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August 2023: 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.
- **Execute provided ‘.sql’ files in MySQL Workbench to create required database and tables.**
- Section A should be handwritten in the answer script provided.

SECTION A – 20 MARKS

1	a	What is the difference between primary key and unique key?	2
1	b	What is the difference between the DELETE TABLE and TRUNCATE TABLE commands in MySQL?	2
1	c	What is meant by transaction? What are ACID properties?	2
1	d	Which MySQL function is used to concatenate string?	2
1	e	How can you change the name of any existing table by using the SQL statement?	2
2	a	What is the view? How can you create and drop view in MySQL?	2
2	b	What are the functions of commit and rollback statements?	2
2	c	What's wrong with this query? SELECT department_id, count(*) FROM department WHERE count(*) > 5 GROUP BY department_id;	2
2	d	What is a "cross join"?	2
2	e	Explain different types of Normalization.	2

SECTION B – 40 MARKS

		Use warehouse_employees schema for answering questions 3a to 3j	
3	a	Write a Query to Select the code of each box, along with the name of the city the box is located in.	4
3	b	Write a Query to Select the warehouse codes, along with the number of boxes in each warehouse.	4
3	c	Write a Query to Select the codes of all warehouses that are saturated (a warehouse is saturated if the number of boxes in it is larger than the warehouse's capacity).	4

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3	d	Write a Query to Select the codes of all the boxes located in Chicago. (Use Subquery)	4
3	e	Write a Query to Select all the data of employees, including each employee's department's data.	4
3	f	Write a Query to Select the name and last name of each employee, along with the name and budget of the employee's department.	4
3	g	Write a Query to Select the name and last name of employees working for departments with a budget greater than \$60,000.	4
3	h	Write a Query to Select the names of departments with more than two employees (use subquery)	4
3	i	Write a Query to Select the name and last name of employees working for departments with second lowest budget.	4
3	j	Write a Query to Select the number of employees in each department (you only need to show the department code and the number of employees).	4
		SECTION C – 40 MARKS	
		Use sales schema for answering questions 4a to 4f	
4	a	Write a Query to display the customers who have similar first name. (USE TABLES: track, artist, customer)	8
4	b	Write a Query to find the customer name, invoice date and previous invoice dates for every customer.(USE TABLES: invoice)	5
4	c	Write a Query to find the total tracks for each genre, which has unit price more than 0.9 and genre name starts with 's'. (USE TABLES: track, genre)	5
4	d	Consumer behaviour analysis is the study of how people make purchase decisions with regard to a product, service or organisation. And a Quantitative analysis is to be performed to understand the number of unique items bought by customer. Using the Media database, write a query to rank customers based on number of unique albums purchased by them in the lifetime. (USE TABLES: track, invoiceline, invoice)	8
4	e	The popularity of Music, irrespective of the quality of the song or the talent involved in composing and playing it, it is nearly impossible to know what makes a song popular. As a musician, people have always been curious about what really makes a song likeable to the masses. To analyse this, the data about the number of tracks billed per composer is needed (invoice raised). Write a Query to get the details of total number of tracks billed per composer. Sort the result in the descending order of the total tracks billed. (Use Tables: track , invoiceline) .	6
4	f	Consumer behaviour analysis is the study of how people make purchase decisions with regard to a product, service or organisation. And a Quantitative analysis is to be performed to understand the number of items bought by customers in every order. Using the Media database, write a query to Create a virtual table to display the details like customerid, billing city and customer city and the number of albums billed in each order placed(invoice raised). (9 Marks) (USE TABLES: track, invoiceline, invoice, customer)	8