Unit Title:	**Introduction to IT Systems Development**
OCR unit number	34
Level:	2
Credit value:	6
Guided learning hours:	50
Unit reference number:	J/601/3247

Candidates undertaking this unit must complete real work activities in a work environment. Simulation is only allowed in exceptional circumstances (please refer to the centre handbook for further details).

Unit purpose and aim

This unit introduces the Systems Development Life Cycle and the roles involved in ICT system development.

Learning Outcomes	Assessment Criteria	Knowledge, understanding and skills
The Learner will: 1 Understand IT Systems and the roles of IT personnel	**The Learner can:** 1.1 Explain the role of IT Systems in society 1.2 Describe the major components of a contemporary IT System 1.3 Describe the roles of personnel in the development, operation and use of IT System	Candidates must be able to explain the roles of IT systems including: • communication services • sharing, exchanging and managing information • the use of the internet • monitoring and tracking systems Candidates must be able to describe the major components of an IT system including: **Hardware:** • Central Processing Unit (CPU), internal/main • memory, • backing storage, • input and output devices • power supplies • servers • communication devices **Software** • generic applications • communication • programming software • systems software

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		• specific software (e.g. MIS, expert system) The candidate must be able to identify and describe the roles of personnel including: • Project manager • Systems analyst and designer • Programmer • Tester • Network managers • Technicians • End-users

2 Understand IT Systems Development Life Cycle (SDLC) models	2.1 Describe top down, bottom up and integrated approaches to IT Systems development
	2.2 Explain the purposes of the initiation, analysis, design and implementation phases of the IT SDLC
	2.3 Identify the advantages and disadvantages of the traditional ('waterfall') SDLC model
	2.4 Describe two other SDLC models, identifying the type of development for which they are suited
		Candidates must be able to describe the differing approaches that can be used during the development of an IT system.
		
		Candidates must be aware that:
		• the top down approach requires an overview of the system being constructed first
		• the bottom up approach requires the component parts being created initially prior to constructing the final system
		• the integrated approach attempts to combine these approaches
		
		Candidates must be aware of the increased use of pre-written components and their use in the integrated approach.
		Candidates must:
		• understand the tasks that must be carried out during each identified phase of the SDLC and the iteration that occurs between each phase
		• be aware of and understand the tools and techniques that can be used within each identified phase
		• the purpose should be explained, including:
		  - inputs to phase
		  - tasks to be carried out
		  - tools and techniques used
		  - output from phase
		
		Candidates must be able to identify the advantages and disadvantages

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		of the traditional SDLC model. These may also be applied to the type of system that is being developed using this SDLC.
		• the advantages of the traditional SDLC model include:
		  - a structured approach
		  - pre-defined tasks to be completed at each stage
		  - defined inputs and outputs for each stage
		• the disadvantages of the traditional SDLC model include:
		  - the client requirements may not be fully known at the start of the process
		  - inflexible approach to SDLC
		
		Candidates must be aware that each type of SDLC has been developed from the traditional SDLC to meet the needs of the increased range of systems that are available and being used.
		
		Candidates must be aware of, and be able to describe, two other SLDC models, for example.
		• Rapid Application Development (RAD)
		• Spiral
		• Joint Application Development (JAD)
		• Prototyping
		
		Candidates must identify, for each SDLC model, that they have described, the type of development for which they are most appropriate.

3 Understand IT Systems Development Life Cycle (SDLC) concepts and processes	3.1 Describe the advantages and disadvantages of the following solution types: • packaged ('off the shelf') • bespoke • combination of packaged and bespoke • upgrade 3.2 Explain the importance of quality assurance and	Candidates must be aware of the differing types of software solutions that could be used during the SDLC. They must also be aware of the appropriateness of the use of each solution type. The described advantages and disadvantages of each solution type should include: • cost

