

Exemplar Candidate Work

Part 1 of 2

GCE in Applied ICT

OCR Advanced Subsidiary GCE in Applied ICT: H515/H715

Unit G049: Numerical Modelling Using Spreadsheets

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Introduction

This exemplar material serves as a general guide. It provides the following benefits to a teacher:

- Gives teachers an appreciation of the variety of work that can be produced for this unit
- Shows how the mark scheme has been applied by a senior assessor

It is important to make the point that the teacher support materials play a secondary role to the Specification itself. The Specification is the document on which assessment is based and specifies what content and skills need to be covered in delivering the course. At all times, therefore, this teacher support should be read in conjunction with the Specification. If clarification on a particular point is sought then that clarification should be found in the Specification itself.

Moderator's Commentary:

G049: Numerical Modelling Using Spreadsheets

Total mark for portfolio: 43 (Max. 50)

This portfolio illustrates the work of a candidate who has analysed a complex problem relating to an invoicing system and how numerical modelling will be used to solve it. The candidate has provided evidence of implementing the solution using entry aids and processing facilities. Details of problems that have been overcome are evidenced. The spreadsheet is tested and evidence of the results included. Technical documentation to support the spreadsheet solution and a user guide have been provided. The candidate has evaluated the effectiveness of their solution and their personal performance.

Task a

The candidate has analysed the problem to establish the calculations and numerical modelling that needs to be performed. Initially, it appears as though the solution has limited numerical modelling and includes only simple calculations, lookup functions and conditional statements. However, the user requirements on page 6 go on to mention that sales figures for each month will be identified as well as the effect of mark up and insurance on the sales figures. These are to be constructed using pivot tables and the creation of scenarios.

The candidate has created mock ups of the screens to be implemented along with identifying the calculations to be performed. However, the similarity between the designs and the final product does raise some concerns, as the content of some of the designs suggests that they are in fact derived from the final product; this is not acceptable. Assessors need to ensure that design evidence is produced prior to implementation. Mark band 3 requires a clear, precise and complete description that could be implemented by someone else. The level of detail relating to the pivot table, pivot chart and scenarios is insufficient to meet these demands.

User aids have not been fully explored. Dropdown lists and menus have been considered. A complete solution is also likely to incorporate the use of cell comments.

As indicated above, the authenticity of some of the designs is questionable, for example the pivot table on page 17 exactly matches the image on page 74 without the monthly data – a screen mock up produced using Excel is unlikely to incorporate a drop down arrow on the pivot table as this is software generated when the pivot table is created. Centres are advised to get candidates to produce hand drawn sketches, either on blank pages or on blank worksheets, to minimise the temptation to start implementing the solution prior to completing the design.

A mark at the top of mark band 2 is appropriate as the level of detail for implementation of some of the numerical processing functions is incomplete and some of the evidence presented as design evidence is implementation evidence.

Mark Band: 2

Mark Awarded: 5 (Max. 7)

Task b (i)

The candidate has described through the use of a narrative supported by screenshots how the solution has been implemented. This starts on page 26. The numerical modelling solution matches the design i.e. all aspects of the design have been implemented. Numerical modelling has been incorporated into the solution. The quality and completeness of the final solution are appropriate – it is reasonably effective, efficient and easy-to-use. To achieve the top of mark band 3 it would be expected that the underlying spreadsheet would be hidden from the user, for example the worksheet tabs, as buttons have been provided for navigation.

Mark Band 3

Mark Awarded: 6 (Max. 7)

Task b (ii)

The candidate has produced a spreadsheet solution that includes a main menu in addition to well designed data input screens; these incorporate the use of dropdown lists in suitable places and validation checks, as identified in the list of more complex spreadsheet facilities on page 64 of the unit specification. Navigation buttons are included on each page to allow the end user to return to the main menu, for example. The solution incorporates the use of specialised built-in spreadsheet functions of suitable complexity including pivot tables and solver, as identified on page 63 of the unit specification. The solution is supported through a variety of common built-in spreadsheet functions, including VLOOKUP and IF. Presentation of output has been considered, including the display of the invoice. This has all been very thoroughly documented. There is sufficient evidence for maximum marks to be awarded.

Mark Band 3

Mark Awarded: 8 (Max. 8)

Task c

This section of the candidate's portfolio (pages 108 – 116) identifies a number of issues that the candidate encountered and the strategy used to overcome the problems. The candidate investigated the issues around the problems to consider a solution and reflected upon the success of the solution to the issues.

Much of the evidence relating to the implementation of the solution is incorporated with the detailed evidence for task b(i) and task b(ii). Again, there is sufficient evidence for maximum marks.

Mark Band 3

Mark Awarded: 5 (Max. 5)

Task d

The candidate has provided a detailed test plan broken down into a number of sections. The candidate has, for each test, described the test to be carried out, identified the expected outcome and recorded the actual outcome from the test i.e. pass/fail. Each section is supported by evidence of the tests carried out. Tests that did not pass were resolved, for example test 3 on page 120.

The accuracy of output has been tested to ensure that the calculations are returning the correct answer. Test 43 on page 143, for example, is checking that the correct delivery charge is applied as a result of the conditional statement.

Further evidence could have been supplied to support the range of acceptable and unacceptable data input used to plan the testing. The candidate has not explicitly checked that the solution meets all the demands of the design specification. The absence of this evidence prevents the candidate from being awarded a mark at the top of mark band 3.

Mark Band 3

Mark Awarded: 6 (Max. 7)

Task e

The candidate has produced clear technical documentation, starting on page 184, that explains all technical aspects of the solution that has been implemented. This is supplemented by the use of images/screenshots to support the explanations. However, the evidence presented does not detail all parts of the solution and a competent third party would not be able to fully reproduce the solution from the evidence presented.

The user guide, starting on page 170, explains how to utilize the system; addressing system requirements, loading the spreadsheet solution, navigating the solution, how to enter data into the system as well as the output generated by the system. Error handling has also been addressed, again, supported by the use of images.

The candidate has addressed all of the requirements in this task in sufficient detail to secure a mark at the top of mark band 3.

Mark Band 3

Mark Awarded: 7 (Max. 8)

Task f

The candidate has reviewed the solution in terms of how well it meets the initial brief (see page 232). User feedback has been considered; it is not necessary to include all of the user surveys. It is not clear if the candidate has fully addressed any weaknesses identified by users. For example, there is some reference to the pivot table on page 239 but this is not a full explanation of issues that need to be addressed or how things could be improved in the future.

The candidate has reviewed their personal performance including identifying strengths and weaknesses of their approach to the problem. Whilst the candidate has included a number of SWOT analyses, these are not necessary but do provide a useful summary of the candidate's findings.

The report is well-structured with the use of headings and paragraphs, although there are some inconsistencies between paragraph spacing. There are few errors in spelling, punctuation and grammar.

Mark Band 3

Mark Awarded: 6 (Max. 8)

Total mark for portfolio: 43 (Max. 50)

G049 - Assessment Evidence Grid

Unit G049: Numerical modelling using spreadsheets					
What candidates need to do:					
Evidence needs to include:					
a: [AO3] an analysis of a suitable user problem and a design specification that describes how candidates will solve it by numerical modelling [7];					
b: [AO1] evidence of implementing the solution using suitable entry aids and processing facilities [15];					
c: [AO3] a record of how candidates overcame their problems [5];					
d: [AO4] a specification for testing the candidate's spreadsheet, and evidence of the results of these tests [7];					
e: [AO2] technical documentation that explains how the candidate's spreadsheet works, and user documentation that explains how it is used [8];					
f: [AO4] an evaluation of the effectiveness of the candidate's solution and their personal performance [8].					
How candidates will be assessed:					
Task	Assessment Objective	Mark Band 1	Mark Band 2	Mark Band 3	Mark Awarded
a	AO3	The candidate produces an analysis of a problem that identifies the main user requirements and a design specification that takes account of these requirements and that identifies the numerical processing required and how output will be presented; [0 1 2]	The candidate produces an analysis of a problem that fully identifies the user requirements and a design specification that is complete and that provides full details of sources of data, numerical processing required, user aids and how output is to be presented; [3 4 5]	The candidate produces a detailed analysis of a complex problem and user requirements along with a design specification that provides a clear, precise and complete description of a numerical modelling solution to the problem that could be implemented by someone else. [6 7]	5/7
b(i)	AO1	The candidate implements a numerical modelling spreadsheet solution to a problem; [0 1 2]	The candidate implements an easy to use numerical modelling spreadsheet solution that solves a problem effectively; [3 4 5]	The candidate implements a complete, effective, efficient and easy to use numerical modelling spreadsheet solution to a complex problem; [6 7]	6/7
b(ii)	AO1	The candidate produces a numerical modelling spreadsheet solution that includes data entry, numerical processing and output; [0 1 2]	The candidate produces a numerical modelling spreadsheet solution that includes data entry, specialist numerical processing functions, complex spreadsheet facilities and presentation of output; [3 4 5]	The candidate produces a numerical modelling spreadsheet solution that includes appropriate use of a range of specialist numerical processing functions and complex spreadsheet facilities for data entry, numerical processing and presentation of output. [6 7 8]	8/8
c	AO3	The candidate produces a record of the strategy used to implement the spreadsheet solution, including methods used to overcome problems; [0 1 2]	The candidate produces a record of the strategy used to implement the spreadsheet solution, the candidate show that the solutions used to overcome problems show an understanding of both the user's needs and the effective use of spreadsheet facilities; [3 4]	The candidate produces a record of the strategy used to implement the spreadsheet solution, the candidate use methodical, analytical and critical approaches to overcome problems during implementation; The candidate's methods will fully address the user's needs and make effective use of spreadsheet facilities. [5]	5/5

Unit G049: Numerical modelling using spreadsheets (continued)					
Task	Assessment Objective	Mark Band 1	Mark Band 2	Mark Band 3	Mark Awarded
d	AO4	The candidate produces a basic test specification and provides evidence that it was used to test that the spreadsheet is functional and that the results are accurate; [0 1 2]	The candidate produces a test specification that includes acceptable and unacceptable input, and expected output, and provides evidence that it was used to adequately test the functionality and accuracy of the spreadsheet solution and that the solution meets the requirements of the design specification; [3 4]	The candidate produces a detailed test specification which tests all aspects of the solution with a full range of acceptable and unacceptable input, expected output, and any associated error messages; The candidate provides evidence that it was used to fully test the functionality and accuracy of the spreadsheet solution and that the solution fully meets the requirements of the design specification. [5 6 7]	6/7
e	AO2	The candidate produces clear technical documentation that identifies the numerical processing methods used, and user documentation that includes copies of menus and screens used, instructions on data entry and routes through the spreadsheet menus and the outputs expected; [0 1 2 3]	The candidate produces technical and user documentation that makes use of graphic images, their technical documentation includes explanations of all technical aspects of the solution, the user documentation includes copies of menus and data input screens, instructions on data entry and routes through the spreadsheet menus, types of output available and possible error messages; [4 5]	The candidate produces complete, high-quality, stand-alone technical and user documentation that makes effective use of graphic images, their technical documentation includes explanations of all technical aspects of the solution, the user documentation includes copies of menus and data input screens, instructions on data entry and routes through the spreadsheet menus, types of output available and possible error messages; [6 7 8]	7/8
f	AO4	The candidate comments on the effectiveness of the final solution, with some overall indication of how the work may be improved in the future; The candidate evaluates aspects of their personal performance that affected the solution; The report may contain errors in spelling, punctuation and grammar; [0 1 2]	The candidate provides an analysis of their final solution that identifies its strengths and weaknesses and considers user feedback in order to identify how the work may be improved in the future; The candidate evaluate aspects of their personal performance that affected the solution by identifying their strengths and weaknesses, with some suggestions for improvement to the overall process; the report contains few spelling, punctuation and grammar errors; [3 4 5]	The candidate provides a full critical analysis of their final solution identifying how well it meets the initial brief, taking into account and analysing user feedback in order to identify how the work may be improved in the future; The candidate evaluates aspects of their personal performance by identifying their strengths and weaknesses and how they may address these issues to be more effective in the future; The report is consistently well-structured and there will be few, if any, spelling, punctuation and grammar errors. [6 7 8]	6/8
Total mark awarded:					43/50

Candidate's work – Part 1

GCE Applied ICT Coursework

Unit 10

Tasks A - C

Unit 10

Task A

Task A

For this assignment I will create and develop a computerised invoicing system to record both customer details and also order details for the company Build_it.com. I will make use of Microsoft Excel in order to use spreadsheet software to analyse the required data and present the results. I will use spreadsheet data to interpret the data and analyse it to find specific information relating to the given scenario. I will also make use of most of the spreadsheet functions in order to give a comprehensive and detailed interpretation of the data and ultimately assess how efficient this selected spreadsheet software is to use and present the information in accordance with the given scenario. Therefore, I will provide a solution to the given scenario using the Microsoft Excel software within the current parameters as stated.

Scenario

Build_it.com is a small, but highly specialised, company which offers custom built home use computer systems. At the present time, all of their records and sales details are not computerised and the company, although being in its early development stage, wish to computerise all of the information in order to present a professional image when sending out invoices and keeping all customer and order details. Therefore, Build_it.com wants to develop a computerised invoicing system to record both customer details and also order details.

The company also wants to develop the computerised system further and be able to create management reports in the form of graphs in order to clearly represent and highlight their sales figures and patterns. At the present time, Build_it.com currently makes a 25% profit but is aiming to increase the profit by investigating new ways to improve the profit margin and also offer special deals for the client in order to be competitive in the sales market.

Solution

Build_it.com currently has all of their customer and order details in written format, along with the invoice also. However as the company is aiming to expand, they wish to upgrade to a computerised system of keeping customer and order details, as well as keeping track of the components they sell and generate invoices for customer sales. Therefore, once the computerised system is put in place, the members of staff will be able to directly input the customer details into the database.

Output Information

The desired output is the computerised generation of an invoice for the customer, with their details inserted when they have been added to the customer details worksheet. The following worksheets and processes will accumulate in the generation of the invoice as the output information:

Add Customer Worksheet – This is where the staff of Build_it.com will enter new customers into the worksheet to have a record for when they purchase an item. Within this worksheet, the customer details will firstly be added to the customer details worksheet as this is the worksheet which will be linked to the invoice. A formula will then be used for the customer number which will increment after every customer has been added.

A macro will then be created so that all of the customer details can be added to the customer detail worksheet with the click of a button. This will function as an aid for data input and processing. The macro will copy all of the information over, will clear all of the data within the add customer worksheet bar the customer number which will also have incremented to ensure a unique customer number.

Customer Details Worksheet – This worksheet is where all of the customer details will be stored for future reference and will also be linked to the invoice worksheet in order for the customer' details to be included within the invoice. This will be done by using the VLOOKUP formula to retrieve information for the given cells.

Components Worksheet – This worksheet will be linked to the invoice sheet, in which combo boxes within the invoice worksheet will be able to select the various components available to purchase.

Invoice Worksheet – This worksheet is therefore the desired output information that is wanted by the company accumulated through the formulas and processes within the other worksheets also as they are inextricably linked. Using the same formula as used in the Add Customer worksheet, the invoice number will increment and clear all of the customer details ready for the next customer and also reset all of the components back to the first available one. This will then be added to the summary table worksheet to keep a record of all of the sales. I will do all of these steps whilst recording a macro and then assign the macro to the button, Add to Summary Table, so that these steps can be achieved with the click of a button, ultimately aiding data input and processing. By using the VLOOKUP formulas, I will also be able to, by only entering the customer number, retrieve all of the customer details from the customer details worksheet. The Combo boxes will be linked to the components worksheet so that the customers can select what they wish to buy. This will be done using the format control of each of the combo boxes.

Formulas will also be used to calculate the sub-total, the delivery charge, the VAT and also the invoice total. These numerical processes will therefore be pertinent to achieving the required output information from the invoice.

All of the above processes will result in the output of the completed invoice.

User Requirements

- The spreadsheet should give off an initial good first impression
- The spreadsheet macros and tabs should ensure ease of use and easy navigation
- The spreadsheet worksheets should be easy to understand, with the content and design features being directed towards the intended target audience
- The content is presented in a clear and concise manner, mainly in the form of tables
- The layout and the colour scheme should be aesthetically pleasing
- The font scheme should be clear for the users to easily read and ensure the user can find the information effectively
- The company logo is included in all of the worksheets
- The spreadsheet allows the user to effectively enter their details in the add customer worksheet and transfer the data over to the customer details worksheet through a use of a macro
- Every customer will have a unique customer number
- The customer details worksheet will present the data in a table and will be sorted by the customer number
- The components worksheet will include all of the products available to purchase including component code, description and cost in a table
- The invoice worksheet will allow the customer to enter their customer number and it will retrieve all of their details from the customer details worksheet through the use of VLookup formula
- The invoice worksheet will include a print macro so the invoice can easily be printed
- The customer can select the products they wish to purchase in the invoice worksheet
- The invoice worksheet will highlight the sub-total, the VAT, the delivery charge and also the invoice total
- The invoice data can be transferred to the summary table worksheet through the use of a macro
- The spreadsheet will contain a pivot table worksheet, highlighting the sales figures for each month

user requirements

- The spreadsheet will include a pivot chart which will be a graphical representation of the data within the pivot table
- The spreadsheet will include a summary table where all of the invoice data will be presented in the form of a table
- The spreadsheet will include a statistics worksheet, which will allow for the user to change the mark up and insurance of each of the products and highlight how these will have an effect on the profit.
- The spreadsheet will contain a scenario summary worksheet, highlighting the mark up and insurance scenarios the client could use, each having an effect on the profit and the current values entered within the statistics worksheet.

Planning Stage

Naming the Spreadsheet

The spreadsheet will need to be named to highlight the name of the company the spreadsheet has been created for.

Inserting Worksheets

The following worksheets will be inserted so that the desired output can take place and the processes can be completed within each of the worksheets. The worksheets will include; menu, add customer, customer details, components, invoice, pivot table, pivot chart, statistics, summary page.

Worksheet Tabs

The worksheet tabs will also be renamed accordingly, corresponding with the given worksheet. Each tab will then be formatted to the same colour scheme as the background colour. Only three colours will be used throughout in order to ensure consistency and also ease of use so that each tab can easily be recognised within the document.

Adding Buttons

These will be created and included within each of the worksheets when applicable and recorded macros will then be linked to each individual button so that when clicked they will take you to the specified worksheet or perform a specific action easily and quickly. Some of their functions will be to bring the user back to the menu worksheet, print the invoice, add the customer to the customer details worksheet and also add the invoice details to the summary worksheet. The buttons will also be formatted to the colour blue in order to show consistency.

Macros

Macros will be included within the various worksheets so that when clicked they would take you to the specified worksheet or perform a specific action easily and quickly. The macros will firstly be recorded and then assigned to the given buttons within the worksheets. The use of macros allows the user to click the selected button and it will do the operations in one single click as the actions have been previously recorded.

✓ design of spreadsheet

General Design Choices

For each of the worksheets I will make use of background colour in order to make the Excel document more aesthetically pleasing. This will be done by selecting all cells using the Ctrl A key, and selecting a fill colour located on the left side of the toolbar. The fill colours were different, with every third worksheet being the same colour.

General Format Choices

The font, Ariel, will also be used throughout to show consistency with different styles such as bold being used where appropriate in headings. The font size will also be changed for heading and for normal text. The headings will be of a larger, size 22 font and bold in order to stand out with the text mostly being of size 12 font.

Logo

A logo will be created that highlights the name of the company so that when the invoice is printed the company name will be present. The logo will be created and inserted into each of the individual worksheets.

Formatting Cells

All of the cells will be formatted correctly so as to function as a validation check so no implausible information can be inserted into the cells through human error e.g. entering the customers name in the cell where the telephone number should be inserted. This will be done through the format cells option within the toolbar, throughout all of the worksheets where applicable.

Another example where the cells will be formatted is within the components worksheet where the price of the products is highlighted and also in the invoice worksheet where the sub-total, delivery charge, VAT and the invoice total is presented. These cells will be formatted to currency to show the pound (£) sign in front of the total.

Formulas and Additional Features

The formulas used and additional features have already been mentioned within the processes of achieving the desired output in the invoice including the use of a formula for the customer number and invoice number which will increment after every customer has been added.

A VLOOKUP formula will also be used to retrieve information for the invoice from the customer details worksheet and combo boxes will be used in the invoice worksheet highlighting the choices available as it is linked to the components worksheet.

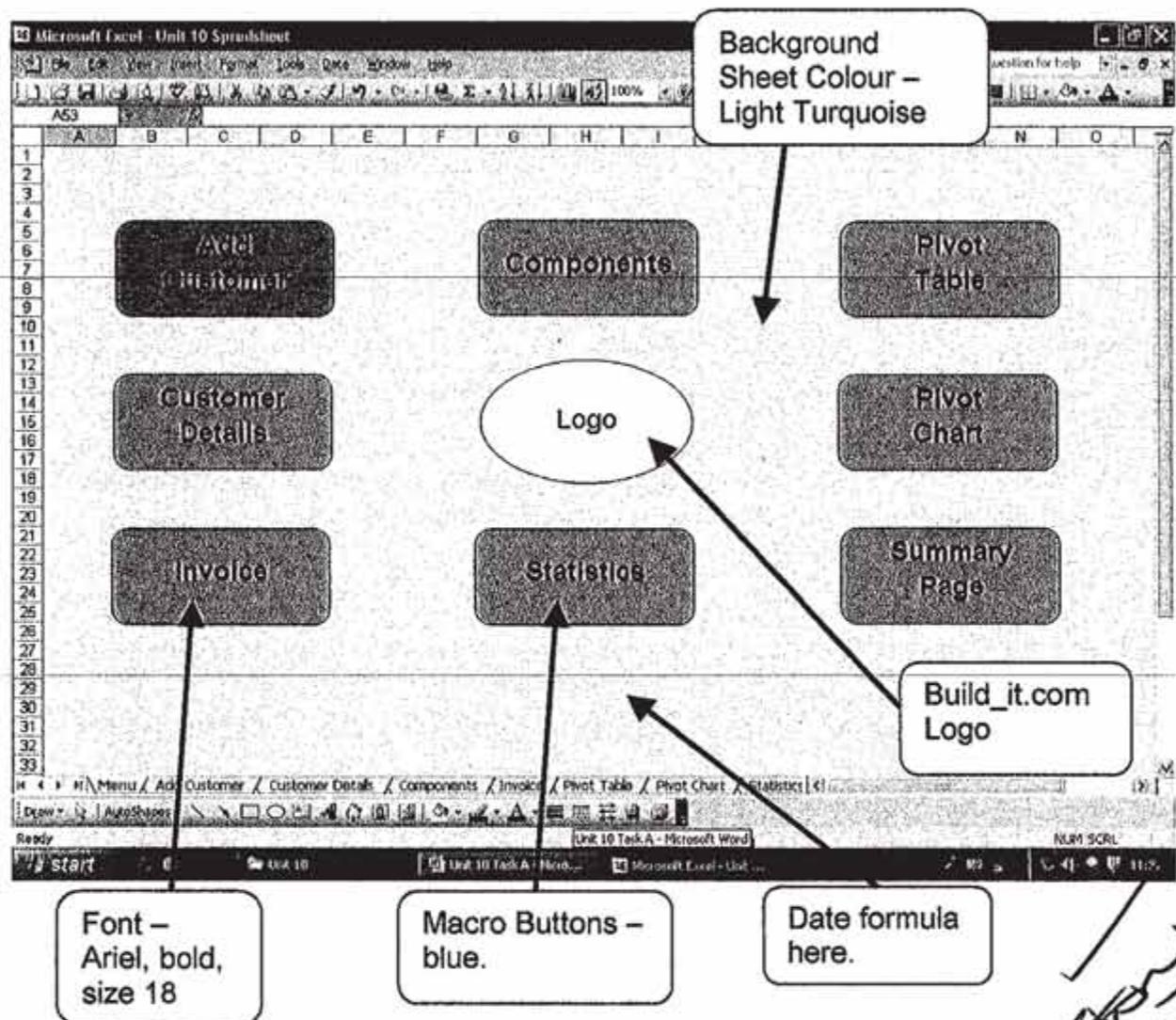
I will also use the date formula =TODAY() on both the menu worksheet and the invoice worksheet.



Storyboard Planning

These storyboards will highlight the plan for the design of each of the individual worksheets. I will also highlight what processes will need to be carried out when it comes to actually creating the Excel document.

Menu Worksheet



The purpose of this worksheet will be to act essentially as a menu, in which the macros will be inserted in order to move to other worksheets including; Add customer, Customer details, Components, Invoice, Pivot Table, Pivot Chart, Statistics, Summary Table. This will therefore, enable the user to move to their required worksheet in the click of one button.

This worksheet will also include the date using the formula =TODAY().

