**Task 1:**

What is a database:

A structured collection of information typically stored digitally.

What is SQL:

A programming language used by relational databases to handle the data.

SQL allows us to access the data, define it and manipulate it.

**Task 2:**

Types of databases:

| Relational | Non-Relational |
| --- | --- |
| Based on tables | Does not rely on tables |
| SQL querying | Key document |
| Ideal for structured data | Ideal for unstructured data |

Examples:

| Relational | Non-Relational |
| --- | --- |
| MySQL | MongoDB |
| SQL server | Redis |
| PostgreSQL | Apache Cassandra |

**What is mySQL:** is an open-source RDBMS (Relational DataBase Management System) that uses SQL to manage databases. MySQL is one of the most used databases for developers.

**Task 3:**

Numeric Data types:

INT: singed number ranges from 2.1B to -2.1B  
Float:Floating point number specify the number of digits in the size

BIGINT: Bigger integer number ranges from 9quintilion to -9quintilion

SMALLINT: Smaller integer number ranges from 32k to -32k

**TASK 4:**  
String Data types:

CHAR: fixed length string can be 0-255characters

VARCHAR:Variable length string can be from 0 to 65535characters

TEXT: holds a string up to a size of 65535 bytes

**TASK 5:**

Date Data types:

DATE: A date format year-month-day

TIME: A time format HOUR:MINUTES:SECONDS

YEAR:year in four digits

**TASK 6:**

Primary keys are needed in each table as a unique identifier for each record it’s a value that cannot be null and cannot contain a duplicate value

**TASK 7:**

NULL AND NOT NUL constraints allow us to make sure some fields can or cannot be left entered so we cannot for example make an account without the user giving and E-mail but we could do it without the user specifying a legal name

**TASK 8:**

AUTO\_INCREMENT is used to make a field get automatically filled with incrementing data this could be used for many reasons but is usually used with ID’s to make sure they are unique and used as a primary key

**TASK 9:**

CREATE DATABASE OCA;

**TASK 10:**

CREATE TA BLE STUDENTS (id int auto\_increment primary key, name varchar(255) not null, email varchar(255) UNIQUE NOT NULL, number int);

**TASK 11:**

Use OCA;

Insert into STUDENTS (name , email) values (‘abdallh’ , ‘[abdallh.a.hatamleh@gmai.com](mailto:abdallh.a.hatamleh@gmai.com)’);  
Update STUDENTS set email=’[myotheremail@gmail.com](mailto:myotheremail@gmail.com)’ where email=’abdallh.a.hatamleh@gmail.com’ ;  
Delete STUDENTS where 1; (will delete all records in this table)

**TASK 12:**

USE OCA;

**TASK 13:**

Create database PracticeDB;

Create table Employees (

Emp\_id int primary key , auto\_increment,

Emp\_name varchar(100) not null,

Emp\_postion varchar(100),

Hire\_date date)

**TASK 14:**

Create table books (

Id int auto\_increment primary key,

Title varchar(255) not null,

Number\_of\_pages smallint,

Price float(10,3)

)

**TASK 15:**

Insert into Employees (emp\_name, hire\_date)

Values

(‘ahmad’,currentDate),

(‘khaled’,currentDate),

(‘wasem’,currentDate);

Update employees set emp\_position=’manager’ where emp\_name = ‘khaled’;

Delete employees where id=3;