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Assignment 1- SQ....pdf

Instructions:

- Submitting assignments should be a single file or through git hub link shared with trainer and hexavarsity.
- Each assignment builds upon the previous one, and by the end, you will have a comprehensive application implemented in Java/C#/Python with a strong focus on SQL schema design, control flow statements, loops, arrays, collections, and database interaction.
- Follow object-oriented principles throughout the Java programming assignments. Use classes and objects to model real-world entities, encapsulate data and behavior, and ensure code reusability.
- Throw user defined exception from method and handle in the main method.
- The following Directory structure is to be followed in the application.
 - **entity/model**
 - Create entity classes in this package. All entity class should not have any business logic.
 - **dao**
 - Create Service Provider interface/abstract class to showcase functionalities.
 - Create the implementation class for the above interface/abstract class with db interaction.
 - **exception**
 - Create user defined exceptions in this package and handle exceptions whenever needed.
 - **util**
 - Create a DBPropertyUtil class with a static function which takes property file name as parameter and returns connection string.
 - Create a DBConnUtil class which holds static method which takes connection string as parameter file and returns connection object.
 - **main**
 - Create a class MainModule and demonstrate the functionalities in a menu driven application.

You are working as a database administrator for a fictional company named "TechShop," which sells electronic gadgets. TechShop maintains data related to their products, customers, and orders. Your task is to design and implement a database for TechShop based on the following requirements:

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e. Inventory

Tasks 2: Select, Where, Between, AND, LIKE:

1. Write an SQL query to retrieve the names and emails of all customers.
2. Write an SQL query to list all orders with their order dates and corresponding customer names.
3. Write an SQL query to insert a new customer record into the "Customers" table. Include customer information such as name, email, and address.
4. Write an SQL query to update the prices of all electronic gadgets in the "Products" table by increasing them by 10%.
5. Write an SQL query to delete a specific order and its associated order details from the "Orders" and "OrderDetails" tables. Allow users to input the order ID as a parameter.
6. Write an SQL query to insert a new order into the "Orders" table. Include the customer ID, order date, and any other necessary information.
7. Write an SQL query to update the contact information (e.g., email and address) of a specific customer in the "Customers" table. Allow users to input the customer ID and new contact information.
8. Write an SQL query to recalculate and update the total cost of each order in the "Orders" table based on the prices and quantities in the "OrderDetails" table.
9. Write an SQL query to delete all orders and their associated order details for a specific customer from the "Orders" and "OrderDetails" tables. Allow users to input the customer ID as a parameter.
10. Write an SQL query to insert a new electronic gadget product into the "Products" table,

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6. Write an SQL query to insert a new order into the "Orders" table. Include the customer ID, order date, and any other necessary information.
7. Write an SQL query to update the contact information (e.g., email and address) of a specific customer in the "Customers" table. Allow users to input the customer ID and new contact information.
8. Write an SQL query to recalculate and update the total cost of each order in the "Orders" table based on the prices and quantities in the "OrderDetails" table.

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Press Ctrl+Shift+M to unmute your mic,
or press and hold the Ctrl+Spacebar.

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Info Navigation Close



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2. Products:

- ProductID (Primary Key)
- ProductName
- Description
- Price

3. Orders:

- OrderID (Primary Key)
- CustomerID (Foreign Key referencing Customers)
- OrderDate
- TotalAmount

4. OrderDetails:

- OrderDetailID (Primary Key)
- OrderID (Foreign Key referencing Orders)
- ProductID (Foreign Key referencing Products)
- Quantity

5. Inventory

- InventoryID (Primary Key)
- ProductID (Foreign Key referencing Products)
- QuantityInStock
- LastStockUpdate

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driven application.
You are working as a database administrator for a fictional company named "TechShop," which sells electronic gadgets. TechShop maintains data related to their products, customers, and orders. Your task is to design and implement a database for TechShop based on the following requirements:

Database Tables:

1. Customers:

- CustomerID (Primary Key)
- FirstName
- LastName
- Email
- Phone
- Address

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2. Products:

- ProductID (Primary Key)



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5. Write an SQL query to retrieve a list of electronic gadgets along with their corresponding categories.
6. Write an SQL query to calculate the average order value for each customer. Include the customer's name and their average order value.
7. Write an SQL query to find the order with the highest total revenue. Include the order ID, customer information, and the total revenue.
8. Write an SQL query to list electronic gadgets and the number of times each product has been ordered.
9. Write an SQL query to find customers who have purchased a specific electronic gadget product. Allow users to input the product name as a parameter.
10. Write an SQL query to calculate the total revenue generated by all orders placed within a specific time period. Allow users to input the start and end dates as parameters.

