| | | |
|---|---|---|
| PES UNIVERSITY | **PES University, Bengaluru**<br>(Established under Karnataka Act No. 16 of 2013) | **UE20CS903** |

**October 2021: END SEMESTER ASSESSMENT (ESA)**
**M TECH DATA SCIENCE AND MACHINE LEARNING_ SEMESTER I**

# UE20CS903 – DataBases & SQL

| Time: 3 Hrs | Answer All Questions | Max Marks: 100 |
|---|---|---|

**INSTRUCTIONS**

- All questions are compulsory.
- Section B and C are coding questions which have to be answered in the system and uploaded in Olympus Login.
- Section A should be handwritten in the answer script provided and signed at the end of the same.

**SECTION A – 20 MARKS**

| | | | |
|---|---|---|---|
| 1 | a | Mention the differences between UNION and UNION ALL | 2 |
| 1 | b | Can we use aggregate functions in where clause? Justify your answer. | 2 |
| 1 | c | Mention the difference between TRUNCATE and ROUND functions.. | 2 |
| 1 | d | Mention the difference between ISNULL() and IFNULL(). | 2 |
| 1 | e | What is referential integrity? | 2 |
| 2 | a | Explain about EXISTS operator | 2 |
| 2 | b | Mention the difference between WHERE and HAVING | 2 |
| 2 | c | Count total number of 'a' appearing in the mentioned phrase ‘Great Learning’ | 2 |
| 2 | d | After creating a table, how a unique constraint can be added to a column and how will you delete the same? | 2 |
| 2 | e | How correlated sub-query can be applied in Having clause? Explain with an example | 2 |