Add Customer Worksheet

Build_it.com
Logo – Top
left hand

Logo

Add Customer

Customer Number: 1004

Surname: []

House Name/Number: []

Town/City: []

Post Code: []

Telephone Number: []

Format cells accordingly

WordArt – 'Add Customer'.
Colour – Black

Background. Colour - Blue

Formula here for unique customer number which increments after every customer is added to the customer details

Font – Ariel, bold, size 10

Background Sheet Colour – White

Add to Customer Details

Menu

Add Customer Macro and Menu Macro

This worksheet is where all of the customer details will be entered into the system and is linked to the menu through the macros that will be recorded. As this is the worksheet where all of the customer data will be inserted, I will format the cells accordingly. An example being in the cells where the customer's name is inserted, the cells will be formatted as text, which will essentially function as a validation check. This will be done for all of the cells and changed accordingly, with number fields also being used.

A formula will be used in the customer number cells so that after every customer is added to the customer details worksheets the customer number will increment so as to ensure a unique customer number.

There will also be macros included within this worksheet, a menu button and an add customer button. The menu button will take the user back to the menu worksheet when selected, while the add to contact details button will function in adding all of the customer details to the customer details worksheet. Once this is done, all of the fields will clear so another customer can be added, with the information moving to the customer details table in order to keep a list of all customer details more effectively and the customer number incrementing.

✓
Exploration
of macros

Customer Details Worksheet

Build_it.com
Logo – Top
left hand

Logo

Customer Details

WordArt –
'Customer Details'.
Colour – Black

Customer Number	Name	Address	House Number	Street	Town/City	Post Code	Telephone Number
-----------------	------	---------	--------------	--------	-----------	-----------	------------------

Font – Ariel,
bold, size 10

Customer details will be
added here automatically
through the add to customer
details macro within the add
customer worksheet.

Background
Colour -
Yellow

Background
Sheet Colour –
White

Menu macro

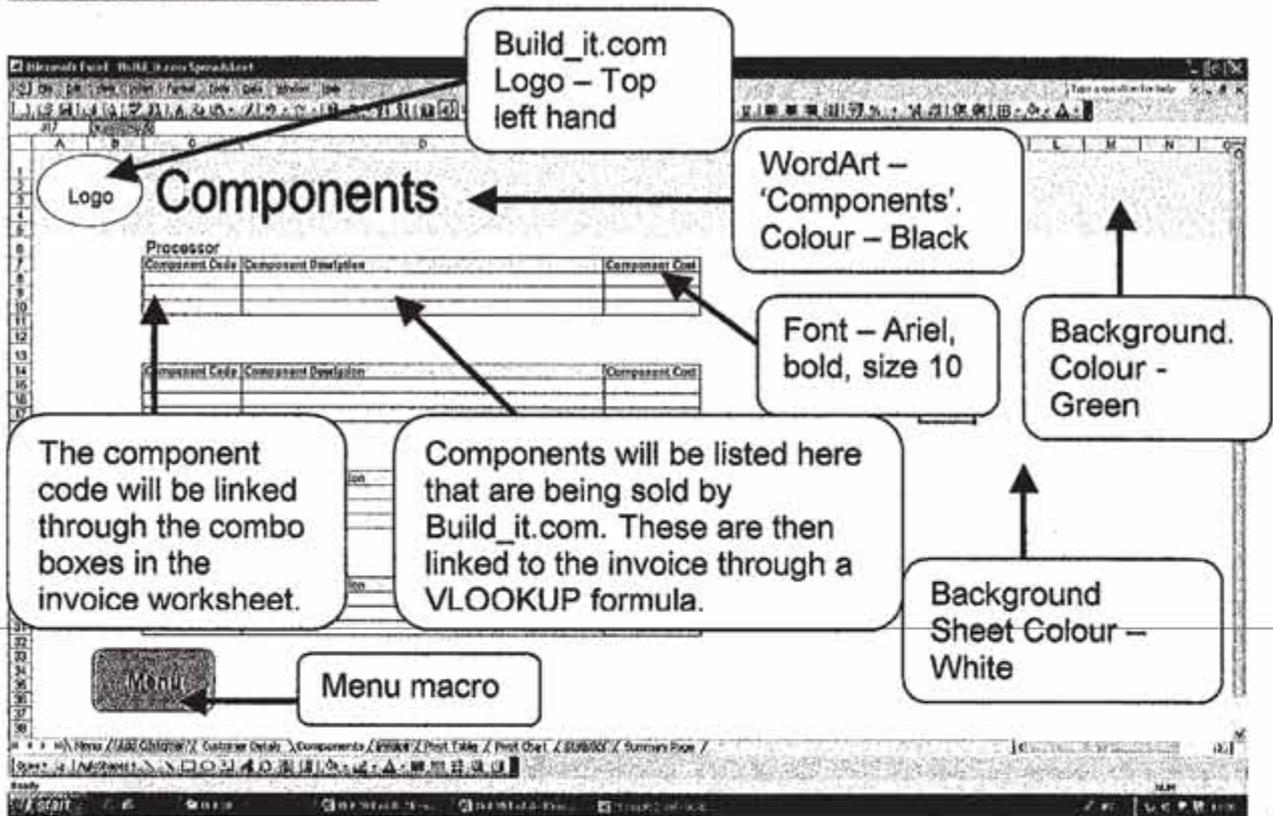
Menu

This worksheet is where all of the customer details will be stored for future reference though the use of a macro which will copy the required information over to the add customer worksheet and enter a new row of cells for the next piece of information and will be sorted according to the customer number.

This worksheet will also be linked to the invoice worksheet in order for the customer' details to be included automatically within the invoice. This will be done by using the VLOOKUP formula to retrieve information for the given cells within the invoice worksheet, with this table being an essential aspect of this process of achieving a functioning invoice.

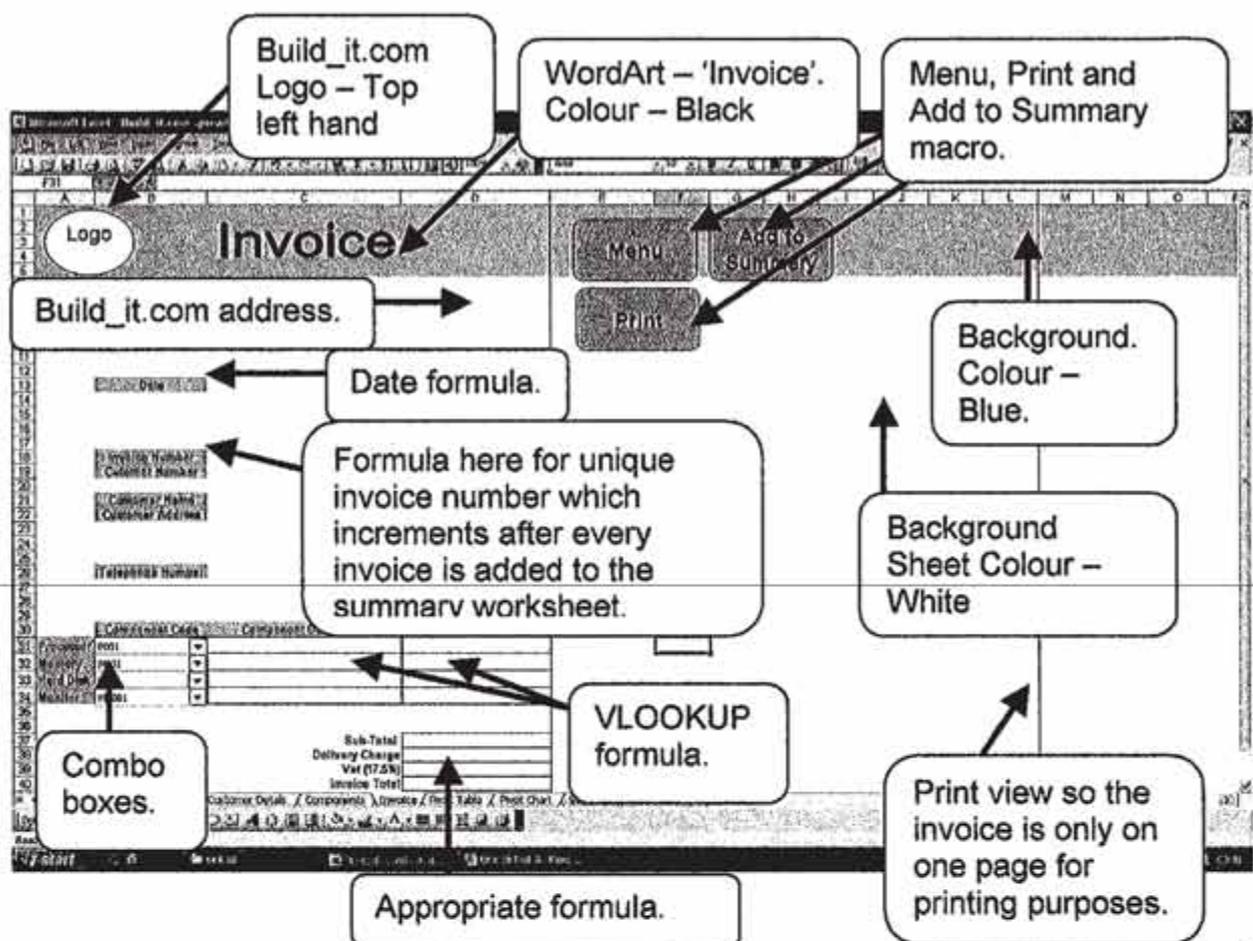
There will also be a menu macro included within this worksheet, which will bring the user back to the menu worksheet when selected.

Components Worksheet



This worksheet is where all of the components including the component code, the component description and component cost are stored, and the cells will be formatted accordingly. This worksheet will then be linked to the invoice, in which combo boxes within the invoice worksheet will be able to select the component code and using the VLOOKUP formula the given component description and cost will be retrieved.

There will also be a menu macro included within this worksheet, which will bring the user back to the menu worksheet when selected.

Invoice Worksheet

This worksheet is where the invoice will be generated. Using the same formula as used in the Add Customer worksheet, the invoice number will increment and clear all of the customer details ready for the next customer and also reset all of the components back to the first available one. This will then be added to the summary table worksheet to keep a record of all of the sales. I will do all of these steps whilst recording a macro and then assign the macro to the button, Add to Summary Table, so that these steps can be achieved with the click of a button.

By using the VLOOKUP formulas, I will also be able to, by only entering the customer number, retrieve all of the customer details from the customer details worksheet. The Combo boxes will be linked to the components worksheet so that the customers can select what they wish to buy. This will be done using the format control of each of the combo boxes.

Formulas will also be used to calculate the sub-total, the delivery charge, the VAT and also the invoice total. These numerical processes will therefore be pertinent to achieving the required output information from the invoice.

All of the cells will be formatted accordingly and this worksheet will also include a menu, print and add to summary table macro which will work in the same format as the add to customer details macro. ✓

Pivot Table Worksheet

Build_it.com
Logo - Top left hand

WordArt - 'PivotTable'.
Colour - Black.

Pivot Table

Sum of Invoice Total	Date	Total
	Feb	
	Mar	
	Apr	
	Grand Total	

Invoice total.

Background Colour - Yellow.

Date sorted according to the month.

Data retrieved from the summary table.

Menu Macro.

Menu

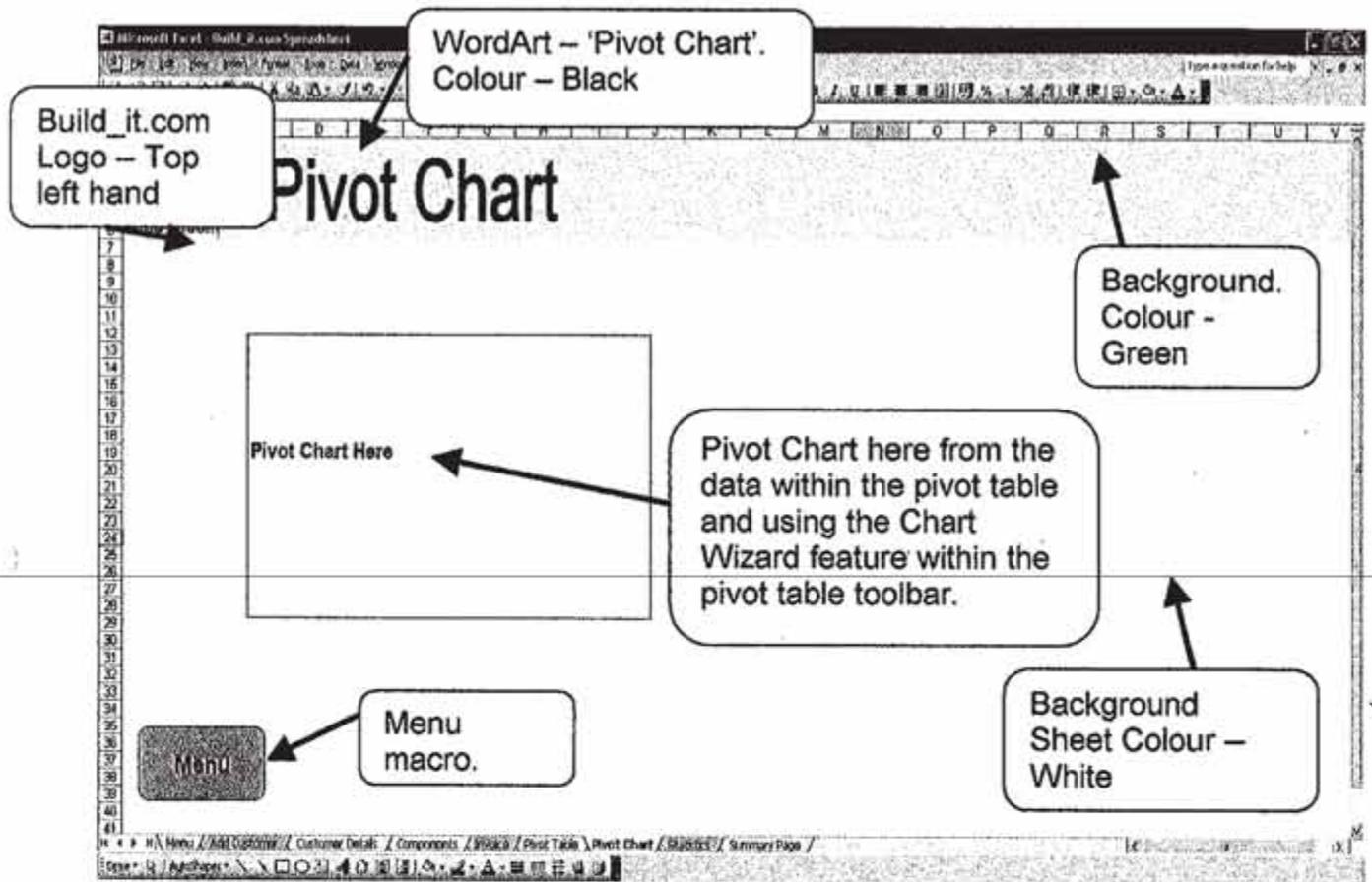
Background Sheet Colour - White

Excel Project

This worksheet is where all of the content within the summary page will be highlighted within the pivot table. A pivot table is a form of data analysis or a summary tool, which in this case, will highlight the sales figures for each month. This content will be used from the summary table data and inserted within the pivot table when selecting the data once the pivot table tab has been selected within the toolbar.

The pivot table will include the data of the purchase along the left hand column which will be sorted according to data order and the total amount from the summary table beside this. This will therefore clearly highlight the sales figures for each month, and as it is linked to the summary table, every time another customer buys an item and their order details are added to the summary table worksheet, it will update the pivot table.

All of the cells will be formatted accordingly and this worksheet will also include a menu macro to take the user back to the menu worksheet.

Pivot Chart Worksheet

This worksheet is where the pivot chart will be. The pivot chart will be created from the data within the pivot table by selecting the chart wizard within the pop-up toolbar when creating the pivot table. This worksheet will then be selected for the chart to be selected into.

This worksheet will also include a menu macro which will take the user back to the menu worksheet.

Summary Table Worksheet

Build_it.com Logo - Top left hand

WordArt - 'Summary Table'. Colour - Black

LOGO

Summary Table

Invoice Number	Customer Number	Date	Surname	Forename	Sub-Total	Delivery Charge	Vat (17.5%)	Invoice Total

Background. Colour - Yellow

Invoice details will be added here automatically through the add to summary table macro within the invoice worksheet.

Menu macro.

MENU

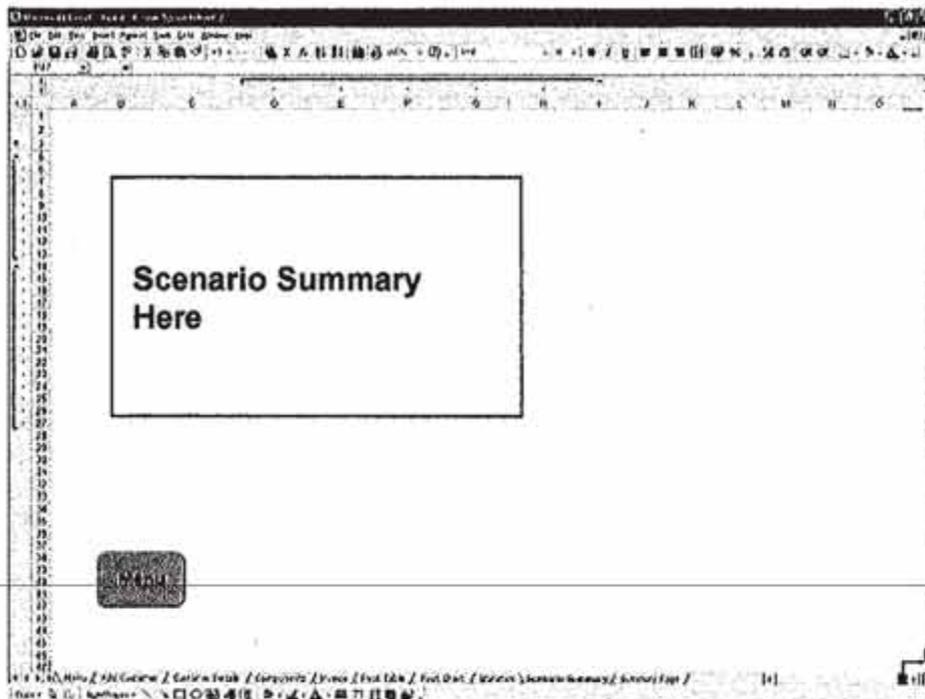
Background Sheet Colour - White

This worksheet is where all of the invoice information will be stored for future reference and will also be used to create the pivot table and chart as they will be created with the information on the sales and invoice total. This will be done through the use of a macro which will copy the required information over to the summary table and enter a new row of cells for the next piece of information and will be sorted according to the date of the transaction.

There will also be a menu macro included within this worksheet, which will bring the user back to the menu worksheet when selected.

The mark up to the side will influence the sale price, while the carriage/insurance percentage to the side will influence the corresponding column within the table. The cells within this worksheet will all also be formatted accordingly. There will also be a menu macro included within this worksheet, which will bring the user back to the menu worksheet when selected.



Scenario Summary Worksheet

This worksheet is where the scenario summary table will be once the scenarios have been created. This is therefore a data representation of how the scenarios will change the profit margins. It will highlight the scenarios available that the client could use, each scenario having a different profit margin and also the current values the mark up and insurance cells are set at.

This worksheet will also include a menu macro which will take the user back to the menu worksheet.

Planning for the Components to be included within the Spreadsheet

I used the following websites to research the components to be included within the components worksheet within the spreadsheet:

- www.aria.co.uk
- www.misco.co.uk

I found components under the following headings and will include these components within the worksheet to highlight what the company sells. I will then enter this information accordingly when it comes to creating the Excel document.

Processor

Component Code	Component Description	Component Cost
P001	Intel Pentium 2.60GHz	£48.16
P002	Intel Core2 Duo 2.93GHz	£88.11
P003	AMD Phenom II 3.20 GHz	£123.89

Memory

Component Code	Component Description	Component Cost
M001	Integral 512MB 800MHz	£8.99
M002	Kingston 1GB 400MHz	£29.36
M003	Corsair 6GB 1333MHz	£146.86

Hard Drive

Component Code	Component Description	Component Cost
H001	120GB Hitachi SATA 2.5"	£32.84
H002	Samsung 3.5" SATA II	£36.41
H003	Fujitsu 500GB SATA II 2.5"	£52.82

Monitor

Component Code	Component Description	Component Cost
MR001	Compaq 19" Widescreen	£88.99
MR002	LG 22" Widescreen	£118.89
MR003	HP 25" Widescreen	£259.99



Unit 10

Task B

Task B

For this assignment I will highlight the set-up of the Excel spreadsheet and also highlight the design choices that will be used throughout. This will include:

- Naming of the Spreadsheet
- Inserting Worksheets
- Adding Buttons
- General Design Choices
- Creating the Company Logo

I will then highlight the over all implementation of the Excel document.

Naming the Spreadsheet



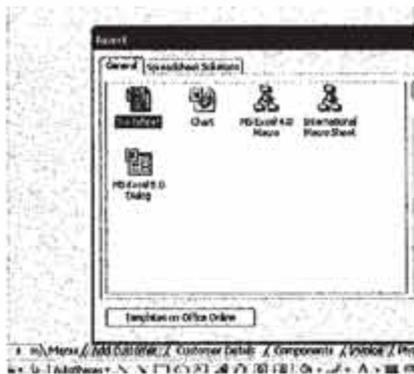
This task was simply done by saving the Excel document as 'Build_it.com Spreadsheet' so that it clearly highlighted the name of the company the spreadsheet had been created for.

Inserting Worksheets

The following worksheets will be included within the Excel document:

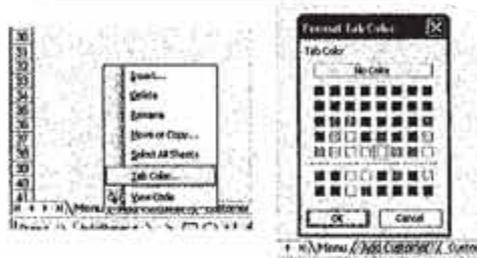
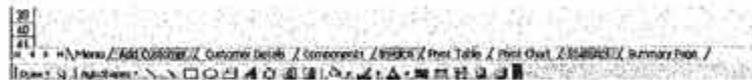
- *Menu*
- *Add Customer*
- *Customer Details*
- *Components*
- *Invoice*
- *Pivot Table*
- *Pivot Chart*
- *Statistics*
- *Summary Page*

initial setup



Once I had opened a new Microsoft Excel document, I inserted five new worksheets within the document. This was done by right clicking the previous tab and then scrolling to 'Insert'. A new worksheet was selected, thus new tabs for the worksheets were formed. This allowed me to have separate worksheets for each section of the data and presentation of the results. The worksheets were also renamed accordingly.

Each tab for the individual worksheets was also formatted to the same colour scheme as the background colour or strip within the corresponding worksheet. Only three colours were used in the same order throughout. This helps to bring consistency and also ease of use so that each tab can easily be recognized within the document clearly.



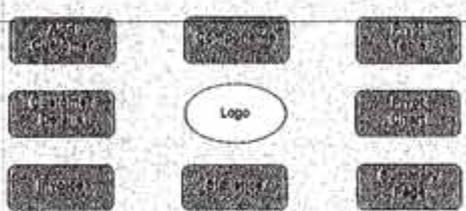
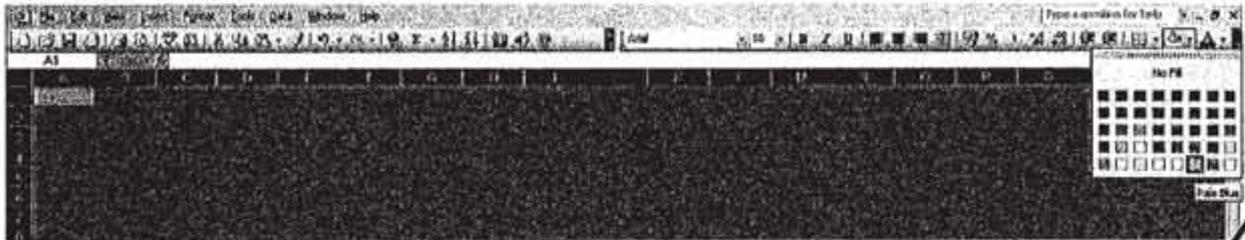
Adding Buttons

Boxes were created using the Autoshape toolbar, which macros will then be linked to each individual button so that when clicked they would take you to the specified worksheet easily. They will also be used to bring the user back to the menu worksheet and also to print the invoice and to add the customer to the customer details worksheet. Using the Format Autoshape option, they were formatted to the colour blue.



