Task 1 – Designing a SQL Database

1. **Overlap and Covering Constraints:**

- The Employee table can either be a technician or worker. For that, I have created an enum column type that specifies the type of employee .
- Union membership also has a time duration, so it ***can*** include a start date and an end date.
- Test table have scores but some tests have also the range score.

2. **RDBMS**

- There are two feature of relational database management systems:-

  Using **Trigger** and **stored procedure** to handle government regulation §57a with certified expert technician.

- For Example:

```
CREATE TRIGGER check_technician_certificate

BEFORE INSERT ON car_test

FOR EACH ROW

BEGIN

   -- Check if the customer exists in the expertise table

   IF NOT EXISTS (SELECT 1 FROM expertise WHERE employee_id =
NEW.employee_id ) THEN

      -- Raise an error if employee is not certified

      SIGNAL SQLSTATE '45000'

      SET MESSAGE_TEXT = employee isn’t certified';

   ELSE

      -- If employee exists

         INSERT INTO car_test (columns) VALUES (values);

   END IF;

END;
```

Task 2 – Querying a SQL Database

I've successfully connected to the SQL database using Azure Data Studio and executed the necessary queries. The attached file, `Task_2.ipynb`, contains all the SQL queries I ran for reference.

Task 3 – Home-made regular expression matcher

The attached file, `Task_3.ipynb`, contains the pattern matching function.