Tables and entities

Teacher's Notes

Lesson Plan

Length	60 mins	Specification Link	215/e_f
Learning objective	Candidates should be able to: (e) understand the relationship between entities and tables (f) understand the components of a relational database, such as tables, forms, queries, reports and modules		

Time (min)	Activity	Further Notes
10	Discuss that it is necessary to carefully analyse the specific situation and carefully identify the data that needs to be stored in a database. Using a projector, display the **Interactive Starter Activity**. Ask the students to suggest suitable items of data before clicking on the check buttons. Discuss whether the items suggested are more suitable than those chosen by the student.	
15	Watch the set of videos, pausing to discuss the content.	
5	Discuss the videos to assess learning. Ask questions such as: • What is an entity?	An entity is a thing which is recognised as being capable of an independent existence and which can be uniquely identified and about which data can be stored.
	• What are attributes?	Attributes are the set of properties used to describe instances of the entity. It is an item of data that can be stored about the entity.
	• What is a field?	A field is one item of data that is stored in each of the records in a table.
	• What is a primary key?	The primary key uniquely identifies each record in the table. It can either be a normal field that is guaranteed to be unique (such as the Unique Pupil Number (UPN) which is different for each student in a school database system) or it can be generated by the DBMS. Primary keys may consist of a single field or multiple fields in combination.
15	Pupils to complete **Worksheet 1** either on paper or on a computer. Ask individual students for their responses and discuss with the class so that all students have the correct answers.	Answers provided. Ask students with the correct responses to explain to the class how they arrived at their answers.

Time (min)	Activity	Further Notes
10	The students use **Interactive Activity 1**.	
	Extension Challenge/Homework Students to complete and submit **Worksheet 2** for homework.	
5	**Plenary** Assess lesson learning outcomes by revisiting the questions asked after the video.	

WORKSHEET 1 ANSWERS

1 **Explain what is meant by:**

(a) an entity

An entity is a thing which is recognised as being capable of an independent existence and which can be uniquely identified and about which data can be stored.

It can be a physical object e.g. a car, person, student, book or it can be a concept e.g. a customer transaction.

(b) attributes

Attributes are the set of properties used to describe instances of the entity. It is an item of data that can be stored about the entity.

For example, a student entity could have attributes such as surname, first name, date of birth, tutor group etc.

(c) a table

A table is a collection of rows and columns forming cells which are used to store data and user information in a structured and organised manner.

The tables are created from the entities identified and each column of the table represents the entity attributes that were identified. The columns are called fields.

Each row of the table represents a record.

(d) a record

A record is a row in the table. It contains a single data value in each column (field).

2 **Label the following table.**

Fields

Member ID	Surname	First Name	House Number	Postcode
001	Smith	Fred	33	CB3 4FT
002	Jones	Alice	6	CB1 3ST
003	Cooper	Jack	13	CB2 7XY

Records

WORKSHEET 1 ANSWERS

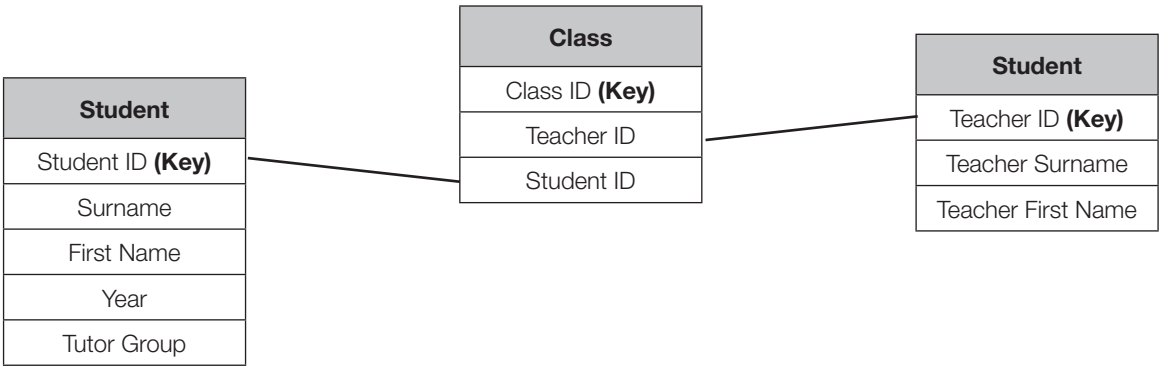
3 **Explain what is meant by a primary key.**

The primary key uniquely identifies each record in the table. It can either be a normal field that is guaranteed to be unique (such as the Unique Pupil Number (UPN) which is different for each student in a school database system) or it can be generated by the DBMS. Primary keys may consist of a single field or multiple fields in combination.

A school is creating a database to store the details of students, the classes they are in and the teachers of those classes.

Using a diagram, identify the tables that should be created, the fields and key fields of each table and how they can be connected to form a relational database.

Similar to the following:



WORKSHEET 2 ANSWERS

1 **A teacher is using a database to store the details of the students in all of their classes. The teacher has identified two entities which have been called PUPIL and CLASS.**

(a) Explain what is meant by the term entity. (2)

A real world object.

... about which data is stored in a database.

Corresponds to tables in the database.

Using the entities, the teacher has created two tables to store details of the pupils and the classes. The following diagram shows the tables in design view.

Pupil
Unique Pupil Number
Surname
First Name
Year
Tutor Group

Class
Class ID
Subject
Room

(b) State the primary key of the Pupil table and explain your answer.

Primary key: Unique Pupil Number (1)

Explanation: It is a unique identifier

Two pupils cannot have the same Pupil Number...

... but they can have the same surname, first name

1 for primary key + any other 2 bullet points (2)

(c) Explain *two* ways in which the teacher could link the Pupil details to the Class details. (4)

ClassID (1) could be included as a foreign key in the Pupil table. (1)

A third table (Pupil_Class) could be created (1) with UniquePupil Number and ClassID as the two fields. (1)