General Design Choices

For each of the worksheets I made use of a background colour in order to make the Excel document more aesthetically pleasing. This was done by selecting all cells using the Ctrl A key, and selecting a fill colour located on the left side of the toolbar. The fill colours were different, with every third worksheet being the same colour.



All of the buttons within the menu worksheet were kept the same colour as I think that it looks more professional and the colours do not clash.

The font, Ariel, was also used throughout to show consistency with different styles such as bold being used where appropriate in headings. The font size was also changed for heading and for normal text. The headings are of a larger, size 22 font and bold in order to stand out with the text mostly being of size 12 font.

Customer Number	<input type="text" value="1004"/>
Surname	<input type="text"/>
Forename	<input type="text"/>
House Name/Number	<input type="text"/>
Street Name	<input type="text"/>
Town/City	<input type="text"/>
Post Code	<input type="text"/>
Telephone Number	<input type="text"/>

Creating the Company Logo



Firstly, I opened up a Photoshop document and named the document – Build_it.com Logo. The size of the image was then selected, being 250 x 250 and a white background was also selected.

The image was then inserted into the document, on a different layer which was renamed 'image', with the previous layer being renamed 'background'. This is so all of the aspects can be moved individually. Another layer was then created and using the text tool, the company name was inserted.



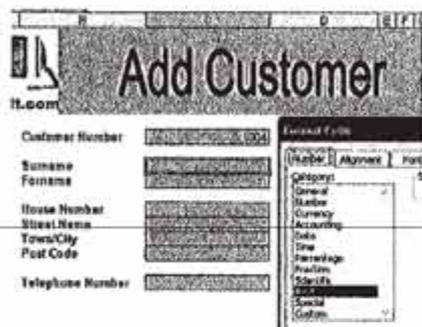
✓
Designing
Create the
logo

Image source - <http://www.highdisplay.com/wp-content/uploads/2009/09/what-is-a-computer-monitor2.jpg>

Formatting Cells

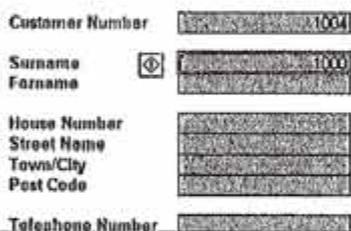
All of the cells were then formatted correctly so as to function as a simple validation check so no implausible information can be inserted into the cells through human error e.g. entering text in the cell where the customer's telephone number should be inserted. This was done through the format cells option within the toolbar, throughout all of the worksheets where applicable.

Add Customer Worksheet



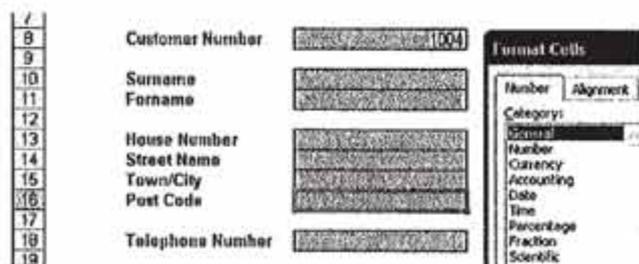
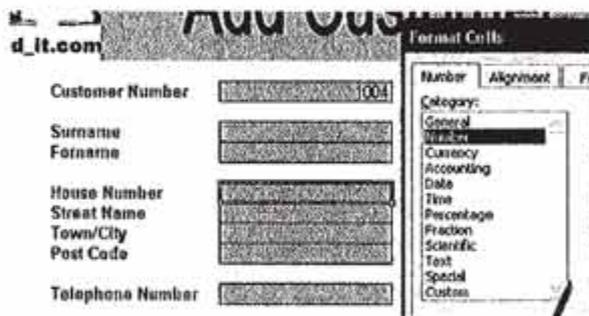
The Surname, Forename, Street Name and Town/City cells were formatted as text. This means that only letters can be inserted within the cells and if, for example, a number is entered into the cell an error message will appear.

Formatted Cells



This is an example of the error message that will appear if the incorrect data is inserted into these particular cells. It will then highlight to the staff that wrong information has been entered.

The House Number and the Telephone Number cells were formatted to number. This means that only numbers can be inserted within the cells and if, for example, text is entered into the cell an error message will appear as shown before.



The Post Code cell was formatted to general as both numbers and text will be included within this cell.

Customer Details Worksheet

The cells within the customer details worksheet were not formatted as they will be directly be copied across from the add customer worksheet, in which the cells will be already formatted.

Components Worksheet

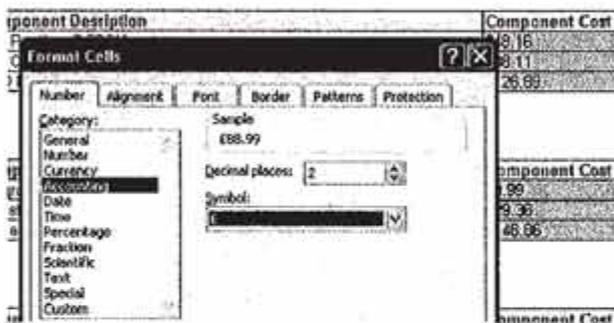
Processor

Component Code	Component Description	Component Cost
P001	Processor	8.16
P002	Processor	8.11
P003	Processor	26.69

Memory

Component Code	Component Description	Component Cost
M001	Memory	1.99
M002	Memory	9.99
M003	Memory	40.96

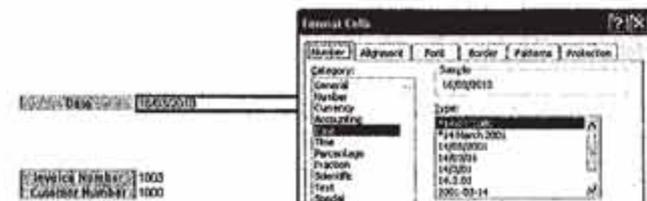
All of the component code cells were formatted to general as both text and numbers are included within this cell. The same process was done for the component description cells.



All of the component cost cells were formatted to accounting, with two decimal places and with the £ symbol.

Invoice Worksheet

The majority of the cells did not need to be formatted again because they are being directly copied across from the customer details worksheet which in turn was directly copied across from the add customer worksheets, with the cells already being formatted.



The date cell was formatted so I could specify the date format, which was chosen as dd/m/yyyy.

Component	Cost
60GHz	£48.10
800MHz	78.99
SATA 2.5"	£32.94
Widescreen	£88.99

Sub Total	£170.10
Delivery Charge	£8.10
Vat (17.5%)	29.77
Invoice Total	£207.97



The Sub-Total, Delivery Charge, VAT and Invoice Total cells were formatted to accounting, with two decimal places and with the £ symbol.

Pivot Table Worksheet

No cells had to be formatted within this worksheet, as all of the information included within the pivot table from the summary worksheet will already be formatted. When it comes to implementing the pivot table, however, the date cells will be sorted in order of months.

Pivot Chart Worksheet

Again, no cells had to be formatted within this worksheet, as all of the information included within the pivot chart was from the pivot table and the data was represented in a chart.

Statistics Workshee.

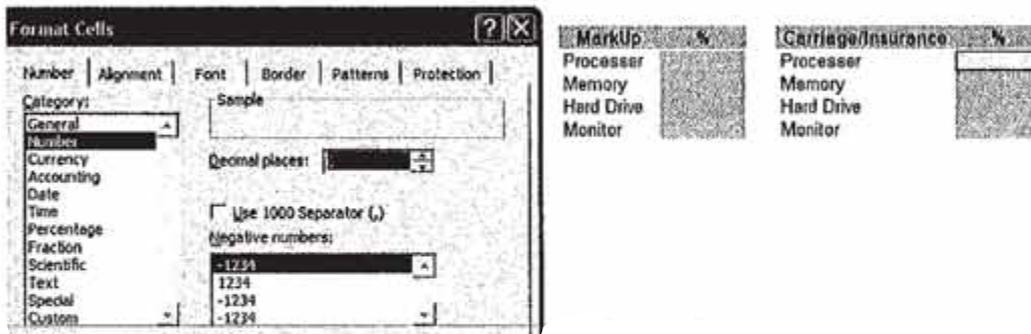
ID	Type	Manufacturer	Cost	Sale Price	Basic Profit	Category	Price-range	Price	Profit
10	Processor	Intel Pentium 2.60GHz	£48.10						
11	Processor	Intel Core 2 Duo 2.93GHz	£88.11						
12	Processor	AMD Phenom II 3.20GHz	£128.65						
13	Memory	Integral 512MB 820MHz	£8.89						
14	Memory	Kingston 1GB 400MHz	£29.29						
15	Memory	Corseair 5GB 1333MHz	£145.86						
16	Hard Drive	120GB Hitachi SATA 2.5"	£32.94						
17	Hard Drive	Samsung 3.5" SATA II	£28.41						
18	Hard Drive	Fujitsu 500GB SATA 3.5"	£82.82						
19	Monitor	Compag 19" Widescreen	£83.11						
20	Monitor	LG 22" Widescreen	£118.64						
21	Monitor	HP 23" Widescreen	£269.52						

These cells were formatted to currency, selecting two decimal places and also the £ symbol when data is entered.



The percentage profit cells and the average percentage profit cells were formatted to number and two decimal places were selected.

The percentage mark up cells and the carriage/insurance cells were also formatted to number with no decimal places being selected.



Summary Table Worksheet

The cells within the summary table worksheet were not formatted as they will be directly be copied across from the invoice worksheet, in which the cells will be already formatted.

Validation Checks

Validation checks will be used within the Add Customer worksheet to ensure that only sensible data can be entered and was only completed within this worksheet as this is the only time data is directly entered in. This does not necessarily mean that the data is correct but that it fits within the specified parameters.

This process will be done through the validation option under the data toolbar to the cells.

Add Customer Worksheet

Surname



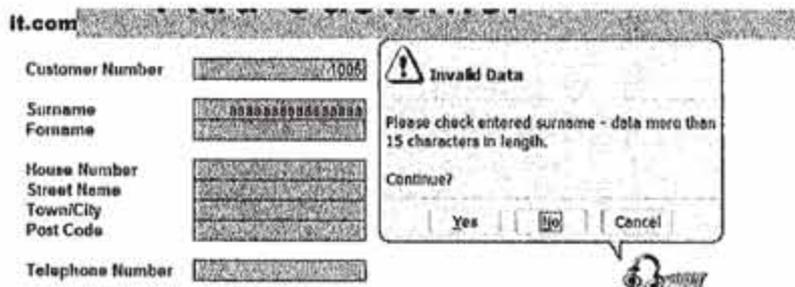
For this cell, I used a text length check so that only text between 1 and 15 characters can be entered into this cell reference. This therefore will highlight if incorrect information may have been entered or if no data has been entered.

Validation checks



I then entered an error alert. If more than 15 characters are entered within this cell, the error/warning alert will appear. The staff can then decline this if the customer's name is in fact longer than 15 characters in unusual circumstances or can see if incorrect information has been added accidentally.

This highlights the warning message that appears when more than 15 characters are entered in this given cell.

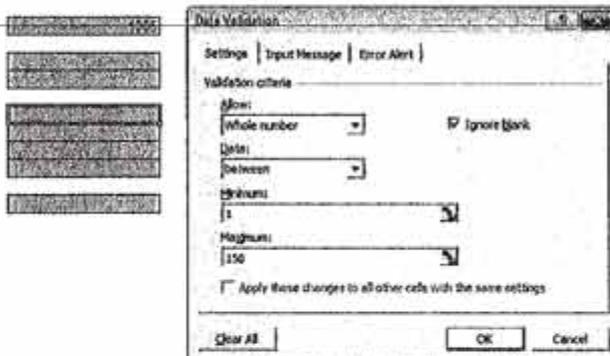


Forename



The same process was completed as the surname validation, however the error message was changed to state that 'Please check entered forename, data more than 15 characters in length.'

House Number



For this cell, I used a whole number check and for the data only between the value of 1 and 999 to account for any customers who live in flats with a large house number. It will also stop non-whole numbers, such as decimals being entered.



A warning message was again entered to tell the staff to check the data entered in the given cell to check if incorrect data has been added accidentally.



When a decimal number was entered, the warning message appeared. Therefore, this validation check will be useful in detecting invalid data.

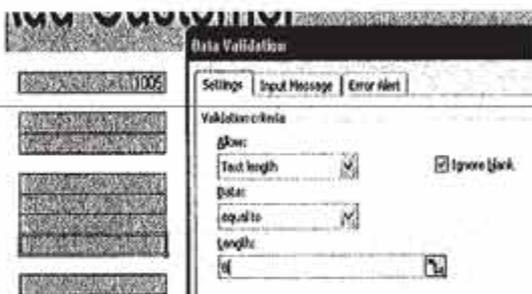
Street Name

The same process was completed as the surname and forename validation, however it was selected that the data could be valid in the range of 1 – 30 characters and the warning message being changed accordingly.

Town/City

The same process was completed for street name validation, with the data being valid in the range of 1 – 20 or the error message will appear with the given information.

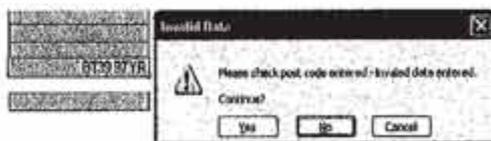
Post Code



For this cell, I used a text length check so that only 8 characters, including a space can be entered into this cell reference. This therefore will highlight if incorrect information may have been entered or if no data has been entered.



A warning message was again entered to tell the staff to check the data entered in the given cell to check if incorrect data has been added accidentally.

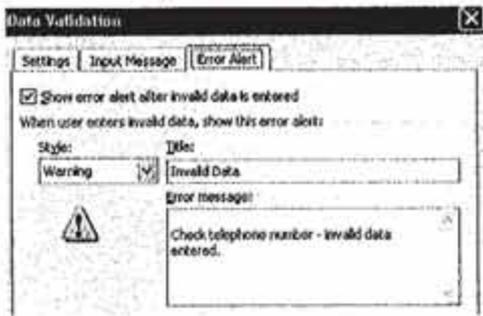


When an additional character was entered, the warning message appeared. This validation check will be useful in detecting invalid data.

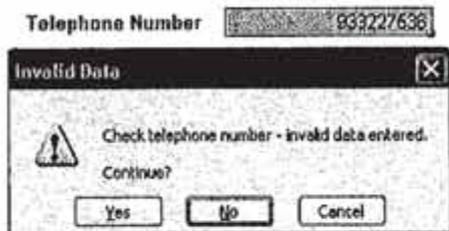
Telephone

For this cell, I used a text length check so that only 11 characters can be entered into this cell reference and also selected whole numbers so that decimals or text cannot be entered. This therefore will highlight if incorrect information may have been entered or if no data has been entered.





A warning message was again entered to tell the staff to check the data entered in the given cell to check if incorrect data has been added accidentally.



When an additional character was entered, the warning message appeared. This validation check will therefore be useful in detecting invalid data.

The use of macros allows the user to click the selected button and it will do the operations in one single click as the actions have been previously recorded.

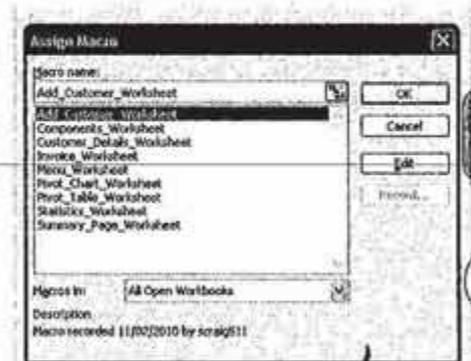
The macros were named and a shortcut keys were created. For this specific macro, once it had been named, I carried out the actions that would take me from the menu worksheet to the add customer worksheet.



This included clicking on the add customer worksheet tab at the bottom of the Excel document and clicking the stop icon on the tab that appeared. This ultimately stopped the recording of the actions of the macro.

Record Macro

Once all of the macros had been recorded I assigned macros to each of the buttons. This was done by right clicking the mouse and scrolling down to the assigned macro. The macro was assigned according to the button that had been selected.



The macros created included:

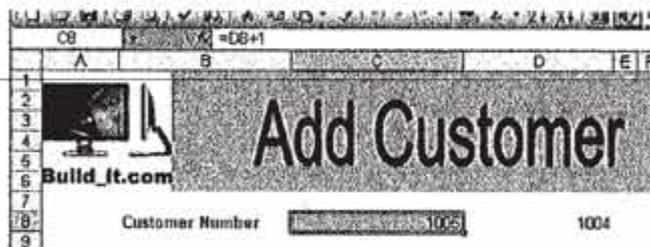
- Add Customer worksheet
- Customer Details worksheet
- Components worksheet
- Invoice worksheet
- Pivot Table worksheet
- Pivot Chart worksheet
- Statistics worksheet
- Summary Page worksheet

Creating the Add Customer Worksheet

Formula / Processes

In order to have a customer number that increments, I will need to use a formula which will be used whenever I create the add to customer worksheet macro. I will add a number to the side of the cell reference where the customer number will be, ensuring that I leave two customer numbers so that I can manually enter two customers within the customer details table so I can see if the macro works when sorting the data in numerical order.

In the customer number cell, I entered the formula =D8+ 1 so that this cell increments.

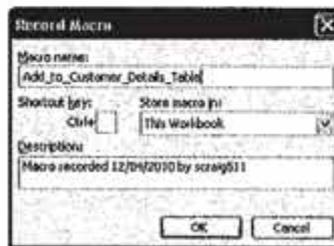


I then made the cell the same colour as the background to disguise this cell reference.

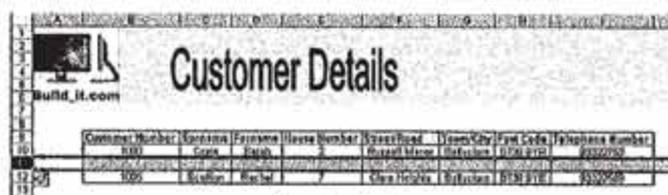
Macros

Add to Customer Details Macro

I started to record my macro (Tools->Macro-> Record New Macro) starting to record when I was on the customer details worksheet. I named the macro Add_to_Customer_Details_Table.



Once it started recording I clicked on the customer details worksheet and inserted a column between the cells where I had manually entered the data.





Once the row has been inserted I clicked on the add customer worksheet. I then copied the data which was inserted within the cell over to the customer details table under the corresponding columns.

The data was then pasted into the customer details table using the paste special option. The values option was then selected so only the value is copied across and not any formula that may have been included within the cell reference.

Customer Number	Surname	Forename	House Number	Street/Road	Town/City	Post Code	Telephone Number
1000	Craig	Sarah	2	Russell Manor	Ballyclare	BT39 9YR	93322763
1001	Archold	Becky	5	Russell Manor	Ballyclare	BT39 9YR	93322756



Steps involved creating the Add Customers Macro



The same process was continued for all of the other data within the add to customer worksheet, including the customer number. All of the content within the customer details table was then sorted in ascending order according to the customer number. This was done by selecting the cell range, which I had named Customer, and selected the option within the data menu toolbar.



I then moved back to the add customer worksheet in order to clear the contents that had been entered, ready for the next customer. I cleared each cell individually using the clear option under the Edit toolbar at the top, however, the customer number was not cleared.



I then copied the customer number and pasted it using the paste special option, again selecting the values option into the cell on the right hand side of the form. This will therefore increment the customer number for the next customer.

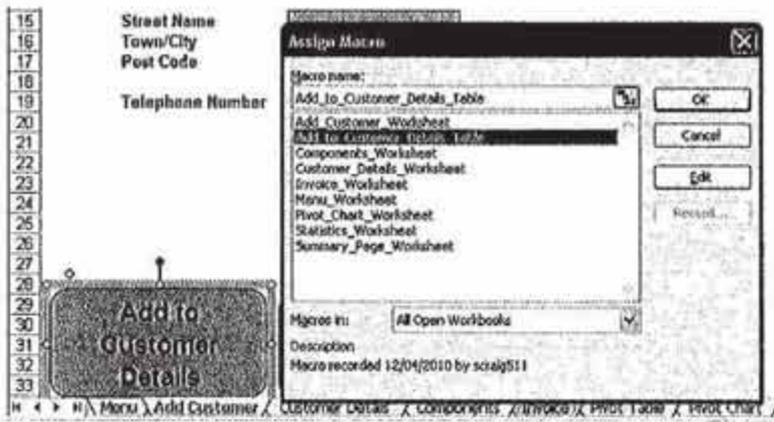
I then pressed Escape on the keyboard in order to deselect the cell. I then stopped the macro from recording. Before I assigned the macro, I edited it, including the line of text 'Application.ScreenUpdating = False' to complete the macro in one move and not for the macro to flash every time an action is being performed in the macro.

```

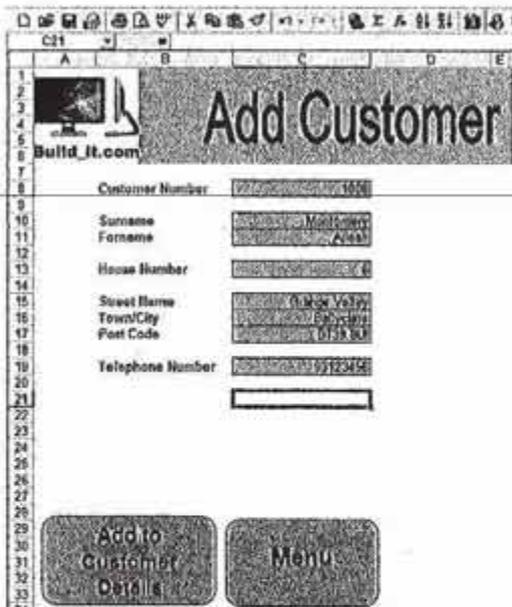
Build_it.com Spreadsheet.xls - Module6 (Code)
[General] Add_to_Customer_Details_Table

Sub Add_to_Customer_Details_Table()
    ' Add_to_Customer_Details_Table Macro
    ' Macro recorded 12/04/2010 by scraig511
    '
    Application.ScreenUpdating = False
    Rows("14:14").Select
    Selection.Insert Shift:=xlDown
    Sheets("Add Customer").Select
    Range("C6").Select
    Selection.Copy
    Sheets("Customer Details").Select
    Range("B14").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks:=False, Transpose:=False
    Sheets("Add Customer").Select
    Range("C10").Select
    Application.CutCopyMode = False
    Selection.Copy
    Sheets("Customer Details").Select
    Range("C14").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks:=False, Transpose:=False
    End Sub
    
```

Problem Solving



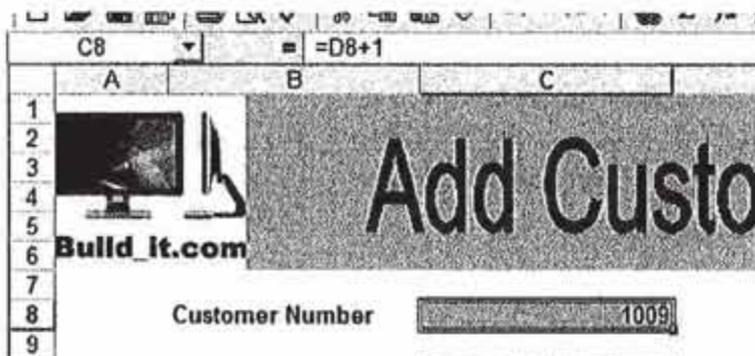
I then assigned the macro to the corresponding macro within the add customer worksheet.



I then added a customer to the customer details worksheet. I entered all of their details and then selected the add to customer details macro.



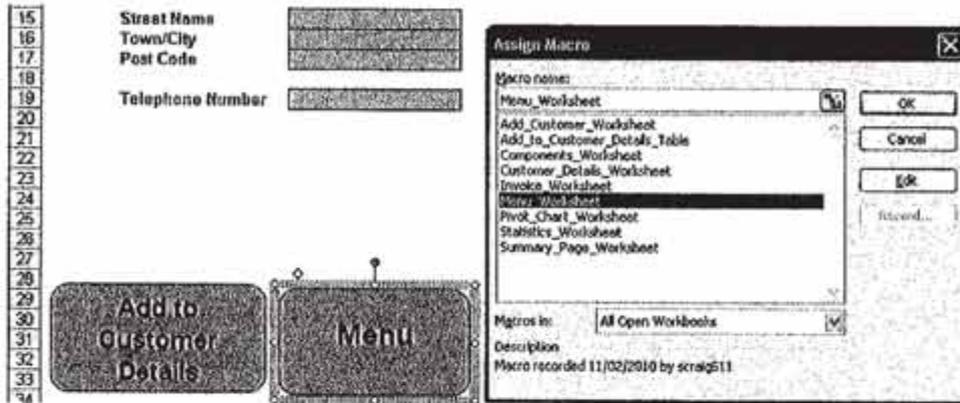
The macro copied all of the data over and also sorted the content from the telephone number, which will later be used in the invoice worksheet.