Task 4. Subquery and its type:

1. Write an SQL query to find out which customers have not placed any orders.
2. Write an SQL query to find the total number of products available for sale.
3. Write an SQL query to calculate the total revenue generated by TechShop.
4. Write an SQL query to calculate the average quantity ordered for products in a specific category. Allow users to input the category name as a parameter.
5. Write an SQL query to calculate the total revenue generated by a specific customer. Allow users

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3. Write an SQL query to list all customers who have made at least one purchase. Include their names and contact information.
4. Write an SQL query to find the most popular electronic gadget, which is the one with the highest total quantity ordered. Include the product name and the total quantity ordered.
5. Write an SQL query to retrieve a list of electronic gadgets along with their corresponding categories.
6. Write an SQL query to calculate the average order value for each customer. Include the customer's name and their average order value.
7. Write an SQL query to find the order with the highest total revenue. Include the order ID, customer information, and the total revenue.
8. Write an SQL query to list electronic gadgets and the number of times each product has been ordered.
9. Write an SQL query to find customers who have purchased a specific electronic gadget product. Allow users to input the product name as a parameter.
10. Write an SQL query to calculate the total revenue generated by all orders placed within a specific time period. Allow users to input the start and end dates as parameters.

Task 4. Subquery and its type:

1. Write an SQL query to find out which customers have not placed any orders.
2. Write an SQL query to find the total number of products available for sale.



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9. Write an SQL query to delete all orders and their associated order details for a specific customer from the "Orders" and "OrderDetails" tables. Allow users to input the customer ID as a parameter.
10. Write an SQL query to insert a new electronic gadget product into the "Products" table, including product name, category, price, and any other relevant details.
11. Write an SQL query to update the status of a specific order in the "Orders" table (e.g., from "Pending" to "Shipped"). Allow users to input the order ID and the new status.
12. Write an SQL query to calculate and update the number of orders placed by each customer in the "Customers" table based on the data in the "Orders" table.

Task 3. Aggregate functions, Having, Order By, GroupBy and Joins:

1. Write an SQL query to retrieve a list of all orders along with customer information (e.g., customer name) for each order.
2. Write an SQL query to find the total revenue generated by each electronic gadget product. Include the product name and the total revenue.

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Task 3. Aggregate functions, Having, Order By, GroupBy and Joins:

1. Write an SQL query to retrieve a list of all orders along with customer information (e.g., customer name) for each order.
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3. Write an SQL query to list all customers who have made at least one purchase. Include their names and contact information.
4. Write an SQL query to find the most popular electronic gadget, which is the one with the highest total quantity ordered. Include the product name and the total quantity ordered.
5. Write an SQL query to retrieve a list of electronic gadgets along with their corresponding categories.
6. Write an SQL query to calculate the average order value for each customer. Include the customer's name and their average order value.

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Task:1. Database Design:

1. Create the database named "TechShop"
2. Define the schema for the Customers, Products, Orders, OrderDetails and Inventory tables based on the provided schema.
3. Create an ERD (Entity Relationship Diagram) for the database.
4. Create appropriate Primary Key and Foreign Key constraints for referential integrity.
5. Insert at least 10 sample records into each of the following tables.
 - a. Customers
 - b. Products
 - c. Orders
 - d. OrderDetails

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e. Inventory

Tasks 2: Select, Where, Between, AND, LIKE:

1. Write an SQL query to retrieve the names and emails of all customers.

6	Michael	Davis	michael.davis@example.com	3216	303 Elm St
7	Olivia	Jones	olivia.jones@example.com	6547	404 Birch Ave
8	Samuel	Taylor	samuel.taylor@example.com	8901	505 Oak Dr
9	Sophia	Wilson	sophia.wilson@example.com	4567	606 Pine Ct
10	William	Clark	william.clark@example.com	7890	707 Cedar Pl

10 rows in set (0.00 sec)

mysql> select * from inventory;

inventoryid	productid	quantityinstock	laststockupdate
1	1	100	NULL
2	2	150	NULL
3	3	75	NULL
4	1	120	NULL
5	2	200	NULL
6	3	50	NULL
7	1	180	NULL
8	2	90	NULL
9	3	250	NULL
10	1	110	NULL

10 rows in set (0.00 sec)

mysql> select * from orderdetails;

orderdetailid	orderid	productid	quantity
1	1	1	2
2	1	2	1
3	2	3	4
4	2	1	3
5	3	2	1
6	3	3	2
7	4	1	1
8	4	3	3
9	5	2	2
10	5	1	4

10 rows in set (0.00 sec)

mysql> select * from order;

