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| The Club ID, Club Name and Stadium contain information that is repeated more than once. To remove this, we can split the table into two separate tables: **Player** and **Club**.

|  |
| --- |
| **Player Table** |
| **Player ID** | **First Name** | **Surname** | **Squad No.** | **Club ID** |
| P101 | James | McGinn | 2 | C100 |
| P201 | Graeme | Rooney | 7 | C100 |
| P103 | Darren | May | 2 | C201 |
| P102 | Simon | Shinnie | 10 | C201 |
| P001 | Sean | Ball | 18 | C201 |
| P200 | Billy | Logan | 7 | C102 |

|  |
| --- |
| **Club Table** |
| **Club ID** | **Club Name** | **Stadium** |
| C100 | Rovers | Town Park |
| C201 | United | ABC Arena |
| C102 | Central | Rose Lane |

The primary key for the Player table is **Player ID** because it is unique.The primary key for the Club table is **Club ID** because it is unique (it is possible for teams from other countries to share the same name; it is possible for two teams to share a stadium).A foreign key has to be a primary key in another table – in this case **Club ID** is used as the foreign key to link the two tables together (this field appears in both tables).If you designed a query to search for the first name and surname of all players who played with Rovers it would be:

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | First Name | Surname | Club Name |
| **Table Name** | Player | Player | Club |
| **Criteria** |  |  | Rovers |

 | Manual A manual database is one that is paper-based. Examples include Yellow Pages, Argos catalogue etc.ElectronicAn electronic database is stored on a computer. It has many advantages over a paper-based database including:* Takes up less storage space
* Quicker to search for and sort information
* Easier to change/edit data that is stored
* Easier to move data eg send via email or storage device instead of carrying a filing cabinet

Flat FileA flat file database stores all data in one table.FieldA field is one piece of information within a table. These can be identified by the different **headings** at the top of each column. There are different types of fields:* Text – stores words
* Number – stores digits
* Boolean – stores yes/no values
* Date – stores date formats e.g. DD/MM/YYYY
* Time – stores time formats e.g. HH/MM/SS, 00.00.00
* Attachment – stores a picture or file

RecordA record is one completed set of fields within a table. These can be identified by the number of **completed rows** in a table.SearchingA **query** is used to find information within a database. It is made up of the **fields** you want to search and the **criteria** (the specific information you want to find). |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SortingDatabase tables can be sorted by fields in two different orders: ascending or descending. **Ascending** – lowest to highest, A – Z, 0 – 9.**Descending** – highest to lowest, Z – A, 9 – 0.RelationalA relational database stores data in **two or more** linked tables. The have several advantages over using a flat file database:* Data only needs to be entered once
* Data is easier to edit – one change is automatically updated everywhere else it appears where as a flat file requires you to change it yourself
* Saves time

KeysA **primary key** is used to ensure that every record is unique.A **foreign key** is used to link two tables together.Example 1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Club ID** | **Club Name** | **Location** | **Price £** | **Indoors?** | **Teacher** |
| C011 | Table Tennis | Building | 10 | Yes | A. O’Neil |
| C012 | Table Tennis | Hall | 10 | Yes | B. Weston |
| C003 | Football | Arena | 15 | No | D. Carson |
| C004 | Basketball | Hall | 12 | Yes | A. O’Neil |

In the table above, there are **6** fields and **4** records.  | The field types would be as follows:* Club ID – Text
* Club Name – Text
* Location – Text
* Price £ – Number
* Indoors? – Boolean
* Teacher – Text

It is sorted by the field **Club Name** in a **descending** order (every other field changes order).The primary key would be **Club ID** because it is a different value (unique) for every row. Example 2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Player ID** | **First Name** | **Surname** | **Squad No.** | **Club ID** | **Club Name** | **Stadium** |
| P101 | James | McGinn | 2 | C100 | Rovers | Town Park |
| P201 | Graeme | Rooney | 7 | C100 | Rovers | Town Park |
| P103 | Darren | May | 2 | C201 | United | ABC Arena |
| P102 | Simon | Shinnie | 10 | C201 | United | ABC Arena |
| P001 | Sean | Ball | 18 | C201 | United | ABC Arena |
| P200 | Billy | Logan | 7 | C102 | Central | Rose Lane |

In the table above there are **7** fields and **6** records. |