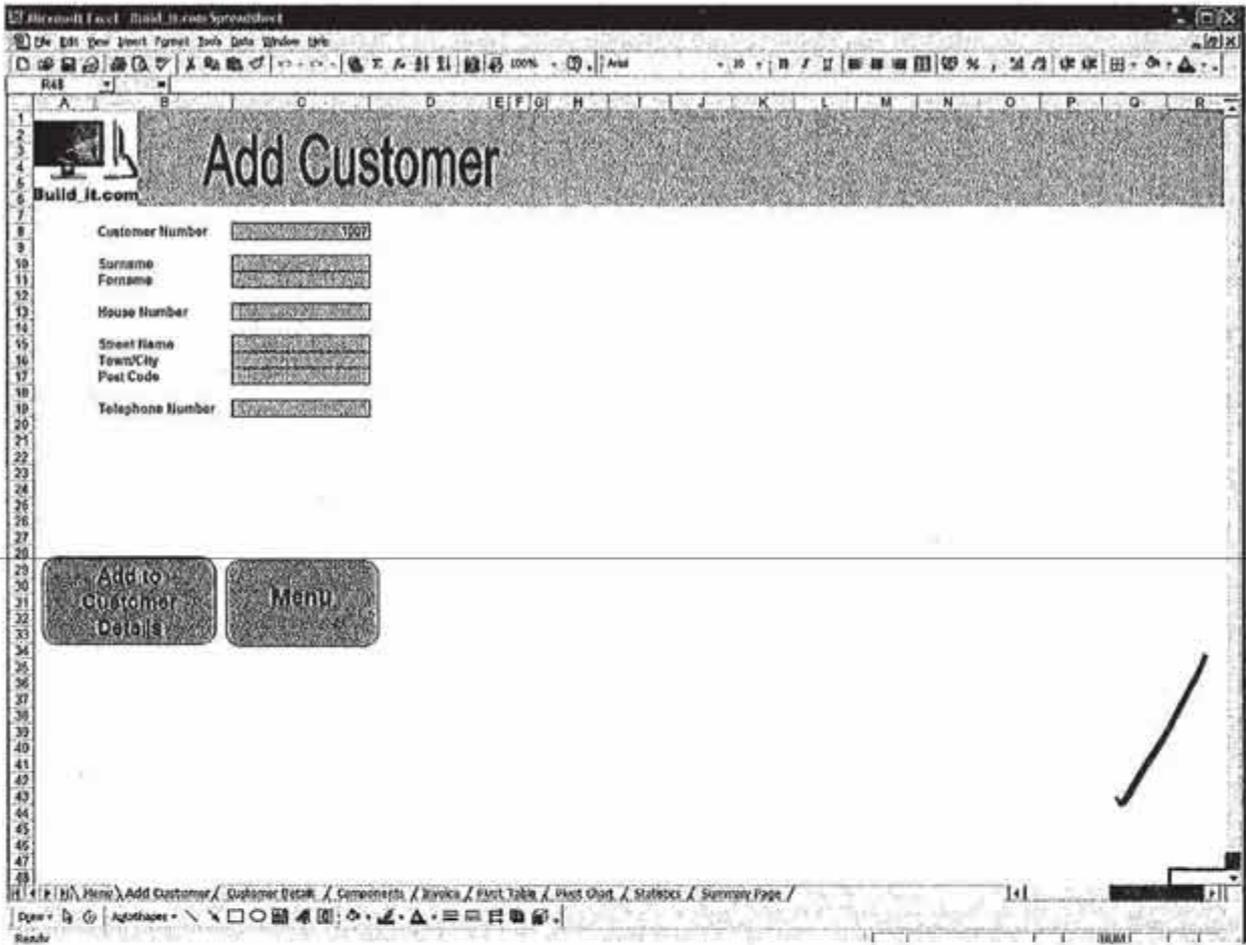
The customer number also incremented for the next customer so that it is unique.

Menu Macro

I created the menu macro using the same process applied to creating the macros included within the menu worksheet. I then assigned the macro to the button that was created.



Completed Add Customer Worksheet



Creating the Customer Details Worksheet

This worksheet was created in conjunction with the add customer worksheet, as they are inextricably linked by the add to customer details macro.

Formula / Processes

No formula was needed within this worksheet, however, I did need to name the table so that all the customer details would be sorted and I also had to manually insert the data into the table before the add to customer details macro could be created.

Once I had created the table, ensuring that the same fields were included as those within the add customer worksheet I added two fields manually so that once I created the macro I was able to see if the details were sorted according to the customer number. The customer numbers for this had to be lower than the number already included within the extra cell to the right of the customer number in the add customer number so that there are no duplicates.

I then named the customer details table by selecting all of the cells and naming them 'Customer' as this was needed when creating the macro to ensure that all the data within the table would be sorted accordingly.

Cell reference named 'Customer'.



Customer Number	Surname	Forename	House Number	Street/Road	Town/City	Post Code	Telephone Number
1000	Clegg	Beish	2	Russell Manor	Babyland	BT39 9YR	93322763
1001	Atchold	Becky	6	Russell Manor	Babyland	BT39 9YR	93322756

Macros

The only macro included within this worksheet was the menu macro. I assigned the already recorded macro to the button within the worksheet like I did previously within the add customer worksheet.

*Named cell
rows*

Complete Customer Details Worksheet

The screenshot shows a Microsoft Excel spreadsheet with the following data in the 'Customer Details' worksheet:

Customer Number	Surname	Forename	House Number	Street/Road	Town/City	Post Code	Telephone Number
1000			2	88			
1001	J		5	88			
1002	G		7	88			
1003			1	88			
1005	S		7	88			
1006			2	88			

A 'Menu' button is located in the lower-left area of the spreadsheet. The spreadsheet interface includes a menu bar (File, Edit, View, Insert, Format, Tools, Data, Window, Help), a toolbar, and a status bar at the bottom.

Creating the Components Worksheet

Formula / Processes

No formula was needed within this worksheet, however, I did need to ensure that the tables containing the information were named and that they were numbered to ensure that the VLOOKUP function could work within the invoice worksheet.

Processor		
Component Code	Component Description	Component Cost
P001	Intel Pentium 2.80GHz	248.16
P002	Intel Core 2 Duo 2.93GHz	288.11
P003	AMD Phenom 3.2GHz	420.60
Memory		
Component Code	Component Description	Component Cost
M001	4GB 1.5MB DDR2	48.99
M002	4GB 1GB DDR2	50.99
M003	4GB 1GB DDR2	54.99
Hard Drive		
Component Code	Component Description	Component Cost
H001	2720 Hard SATA 1TB	84.41
H002	Western 1TB SATA	84.41
H003	Toshiba 200GB SATA 4.3TB	85.82
Monitor		
Component Code	Component Description	Component Cost
M001	17" LCD	114.99
M002	17" LCD	114.99
M003	17" LCD	120.99

Firstly I entered all of the data within tables that I had previously collected within the planning stages and formatted the cells accordingly.

Processor	
Component	
P001	1
P002	2
P003	3
Memory	
Component	
M001	1
M002	2
M003	3
Hard Dr	
Component	
H001	1
H002	2
H003	3
Monitor	
Component	
M001	1
M002	2
M003	3

I then numbered from 1-3 each of the rows containing information on the four items being sold. This is essential so that the VLOOKUP function would work within the invoice worksheet.

I then renamed the cells range, not including the title row for each of the tables. This cell range was renamed 'Processors'.

Cell reference named 'Processors'.

Processor		
Component Code	Component Description	Component Cost
1P001	Intel Pentium 2.80GHz	248.16
2P002	Intel Core 2 Duo 2.93GHz	288.11
3P003	AMD Phenom 3.2GHz	420.60

Microsoft Excel - Build_it.com Spreadsheet

File Edit View Insert Format Tools Data Window Help

Build_it.com

Components

Processor

Component Code	Component Description	Component Cost
1 P001	Intel Pentium 2.6GHz	£48.16
2 P002	Intel Core 2 Duo 2.93GHz	£88.11
3 P003	AMD Phenom II 3.2GHz	£126.89

Memory

Component Code	Component Description	Component Cost
1 M001	Integral 512MB 660MHz	£8.99
2 M002	Kingston 1GB 400MHz	£29.98
3 M003	Corsair 6GB 1333MHz	£148.88

This cell range was named 'Memory.'



Microsoft Excel - Build_it.com Spreadsheet

File Edit View Insert Format Tools Data Window Help

Build_it.com

Components

Processor

Component Code	Component Description	Component Cost
1 P001	Intel Pentium 2.6GHz	£48.16
2 P002	Intel Core 2 Duo 2.93GHz	£88.11
3 P003	AMD Phenom II 3.2GHz	£126.89

Memory

Component Code	Component Description	Component Cost
1 M001	Integral 512MB 660MHz	£8.99
2 M002	Kingston 1GB 400MHz	£29.98
3 M003	Corsair 6GB 1333MHz	£148.88

Hard Drive

Component Code	Component Description	Component Cost
1 H001	120GB Hitachi SATA 2.5"	£37.84
2 H002	Samsung 3.5" SATA II	£36.41
3 H003	Fujitsu 600GB SATA-1 2.5"	£67.82

This cell range was named 'Hard_Drives' ensuring there were no spaces between the words or the cells would not be named.



Microsoft Excel - Build_it.com Spreadsheet

File Edit View Insert Format Tools Data Window Help

Build_it.com

Components

Processor

Component Code	Component Description	Component Cost
1 P001	Intel Pentium 2.6GHz	£48.16
2 P002	Intel Core 2 Duo 2.93GHz	£88.11
3 P003	AMD Phenom II 3.2GHz	£126.89

Memory

Component Code	Component Description	Component Cost
1 M001	Integral 512MB 660MHz	£8.99
2 M002	Kingston 1GB 400MHz	£29.98
3 M003	Corsair 6GB 1333MHz	£148.88

Hard Drive

Component Code	Component Description	Component Cost
1 H001	120GB Hitachi SATA 2.5"	£37.84
2 H002	Samsung 3.5" SATA II	£36.41
3 H003	Fujitsu 600GB SATA-1 2.5"	£67.82

Monitor

Component Code	Component Description	Component Cost
1 M001	Compag 19" Widescreen	£89.99
2 M002	LG 22" Widescreen	£118.89
3 M003	HP 25" Widescreen	£263.89

This cell range was named 'Monitors.'

The component code cell ranges were also renamed for each of the components;

- The Processor Component Codes were renamed 'Processor_Codes'.
- The Memory Component Codes were renamed 'Memory_Codes'.
- The Hard Drive Component Codes were renamed 'Hard_Drive_Codes'.
- The Monitor Component Codes were renamed 'Monitor_Codes'.

The screenshot shows an Excel spreadsheet with the following data:

Processor		
Component Code	Component Description	Component Cost
P001	Intel Pentium 2.66GHz	£48.95
P002	Intel Core 2 Duo 2.93GHz	£88.11
P003	AMD Phenom 3.2GHz	£125.89

Memory		
Component Code	Component Description	Component Cost
M001	Memori 512MB 800MHz	£8.59
M002	Kingston 1GB 400MHz	£29.36
M003	Conair 6GB 1333MHz	£166.86

Hard Drive		
Component Code	Component Description	Component Cost
H001	120GB Hitachi SATA 2.5"	£32.84
H002	Samsung 3.5" SATA II	£35.41
H003	Fujitsu 600GB SATA II 2.5"	£52.82

Monitor		
Component Code	Component Description	Component Cost
M0001	Compaq 19" Widescreen	£80.99
M0002	LG 22" Widescreen	£118.89
M0003	HP 24" Widescreen	£259.99

Macros

Again only the menu macro was included within this worksheet and I assigned the already recorded macro to the corresponding button within the worksheet to take the user back to the menu worksheet once clicked.

Complete Customer Details Worksheet

Components

Processor

Component Code	Component Description	Component Cost
P001	Intel Pentium 2.6GHz	£49.95
P002	Intel Core 2 Duo 2.93GHz	£89.99
P003	AMD Phenom II 3.2GHz	£129.99

Memory

Component Code	Component Description	Component Cost
M001	Integral 512MB 800MHz	£9.99
M002	Kingston 1GB 400MHz	£29.96
M003	Conair 5GB 1333MHz	£146.06

Hard Drive

Component Code	Component Description	Component Cost
H001	120GB Hitachi SATA 2.5"	£32.84
H002	Samsung 3.5" SATA II	£36.41
H003	Fujitsu 500GB SATA-II 2.5"	£52.82

Monitor

Component Code	Component Description	Component Cost
M0001	Compag 19" Widescreen	£88.99
M0002	14.1 22" Widescreen	£118.99
M0003	HP 26" Widescreen	£289.99

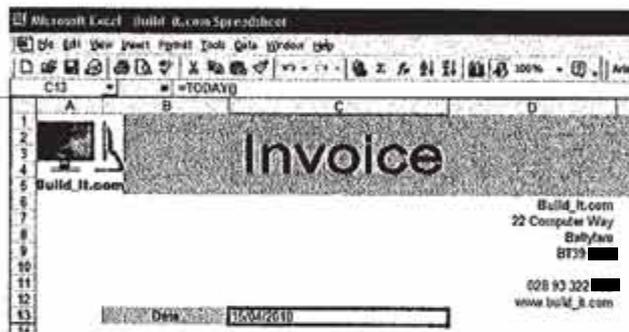
Menu

Creating the Invoice Worksheet

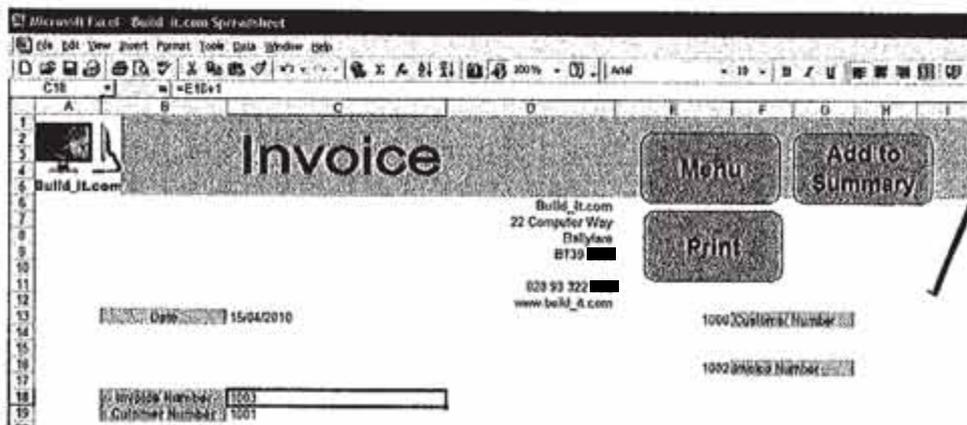
Formula / Processes

Firstly when creating this worksheet, I followed the plan that was previously created involving the layout of the worksheet ensuring that is within one page using the print preview feature as I will have a print macro also within this worksheet.

Secondly I entered the company address of in the cells on the top right hand corner, similar to what would usually be included in invoices from shop stores. I then used the formula, =TODAY() to include the date within the invoice sheet.



In order to have an invoice number that increments I followed the same process as within the add customer worksheet with the unique customer number. I had a cell reference to the side that included the number 1000, and then added the formula, in this case, =E16+1. This will later be used when creating the add to summary macro using the same process as the add to customer details macro.



VLOOKUP Formula

The next step was using the VLOOKUP formula to retrieve all of the customer details from the customer details worksheet. Initially I decided that only the customer number would be needed to retrieve all of the content. However, I decided against this as it was flawed in the sense that very few customers would actually know or remember their customer number. Therefore, I have decided to use the telephone number instead. The client will enter their telephone number within the invoice, and through VLOOKUP formulas, it will retrieve all of their other contact information, including the customer number to save time and stop any data entry errors.

VLOOKUP

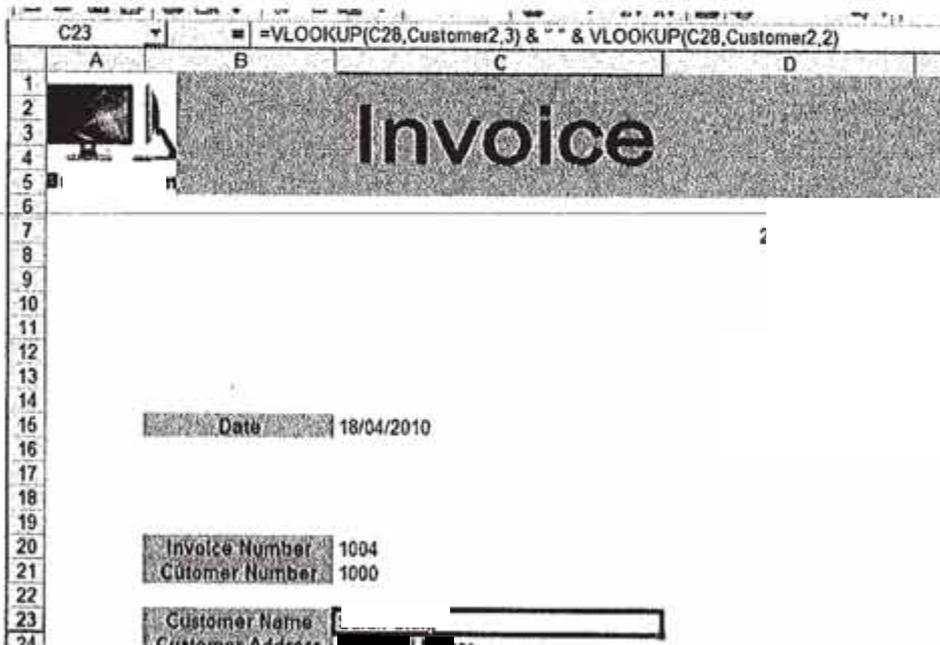
Customer Number Cell

In order for the customer number to be retrieved from the corresponding telephone number, I included the formula, =VLOOKUP(C28, Customer2, 8). This means that the lookup value is C28, the telephone number cell within the invoice worksheet, the table array is Customer2, which is the cell reference of the complete customer details table and the column index value is 8 as it is the eighth column within the customer details table. The column index number will be the aspect of the formula that will change depending on the cell. Then depending on the telephone number that is entered, the customer number will be retrieved.



Customer Name Cell

Again, in order for the customer name to be retrieved from the corresponding telephone number, I included the formula, =VLOOKUP(C28,Customer2,3)&" "&VLOOKUP(C28,Customer2,2). This formula included two VLookup formulas, as I wanted to combine the forename and surname cells from the customer details worksheet. For both VLookup formulas the lookup value is C28, the telephone number cell within the invoice worksheet and the table array is Customer 2, which is the cell reference of the complete customer details table. The first VLookup column index number is 3, as it corresponds to the forename, while the second VLookup column index number is 2 as it corresponds to the surname within the customer details table. The formula in the middle was added, "&" "&", which tells the VLookup that there is one lookup then a space and another lookup so that the customer name will be displayed with the forename, a space and then the surname. Then depending on the telephone number that is entered, the customer name will be retrieved.

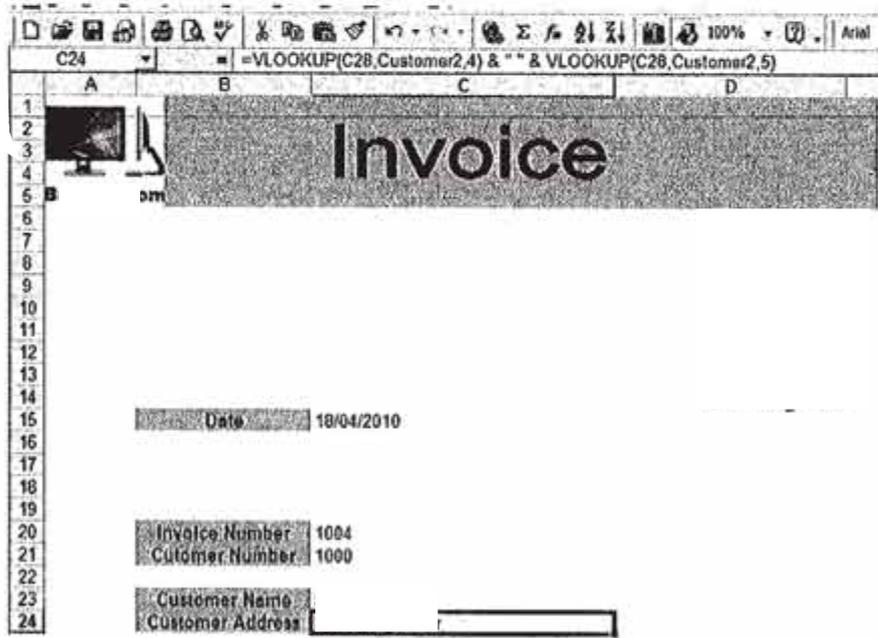


Customer Address Cell (First Line)

Again, in order for the first line of the customer address to be retrieved from the corresponding telephone number, I included the formula, `=VLOOKUP(C28, Customer2, 4) & " " & VLOOKUP(C28, Customer2, 5)`. This formula included two VLookup formulas, as I wanted to combine the house number and the street name from the customer details worksheet. For both VLookup formulas the lookup value is C28, the telephone number cell within the invoice worksheet and the table array is Customer 2, which is the cell reference of the complete customer details table.

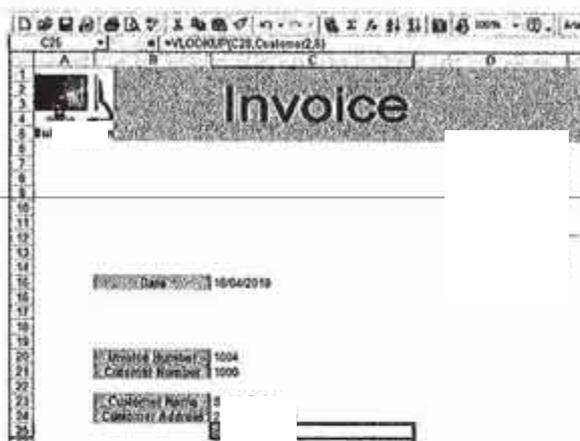
The first VLookup column index number is 4, as it corresponds with the house number, while the second VLookup column index number is 5 as it corresponds with the street name within the customer details table. The formula in the middle was added, `& " "`, which tells the VLookup that there is one lookup then a space and another lookup so that the first line of the customer address will be displayed with the house number, a space and then the street name. Then depending on the telephone number that is entered, the customer name will be retrieved.

Concatenation



Customer Address Cell (Second Line)

In order for the second line of the customer address, the town, to be retrieved from the corresponding telephone number, I included the formula, =VLOOKUP(C28,Customer2,6). This means that the lookup value is C28, the telephone number cell within the invoice worksheet, the table array is Customer2, which is the cell reference of the complete customer details table and the column index value is 6 as it is the sixth column within the customer details table. Then depending on the telephone number that is entered, the customer's town will be retrieved.



Customer Address Cell (Post Code Line)

Again, in order for the post code to be retrieved from the corresponding telephone number, I included the formula, =VLOOKUP(C28,Customer2,7). This means that the lookup value is C28, the telephone number cell within the invoice worksheet, the table array is Customer2, which is the cell reference of the complete customer details table and the column index value is 7 as it is in the seventh column in the customer details table that contains the post code. Then depending on the telephone number that is entered, the customer's postcode will be retrieved.



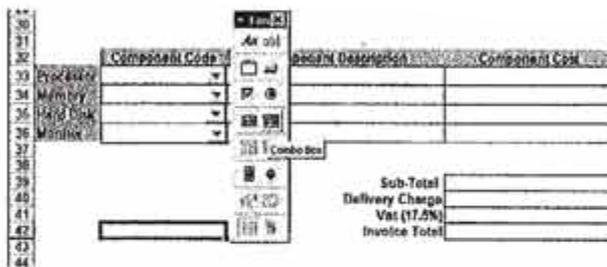
Combo Boxes and VLookups of Components

The combo boxes were then created so that the customer can select which component they wish to purchase from a drop down tab.

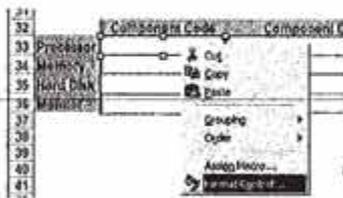


Firstly, I selected the forms toolbar in which the combo box can be found.

Combo boxes

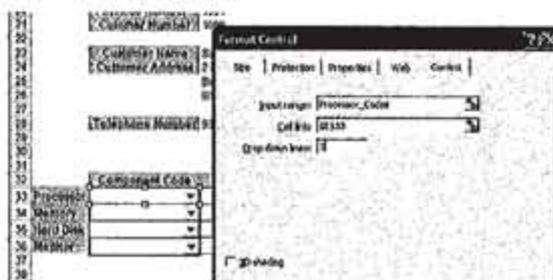


The combo boxes were then created over the top of the component code cells by selecting the combo box and dragging it to the appropriate size like a text box.



