[Datatypes in SQL 3](#_Toc104400546)

[Data types – numbers 3](#_Toc104400547)

[Data types – dates 3](#_Toc104400548)

[SQL Syntax 4](#_Toc104400549)

[Create table 4](#_Toc104400550)

[Adding foreign key 4](#_Toc104400551)

[Rename a table after creation 4](#_Toc104400552)

[Add column 4](#_Toc104400553)

[Drop a column 4](#_Toc104400554)

[Add primary key 4](#_Toc104400555)

[Add foreign key 4](#_Toc104400556)

[Drop table 4](#_Toc104400557)

[Insert data by list 4](#_Toc104400558)

[Insert specific data 5](#_Toc104400559)

[Test your knowledge (1/3) 5](#_Toc104400560)

[SELECT statement 5](#_Toc104400561)

[Order results 5](#_Toc104400562)

[Conditions in Select operator 6](#_Toc104400563)

[Check your knowledge (2/3) 6](#_Toc104400564)

[Aggregate functions 7](#_Toc104400565)

[Select Max 7](#_Toc104400566)

[Count 7](#_Toc104400567)

[Joins and subqueries 8](#_Toc104400568)

Pseudo code:

SHOW DATABASES;

* Returns database

SHOW TABLES IN database;

* Returns tables in the database

SHOW COLUMS IN table;

* Returns columns in specified table

# Datatypes in SQL

* Char (size)

Holds fixed string, specified length of characters in brackets. 255 is max size.

* VARCHAR(size)

Variable length string, specified length within brackets. Max size is 255, over 255 is converted to TEXT

* TEXT

Holds string with max 65,535 characters

## Data types – numbers

|  |  |
| --- | --- |
| **Data type** | **Specification** |
| TINYINT | -128 to 127 or 0 to 255 unsigned |
| SMALLINT | -32,768 to 32,767 or 0 to 65,535 unsigned |
| MEDIUMINT | -8,388,608 to 8,388,607 or 0 to 16,777,215 unsigned |
| INT | -2,147,483,648 to 2,147,483,647 or 0 to 4,294,967,295 unsigned |
| BIGINT | -9,223,372,036,854,775,808 to 9,223,372,036,854,775,807 or 0 to 18,446,744,073,709,551,615 unsigned |
| FLOAT(size, d) | Size is the total number of digits to displays and d is the number of digits to the right of the decimal place |
| DOUBLE(size, d) | Size is the total number of digits to displays and d is the number of digits to the right of the decimal place |
| BOOL or BOOLEAN | Store true or false |

## Data types – dates

|  |  |
| --- | --- |
| **Data type** | **Specification** |
| DATE | YYYY-MM-DD |
| DATETIME | YYYY-MM-DD HH:MI:SS |
| TIMESTAMP | YYYY-MM-DD HH:MI:SS |
| YEAR | YYYY |
| TIME | HHH:MI:SS |

# SQL Syntax

## Create table

# creating table only if it doesn't exist to avoid duplicates

("""CREATE TABLE IF NOT EXISTS Table\_name (  
 Column INTEGER PRIMARY KEY AUTOINCREMENT,  
 Column datatype constraint,  
 Column datatype constraint,  
 )""")

## Adding foreign key

CREATE TABLE IF NOT EXISTS Table\_name1 (  
 Column\_name DATATYPE PRIMARY KEY AUTOINCREMENT,  
 FOREIGN KEY (column\_name) REFERENCES Table\_name2  
 (column\_name)  
 )""")

## Rename a table after creation

ALTER TABLE table\_name RENAME new\_table\_name;

## Add column

ALTER TABLE table\_name ADD column\_name type;

## Drop a column

ALTER TABLE table\_name DROP column\_name;

## Add primary key

ALTER TABLE table\_name ADD PRIMARY KEY (id\_name);

## Add foreign key

ALTER TABLE table\_name ADD FOREIGN KEY (id) REFERENCES table\_name(column);

## Drop table

DROP TABLE table\_name;

DROP DATABASE database\_name;

## Insert data by list

sql\_health2 = """ INSERT INTO Table\_name (column\_name, column\_name,) VALUES (?, ?) """  
values\_health2 = [  
 ('Mister', 'Doctor'),  
 ('Kaiser', 'Clara'),  
 ('Marie', 'Curie')]

## Insert specific data

INSERT INTO table\_name (column\_name, column\_name) VALUES (“text”, “int”);

## Test your knowledge (1/3)

1. How would you get the details of a table?
   1. DESCRIBE table
2. How do you delete a table?
   1. DROP table

# SELECT statement

A select statement is used to query the database to get information from it

SELECT values FROM table\_name;

" SELECT \* FROM table\_name WHERE column\_name = X"

## Order results

Default sorts in ascending order, by specifying DESC it sorts in descending order

SELECT \* FROM table\_name ORDER BY x

SELECT \* FROM table\_name ORDER BY x DESC

WHERE CLAUSE specifies conditions to query data;

Where SQL can specify a range using between or in or even use a partial match with LIKE and a wildcard with an underscore representing a single character and a percentage sign as any number of characters.

## Conditions in Select operator

Comparison operators (=,<>,<,>,<=,>=)

Boolean operators (AND, OR, NOT)

BETWEEN

LIKE

IN

## Check your knowledge (2/3)

1. What character is used to denote all the columns in a select query?
   1. \*
2. How would you sort the results of your query?
   1. ORDER BY

# Aggregate functions

Aggregate functions perform calculations or do some basic analysis of your data. These can be used to find the maximum or minimum value, sum the values in a given column or calculate the average.

Exersise database:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Adress** | **Postcode** | **Type** | **Rent** | **Owner** | **Bedrooms** |
| 1 Church Street | SN2 2NA | 1 | 700 | 1 | 3 |
| 99 High Street | SN3 5FG | 1 | 1200 | 1 | 5 |
| 23 Main Road | SN8 9CD | 2 | 600 | 2 | 2 |
| 4 Dale Street | SN1 1FE | 3 | 750 | 3 | 3 |
| 2 Manor Road | SN5 5FF | 2 | 800 | 3 | 4 |

## Select Max

To find the maximum rent value from the properties the syntax would look like this:

SELECT MAX(rent) FROM properties;

To name the new column just created, the syntax would be

SELECT MAX(rent) as maxRent FROM properties;

## Count

count the number of rows that meet the conditions specified in the where clause.

SELECT COUNT(\*) FROM properties WHERE Bedrooms < 2;

# Joins and subqueries

Where clause to link the two tables based on the primary and foreign keys; that is to say owner is a foreign key in properties and ID is the corresponding primary key in owners, and the same thing.

A join would accomplish the same thing;

an inner join to link our tables together, but not the comparison of owner ID and the owner column in properties is still the same.

The query will tie together two tables and give data from both of them in our results.

The results will show the address of the property and its postcode along with the name and telephone number of the owner.