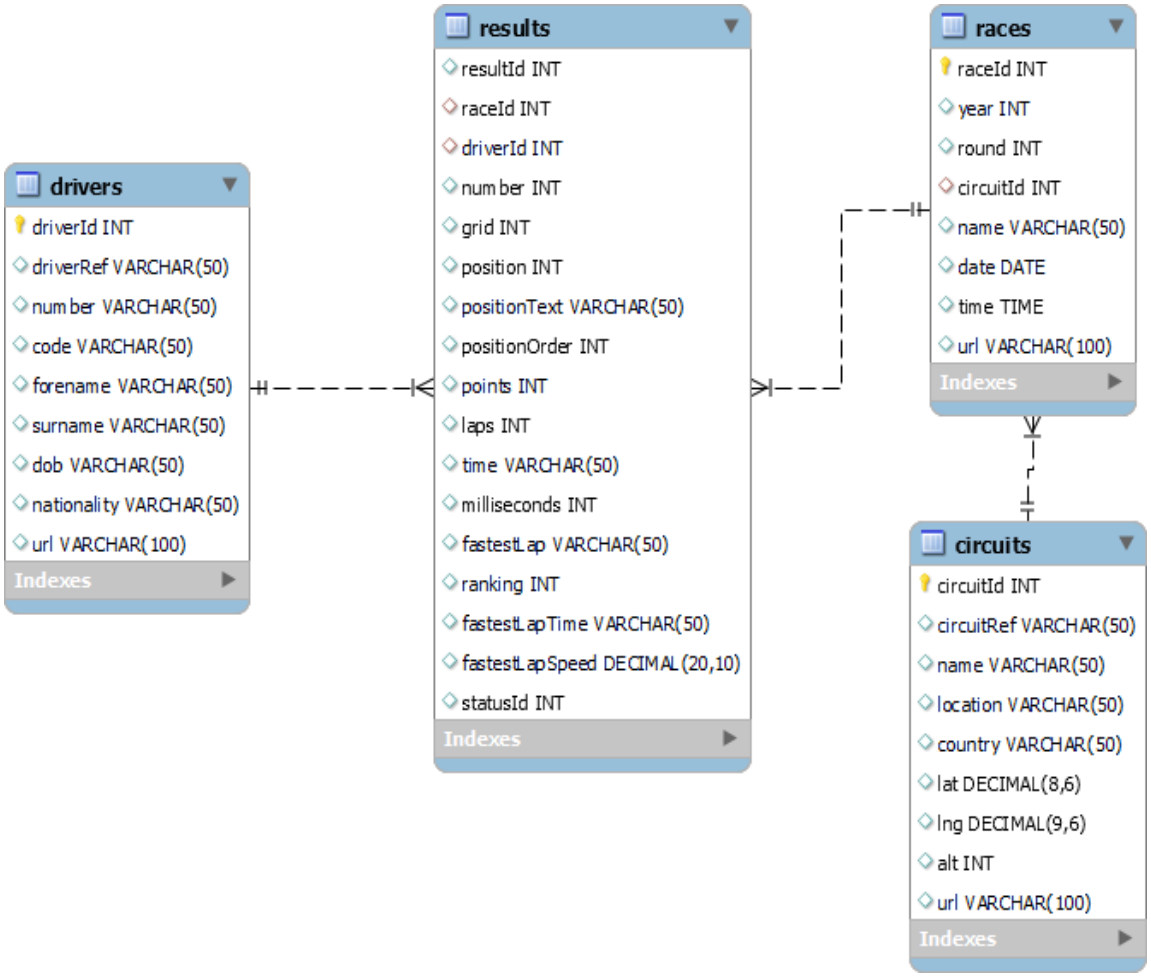
**SECTION B – 40 MARKS**

| | | | |
|---|---|---|---|
| 3 | a | Write a Query to display average rainfall and average Evaporation for each Location except records with Evaporation as NULL. **(3 Marks) (Executable) (Use Tables: AustraliaWeather).** | 4 |

| | | | |
|---|---|---|---|
| | | | |

| Date | Location | MinTemp | MaxTemp | Rainfall | Evaporation | Humidity9am | Humidity3pm | Pressure9am | Pressure3pm | Temp9am | Temp3pm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2008-07-09 | Brisbane | 6 | 16.7 | 4 | 1 | 48 | 34 | 1022.6 | 1020.2 | 12.4 | 16.2 |
| 2008-07-10 | Brisbane | 10.3 | 19.7 | 0 | 4 | 47 | 34 | 1021.8 | 1017 | 13.2 | 18.8 |
| 2008-07-11 | Brisbane | 6.6 | 19.6 | 0 | 4 | 48 | 38 | 1021.7 | 1019.4 | 14.2 | 18.7 |
| 2008-07-12 | Brisbane | 7.9 | 21.1 | 0 | 2.2 | 60 | 48 | 1025.9 | 1023.4 | 12.8 | 19.3 |
| 2008-07-13 | Brisbane | 12 | 22.8 | 0 | 3 | 72 | 69 | 1026.6 | 1023.3 | 15.3 | 21.2 |
| 2008-07-14 | Brisbane | 13.6 | 25.7 | 0 | 1 | 86 | 65 | 1025.3 | 1021 | 18.3 | 23.3 |
| 2008-07-15 | Brisbane | 16.7 | 24.8 | 0 | 1.2 | 80 | 65 | 1022.2 | 1018.7 | 19.1 | 23.4 |
| 2008-07-16 | Brisbane | 16.5 | 18.9 | 5 | 2.6 | 93 | 71 | 1020.1 | 1017.8 | 17.1 | 18.7 |
| 2008-07-17 | Brisbane | 12.2 | 21.5 | 3 | 0.8 | 80 | 57 | 1020.6 | 1016.1 | 15.6 | 21.2 |
| 2008-07-18 | Brisbane | 9.4 | 25.4 | 0 | 1.2 | 72 | 34 | 1017.3 | 1011.9 | 15.2 | 25 |
| 2008-07-19 | Brisbane | 6.8 | 22.9 | 0 | 3.2 | 55 | 25 | 1018.3 | 1015.7 | 15.4 | 22.4 |
| 2008-07-20 | Brisbane | 7.5 | 22.9 | 0 | 3.4 | 60 | 45 | 1020.6 | 1015.4 | 13.6 | 21.3 |
| 2008-07-21 | Brisbane | 12.5 | 22.8 | 0 | 2.2 | 83 | 54 | 1014.9 | 1013.8 | 17.4 | 18.7 |
| 2008-07-22 | Brisbane | 12.1 | 20.4 | 0 | 3.6 | 48 | 52 | 1022.1 | 1021.3 | 16.6 | 18.7 |
| 2008-07-23 | Brisbane | 12.5 | 15.7 | 0 | 4.4 | 73 | 77 | 1026.7 | 1023.1 | 12.7 | 15.2 |
| 2008-07-24 | Brisbane | 12.4 | 14.3 | 13 | 0.6 | 92 | NULL | 1021 | NULL | 12.9 | NULL |
| 2008-07-25 | Brisbane | 12.5 | 18.9 | 22 | 0.6 | 86 | 67 | 1014.8 | 1014.1 | 13.8 | 17.9 |