The next step was right clicking on the combo box and selecting format control in order to link the combo boxes to the component codes within the components worksheet.

Within the format control option the input range was entered as the same name that was given for the processor component codes within the component worksheet. In this case it was 'Processor_Codes'. The cell link was selected to the right hand side of the table, with the number one that will later be formatted to the same colour as the worksheet background. The number of drop down lines was selected as three as I have three processors.



Formatted Combo box

30		
31		
32		Component Code
33	Processor	
34	Memory	P001
35	Hard Disk	P002
36	Monitor	P003
37		
38		

The drop down tab therefore highlights the component codes of each of the processors available. The same process was completed for the memory, hard disk and monitor combo boxes.

The next step was to create VLookups to retrieve the component descriptions and the component costs depending on which component is selected. The VLOOKUP formula was entered and the fx tab selected. The lookup value in this case is the cell to the immediate right of the table, as it changes according to what component code is selected within the combo box and it corresponds to the same numbers previously added within the component worksheet for each of the different components. The table array is the name of the processor table, being 'Processors' and the column index is three as it was the third column within the components worksheet.

The screenshot shows the VLOOKUP dialog box in Microsoft Excel. The dialog box has the following fields:

- Lookup_value: =1
- Table_array: =(\$A\$3:\$E\$3,'Processors')
- Col_index_num: =3
- Range_lookup: =

Below the dialog box, the formula result is shown as: =INDIRECT("P002")

The worksheet below shows the following data:

17			
18			
19			
20	Product Number	1034	
21	Colour Number	1000	
22			
23	Component Name		
24	Component Address		
25			
26			
27			
28	Telephone Number	03322	
29			
30			
31			
32		Component Code	Component Description
33	Processor	P001	=VLOOKUP(E33,Processors,3)
34	Memory	P001	

The same process was completed for the memory, hard disk and monitor component descriptions. However, the table array changed to the corresponding cell reference of each individual table.

This therefore brought up all of the component descriptions depending on which component code was selected within the combo boxes.

31				
32		Component Code	Component Description	Component Cost
33	Processor	P001	Intel Pentium 2.60GHz	
34	Memory	M002	Kingston 1GB 400MHz	
35	Hard Disk	H003	Fujitsu 500GB SATA-II 2.5"	
36	Monitor	MR001	Compaq 19" Widescreen	
37				

The next task was to complete the VLookups for the component cost. This was done in the similar manner as the VLookups for the component description. The VLOOKUP formula was entered and the fx tab was selected. The lookup value was again selected as the cell to the immediate right of the table, as it changes according to what component code is selected within the combo box and it corresponds to the same numbers previously added within the component worksheet for each of the different components. The table array is the name of the processor table, being 'Processors' and the column index is four as it was the fourth column within the components worksheet.

The same process was completed for the memory, hard disk and monitor component costs. However, the table array changed to the corresponding cell reference of each individual table.

The component table was therefore complete within the invoice so the customer can select which item they wish to purchase. I think this is one area of weakness as the customer has to buy one of each of the components and if I was to complete a similar task in the future I would include a blank row within the tables in the components worksheet so that if the customer did not wish to buy an item, they could select the component code for none and would therefore be able to buy any combination of the products.

30				
31				
32		Component Code	Component Description	Component Cost
33	Processor	P001	Intel Pentium 2.60GHz	£48.16
34	Memory	M001	Integral 512MB 800MHz	£8.99
35	Hard Disk	H001	120GB Hitachi SATA 2.5"	£32.84
36	Monitor	MR001	Compaq 19" Widescreen	£88.99
37				

Calculation Formula

This process included using formula in order to calculate the sub-total, delivery charge, VAT and also the invoice total.

Sub-Total

The formula for the sub total was =D33+D34+D35+D36. This formula essentially added up all of the component costs within those cells. The sub total will change when the component costs change depending on the selected product.

	Component Code	Component Description	Component Cost
Processor	P001	Intel Pentium 2.60GHz	£48.16
Memory	M001	Integral 512MB 800MHz	£8.99
Hard Disk	H001	120GB Hitachi SATA 2.5"	£32.84
Monitor	MR001	Compaq 19" Widescreen	£88.99

Sub-Total	=D33+D34+D35+D36
Delivery Charge	
Vat (17.5%)	
Invoice Total	

Delivery Charge

The delivery charge for the products changed depending on the sub total the customer spent. If the sub total was less than £600 then the delivery cost was 3% of the sub total, however, if the sub total was more than £600 then the delivery cost was 5% of the sub total. I therefore had to use an IF formula within this cell. The logical test was if cell D39 (the sub total cell) was less than £600. If this was true then cell D39 would be multiplied by 0.03 (or 3%) however if the logical test was false, then cell D39 would be multiplied by 0.05 (or 5%). Again this changes according to the value within the sub total cell.

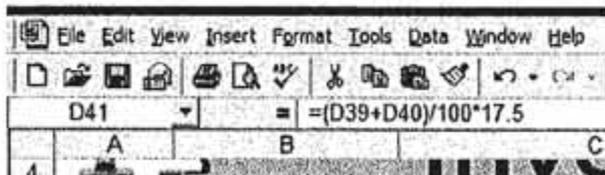


Sub-Total	£252.40
Delivery Charge	=IF(D38,D37*0.05,D37*0.03)
Vat (17.5%)	£45.50
Invoice Total	£305.47

Calculations IF

VAT (17.5%)

The VAT was calculated by adding both the sub total and the delivery charge and multiplying the sum of these by 17.5%. I therefore used the formula; $=(D39+D40)/100*17.5$. Again this changes according to the values within the sub total and also the delivery charge.



Sub-Total	£178.98
Delivery Charge	£5.37
Vat (17.5%)	£32.26
Invoice Total	

op

Invoice Total

Sub-Total	£178.98
Delivery Charge	£5.37
Vat (17.5%)	£32.26
Invoice Total	=(D39+D40+D41)

The invoice total was simply calculated by adding the sub total, the delivery charge and the VAT together.

Clearing the Invoice Ready for the Next Customer

This process will be done within the add to summary table macro, however, another piece of formula will need to be added to each of the cells in order to make them appear blank. I want all of the customer details and the components description and cost to appear blank when I enter 0 in the telephone number, and then when the customer's telephone number is entered it will bring up all of their information.

In order to do this I will use an IF formula; if the telephone number cell is 0 then make this cell blank. The formula was added to the VLookup formula already present for example in the customer number cell; =IF(C28=0, " ", VLOOKUP(C28, Customer2,8)). This formula means that if cell C28 (the telephone number cell) is 0, then have no text, highlighted by the space between the speech marks and if this cell is not 0 then complete the VLookup.



The same process was carried out for all of the customer details and also the component description cells.

Within the component cost cells the same principle was carried out, however, instead of having the cells blank, I wanted them to appear as £0.00. Therefore, I adapted the formula and within the speech marks, I included £0.00, an example being for the Processor Component Cost cell and the formula being; =IF(C28=0,"£0.00",VLOOKUP(E33,Processors,4))

Component Cost	
	£0.00
	£0.00
	£0.00
	£0.00

If a Statement to reset Invoice

The following screenshot highlights that when the telephone number is zero, the cells are either blank or set to £0.00.

13			
14			
15	Date	18/04/2010	
16			
17			
18			
19			
20	Invoice Number	1004	
21	Customer Number		
22			
23	Customer Name		
24	Customer Address		
25			
26			
27			
28	Telephone Number	0	
29			
30			
31			
32			
33	Processor	P001	£0.00
34	Memory	M001	£0.00
35	Hard Disk	H001	£0.00
36	Monitor	MR001	£0.00
37			
38			
39			
40			
41			
42			
43			
44			

Sub-Total	£0.00
Delivery Charge	£0.00
Vat (17.5%)	£0.00
Invoice Total	£0.00

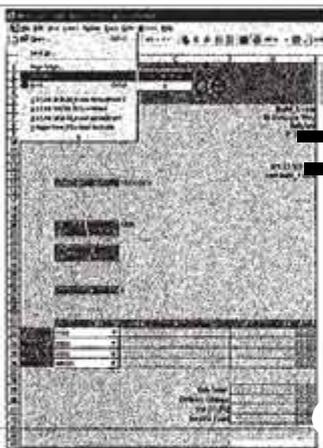
Macros

Menu Macro

The menu macro was again included within this worksheet. I assigned the already recorded macro to the corresponding button within the worksheet in order to take the user back to the menu worksheet once clicked upon.

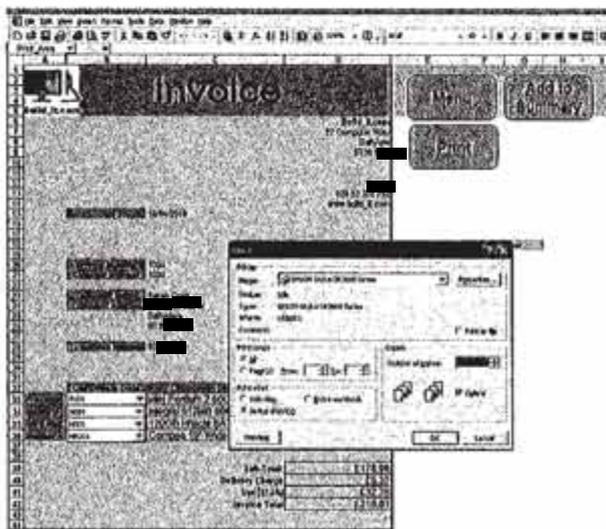
Print Macro

As this is an invoice, the company will need to print two copies of the invoice, one for the client and one for the company themselves to keep a record of sales. Therefore, for convenience I will create a macro that will enable the user to do this in one step by just clicking on the macro and confirming the print.



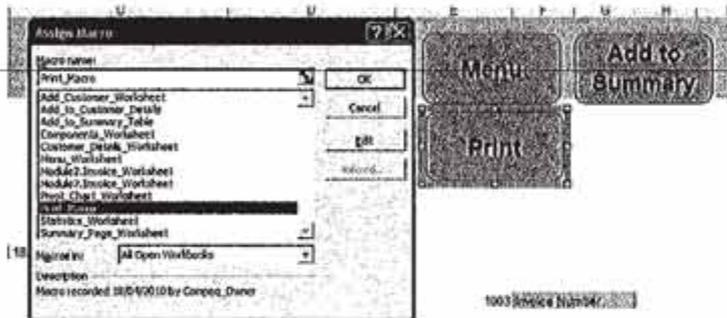
In order for this to work, I also had to ensure that the invoice document is within one page for printing purposes. I selected the cells that I wanted to print and I set the print area. This names the selected cells, 'Print_Area'.

I started recording the macro on the invoice worksheet; Tools -> Record New Macro. I then clicked on the tab containing the cell references at the top left hand corner and selected 'Print_Area'.



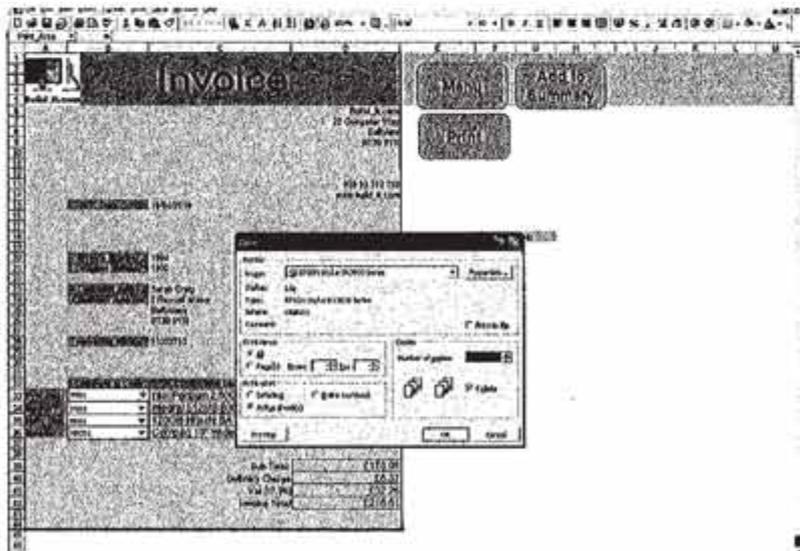
I then clicked on File -> Print and selected two copies and then pressed the Escape key and stopped the macro from recording.

Finally, before I assigned the macro I edited it, including the line 'Application.ScreenUpdating = False' to complete the macro in one move and not for the macro to flash every time an action is being performed in the macro.



I then assigned the macro to the corresponding Print button within the invoice worksheet.

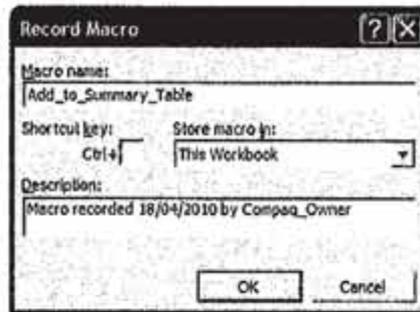
When the print macro was selected the print area was selected and the print option appeared, ready to print two copies.



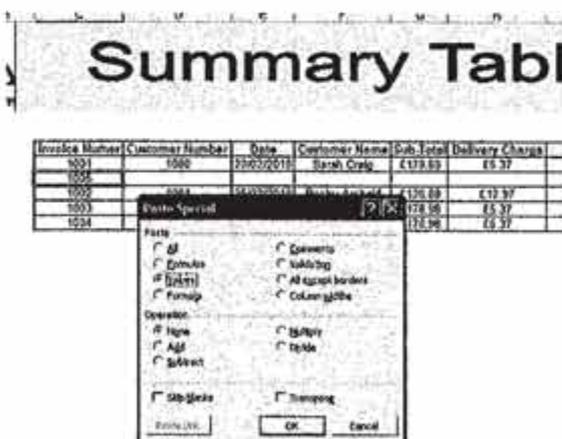
Print Macro

Add to Summary Macro

I started to record my macro (Tools -> Macro -> Record New Macro) starting to record when I was on the summary table worksheet. I named the macro Add_to_Summary.

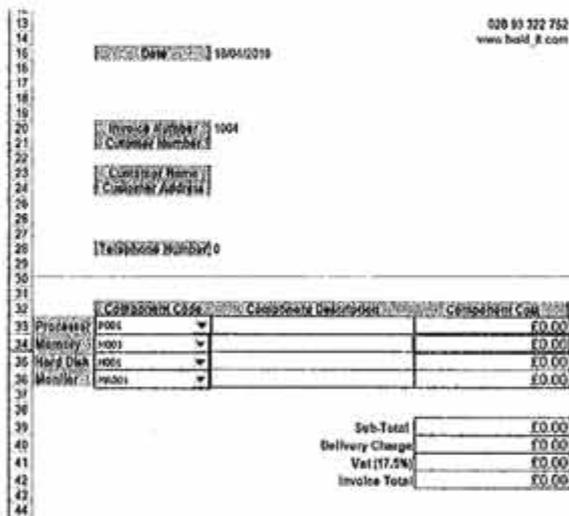
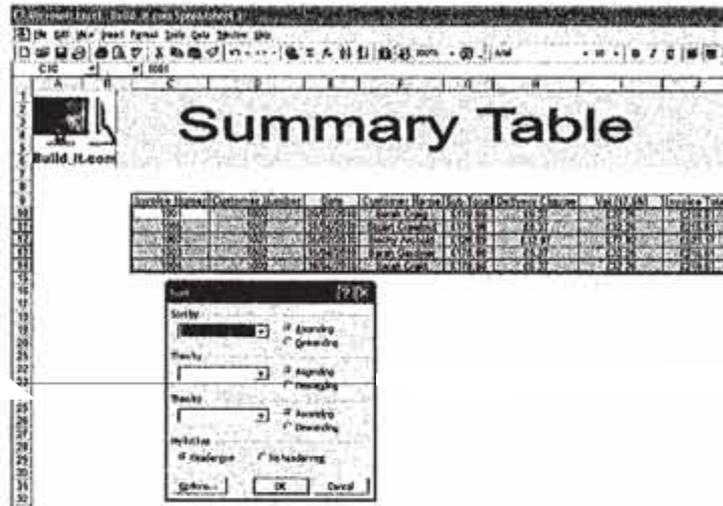


Once the macro started recording I clicked on the summary worksheet and inserted a row between the cells where I had previously manually entered the data.



Once the row had been inserted I clicked on the invoice worksheet. I then copied the corresponding data over to the summary table under the various columns. The data was then pasted into the summary table using the paste special option. The values option was then selected so only the value is copied across and not any formula that may be included within the cell reference.

The same process was continued for all of the other data within the invoice worksheet and the corresponding columns in the summary table. All of the content within the summary table was then sorted in ascending order according to the invoice number. This was done by selecting the cell range that I had named Summary and selecting the option within the data menu toolbar.



I then moved back to the invoice worksheet and entered 0 into the telephone number cell so that the invoice looked clear, ready for the next customer.

I then copied the invoice number and pasted it using the paste special option, again selecting the values option into the cell on the right hand side of the worksheet. This will therefore increment the invoice number for the next customer.

I then pressed Escape on the keyboard in order to deselect the cell. I then stopped the macro from recording. Before I assigned the macro, I edited it, using the line of test 'Application.ScreenUpdating = False' to complete the macro in one move and not for the macro to flash every time an action is being performed in the macro.

```
Build_It.com Spreadsheet 7.xls - Module9 (Code)
[General]
Sub Add_to_Summary_Table ()
' Add_to_Summary_Table Macro
' Macro recorded 18/04/2010 by Compaq_Owner
'
Application.ScreenUpdating = False
Rows("11:11").Select
Selection.Insert Shift:=xlDown
Sheets("Invoice").Select
Range("C21").Select
Selection.Copy
Sheets("Summary Page").Select
Range("C11").Select
Selection.PasteSpecial Paste:=xlValues, Operat
```

Addition code entered into the macro.



I then assigned the macro to the corresponding button within the invoice worksheet.

Completed Invoice Worksheet

Invoice

Menu Add to Summary Print

Date: 18/04/2010 www.nuca_1.com

1004 Invoice Number

Invoice Number: 1005
Customer Number: 1000

Customer Name
Customer Address

Telephone Number: 8332

Component Code	Component Description	Component Cost
P001	Intel Pentium 2.60GHz	£48.16
M002	Kingston 1GB 400MHz	£29.36
H003	Fujitsu 500GB SATA-II 2.5"	£52.82
M0001	Compaq 19" Widescreen	£88.99

Sub-Total	£219.33
Delivery Charge	£8.88
Vat (17.5%)	£39.53
Invoice Total	£265.44

Ready

Creating the Summary Table Worksheet

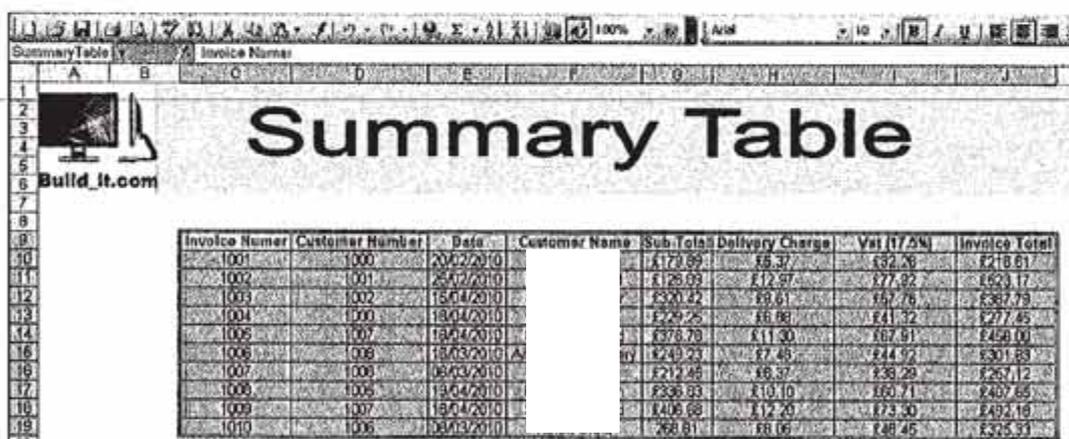
This worksheet was created in conjunction with the invoice worksheet, as they are inextricably linked by the add to summary macro.

Formula / Processes

No formula was needed within this worksheet. However, I did need to name the table so that all of the invoice details that were copied across would be sorted and I also had to manually insert data into the table before the add to summary macro could be created.

Once I had created the table, ensuring that the correct fields were included as those within the invoice worksheet, I added two fields manually so that once I created the macro I was able to see if the details were sorted according to the invoice number.

I then named the summary table by selecting all of the cells and naming them 'SummaryTable' as this was needed when creating the macro to ensure that all of the data within the table was sorted accordingly.



Invoice Number	Customer Number	Date	Customer Name	Sub-Totals	Delivery Charge	Vat (17.5%)	Invoice Total
1001	1000	20/02/2010		£172.89	£5.37	£32.76	£211.02
1002	1001	25/02/2010		£128.09	£12.97	£27.92	£169.07
1003	1002	18/04/2010		£320.42	£9.61	£67.76	£397.79
1004	1000	18/04/2010		£229.25	£6.88	£41.32	£277.45
1005	1007	18/04/2010		£378.70	£11.30	£67.91	£457.91
1006	1008	18/03/2010	A	£249.23	£7.48	£44.52	£301.23
1007	1000	08/03/2010		£212.48	£6.37	£38.29	£257.12
1008	1005	19/04/2010		£335.83	£10.10	£60.71	£406.64
1009	1007	18/04/2010		£406.68	£12.20	£73.30	£492.18
1010	1006	08/03/2010		£68.81	£6.06	£10.45	£85.32

Macros

Menu Macro



The menu macro was again included within this worksheet. I assigned the already recorded macro to the corresponding button within the worksheet in order to take the user back to the menu worksheet once clicked upon.

Completed Summary Table Worksheet

Microsoft Excel - build_it.com Spreadsheet 7

File Edit View Insert Format Tools Data Window Help

MSB

Summary Table

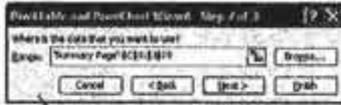
Invoice Number	Customer Number	Date	Customer Name	Sub-Total	Delivery Charge	Vat (17.5%)	Invoice Total
1001	1000	20/02/2010		£179.89	£8.37	£32.28	£216.61
1002	1001	24/02/2010	R	£158.89	£12.87	£27.92	£199.71
1003	1002	15/04/2010	S	£320.42	£9.61	£57.78	£387.79
1004	1000	18/04/2010		£220.25	£6.89	£41.32	£268.45
1005	1007	18/04/2010	S	£376.78	£11.20	£67.91	£455.00
1006	1008	18/03/2010	Adv	£245.23	£7.49	£44.92	£301.63
1007	1006	08/03/2010		£212.45	£6.37	£39.29	£257.92
1008	1005	18/04/2010	R	£336.83	£10.10	£59.71	£406.63
1009	1007	18/04/2010	S	£465.88	£12.20	£73.30	£551.38
1010	1006	08/03/2010		£288.81	£8.08	£48.45	£345.33

File Edit View Insert Format Tools Data Window Help

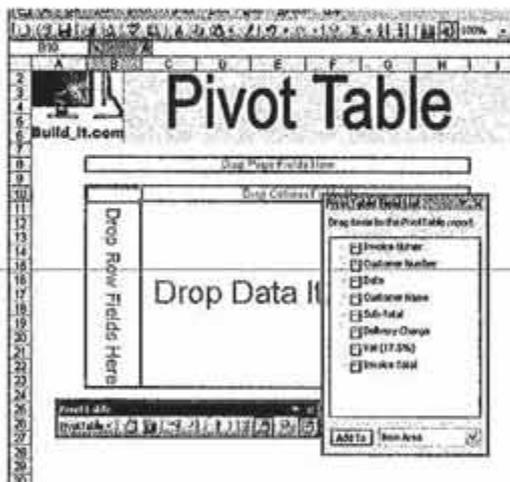
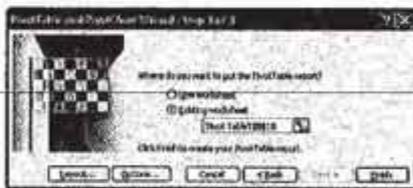
Ready

Invoice Number	Customer Number	Date	Customer Name	Sub Total	Delivery Charge	Vat (7.5%)	Invoice Total
1001	1001	15/02/2010	Sarah Craig	470.84	45.27	432.26	958.37
1002	1001	15/02/2010	Emily Archer	418.89	41.30	477.91	882.12
1003	1002	15/04/2010	Frank Shepherd	250.42	24.81	257.78	532.78
1004	1002	15/04/2010	Sarah Craig	229.26	22.88	241.97	507.46
1005	1007	15/04/2010	Shant Crawford	136.78	13.30	152.91	325.00
1006	1008	15/04/2010	Aileen Montgomery	549.23	53.49	614.92	1301.83
1007	1008	15/04/2010	Helen Craig	827.45	80.37	936.26	2007.12
1008	1000	15/04/2010	Rachel Boulton	1306.03	125.00	1557.11	3407.65
1009	1007	15/04/2010	Shant Crawford	600.08	58.20	679.56	1440.78
1010	1008	15/04/2010	John Smith	348.81	33.85	389.65	828.30

The next step was to select the data that will be included within the Pivot Table. This is the summary table.



