Databases

Introduction

A database is a collection of data that is grouped together in an organised way.

There are many advantages with the use of databases to store information. For example:

They are easy to search.

It's easy to create reports and it's easy to update or delete information.

Tables

Databases store data in tables. This is an example of a table that is used to store student details.

Student_ID	First_Name	Last_Name	Address	DOB	Gender
1	John	Curtis	12 Brook Lane	21/03/1990	Male
2	Ben	Jackson	1 Totters Lane	15/04/1990	Male
3	Sarah	Smith	60 Belsize Rd	06/06/1990	Female

Each individual piece of information in a table is known as a field; for example, Last_Name is a field.

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All the information related to one object or person is known as a record; for example, this is the record for John Curtis.

Primary Keys

It is important that each record in a database is unique, so what happens if there are two people with exactly the same details?

This problem is solved using a primary key – a special field which uniquely identifies each record.

In this table, the Student_ID field is the primary key.

Student_ID	First_Name	Last_Name	Address	DOB	Gender
1	John	Curtis	12 Brook Lane	21/03/1990	Male
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Searching Databases

We can search databases to locate records that meet certain criteria. Here is a simple search condition:

```
Gender = “Male”
```

In this case it selects the records containing the details of male students from the student table.

Student_ID	First_Name	Last_Name	Address	DOB	Gender
1	John	Curtis	12 Brook Lane	21/03/1990	Male
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Here are the results of this search condition:

Student_ID	First_Name	Last_Name	Address	DOB	Gender
1	John	Curtis	12 Brook Lane	21/03/1990	Male
2	Ben	Jackson	1 Totters Lane	15/04/1990	Male

Combining Conditions

Multiple conditions can be combined using the **AND** and **OR** logical operators.

```
(Test_1 >= 50) AND (Test_2 >= 50) AND (Test_3 >= 50)
```

This query will return all records where every test score is greater than or equal to 50.

Student_ID	Test_1	Test_2	Test_3
1	60	43	78
2	32	61	98
3	100	84	72

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