Assignment # 4
CS 2005 – Database
Systems Spring 2023

Submission Guidelines

1. You must submit .doc and .sql file on the classroom having name 21F-XXXX.
2. Word file must be properly formatted.
3. SQL file must be properly commented.
4. Late submission is strictly not allowed.
5. Follow the deadline mentioned on classroom

Solution Guidelines

1. Use Oracle database Syntax for SQL Query Structure.
2. Change the provided database queries where required.
3. Screenshots are required against each query.
4. In case of violation of any provided guidelines, you will lose marks.
5. Plagiarism is not allowed.

Question No 01:Normalization   (30)
Apply Normalization and write 1NF, 2NF, 3NF forms of the following tables.

Customers:

Customer ID	CustomerName	ContactName	ContactEmail	Address	City	PostalCode	Country
1	John Smith	Jane Doe	jane@example.com	123 Main St	Anytown	12345	USA
2	Jane Johnson	John Doe	john@example.com	456 Oak Ave	Somewhere	67890	Canada
3	Bob Brown	Bob Doe	bob@example.com	789 Maple St	Elsewhere	54321	Mexico

Orders:

OrderID	CustomerID	OrderDate	ShippedDate	ShipVia
1	1	45017	45020	1
2	2	45018	45022	2
3	1	45019	45023	1
4	3	45020	45024	3

OrderDetails:

OrderID	Order Price	ProductID	Product Name	UnitPrice	Quantity
1	90	1	Leather Case	10	5
1	90	2	AirPods	20	2
2	150	3	HomePod	15	10
3	115	1	Leather Case	10	3
3	115	3	HomePod	15	4
3	115	4	CarPlay	25	1
4	115	4	CarPlay	25	3

Question No 2:Normalization   (30)
Apply Normalization and write 1NF, 2NF, 3NF forms of the following tables.

StaffBranch Table

staffNo	name	position	salary	branchNo	branchAddress	telNo
Sl500	Tom Daniels	Manager	46000	B001	8Jefferson Way, Portland . OR 97201	503-555-3618
S0003	Sally Adams	Assistant	30000	B001	8Jefferson Way, Portland, OR 97201	503-555-36 18
S0010	Mary Martinez	Manager	50000	B002	City Center Pla7.a, Seattle, WA 98122	206-555-6756
S3250	Robert Chin	Supervisor	32000	B002	City Center, Seattle, WA 98122	206-555-6756
S2250	Sally Stern	Manager	48000	B004	16 - 14th Avenue, Seattle. WA 98128	206-555-3131
S0415	Ari Petel	Manager	41000	B003	14 -8th Avenue, New York, NY 10012	212-371-3000

STAFF

staffNo	na1ne	position	salMy	branchNo
S1500	Tom Daniels	M<mager	46000	6001
S0003	Sally Adam s	Assistant	30000	B001
S0010	Mary fvfartine2	Ma nager	50000	B002
S3250	Robert Chin	Supervisor	32000	B002
S2250	Sally Stern	Manager	48000	13004
S0415	Art Peters	Mcinager	41000	B003

BRANCH

branch No	branchAddress	tel No
B001	8Jefferson Way, Portland, OR 97201	503-555-3618
B002	City Center Plaza, Seattle, WA 98122	206-555-6756
B003	14 -8th Avenue, New York, NY 10012	212-371-3000
B004	16 - 14th Avenue, Seattle, WA 98128	206-555-3131

Question No 03:Normalization   (40)
Apply 5NF to the following tables:

1. CUSTOMER_ORDERS

Order ID	Customer ID	Order Date	Product ID	Quantity
1	101	44562	P01	3
2	102	44563	P02	1
3	101	44564	P03	2
4	103	44565	P04	5
5	102	44566	P02	2

2. STUDENT_COURSES

student_id	course	instructor_name	grade
1	Math 101	Smith	A
1	English 1	Johnson	B
2	Math 101	Smith	C
2	Science 1	Kim	B+
3	English 1	Johnson	A-
3	Science 1	Kim	A

Question No 02: Procedures, Functions, PL/SQL   (60)
1. Write a procedure to transfer an employee from one manager to another and update the hire date accordingly.
2. Write a procedure to generate a report of products that have low inventory level and their categories' names using CURSOR.
3. Create a procedure to display complete information of table employees having employee first name contain "A" in their name using CURSOR.

4. Create a Procedure that retrieves the number of employees managed by a given manager.
5. Create a procedure to decrease the quantity in inventory. Make sure the quantity in inventory do not become negative.
6. Write a function to create a new product category with a given name and return its ID.
7. Create a pl/sql program that will use the function in (7) to create a product category and then use that id to store a product data.
8. Write a function that retrieves the total number of products in a given category.
9. Create a function that returns the sales total for a given customer.
10. Call all functions in a pl/sql program and show output.

Question No 03: Triggers   (70)

1. Create an Oracle trigger to automatically insert a new region into the regions table when a new country is added to the countries table?
2. Create an Oracle trigger to update the quantity of a product in the inventories table after an order is placed in the order_items table?
3. Create an Oracle trigger to automatically delete all contacts associated with a customer when that customer is deleted from the customers table?
4. Create an Oracle trigger to update the credit limit of a customer in the customers table when a new order is placed in the orders table and the order total exceeds the current credit limit of the customer?
5. Create an Oracle trigger to automatically update the product_category column in the products table when a product is added to the table and the product name contains a name from category? e.g Cheese Pizza contains category name(Pizza) in its name. (You can use Cursor or arrays for this purpose).
6. Create a table contacts_backup using the create query of contacts but do not use any constraint(make those fields simple).
   Now Create a Trigger that will run before any contact is deleted. It will save the data of the contact in contacts_backup table.