SQL stands for “Structured Query Language”, commands (usually called queries)

Databases are arranged as tables.

Each table has columns (also known as fields) that describe the data, and rows (also known as records) which contain the data.

As a shortcut, we can select all of the columns in a table using \*

Use SELECT… FROM… to get values from a database table.

SQL is case-insensitive (but data is case-sensitive).

eliminate the redundant output to make the result more readable by adding the DISTINCT keyword to our query: SELECT DISTINCT quant FROM Survey;

SELECT taken, person, quant FROM Survey ORDER BY taken ASC, person DESC;

we can use IN to see if a value is in a specific set:

SELECT \* FROM Survey WHERE person IN ('lake', 'roe');

SELECT \* FROM Survey WHERE person = 'lake' OR person = 'roe';

SELECT \* FROM Survey WHERE quant = 'sal' AND (person = 'lake' OR person = 'roe');用括号表明先后顺序

SELECT taken, round(5 \* (reading - 32) / 9, 2) as Celsius FROM Survey WHERE quant = 'temp'; 直接用reading算出celsius并重命名

SELECT \* FROM Person WHERE id = 'dyer' UNION SELECT \* FROM Person WHERE id = 'roe'; Use UNION to combine the results of two or more queries.

To check whether a value is null or not, we must use a special test IS NULL: SELECT \* FROM Visited WHERE dated IS NULL;

The function group\_concat(field, separator) concatenates all the values in a field using the specified separator character (or ‘,’ if the separator isn’t specified).

JOIN joins each record of one table with each record of the other table to give all possible combinations. Since there are three records in Site and eight in Visited, the join’s output has 24 records (3 \* 8 = 24). And since each table has three fields, the output has six fields (3 + 3 = 6).

add a clause specifying that we’re only interested in combinations that have the same site name: SELECT \* FROM Site JOIN Visited ON Site.name = Visited.site;

join any number of tables simply by adding more JOIN clauses to our query, and more ON tests: SELECT Site.lat, Site.long, Visited.dated, Survey.quant, Survey.reading

FROM Site JOIN Visited JOIN Survey

ON Site.name = Visited.site

AND Visited.id = Survey.taken

AND Visited.dated IS NOT NULL;

A primary key is a value, or combination of values, that uniquely identifies each record in a table.

A foreign key is a value (or combination of values) from one table that identifies a unique record in another table.

* Every value in a database should be atomic.
* Every record should have a unique primary key.
* A database should not contain redundant information.
* Units and similar metadata should be stored with the data.