Scenario

You have been asked by a local business to demonstrate your ability to create a database and to retrieve data from the database in order to meet requirements. The business is in need of a new person to support their small business database and you are on the shortlist of possible new employees.

You received an email from the business owner following a discussion about the need to verify your skills. The email read as follows:

Further to our recent conversation please produce a word processed document in which you include evidence, as specified, to show you can complete each of the following tasks. Please be sure that you use numbering to clearly identify the item that you are responding to (e.g. Task 1, Task 3.1)

Task 1: Create relational database

Create a database called YourNameTest. (e.g. FredTest).

Capture the screen showing the SQL statement being executed and submit the SQL (as text) used to create the database.

Task 2: Create table and insert data

Within the YourNameTest database create the following tables using SQL and insert the data, also using SQL statements.

For each table capture the screen showing the SQL statement being executed and submit the SQL (as text) used to create tables and associated constraints.

Table 1 – Student Table

StudentID	FirstName	LastName	DOB
S001	*YourFirstName*	*YourLastName*	*YourDateOfBirth*
S002	*Fred*	*Nile*	*03/03/1940*
S003	*Christine*	*Anu*	*01/09/1970*
S004	*James*	*Brown*	*02/03/1976*
S005	*Mark*	*Oliphant*	*03/10/1958*
S006	*George*	*Bush*	*28/11/1951*

Table 2 – Course Table

CourseID	CourseName	HoursPerWeek	StartDate
C001	*Cert 1*	*15*	*1/2/2012*
C002	*Cert 2*	*20*	*2/2/2012*
C003	*Cert 3*	*16*	*3/2/2012*
C004	*Cert 4*	*20*	*13/2/2012*

Table 3 – Enrolment Table

StudentID	CourseID
S001	*C001*
S002	*C001*
S003	*C002*
S004	*C002*
S005	*C004*

Task 3: Select data from database

Write and execute SQL statements to return the specified data below from your database.

1 An SQL statement which returns everything from the Student table.

2 An SQL statement that returns the FirstName, LastName, of students enrolled in the course with CourseID C001.

3 An SQL statement that finds your record.

4 An SQL statement which return all Course details sorted by the StartDate in descending order.

5 An SQL statement to tell you how many students are enrolled in the Cert 1 course

6 An SQL statement that returns the course with the most hours per week

7 An SQL statement that counts all records in the Course table

8 An SQL statement that returns all courses having at least 2 students enrolled which is ordered by course with the greatest number of students

9 An SQL statement that lists Students Names who are not enrolled

10 An SQL Statement that returns all students who have a first name that begins with 'Chris', e.g. Christine or Christos.

For each query capture:

> test data that you have prepared in order to verify that the results returned are accurate (i.e. expected results)

> the screen showing the SQL statement being executed

> the SQL (as text) used to query the database

> a statement as to whether or not your SQL returned the expected results

Task 4: Modify table structure

Write the SQL statement to add a field to the Courses table to record the Course EndDate

Capture the screen showing the SQL statement being executed and submit the SQL (as text) used to modify the database.

Task 5: Modify table data

Write SQL statements to make the following record changes:

1 To Update Fred Niles date of birth to the 06/06/1940

2 To Delete James Brown's record

3 An SQL statement to verify the record James Brown's was deleted

4 To add the 05/06/2012 to the course EndDate of the Cert 2 course

5 An SQL statement to verify the Cert 2 course record was updated

For each modification capture the screen showing the SQL statement being executed and submit the SQL (as text) used to update the data in the database.

Task 6: Written definitions

Provide a written response to the following questions:

1 What command removes a whole table from the database?

2 What command will show a list of all tables in the database?

3 What command will show a tables structure- e.g. data types, constraints etc.?

4 What command would remove the database entirely from the RDBMS?

5 Briefly explain the purpose of each of the following, providing an example of where you might use each aggregate function:

- MIN
- MAX
- SUM
- AVG
- COUNT
- COUNT(*)

6 Briefly explain the purpose of each of the following, providing an example of how you might use each:

- GROUP BY
- HAVING
- ORDER BY
- dates and times
- SQL data types
- numbers
- text
- SQL syntax:
- SELECT
- FROM
- WHERE
- LIKE
- DISTINCT
- CREATE

- ALTER TABLE
- INSERT INTO
- UPDATE
- DELETE
- DROP

7 Briefly describe following in SQL statements and Boolean operators:

- IN and BETWEEN conditional operators
- mathematical operators (including addressing order of precedence)
- table joins (relationships) (including the impact of different types of joins)