SQL Fundamentals

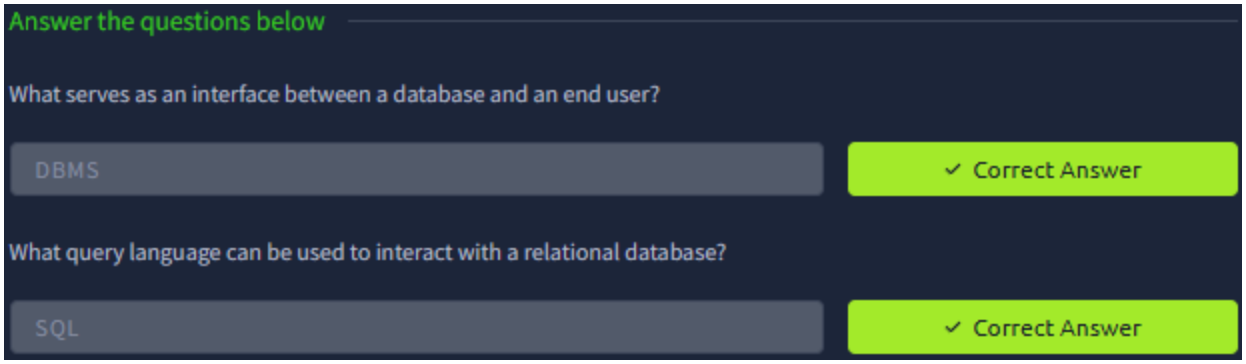
What is a database?
Well they are very important applications that allow for an organised collection of structured information or data that is easily accessible.

Different types of databases:
Relational Databases: Eg SQL
Non-Relational Databases: Eg NOSQL

Some examples are shown above.

What is SQL?
Databases are usually controlled by a Database Management System (DBMS) serving as an interface between an end user and a database.
An example of a DBMS could be MySQL.
SQL stands for Structured Query Language, used to query, define and manipulate the data stored in a relational database.

SQL is:
Fast: Can return massive batches of data and immediately provide a result.
Easy to learn: SQL written in plain english, making it easier to pick up.
Reliable: Guarantees accuracy when it comes to data by following a strict structure into which data sets must fall in order to be inserted.
Flexible: SQL provides many capabilities when it comes to querying a database. This allows users to perform vast data analysis tasks efficiently.



When using databases, there's many commands we can use to navigate the database itself, or even create a database to store information which we can later access.
Please look at the "Cheat sheet for SQL Fundamentals" to further see what commands we can use.

CRUD: Create, Read, Update and Delete. Are considered basic operations in any system that manages data.
Create: Will create new records in a table. : **INSERT INTO**
Read: Is used to read and retrieve data from a table. : **SELECT**
Update: Is used to modify an existing record. : **UPDATE**
Delete: Removes records from a table. : **DELETE**

Clauses: This is part of a statement that specifies the criteria of the data being manipulated. Clauses help us define the type of data and how it should be retrieved and sorted.

Some clauses we will use are;
DISTINCT: Used to avoid duplicate records when doing a query, returning only unique values.
GROUP BY, ORDER BY, HAVING.
Example of navigating start to finish: [IN CODE]:
mysql -u root -p
trhackme
SHOW DATABASES;
USE thm_books;
SHOW TABLES;
SELECT * FROM books;

SELECT category, GROUP_CONCAT(name SEPARATOR " & ") AS hacking_tools
FROM hacking_tools
GROUP BY category;

```
SELECT GROUP_CONCAT(name SEPARATOR ' & ') AS hacking_tools
FROM hacking_tools
WHERE amount NOT LIKE '%0';
```