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	meeting customer requirements during the IT SDLC and the means by which they can be achieved 3.3 Describe the applicability of the following methods of gathering information: • interviews • observations • questionnaires • examination of records and documents	• support • availability • choice (e.g. vendor) • upgrade options • memory footprint • testing Candidates must understand and explain the differing methods that can be used for Quality Assurance and ensuring that customer requirements are met. These methods should include: • meetings • user focus groups and feedback • testing – including beta • referral to documentation The importance of this process must be understood, and explained, by the candidate including: • the potential for the final system to not meet the client requirements • financial and time issues • resource issues including development staff, training Candidates must be aware of the differing approaches that can be used to gather information Candidates must also understand, and describe, the advantages and disadvantages of each method and, in which situation each method could be used and should include: • time issues • cost implications • response rates • accuracy and reliability of results gathered • flexibility of method

Assessment

Candidates undertaking this unit must complete real work activities in order to produce evidence to demonstrate they are occupationally competent. Real work is where the candidate is engaged in activities that contribute to the aims of the organisation by whom they are employed, for example in paid employment or working in a voluntary capacity.

Simulation is only allowed for aspects of units when a candidate is required to complete a work activity that does not occur on a regular basis and therefore opportunities to complete a particular work activity do not easily arise. When simulation is used, assessors must be confident that the simulation replicates the workplace to such an extent that candidates will be able to fully transfer their occupational competence to the workplace and real situations.

Internal quality assurance personnel must agree the use of simulated activities before they take place and must sample all evidence produced through simulated activities.

It is the assessor's role to satisfy themselves that evidence is available for all performance, knowledge and evidence requirements before they can decide that a candidate has finished a unit. Where performance and knowledge requirements allow evidence to be generated by other methods, for example by questioning the candidate, assessors must be satisfied that the candidate will be competent under these conditions or in these types of situations in the workplace in the future. Evidence of questions must include a written account of the question and the candidate's response. Observations and/or witness testimonies must be detailed and put the evidence into context ie the purpose of the work etc.

All of the assessment criteria in the unit must be achieved and clearly evidenced in the submitted work, which is externally assessed by OCR.

Evidence for the knowledge must be explicitly presented and not implied through other forms of evidence.

Evidence requirements

All aspects of the assessment criteria must be covered and evidence must be available that shows where and how the assessment criteria have been achieved.

Assessment Criterion 1

Candidates must produce a report describing the roles of personnel, the major components of an IT system and its role in society.

Assessment Criterion 2

Candidates must describe the systems development life cycle models which can be used including:

- inputs to phase

- tasks to be carried out

- tools and techniques used

- output from phase

- advantages/disadvantages

Assessment Criterion 3

For a given scenario candidates must select an appropriate solution describing the advantages and disadvantages of their choice.

Candidates must explain the quality assurance processes and procedures required to meet customer needs and gather customer information and feedback.

Candidates are encouraged to choose activities which will allow them to cover all or a majority of the criteria at one time. It is not necessary to use different activities for each element of the criterion.

Guidance on assessment and evidence requirements

Evidence can reflect how the candidate carried out the process or it can be the product of a candidate's work or a product relating to the candidate's competence.

For example: The process that the candidate carries out could be recorded in a detailed personal statement or witness testimony. It is the assessor's responsibility to make sure that the evidence a candidate submits for assessment meets the requirements of the unit.

Questioning the candidate is normally an ongoing part of the assessment process, and is necessary to:

- test a candidate's knowledge of facts and procedures

- check if a candidate understands principles and theories *and*

- collect information on the type and purpose of the processes a candidate has gone through

- candidate responses must be recorded

It is difficult to give a detailed answer to how much evidence is required as it depends on the type of evidence collected and the judgement of assessors. The main principles, however, are as follows: for a candidate to be judged competent in a unit, the evidence presented must satisfy:

- all the items listed, in the section 'Learning Outcomes'

- all the areas in the section 'Assessment Criteria'

The quality and breadth of evidence provided should determine whether an assessor is confident that a candidate is competent or not. Assessors must be convinced that candidates working on their own can work independently to the required standard.

Additional information

For further information regarding administration for this qualification, please refer to the OCR document '*Admin Guide: Vocational Qualifications*' *(A850)* on the OCR website www.ocr.org.uk .