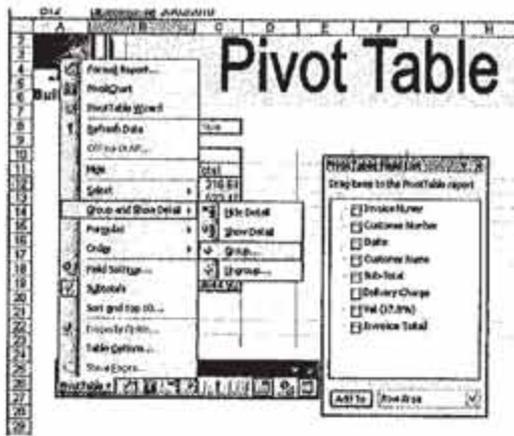
I then selected that I wanted to include the Pivot Table within an existing worksheet and selected the cell from which I wanted the table to begin. I then selected Finish.



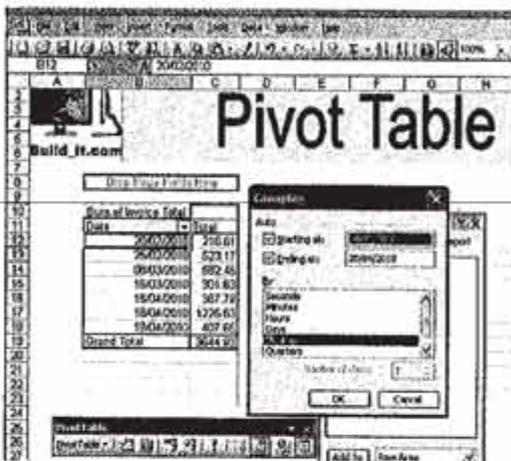
This then creates the template for the Pivot Table and I have to include the data within it now such as the date and also the invoice total.



On the left hand side I dragged across the date and on the right hand side I dragged across the invoice total. This then brings up all of the sales figures including the date of the sale and the total spent from the summary table worksheet.



I then sorted the content within the table by date. Using the popup Pivot Table toolbar I selected the group option after I had clicked on the data containing the date.



I then selected the option to group the dates by month so they will be in date order.

Sum of Invoice Total	
Date	Total
Feb	739.78
Mar	884.08
Apr	2021.07
Grand Total	3644.93

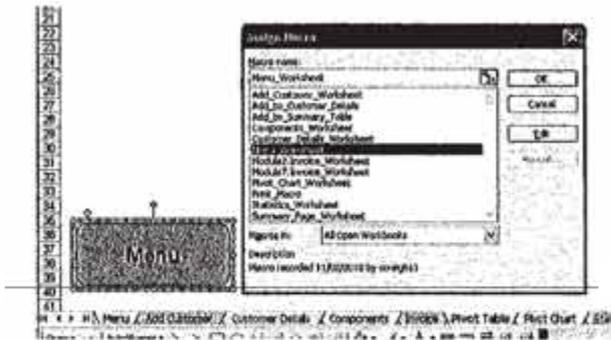
The Pivot Table therefore shows the total sales figures for each month and how much the company has made in sales so far.

This data changes according to the content within the summary table, therefore taking into account when new sales have been made.

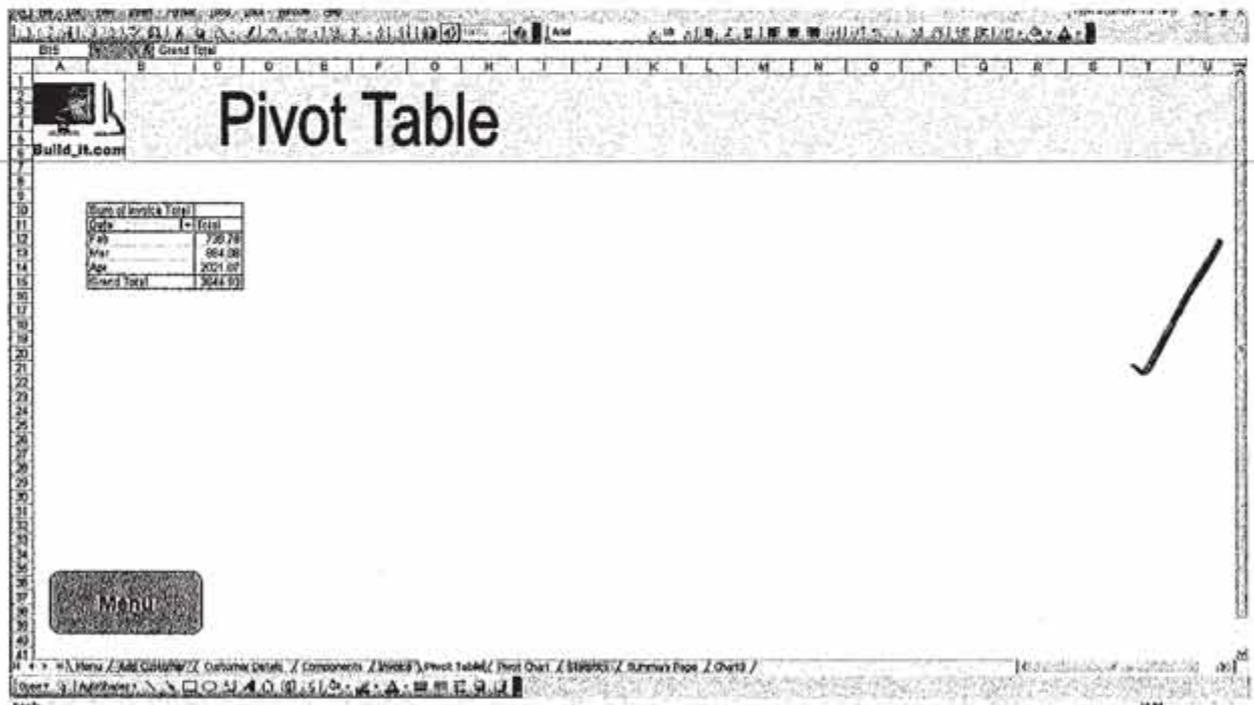
Macros

Menu Macro

The menu macro was again included within this worksheet. I assigned the already recorded macro to the corresponding button within the worksheet in order to take the user back to the menu worksheet once clicked upon.



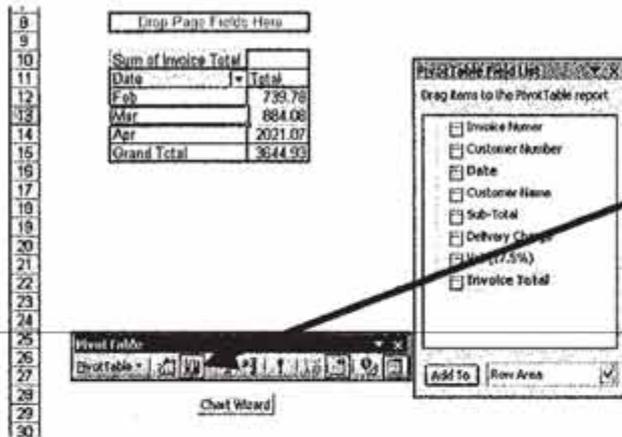
Completed Pivot Table Worksheet



Creating the Pivot Chart Worksheet

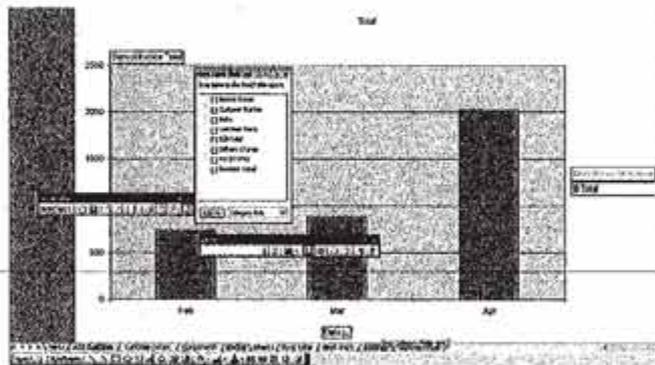
Formula / Processes

The next step was the creation of the pivot table, which is created from the data within the pivot table. Therefore, it is a data representation of the pivot table data.



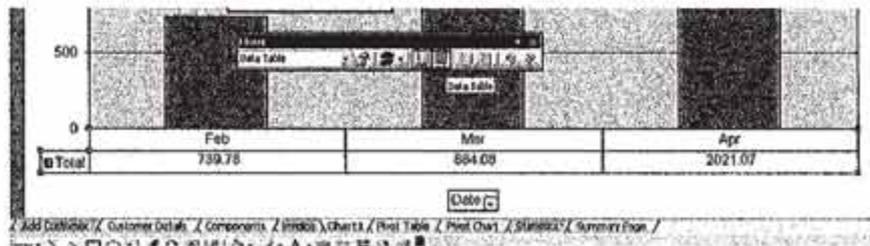
Firstly I selected the chart wizard option within the Pivot Table toolbar.

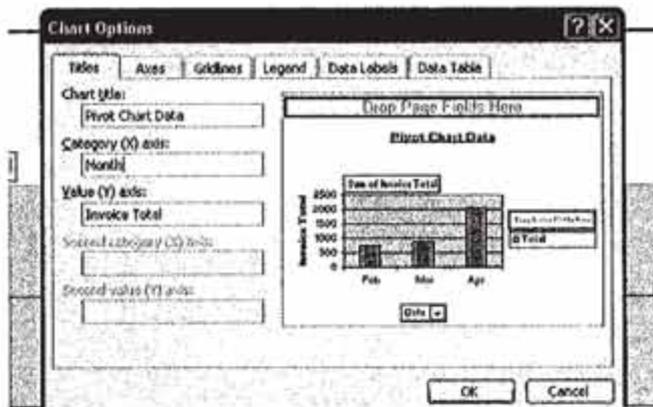
Pivot Chart



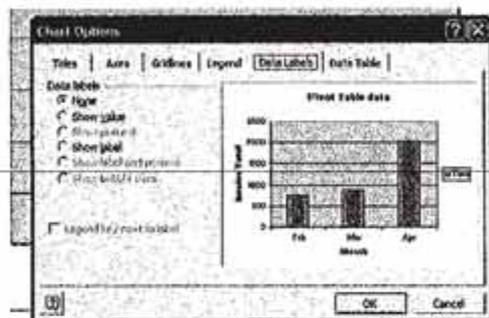
Once this was clicked upon, it brought up the pivot chart containing all of the data within the Pivot Table.

I then included a title within the worksheet, named 'Pivot Table Data' and also included a data table at the bottom of the chart to give exact numbers.



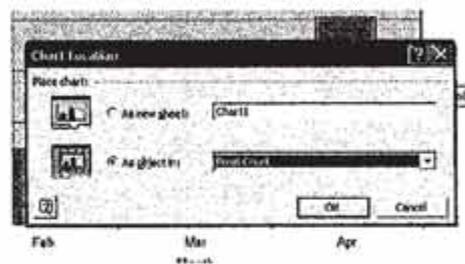


The Pivot Chart was then renamed 'Pivot Table Data' and the y-axis renamed Invoice Total and the x-axis renamed month.



The data labels were then deselected so that the Chart does not contain labels stating Drop Data Field Here.

I then moved the chart to the pivot table worksheet that was already created as I did not select this option at the time. This was done by right clicking on the pivot chart, selecting location and selecting the existing worksheet (Pivot Chart Worksheet) and dragging it across to wherever I wanted to place it within the worksheet



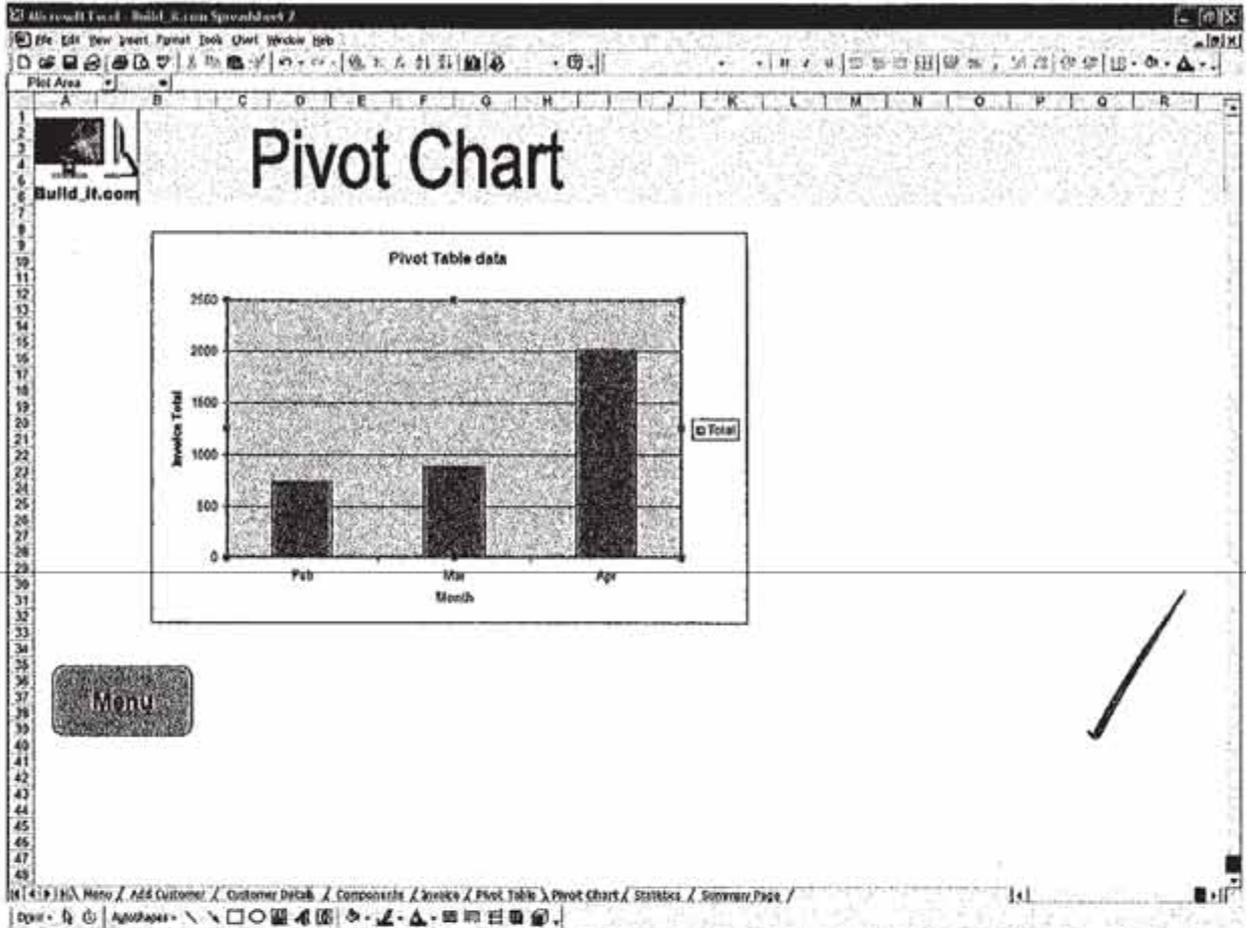
Macro

Menu Macro

The menu macro was again included within this worksheet. I assigned the already recorded macro to the corresponding button within the worksheet in order to take the user back to the menu worksheet once clicked upon.



Completed Pivot Chart Worksheet



I then had to name the mark up cells and the carriage/insurance cells to the right hand side of the statistics table. This was done using the same process as the profit percentage cost named cells.

Component	Cost	Sale Price	Profit
Processor Intel Pentium 2 400MHz	£40.11	£48.11	£8.00
Processor Intel Celeron 2 Duo 2.80GHz	£38.11	£46.11	£8.00
Processor AMD Phenom 3 2.20GHz	£120.89	£140.89	£19.99
Memory Integral 512MB DDR2	£5.99	£7.19	£1.20
Memory Kingston 1GB DDR2	£22.99	£28.19	£5.20

The cells were renamed the following:

MarkUp Cells

- Processor_MarkUp
- Memory_MarkUp
- Hard_Drive_MarkUp
- Monitor_MarkUp

Carriage / Insurance Cells

- Processor_Ins
- Memory_Ins
- Hard_Drive_Ins
- Monitor_Ins

MarkUp Cells

The next step was inserting the formula for each of the table columns.

Sale Price Formula

The sale price is the cost price of the product multiplied by the corresponding MarkUp value according to the type of component, e.g. processor or memory etc. I will therefore use the same principle when creating all of the cost price cells, but will highlight how I completed this using the first processor product as an example.

E10 =D10+(D10*Processor_MarkUp)

Type	Description	Cost	Sale Price	Basic
Processor	Intel Pentium 2.60GHz	£48.16	£52.98	
Processor	Intel Core 2 Duo 2.93GHz	£88.11		
Processor	AMD Phenom II 3.20GHz	£126.89		
Memory	Integral 512MB 800MHz	£8.99		
Memory	Kingston 1GB 400MHz	£29.36		
Memory	Corsair 6GB 1333MHz	£146.86		

The formula used was the cost price, cell D10 added to the value of the cost multiplied by the MarkUp value. This will however change depending on the MarkUp value.

Basic Profit Formula

F10 =E10-D10

Type	Description	Cost	Sale Price	Basic Profit	Carriage
Processor	Intel Pentium 2.60GHz	£48.16	£52.98	£4.82	
Processor	Intel Core 2 Duo 2.93GHz	£88.11	£96.92	£8.81	
Processor	AMD Phenom II 3.20GHz	£126.89	£139.68	£12.79	
Memory	Integral 512MB 800MHz	£8.99	£10.34	£1.35	
Memory	Kingston 1GB 400MHz	£29.36	£33.71	£4.35	
Memory	Corsair 6GB 1333MHz	£146.86	£168.81	£21.95	
Hard Drive	120GB Hitachi SATA 2.5"	£32.84	£36.78	£3.94	
Hard Drive	Samsung 3.5" SATA II	£36.41	£40.78	£4.37	
Hard Drive	Fujitsu 64GB SATA-II 2.5"	£52.82	£59.16	£6.34	
Monitor	Compaq 19" Widescreen	£88.99	£102.34	£13.35	
Monitor	LG 22" Widescreen	£118.99	£136.72	£17.73	
Monitor	HP 29" Widescreen	£269.99	£288.98	£18.99	

The basic formula was simply the sale price minus the cost price. The same principle was again used for the entire column.

Carriage / Insurance Formula

These cell formulas are dictated by the percentage entered within the corresponding Carriage / Insurance cells to the immediate right of the statistics table. The formula is the cost price multiplied by the carriage / insurance percentage for the corresponding component. The same principle is carried out for the rest of the column, with the carriage / insurance cells changing depending on whether the product is a processor, a memory product, a hard drive or a monitor.

LOOKUP =D10*Processor_ins

Type	Description	Cost	Sale Price	Basic Profit	Carriage/Ins
Processor	Intel Pentium 2.60GHz	£48.16	£52.98	£4.82	=D10*Procead
Processor	Intel Core 2 Duo 2.93GHz	£88.11	£96.92	£8.81	
Processor	AMD Phenom II 3.20GHz	£126.89	£139.68	£12.79	

Profit Formula

Type	Description	Cost	Sale Price	Basic Profit	Carriage/Ins	Profit	Pr
Processor	Intel Pentium 2.60GHz	£48.16	£57.79	£9.63	£0.96	£9.67	
Processor	Intel Core 2 Duo 2.93GHz	£88.11	£105.73	£17.62	£1.76	£15.86	
Processor	AMD Phenom II 3.20GHz	£126.89	£152.27	£25.38	£2.54	£22.84	
Memory	Integral 512MB 800MHz	£8.99	£10.34	£1.35	£0.09	£1.26	
Memory	Kingston 1GB 400MHz	£29.36	£33.76	£4.40	£0.29	£4.11	
Memory	Corsair 6GB 1333MHz	£146.86	£168.89	£22.03	£1.47	£20.56	
Hard Drive	120GB Hitachi SATA 2.5"	£32.84	£38.75	£5.91	£0.99	£4.93	
Hard Drive	Samsung 3.5" SATA II	£36.41	£42.96	£6.55	£1.09	£5.46	
Hard Drive	Fujitsu 500GB SATA-II 2.5"	£52.82	£62.33	£9.51	£1.58	£7.92	
Monitor	Compaq 19" Widescreen	£88.99	£106.79	£17.80	£1.78	£16.02	
Monitor	LG 22" Widescreen	£118.89	£142.67	£23.78	£2.38	£21.40	
Monitor	HP 26" Widescreen	£269.99	£311.99	£52.00	£5.20	£46.80	

The profit formula was simply the basic profit cell minus the carriage / insurance cell. This value should defiantly not be a minus or the company would be losing money.

Profit Percentage Cost

Type	Description	Cost	Sale Price	Basic Profit	Carriage/Ins	Profit	Profit Percentage Cost
Processor	Intel Pentium 2.60GHz	£48.16	£57.79	£9.63	£0.96	£9.67	19%
Processor	Intel Core 2 Duo 2.93GHz	£88.11	£105.73	£17.62	£1.76	£15.86	18%
Processor	AMD Phenom II 3.20GHz	£126.89	£152.27	£25.38	£2.54	£22.84	18%
Memory	Integral 512MB 800MHz	£8.99	£10.34	£1.35	£0.09	£1.26	14%
Memory	Kingston 1GB 400MHz	£29.36	£33.76	£4.40	£0.29	£4.11	14%
Memory	Corsair 6GB 1333MHz	£146.86	£168.89	£22.03	£1.47	£20.56	14%
Hard Drive	120GB Hitachi SATA 2.5"	£32.84	£38.75	£5.91	£0.99	£4.93	15%
Hard Drive	Samsung 3.5" SATA II	£36.41	£42.96	£6.55	£1.09	£5.46	15%
Hard Drive	Fujitsu 500GB SATA-II 2.5"	£52.82	£62.33	£9.51	£1.58	£7.92	15%
Monitor	Compaq 19" Widescreen	£88.99	£106.79	£17.80	£1.78	£16.02	18%
Monitor	LG 22" Widescreen	£118.89	£142.67	£23.78	£2.38	£21.40	18%
Monitor	HP 26" Widescreen	£269.99	£311.99	£52.00	£5.20	£46.80	17%

The profit percentage cost was simply the profit cell divided by the cost cell with the profit cells being formatted to percentages. The same process was again carried out for the whole column with the formula changing accordingly.

Average Percentage Cost

This value was simply obtained by adding all of the profit percentage cells and dividing them by 12.

Type	Description	Cost	Sale Price	Basic Profit	Carriage/Ins	Profit	Profit Percentage Cost	
Processor	Intel Pentium 2.60GHz	£48.16	£57.79	£9.63	£0.96	£9.67	19%	
Processor	Intel Core 2 Duo 2.93GHz	£88.11	£105.73	£17.62	£1.76	£15.86	18%	
Processor	AMD Phenom II 3.20GHz	£126.89	£152.27	£25.38	£2.54	£22.84	18%	
Memory	Integral 512MB 800MHz	£8.99	£10.34	£1.35	£0.09	£1.26	14%	
Memory	Kingston 1GB 400MHz	£29.36	£33.76	£4.40	£0.29	£4.11	14%	
Memory	Corsair 6GB 1333MHz	£146.86	£168.89	£22.03	£1.47	£20.56	14%	
Hard Drive	120GB Hitachi SATA 2.5"	£32.84	£38.75	£5.91	£0.99	£4.93	15%	
Hard Drive	Samsung 3.5" SATA II	£36.41	£42.96	£6.55	£1.09	£5.46	15%	
Hard Drive	Fujitsu 500GB SATA-II 2.5"	£52.82	£62.33	£9.51	£1.58	£7.92	15%	
Monitor	Compaq 19" Widescreen	£88.99	£106.79	£17.80	£1.78	£16.02	18%	
Monitor	LG 22" Widescreen	£118.89	£142.67	£23.78	£2.38	£21.40	18%	
Monitor	HP 26" Widescreen	£269.99	£311.99	£52.00	£5.20	£46.80	17%	
							Average % Profit	16%

MarkUp Cell and Carriage / Insurance Cells

The MarkUp Cells and the Carriage / Insurance cells ultimately effect the data within the table, and once these values are changed so too does the statistics within the table.

