

OCR Computer Science AS Level

1.3.1 Databases

Concise Notes



Specification:

1.3.2 a)

- Relational Database
- Flat File
- Primary Keys, Foreign Keys, Secondary Keys
- Entity relationship modelling

1.3.2 b)

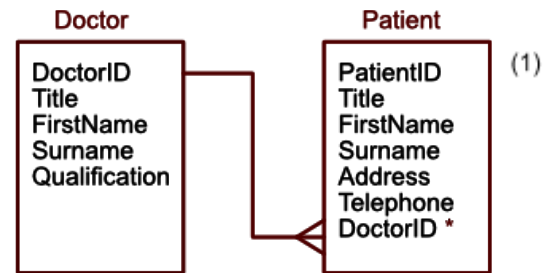
- Methods of capturing, selecting, managing, and exchanging data



Relational Database

Relational Databases

- A relational database is one which **uses different tables** for different **entities**.
- An entity is an item of interest about which **information is stored**.
- The diagram on the right shows a relational database connecting two tables.



Flat File

- A flat file database consists of a **single file**.
- The flat file will most likely be based around a **single entity and its attributes**.
- Attributes are the categories about which data is collected.
- Flat files are typically written out in the following way:

Entity1(Attribute1, Attribute2, Attribute3 ...)

- For the example in the table below, the description would be laid out as:

Car(CarID, Age, Price)

Car		
CarID	Age	Price
Car1	5 years	£1,500
Car2	2 years	£2,400

Primary Key

- The **unique identifier** which is different for each object added to the database.
- In example (2), the unique identifier is the CarID.
- In example (1), the primary key for the doctor table is DoctorID and the primary key for the patient table is PatientID.

Foreign Key

- A foreign key is the attribute which **links two tables together**.
- In example (1), DoctorID is the foreign key, as it exists.

Secondary Key

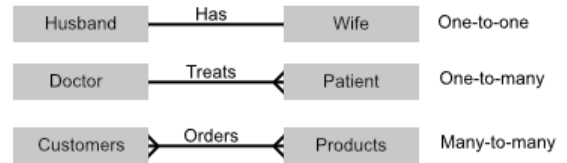
- A secondary key is used to enable a database to be **searched quickly**
- In example (1), a **secondary index** (secondary key) can be set up on the Surname attribute.



- This will allow the table to be sorted on this attribute.

Entity Relationship Modelling

- **One-to-one**: Each entity can only be linked to one other entity.
- **One-to-many**: One table can be associated with many other tables.
- **Many-to-many**: One entity can be associated with many other entities and the same applies the other way round
- The image shows how this is represented diagrammatically.



Handling Data

Capturing Data

- Data needs to be input into the database and there are various ways of doing this.
- The chosen method is always dependent on the context.
- Data may need to be **manually entered** or scanned using methods such as **Magnetic Ink Character Recognition (MICR)** which is used with cheques.

Selecting and Managing Data

- Selecting the correct data is an important part of **data preprocessing**.
- This could involve only selecting data that fits a certain criteria.
- Collected data can be managed using SQL to sort, restructure and select certain sections.

Exchanging Data

- Exchanging data is the process of **transferring the data** that has been collected.
- One common example of this is **EDI (Electronic Data Interchange)**.

