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**Database - Build and Query**

Question 1

1. Convert the provided ERD to a Relational Schema.
2. Follow the design as provided. Do NOT make design changes of any kind.

Submit your Relational Schema below

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| **Subject** (SubjCode, Description)  PK (SubjCode)  **Teacher** (StaffID, Surname, GivenName)  PK (StaffID)  **Student** (StudentID, Surname, GivenName, Gender)  PK (StudentID)  **SubjectOffering** (SubjCode, Year, Semester, Fee, StaffID)  PK (Year, Semester)  FK (SubjCode, StaffID)  **Enrolment** (StudentID, SubjCode, Year, Semester, DateEnrolled, Grade)  PK (StudentID, SubjCode, Year, Semester)  FK (StudentID, SubjCode, Year, Semester) |

Question 2

Based directly on your Relational Schema from task 1and the provided Data Dictionary, write and execute the DDL to create your database.

Using an SQL Query (not the GUI) verify that all tables have been successfully created.

***Capture screenshot/s of this query and its result set & add submit below.***

Commit your work in your Git repo with the commit message “Task 2 Complete” & push it to origin.

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| RESULT: |

Question 3

Write and execute the DML to add the test data provided to your database

Additional Data:You MUSTalso add yourself as a student. Use your name &student id, invent other data.

In a query editor on the cloud service your database is deployed on & run the query:

*Select \* from student*

***Submit a screenshot of the result set from the above query below:***

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Question 4

Write a query that shows the student first name and surname, the subject code and description, the subject offering year, semester & fee and the given name and surname of the teacher for that subject offering.

***Screenshot the query and result set and submit below***

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Question 5

Write a query which shows the number of enrolments, for each year and semester in the following example format. For example:

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| --- | --- | --- |
| Year | Semester | Num Enrollments |
| 2018 | 2 | 1 |
| 2019 | 1 | 7 |
| 2019 | 2 | 4 |
| 2020 | 1 | 5 |

*(The actual results will vary. This demonstrates format only)*

***Screenshot the query and result set and submit below:***

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Question 6

Query 3:

Write a query which lists all enrolments which for the subject offering which has the highest fee. (This query must use a sub-query.)

***Screenshot the query and result set and submit below:***

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Commit your work in your Git repo with the commit message “Queries Complete” & push it to origin.

Question 7

Create a View based on Question/Task 3

***Submit the SQL below***

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| DROP VIEW if exists SubqueryTask3;  CREATE VIEW SubqueryTask3 AS  (SELECT  \*  FROM  Enrolment  WHERE  (SubjCode , Year, Semester) IN (SELECT  SubjCode, Year, Semester  FROM  SubjectOffering  WHERE  EventFee = (SELECT  MAX(EventFee)  FROM  SubjectOffering))); |

Commit your work in your Git repo with the commit message “View Complete”& push it to origin.

Question 8

Write queries to prove your responses to questions/tasks 3 - 6 are returning the correct/ sensible results.

E.g. to test that select \* from student is returning the correct number of rows you could use select count(\*) from student and check that the number in the count query is the same as the number of rows returned by the select \* query.

***Provide a (short) written explanation of how each of your ‘test’ queries verifies the original query:***

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| **Task3**  ***-- TEST---***  ***select count(\*) from Student;***  **Explanation:**  For Task 3 – As a test query we run a count (\*) to confirm the total number of students in the Student Table.  **Task4**  *-- Student\_FirstName Student\_SurName SubjCode Description Year Semester EventFee Teacher\_FirstName Teacher\_SurName*  *Tim Baird ICTBSB430 Create Basic Databases 2020 1 200 Bon Scott*  ***-- TEST***  *select StudentId from Enrolment where SubjCode='ICTBSB430' and Year='2020' and Semester='1' and StudentId='s12233445';*  *-- s12233445*  *select Surname, GivenName from Student where StudentId='s12233445';*  *-- Baird Tim*  *select Description from Subject where SubjCode='ICTBSB430';*  *-- Create Basic Databases*  *select EventFee,StaffId from SubjectOffering where SubjCode='ICTBSB430' and Year='2020' and Semester='1';*  *-- 200 87665544*  *select Surname, GivenName from Teacher where StaffId='87665544';*  *-- Scott Bon*  **Explanation:**  Confirmed result from task query by reviewing the data in Tables.  **Task5**  -- RESULT  -- Year|Semester| No.Enrolment  2019 1 2  2019 2 3  ***-- TEST***  *select count(\*) from Enrolment where Year='2019' and Semester='1';*  *-- 2*  *select count(\*) from Enrolment where Year='2019' and Semester='2';*  *-- 3*  **Explanation:**  As a test query we ran a count (\*) for the total number of Enrolments per Year and Semester and compare the results again the result of the task query.  **Task6**  ***-- TEST---***  *SELECT DISTINCT*  *(SubjCode)*  *FROM*  *Enrolment*  *WHERE*  *(SubjCode , Year, Semester) IN (SELECT*  *SubjCode, Year, Semester*  *FROM*  *SubjectOffering*  *WHERE*  *EventFee = (SELECT*  *MAX(EventFee)*  *FROM*  *SubjectOffering));*  *SELECT SubjCode, EventFee*  *FROM*  *SubjectOffering*  *WHERE*  *EventFee = (SELECT*  *MAX(EventFee)*  *FROM*  *SubjectOffering);*  **Explanation:**  We first identified the unique subject code from the main task query and confirmed that these subject codes have maximum fees from the subject offering table. |