MarkUp Changes

Therefore I will highlight when different values are entered within the MarkUp cell the data will change within the statistics table. The same is true for all of the cells within the table, when the corresponding MarkUp is changed.

When the MarkUp cell is 20% the following values are calculated.

Type	Description	Cost	Sale Price	Basic Profit	Carriage/Ins	Profit	Profit Percentage Cost	MarkUp %
Processor	Intel Pentium 2.60GHz	£48.18	£57.79	£9.63	£0.96	£8.67	18%	20.00%
Processor	Intel Core 2 Duo 2.93GHz	£88.11	£105.73	£17.62	£1.76	£16.86	19%	15.00%
Processor	AMD Phenom II 3.20GHz	£126.89	£152.27	£25.38	£2.54	£22.84	18%	13.00%
Memory	Integral 512MB 800MHz	£8.99	£10.34	£1.35	£0.18	£1.17	13%	18.00%

While when the MarkUp is changed to 10%, the values within the statistics table changed as highlighted below.

Type	Description	Cost	Sale Price	Basic Profit	Carriage/Ins	Profit	Profit Percentage Cost	MarkUp %
Processor	Intel Pentium 2.60GHz	£48.18	£52.98	£4.82	£0.96	£3.85	8%	10.00%
Processor	Intel Core 2 Duo 2.93GHz	£88.11	£96.92	£8.81	£1.76	£7.05	8%	15.00%
Processor	AMD Phenom II 3.20GHz	£126.89	£139.58	£12.69	£2.54	£10.15	8%	13.00%
Memory	Integral 512MB 800MHz	£8.99	£10.34	£1.35	£0.18	£1.17	13%	18.00%
Memory	Kingston 1GB 400MHz	£29.36	£33.76	£4.40	£0.59	£3.82	13%	

Carriage / Insurance Changes

I will also highlight that the same process occurs when the carriage / insurance cells are changed, only with different cells changing that are using the formula dependant on the carriage / insurance. Therefore the data within the statistics table will change when the value within the carriage / insurance cells are too changed, with the same being true for all of the cells within the table.

When the Carriage / Insurance cell is 5% the following values are calculated.

Type	Description	Cost	Sale Price	Basic Profit	Carriage/Ins	Profit	Profit Percentage Cost	MarkUp %	Carriage/Insurance %
Processor	Intel Pentium 2.60GHz	£48.18	£57.79	£9.63	£2.41	£7.22	15%	20.00%	5.00%
Processor	Intel Core 2 Duo 2.93GHz	£88.11	£105.73	£17.62	£4.41	£13.22	15%	15.00%	2.00%
Processor	AMD Phenom II 3.20GHz	£126.89	£152.27	£25.38	£6.34	£19.03	15%	13.00%	3.00%
Memory	Integral 512MB 800MHz	£8.99	£10.34	£1.35	£0.18	£1.17	13%	18.00%	
Memory	Kingston 1GB 400MHz	£29.36	£33.76	£4.40	£0.59	£3.82	13%		

When the carriage / insurance is changed to 2%, the values within the statistics table are changed as highlighted below.

Type	Description	Cost	Sale Price	Basic Profit	Carriage/ins	Profit	Profit Percentage	Cost
Processor	Intel Pentium 2.60GHz	£48.16	£57.79	£9.63	£0.86	£8.07	16%	
Processor	Intel Core 2 Duo 2.93GHz	£88.11	£105.73	£17.62	£1.76	£16.86	18%	
Processor	AMD Phenom II 3.20GHz	£126.89	£152.27	£25.38	£2.54	£22.84	18%	
Memory	Integral 512MB 800MHz	£8.99	£10.34	£1.35	£0.18	£1.17	13%	

Markup	%
Processor	20.00%
Memory	15.00%
Hard Drive	13.00%
Monitor	18.00%

Carriage/insurance	%
Processor	2.00%
Memory	2.00%
Hard Drive	3.00%
Monitor	1.00%

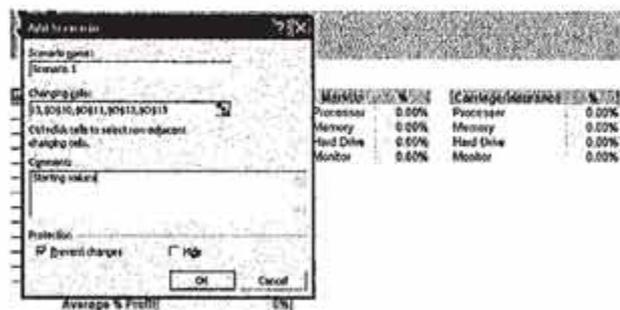
Effects of Changing MarkUp and Carriage Cells on the Profit Percentage Cost

In order for a consistent approach to using the MarkUp and Carriage cells, I created scenarios that will be used according to the information included within the selected cells. This will result in a table being produced which will highlight to the client if they set the mark up values and the insurance values to the stated amounts, this will be their expected profits. This will therefore enable the client to maximise their profits according to the rate the certain products are selling at.

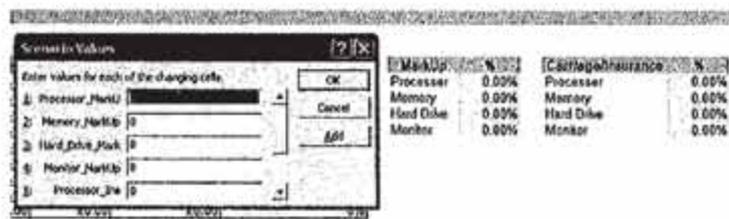


Firstly, I selected the scenarios option under the tools toolbar at the top of the Excel software. I then selected the 'Add' tab in order to generate a new scenario.

I then renamed the scenario, 'Scenario 1' and selected the data for the cells that I expect to change. This is the MarkUp cells and the Carriage / Insurance cells as they are the input cells for the statistics worksheet, and therefore they will be changing. I also included a comment stating 'starting values', as this scenario is for the cells being set at zero.



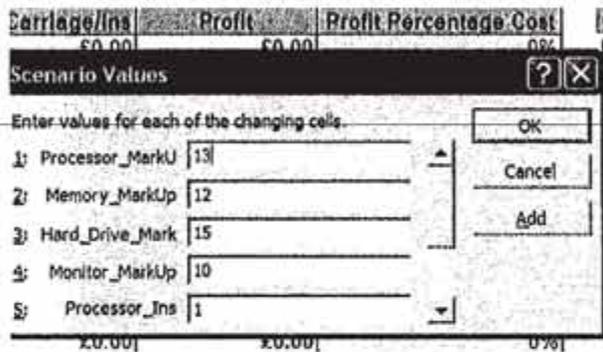
This then brought up another option of changing the scenario values. However, for option 1 I decided that I would keep these at zero, as this is the starting value scenario.



I then decided to create a second scenario, this time with a standard set of mark up and carriage or insurance values. This will therefore show a normal profit for the customer.



This scenario was named 'Scenario 2' and the selected data for the cells was the same as the previous scenario. I included the comment 'high mark up, low carriage / insurance.'



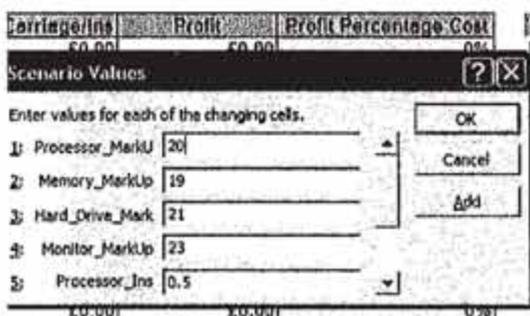
I then changed the scenario values to suit the objective of this scenario; having relatively good mark ups and relatively small carriage / insurance values.

Scenario 2

I decided to enter another scenario, this time with high mark up values and low carriage or insurance values. This scenario will highlight how to maintain a very high profit for the company.



This scenario was named 'Scenario 3' and the selected data for the cells was the same as the previous scenario. I also included the comment 'maximum profit'.

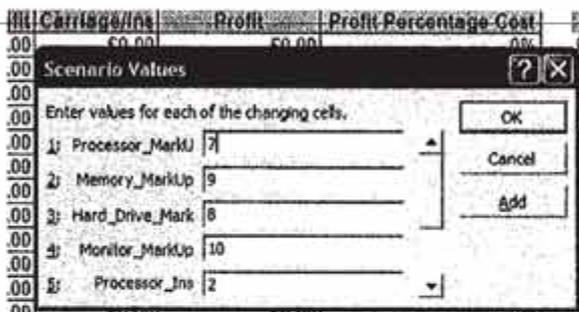


I then changed the scenario values to suit the objective of this scenario; very high mark ups and very low small carriage / insurance values to maximise profits.

The next scenario I created had smaller mark up values and higher carriage or insurance values. In this case the scenario will highlight a very low profit figure and show the company the figures they should avoid if they want to maximise their profits.



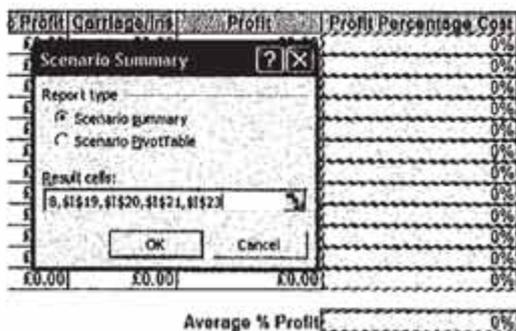
This scenario was named 'Scenario 4' and the selected data for the cells was the same as the previous scenario. I also included the comment 'minimal profit'.



I then changed the scenario values to suit the objective of this scenario; small mark ups and high carriage / insurance values to minimise profits.



This showed all of the scenarios that were created and I clicked on the summary option to highlight the scenarios within a table. This is therefore a tool which the client can use to compare the scenarios to decided which meets his needs best.



I selected the scenario summary and also selected the result cells, being the profit percentage cost and the average % cost as these will effected by the mark ups and insurance values.

Scenario Summary Worksheet

The scenario summary appeared within a new worksheet. It highlighted the scenarios available that the client could use, each having a different range or profit and also the current values entered within the statistics worksheet.

Menu Macro



The menu macro was again included within this worksheet. I assigned the already recorded macro to the corresponding button within the worksheet in order to take the user back to the menu worksheet once clicked upon.

Completed Scenario Summary Worksheet

Scenario Summary		min/SALES	Current	Scenario 1	Scenario 2	Scenario 3
Changing Cells						
Processor Markup		0.00	0.00	13.00	20.00	7.00
Memory Markup		0.00	0.00	12.00	19.00	6.00
Hard_Drive Markup		0.00	0.00	15.00	21.00	8.00
Monitor Markup		0.00	0.00	10.00	23.00	10.00
Processor Inv		0.00	0.00	1.00	0.50	2.00
Memory Inv		0.00	0.00	1.00	1.00	2.70
Hard_Drive Inv		0.00	0.00	2.00	0.60	2.00
Monitor Inv		0.00	0.00	1.00	1.00	2.00
Result Cells						
Unit_Percent		0.00	0.00	12.00	19.50	6.00
Total_Cost_2		0.00	0.00	12.00	19.50	6.00
AMD_Phantom		0.00	0.00	10.50	18.00	6.30
Magnum_212GB		0.00	0.00	10.50	18.00	6.30
Kingston_1GB		0.00	0.00	10.50	18.00	6.30
Conair_6GB		0.00	0.00	10.50	18.00	6.30
Hitachi_125GB		0.00	0.00	13.00	20.50	6.50
Samsung_SATA_II		0.00	0.00	13.00	20.50	6.50
Fujitsu_500GB		0.00	0.00	13.00	20.50	6.50
Compaq_19		0.00	0.00	0.00	22.00	7.00
LG_22		0.00	0.00	0.00	22.00	7.00
HP_25		0.00	0.00	0.00	22.00	7.00
Average % Summary		0.00	0.00	11.13	20.00	5.95

Note: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in grey.

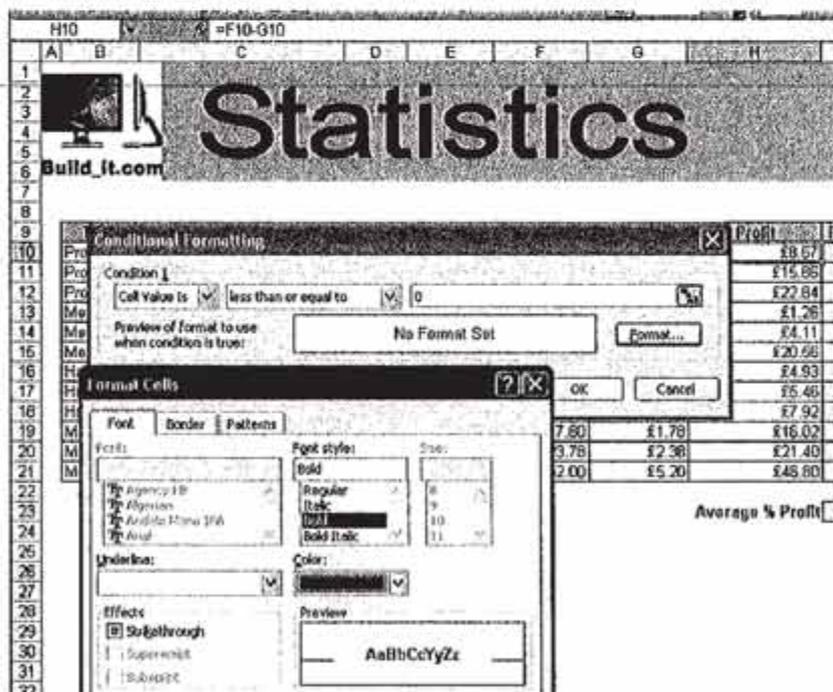
Menu

Conditional Formatting for Selected Cells in the Statistics Worksheet

Whenever I was creating the statistics worksheet I realised that it was not easily recognisable if the profit was a minus or 'in the red.' This could be easily caused by human error when entering too low a mark up value or too high a value in carriage the carriage or insurance cell.

Therefore I decided to use conditional formatting in order to highlight if the cells are a minus figure or equal than 0, therefore making zero profit, the cells would be formatted to red, bold text. This would therefore result in the worksheet being more user friendly and ultimately more efficient.

This process was done by clicking on the selected cells I wanted this process to effect and selecting the Conditional Formatting option under the format toolbar at the top of the Excel software. I then selected condition 1 as the 'cell value is' and 'less than or equal to' and then entered 0. I then selected the format tab and selected the bold font style and the red font colour. The same process was continued for all of the basic profit and profit cells



Conditional Formatting

Therefore, when I entered 0 into the MarkUp processor cell. This means that the basic profit should be 0 and therefore should be red and bold text, while the profit cells for the processors will be minus, as the carriage will be taken away from the profit, which will be 0.

9	Description	Cost	Sale Price	Basic Profit	Carriage/Inc	Profit	Profit Percentage Cost	Markup %	Carriage/Inc	
10	Intel Pentium 2.60GHz	£48.18	£48.18	£0.00	£0.96	£0.96		Processor	0.00%	Processor
11	Intel Core 2 Duo 2.93GHz	£88.11	£88.11	£0.00	£1.76	£1.76		Memory	15.00%	Memory
12	AMD Phenom II 3.20GHz	£126.89	£126.89	£0.00	£2.54	£2.54		Hard Drive	18.00%	Hard Drive
13	Integral 512MB 800MHz	£8.99	£10.34	£1.35	£0.09	£1.20		Monitor	20.00%	Monitor

Macros

Menu Macro



The menu macro was again included within this worksheet. I assigned the already recorded macro to the corresponding button within the worksheet in order to take the user back to the menu worksheet once clicked upon.

Completed Statistics Worksheet

Microsoft Excel - Build It.com Spreadsheet 2

File Edit View Insert Format Tools Data Window Help

100%

Build It.com

Statistics

Type	Description	Cost	Sale Price	Basic Profit	Commission	Profit	Profit Percentage	Cost	Markup	Commission
Processor	Intel Pentium 2.6GHz	£48.16	£54.42	£6.26	£0.48	£6.74	12.00%		Processor	1.00%
Processor	Intel Core 2 Duo 2.83GHz	£88.11	£99.66	£11.55	£0.88	£12.43	12.00%		Processor	1.00%
Processor	AMD Phenom 8 3.2GHz	£126.63	£143.38	£16.75	£1.27	£18.02	12.00%		Processor	1.00%
Memory	Kingston 1GB 800MHz	£8.59	£10.07	£1.48	£0.13	£1.61	18.50%		Memory	1.00%
Memory	Kingston 1GB 400MHz	£29.36	£32.88	£3.52	£0.44	£3.96	13.50%		Memory	1.00%
Memory	Corson 4GB 1333MHz	£146.69	£164.48	£17.79	£2.20	£19.99	13.60%		Memory	1.00%
Hard Drive	750GB Hitachi SATA 2.5"	£32.84	£37.77	£4.93	£0.64	£5.57	13.00%		Hard Drive	1.00%
Hard Drive	3.2" SATA II	£38.41	£41.87	£3.46	£0.73	£4.19	13.00%		Hard Drive	1.00%
Hard Drive	Fujitsu 500GB SATA-4 2.5"	£52.82	£60.74	£7.92	£1.04	£8.96	13.00%		Hard Drive	1.00%
Monitor	Compaq 17" Widescreen	£88.99	£107.09	£18.10	£0.89	£18.99	2.00%		Monitor	1.00%
Monitor	LG 22" Widescreen	£118.69	£130.74	£12.05	£1.19	£13.24	2.00%		Monitor	1.00%
Monitor	HP 20" Widescreen	£259.99	£286.93	£26.94	£2.69	£29.63	2.00%		Monitor	1.00%

Average % Profit: 11.13%

Menu

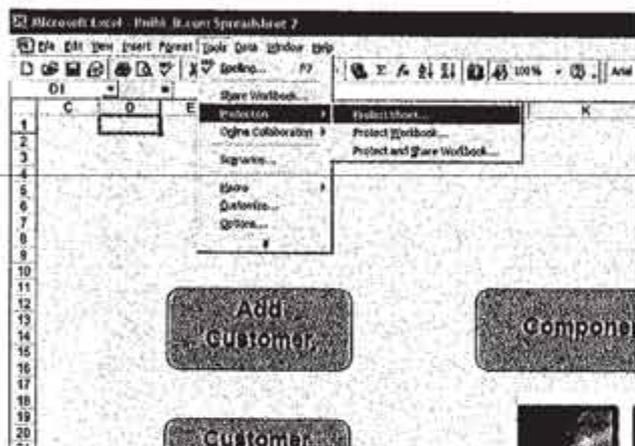
H:\4\1\Menu / Add Customer / Customer Details / Components / Invoice / Pivot Table / Pivot Chart / Statistics / Scenario Summary / Summary Page /

Ready

Protection of Cells

This process includes the protection of each worksheet within the Excel document. The process of protection stops users being able to delete cells where there has been a formula put in place such as a VLookup. For example, in the invoice worksheet, I only want the user to be able to change the telephone number cell and also the combo boxes cells so they can make their choice and enter data respectively.

Menu Worksheet



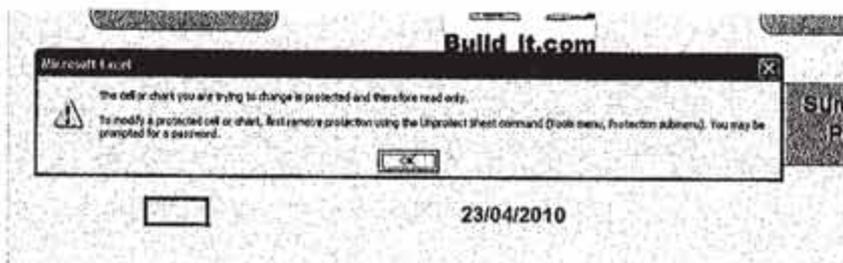
There were no cells within the menu worksheet that had to be unlocked firstly, therefore I went ahead with protecting the worksheet; Tools → Protection → Protect Worksheet.

Protected cells

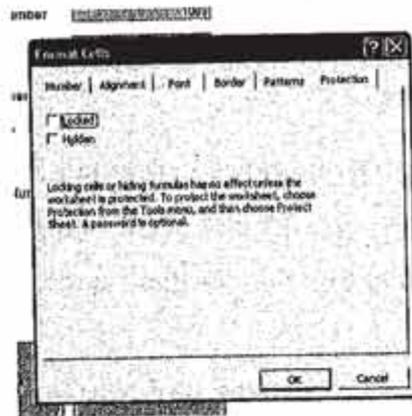


I then selected to protect the contents and the scenarios, but not the objects, as this would interfere with the user working the macros within the menu worksheet. I then entered a password, which confirmed the protection of this worksheet.

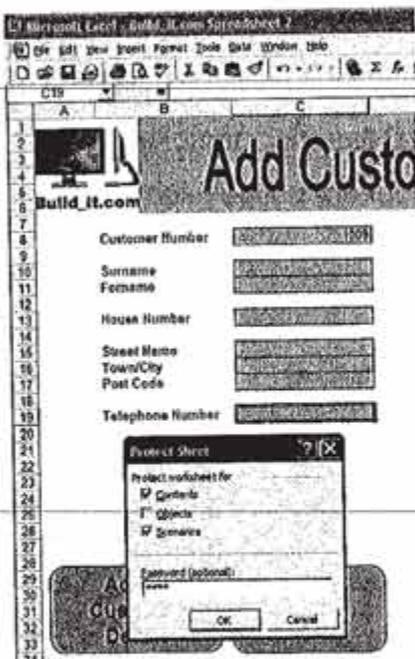
Therefore, when I tried to enter data within one of the cells, a warning message appeared saying that the cells had been protected. However, I was still able to use the macros within this worksheet.



Add Customer Worksheet



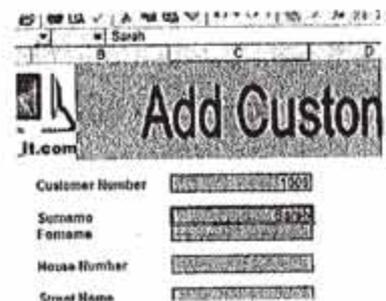
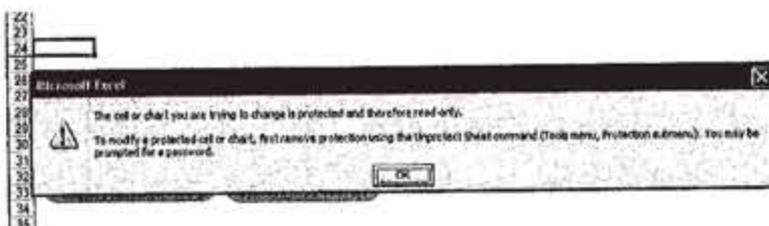
Firstly I had to unlock the cells that data needed to be entered into. This included all of the cells within the form, such as the customer surname, forename etc. This was done formatting the cells and deselecting the locked option under the Protection toolbar and the same process was completed for each individual cell that data needed to be entered into.



I then selected; Tools → Protection → Protect Worksheet and chose to protect the contents and the scenarios, but not the objects as this would interfere with the user working the macros, including the menu macro and also the add to customer details macro. I then entered a password, the same as on the menu worksheet, which confirmed the protection of this worksheet.



Therefore, when I tried to enter data within one of the cells, a warning message appeared saying that the cells had been protected. However, I was still able to enter data within the form cells, such as customer surname, forename, house number etc.

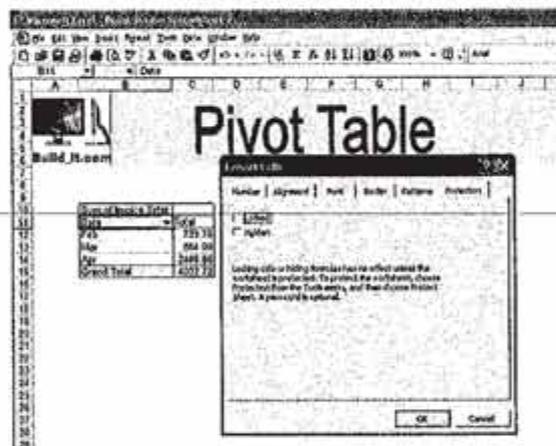


Therefore, when I tried to enter data within one of the cells, a warning message appeared saying that the cells had been protected. However, I was still able to enter data within the telephone number cell and select the data from the combo boxes.



Pivot Table Worksheet

The same process was carried out within the pivot table worksheet, however, the date cell was deselected as it can be used to look at the figures for a selected month. However, all of the other cells were kept locked. I then Protected the rest of the worksheet.