| | | | |
|---|---|---|---|
| 3 | b | Write a Query to display the maximum temperature recorded in the morning and afternoon for each location in each month (Use Tables: AustraliaWeather). | 8 |
| 3 | c | Write a Query to add a new column to the existing table "australiaweather" with the name `Pressure9pm`. The column should be of type Int and hold a default value of 1001 in case no value is supplied during insertion. Also make sure the column does not have accept null values | 8 |
| 3 | d | An observation on Rainfall has to be made on a bi-yearly basis for forecasting purpose, hence write a query to compare Average Rainfall for month of January, 2008 and July, 2008. (Use Tables: AustraliaWeather). | 8 |
| 3 | e | A study requires the total humidity recorded per day, combine the columns into a single column by adding the Humudity recorded in the morning and noon. Compare the average Humidity in the month of January 2009 and February 2009. (Use Tables: AustraliaWeather). | 6 |
| 3 | f | The Meteorogical Department wants an analysis of the morning weather. Write a Query to display the highest recorded Pressure in each location in every month, when the evaporation record is available and temperature range in the morning should range between 14 and 30 degrees. Filter the records where Maximum Humidity (Executable) in the morning should not exceed 70. (Make appropriate date conversions if necessary). (Use Tables: AustraliaWeather). | 6 |
| | | | |
| | | **SECTION C – 40 MARKS** | |
| 4 | a | Consider the Formula 1 Racing ER Diagram given below: | 6 |




Scenario:
Formula One (also Formula 1 or F1 and officially the FIA Formula One World Championship) is the highest class of single-seat auto racing that is sanctioned by the Fédération Internationale de l'Automobile (FIA). The FIA Formula One World Championship has been one of the premier forms of racing around the world since its inaugural season in 1950. This dataset contains data from 1950 all the way through the 2017 season, and consists of tables describing constructors, race drivers, lap times, pit stops and more.
The Racing Association is planning to conduct tha races in less worn out circuits. Hence, there is a need to identify the circuits where no races have been held so far. Write a Query to get the list. (4 Marks)

| | | | |
|---|---|---|---|
| 4 | b | A journalist is writing an article about the racer who holds the record for completing a lap in shortest time duration. Get the details about the driver. (6 Marks) | 10 |
| 4 | c | An article is to be published for ranking the race drivers based on their points accumulated. Generate such a report along with the details of the race driver. (6 Marks) | 10 |

| | | | |
|---|---|---|---|
| 4 | d | Create a virtual table which consits of the the details of all the race drivers , along with the count of total number of races played so far. Sort the result in the order of highest races played to the lowest. (7 Marks) | 7 |
| 4 | e | Generate a report for displaying the Id and names of the races conducted. Also display the driver who participated, points scored, no of laps in race and the duration taken to complete the race in milliseconds. Display the report in a sorted manner. (7 Marks) | 7 |

* * *