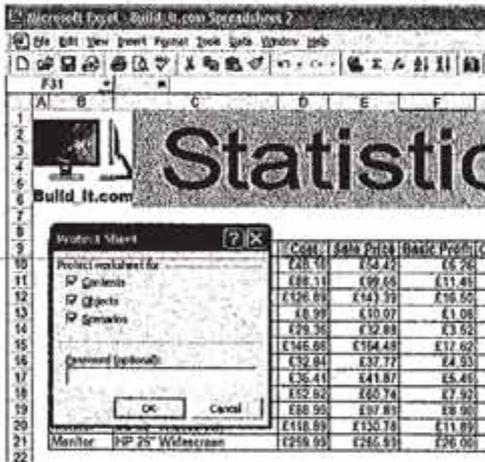
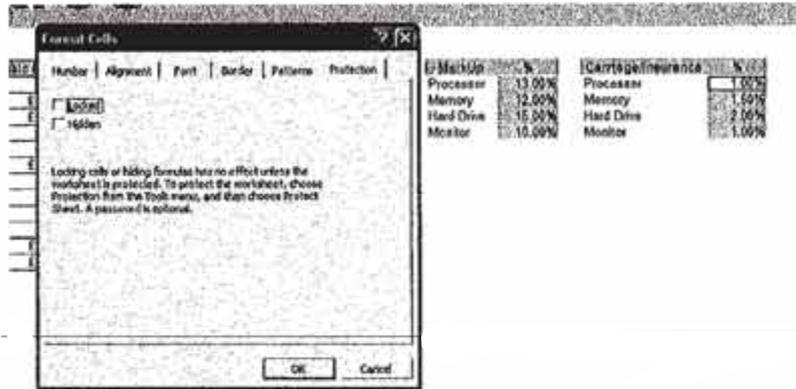


Pivot Chart Worksheet

The same process was carried out for this worksheet and the whole worksheet was protected, as there is no data entry within this page.

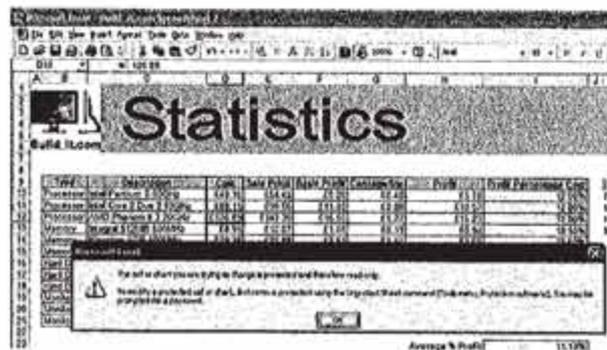
Statistics Worksheet

Firstly I had to unlock the cells that data needed to be entered into. This included the mark up % cells and the carriage / insurance % cells, as these were needed for calculating the statistics table and changing the profit margins. This was done formatting the cells and deselecting the locked option under the Protection toolbar



I then selected; Tools → Protection → Protect Worksheet and chose to protect the contents and the scenarios, but not the objects as this would interfere with the menu macro. I then entered a password, the same as on the other worksheets, which confirmed the protection.

Therefore, when I tried to enter data within the statistics table, a warning message appeared saying that the cells had been protected. However, I was still able to enter data within the mark up % cells and the carriage / insurance % cells.



Scenario Summary Worksheet

The same process was carried out for this worksheet and the whole worksheet was protected, as there is no data entry within this page.

Summary Page Worksheet

Again the same process was carried out for this worksheet and the whole worksheet was protected, as there is no data entry within this page.

Output Information

The desired output is the computerised generation of an invoice for the customer, with their details inserted when they have been added to the customer details worksheet. The following worksheets and processes accumulated in the generation of the invoice as the output information:

Add Customer Worksheet – This is where the staff of Build_it.com enters new customers into the worksheet to have a record when they purchase an item. Within this worksheet, the customer details will then be added to the customer details worksheet. This data is stored in tables to ensure the data can easily be sorted and is presented in a professional and cohesive manner. This worksheet is then linked to the invoice worksheet through VLookup formulas, resulting in the customer entering their telephone number within the invoice worksheet, and the VLookups bringing across all of the customer details information within the row with the corresponding telephone number. A formula will then be used for the customer number, which will increment after every customer has been added to ensure that every customer has a unique customer number.

The add to customer details macro allows the user to add all of the data to the customer detail worksheet with the click of a button. This functions as an aid for quick and easy data input and processing. The macro will copy all of the information over, will clear all of the data within the add customer worksheet except the customer number which will also have incremented to ensure a unique customer number.

Customer Details Worksheet – This worksheet is where all of the customer details are stored for future reference and is also linked to the invoice worksheet in order for the customer' details to be included within the invoice. This is done by using the VLOOKUP formula to retrieve information for the given cells from the corresponding telephone number that has been entered.

Components Worksheet – This worksheet is linked to the invoice sheet, in which combo boxes within the invoice worksheet allow the customer to select the various components available to purchase.

Invoice Worksheet – This worksheet is therefore the desired output information that is wanted by the company accumulated through the formulas and processes within the other worksheets also as they are inextricably linked. Using the same formula as used in the Add Customer worksheet, the invoice number will increment and clear all of the customer details ready for the next customer and also reset all of the components back to the first available one. This data is then be added to the summary table worksheet to keep a record of all of the sales using the add to summary macro, ultimately aiding data input and processing.

By using the VLOOKUP formulas, I was able to, by only entering the customer's telephone number, retrieve all of the customer details from the customer details worksheet. The Combo boxes were also linked to the components worksheet so that the customers can select what they wish to buy.

Formulas were also used to great effect, calculating the sub-total, the delivery charge, the VAT and also the invoice total. These numerical processes were therefore pertinent to achieving the required output information from the invoice.

All of the above processes will result in the output of the competed invoice. The print macro within the invoice worksheet allowed for the user to complete the output information. By clicking on this macro, it sends two copies of the invoice to print, one for the client and one for the company themselves to keep a record of sales.

Requirements of Excel Software

This is the first aspect that will need to be considered when using this Excel document. The document that was created for your company, Build_it.com, used Microsoft Excel 2003 edition. In order to ensure that the document works on your computers within the company, the following requirements will need to be met for optimum results and full use of the software:

Computer and Processor – Computer/laptop with an Intel Pentium 233MHz or faster with a Pentium III recommended

Memory – 128 megabytes (MB) of RAM or greater

Hard Disk – 150 MB of available hard-disk space; optional installation files cache (recommended) requires an additional 200 MB of available hard-disk space

Drive – CD-ROM or DVD drive

Display – Super VGA (800 × 600) or higher-resolution monitor

Operating System – Microsoft Windows 2000 with Service Pack 3 (SP3), Windows XP, or later

Other – Microsoft Exchange Server is required for certain advanced functionality in Microsoft Office Outlook; Microsoft Windows Server 2003 running Microsoft Windows SharePoint Services is required for certain advanced collaboration functionality; certain inking features require running Microsoft Office on the Microsoft Windows XP Tablet PC Edition; speech recognition functionality requires a Pentium II 400-MHz or faster processor, a close-talk

All of this information was taken from the Microsoft Office website, highlighting the specific requirements of this software:

Source - <http://office.microsoft.com/en-us/excel/HA102126851033.aspx>

System
requirements

Macro Code (Add to Customer Details Macro)

```

Build_it.com Spreadsheet.xls - Module6 (Code)
(General) Add_to_Customer_Details_Table

Sub Add_to_Customer_Details_Table()
' Add_to_Customer_Details_Table Macro
' Macro recorded 12/04/2010 by [redacted]
'
Application.ScreenUpdating = False
Rows("14:14").Select
Selection.Insert Shift:=xlDown
Sheets("Add Customer").Select
Range("C8").Select
Selection.Copy
Sheets("Customer Details").Select
Range("B14").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
Sheets("Add Customer").Select
Range("C10").Select
Application.CutCopyMode = False
Selection.Copy
Sheets("Customer Details").Select
Range("C14").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
Sheets("Add Customer").Select
Range("C11").Select
Application.CutCopyMode = False
Selection.Copy
Sheets("Customer Details").Select
Range("D14").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
Sheets("Add Customer").Select
Range("C13").Select
Application.CutCopyMode = False
Selection.Copy
Sheets("Customer Details").Select
Range("E14").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
Sheets("Add Customer").Select
Range("C14").Select
Application.CutCopyMode = False
Selection.Copy
Sheets("Customer Details").Select
Range("F14").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
Sheets("Add Customer").Select
    
```

Name of the Macro.

Stop macro flickering when performing actions.

Go to Customer Details Worksheet

Copy all of the data from the add customer form to the corresponding columns in the add customer table using the copy and paste special option. Each cell is done separately.



```

Build_it.com Spreadsheet.xls
Build_it.com Spreadsheet.xls - Module6 (Code)
Add_to_Customer_Details_Table

Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
Sheets("Add Customer").Select
Range("C15").Select
Application.CutCopyMode = False
Selection.Copy
Sheets("Customer Details").Select
Range("G14").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
Sheets("Add Customer").Select
Range("C16").Select
Application.CutCopyMode = False
Selection.Copy
Sheets("Customer Details").Select
Range("H14").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
Sheets("Add Customer").Select
Range("C18").Select
Application.CutCopyMode = False
Selection.Copy
Sheets("Customer Details").Select
Range("I14").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
Application.Goto Reference:="Customer"
Application.CutCopyMode = False
Selection.Sort Key1:=Range("B10"), Order1:=xlAscending, Header:=xlGuess, _
OrderCustom:=1, MatchCase:=False, Orientation:=xlTopToBottom, _
DataOption1:=xlSortNormal
Sheets("Add Customer").Select
Range("C10").Select
Selection.ClearContents
Range("C11").Select
Selection.ClearContents
Range("C13").Select
Selection.ClearContents
Range("C14").Select
Selection.ClearContents
Range("C15").Select
Selection.ClearContents
Range("C16").Select
Selection.ClearContents

```

Gain all of the data from the add customer form is copied to the corresponding columns in the add customer table using the copy and paste special option. Each call is done separately.

Sort the customer details table according to the customer number.

Clear the add customer form bar the customer number using the clear contents option.

Copy the customer number and using the paste special option to the right of the form so it will increment ready for the next customer.

```

Range("C18").Select
Selection.ClearContents
Range("C8").Select
Selection.Copy
Range("D8").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
Application.CutCopyMode = False
End Sub

```

End of macro.

Add to customer macro.



Build_it.com

Add Customer

Customer Number 1006

Surname

Forname

House Number

Street Name

Town/City

Post Code

Telephone Number

*✓
Form
used*

Add to
Customer
Details

Menu



Invoice

Date =TODAY()

Invoice Number =E16+1
Customer Number 1000

Customer Name =VLOOKUP(C19,Customer,3) & " " & VLOOKUP(C19,Customer,2)
Customer Address =VLOOKUP(C19,Customer,4) & " " & VLOOKUP(C19,Customer,5)
=VLOOKUP(C19,Customer,6)
=VLOOKUP(C19,Customer,7)

Telephone Number =VLOOKUP(C19,Customer,8)

	Component Code	Component Description
Processor	P002	=VLOOKUP(E31,Processors,3)
Memory	M001	=VLOOKUP(E32,Memory,3)
Hard Drive	H002	=VLOOKUP(E33,Hard Drives,3)
Monitor	MR002	=VLOOKUP(E34,Monitors,3)

Sub-Total
Delivery Charge
Vat (17.5%)
Invoice Total

Handwritten signature



2:



1002

Invoice Number

Component/Cost	
=VLOOKUP(E31,Processors,4)	2
=VLOOKUP(E32,Memory.,4)	1
=VLOOKUP(E33,Hard Drives,4)	2
=VLOOKUP(E34,Monitors,4)	2



=IF(C19=0,"£0.00",(D31+D32+D33+D34))
=IF(D37>600,D37*0.05,D37*0.03)
=(D37+D38)/100*17.5
=(D37+D38+D39)

Unit 10

Task C

Task C

For this assignment I will highlight all of the problems I faced when implementing the Excel document and creating the worksheets and will highlight my solutions to each of the problems experienced. I will also evaluate how successful I overcame these problems so that I can assess how efficient the solutions were and ensure that they also fulfilled the needs of the spreadsheet.

I will highlight the problems experienced and my solution for the following:

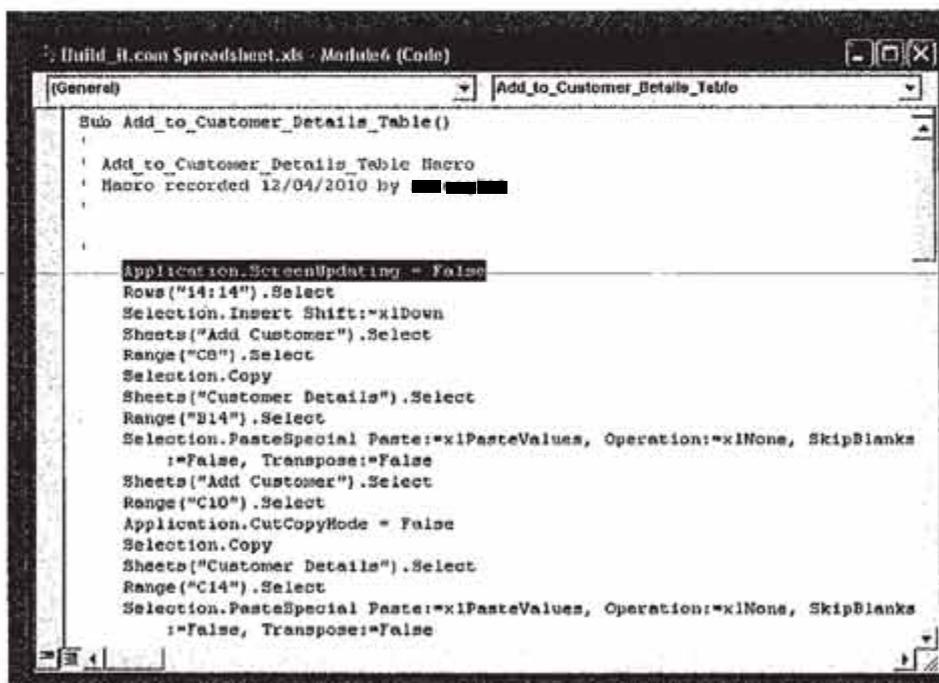
- Add to customer details macro
- Invoice – using the telephone number for the VLookups
- Invoice – not having n/a appearing when the telephone number is zero
- Pivot Chart not on the already created worksheet
- Statistics - having the basic profit or profit appear red if a minus value

✓ Problems identified

Add to Customer Details Macro

The first problem I came across when creating the web site was the add to customer details macro. The problem was not in the steps taken to create the macro itself, but when the macro was clicked upon to add the customer to the customer details table, it kept flashing. I checked the macro code using the edit macro option and there did not seem to be anything wrong with the process that I recorded.

Therefore, in order to solve my problem my teacher suggested that used Google to search for Microsoft Excel screen flickering to try to find a solution for the macro flashing and completing all of the processes within one step. I found the source, <http://www.ozgrid.com/VBA/excel-macro-screen-flicker.htm> and it stated that if I included the line of text, `Application.ScreenUpdating = False` before the code to perform the macros, it would stop the screen from flickering and perform the processes in one step.



```

Sub Add_to_Customer_Details_Table()
    Add_to_Customer_Details_Table Macro
    Macro recorded 12/04/2010 by [REDACTED]

    Application.ScreenUpdating = False
    Rows("14:14").Select
    Selection.Insert Shift:=xlDown
    Sheets("Add Customer").Select
    Range("C8").Select
    Selection.Copy
    Sheets("Customer Details").Select
    Range("B14").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks
    :=False, Transpose:=False
    Sheets("Add Customer").Select
    Range("C10").Select
    Application.CutCopyMode = False
    Selection.Copy
    Sheets("Customer Details").Select
    Range("C14").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks
    :=False, Transpose:=False
  
```

Once I knew this piece of code, I edited the macro, including it before the macro processes.

Screen Flicker

Therefore, I feel that when overcoming this problem, I used my initiative in looking for ways to fix the problem and I also learnt new aspects about the Excel software that is beneficial when was creating the other macros within the Excel document and also if I was to complete a similar task in the future.

Invoice – Using the Telephone Number for the VLookups

The next problem that I came across was within the invoice worksheet when I was using the VLookup formula to retrieve all of the customer details from the customer details worksheet. Initially I had planned that I would use the customer detail by using it as the lookup value and by entering this, it would retrieve all the content. However, I decided against this as it was flawed in the sense that very few customers would actually know or remember their customer number.

Therefore, as a solution to my problem, I decided to use the telephone number instead as it is also unique and the client will surely know their own telephone number. The client will then enter their telephone number within the invoice, and through VLookup formulas, it will retrieve all of their contact information, including retrieving their customer number to save time and stop any data entry errors.

In order for the customer number to be retrieved from the corresponding telephone number, I included the formula, =VLOOKUP(C28, Customer2, 8). This means that the lookup value is C28, the telephone number cell within the invoice worksheet, the table array is Customer2, which is the cell reference of the complete customer details table and the column index value is 8 as it is the eighth column within the customer details table. The column index number will be the aspect of the formula that will change depending on the cell. Then depending on the telephone number that is entered, the customer number will be retrieved.

The screenshot shows the Microsoft Excel interface with the VLOOKUP dialog box open. The dialog box contains the following fields:

- Lookup_value: 1000
- Table_array: Customer2
- Col_index_num: 8
- Range_lookup: (checked)

The formula bar shows: =VLOOKUP(C28, Customer2, 8)

The spreadsheet content is as follows:

13		
14		
15	028 93 32	18/04/2010
16		
17		
18		
19		
20	Telephone Number: 1000	
21	Customer Number: =VLOOKUP(C28, Customer2, 8)	
22		

Handwritten text on the right side of the image reads: ✓ VLOOKUP

The same process was completed for all of the customer details information, however, the column index value was changed accordingly depending on the column it was under within the customer details worksheet. This therefore meant that if I entered a telephone number that was included within the customer details table, it would automatically retrieve all of their other contact information to the invoice worksheet to save time and any data entry errors.

Invoice Number	1005
Customer Number	1007

Customer Name	
Customer Address	

Telephone Number	
------------------	--

The customer's telephone number was entered and it brought up all of their details according to what was included within the customer details table.

Overall, I think that my solution to this problem was very good as in the long term it will prevent the customer from having to remember their customer number and is more effective. I therefore feel that this solution added to the overall Excel document as a whole and identified with the needs of the user.

Invoice – not having n/a appearing when the telephone number is zero

I encountered this problem was I was attempting to clear the invoice ready for the next customer to use and select the products they wish to buy. Initially, I tried entering 0 into the telephone number cell to clear the customer details as there would be no record of a 0 telephone number. Although this worked in the sense that the cells for the customer details appeared N/A, I think that this looked messy and unprofessional and I wanted all of the customer details, the components descriptions to appear blank and the component cost cells to appear as £0.00.

Therefore, I decided that as a solution to the problem, I would use IF formula; if the telephone number is 0 then make the cell blank or £0.00. Therefore I added this formula to the start of the VLookup formula already present within the cells, an example being; =IF(C28=0," ", VLOOKUP(C28,Customer2,8)). This formula means that if cell C28 (the telephone number cell) is 0, then have no text, highlighted by the space between the speech marks within the formula, and if the cell is not 0, then complete the VLookup formula to retrieve the information. The same process was then applied to all of the customer details cells and the component description cells.



*N/A
excel
error
when
resetting
invoice*

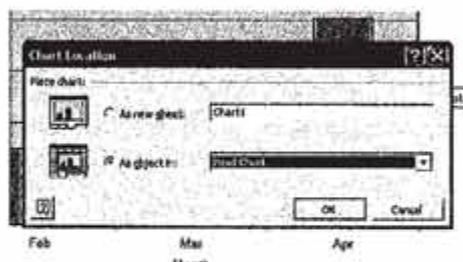
Within the component cost cells the same principle was carried out, however, instead of having the cells blank, I wanted them to appear as £0.00. Therefore, I adapted the formula and within the speech marks, I included £0.00, an example being for the Processor Component Cost cell and the formula being; =IF(C28=0,"£0.00",VLOOKUP(E33,Processors,4)).

	Component Code	Component Description	Component Cost
34 Processor	P002		£0.00
35 Memory	M001		£0.00
36 Hard Disk	H003		£0.00
37 Monitor	M002		£0.00

Pivot Chart not on the Already Created Worksheet

After I had completed the Pivot Table, I simply clicked upon the chart wizard option within the Pivot Table toolbar. This however meant the pivot table was inserted within a new worksheet, which was named Chart1. The problem was that I had already created a worksheet for the Pivot Chart and I wanted to still have the banner at the top of the worksheet in order to show consistency and also have the menu macro to enable the user to go back to the menu worksheet. This was therefore a problem I sought to fix.

After using the help tool within the Microsoft Excel software, it stated that there was a right click and location option in order to include the Pivot Chart within an existing worksheet. This was done by right clicking on the Pivot Chart, selecting location and then selecting the existing worksheet (Pivot Chart Worksheet) and dragging it across to wherever I wanted to place it within the worksheet.



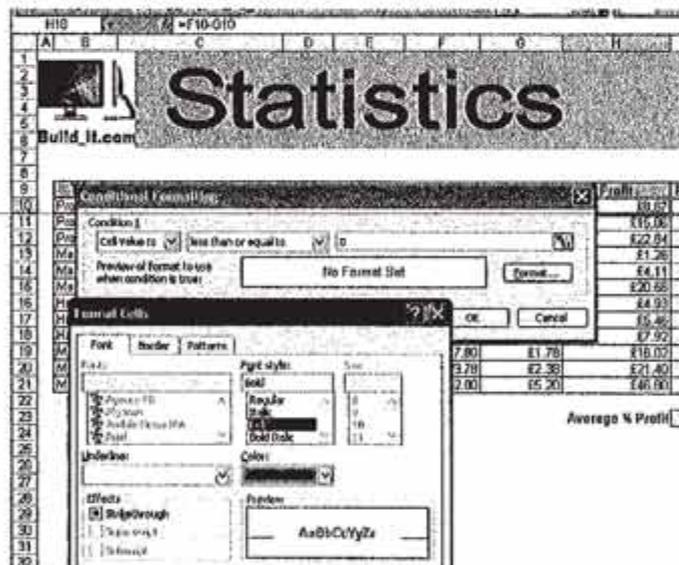
*Pivot Chart
creation*

I feel that I used my initiative when solving this problem within the Excel worksheet and feel that my solution resulted in a better overall document. I also think that it makes the worksheet being more professional as it included a macro within the worksheet and also consistent with the banner and the company logo at the top of the worksheet.

Statistics - having the basic profit or profit appear red if a minus value

I realised whilst creating the statistics worksheet that an apparent weakness was that if the profit was a minus or 'in the red' it would not be easily recognisable or detected. This could be easily caused by human error when entering too low a MarkUp value or too high a value in Carriage / Insurance. Therefore, although not a problem which damaged the overall working of the document, if I fixed the problem the Excel document would be more user friendly and ultimately more efficient.

I therefore decided that I would use conditional formatting in order to highlight if the cells are a minus figure or equal than 0, therefore making zero profit, the cells would be formatted to red, bold text. This was done by clicking on the selected cells and selecting the Conditional Formatting option under the format toolbar along the top of the Excel software. I then selected condition 1 as the 'cell value is' and 'less than or equal to' and then entered 0. I then selected the format tab and selected the bold font style and the red font colour. The same process was continued for all of the basic profit and profit cells.



When I tested the conditional formatting, I entered 0 into the Markup processor cell. This means that the basic profit should be 0 and therefore should be red and bold text, while the profit cells for the processors will be minus as the carriage will be taken away from the profit, which will be 0.

	Description	Cost	Sale Price	Basic Profit	Carriage/Ins	Profit	Profit Percentage Cost	Markup %	(Carriage/Ins)
9									
10	Intel Pentium 2.60GHz	£48.16	£48.16	£0.00	£0.96	-£0.96		Processor 0.00%	Processor
11	Intel Core 2 Duo 2.93GHz	£90.11	£98.11	£8.00	£1.76	-£1.76		Memory 15.00%	Memory
12	AMD Phenom II 3.20GHz	£126.89	£126.89	£0.00	£2.54	-£2.54		Hard Drive 18.00%	Hard Drive
13	Integral 512MB 800MHz	£9.99	£10.34	£1.35	£0.09	£1.26		Monitor 20.00%	Monitor

Therefore, I feel that I used my initiative when solving this problem within the Excel worksheet and feel that my solution resulted in a better overall document. I think that this problem that I fixed resulted in a more user friendly spreadsheet as it will detect some human errors and ultimately, in my opinion, has made my spreadsheet more efficient.