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'order' at lin



```
Tables_in_techshop
```

```
customers
inventory
orderdetails
orders
products
```

```
5 rows in set (0.10 sec)
```

```
mysql> select * from custmers;
```

```
ERROR 1146 (42S02): Table 'techshop.custmers' doesn't exist
```

```
mysql> select * from customers;
```

customerid	firstname	lastname	email	phone	address
1	John	Doe	john.doe@example.com	1234	123 Main St
2	Jane	Smith	jane.smith@example.com	9876	456 Oak Ave
3	Alice	Johnson	alice.johnson@example.com	5551	789 Pine Rd
4	Bob	Williams	bob.williams@example.com	1239	101 Cedar Ln
5	Eva	Brown	eva.brown@example.com	7890	202 Maple Blvd
6	Michael	Davis	michael.davis@example.com	3216	303 Elm St
7	Olivia	Jones	olivia.jones@example.com	6547	404 Birch Ave
8	Samuel	Taylor	samuel.taylor@example.com	8901	505 Oak Dr
9	Sophia	Wilson	sophia.wilson@example.com	4567	606 Pine Ct
10	William	Clark	william.clark@example.com	7890	707 Cedar Pl

```
10 rows in set (0.00 sec)
```

```
mysql> select * from inventory;
```

inventoryid	productid	quantityinstock	laststockupdate
1	1	100	NULL
2	2	150	NULL
3	3	75	NULL
4	1	120	NULL
5	2	200	NULL
6	3	50	NULL
7	1	180	NULL
8	2	90	NULL
9	3	250	NULL
10	1	110	NULL




```
es products(productid),quantity text;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '' at line 1
mysql> create table orderdetails(orderdetailid int primary key,orderid int,foreign key(orderid) references orders(ordderid),productid int,foreign key(productid) referen
ces products(productid),quantity int;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '' at line 1
mysql> create table orderdetails(orderdetailid int primary key,orderid int,foreign key(orderid) references orders(ordderid),productid int,foreign key(productid) referen
ces products(productid),quantity int;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '' at line 1
mysql> create table orderdetails(orderdetailid int primary key,orderid int,foreign key(orderid) references orders(ordderid),productid int,foreign key(productid) referen
ces products(productid),quantity int);
Query OK, 0 rows affected (4.39 sec)
```

```
mysql> create table inventory(inventoryid int primary key,productid int,foreign key(productid) references products(productid),quantityinstock int,laststockupdate int);
Query OK, 0 rows affected (1.26 sec)
```

```
mysql> show tables;
```

```
+-----+
| Tables_in_techshop |
+-----+
| customers          |
| inventory           |
| orderdetails        |
| orders              |
| products            |
+-----+
5 rows in set (0.06 sec)
```

```
mysql>
```



```
mysql> INSERT INTO Customers (customerid,FirstName, LastName, Email, Phone, Address)
-> VALUES (11,'sharath', 'akula', 'sharath@gmail.com', 1430, '140 Street');
Query OK, 1 row affected (0.08 sec)
```

```
mysql> INSERT INTO Customers (customerid,FirstName, LastName, Email, Phone, Address)
-> ;
```

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '' at line 1

```
mysql> select * from customers;
```

customerid	firstname	lastname	email	phone	address
1	John	Doe	john.doe@example.com	1234	123 Main St
2	Jane	Smith	jane.smith@example.com	9876	456 Oak Ave
3	Alice	Johnson	alice.johnson@example.com	5551	789 Pine Rd
4	Bob	Williams	bob.williams@example.com	1239	101 Cedar Ln
5	Eva	Brown	eva.brown@example.com	7890	202 Maple Blvd
6	Michael	Davis	michael.davis@example.com	3216	303 Elm St
7	Olivia	Jones	olivia.jones@example.com	6547	404 Birch Ave
8	Samuel	Taylor	samuel.taylor@example.com	8901	505 Oak Dr
9	Sophia	Wilson	sophia.wilson@example.com	4567	606 Pine Ct
10	William	Clark	william.clark@example.com	7890	707 Cedar Pl
11	sharath	akula	sharath@gmail.com	1430	140 Street

11 rows in set (0.00 sec)

```
mysql>
```



1	Laptop	High-performance laptop	1200
2	Smartphone	Latest smartphone model	800
3	Headphones	Noise-canceling headphones	150
4	Camera	Digital camera with advanced features	600
5	Fitness Tracker	Track your health and fitness	50
6	Coffee Maker	Automatic coffee maker	100
7	Bluetooth Speaker	Portable Bluetooth speaker	80
8	Desk Chair	Ergonomic office chair	200
9	Smart TV	Ultra HD Smart TV	1000
10	Wireless Mouse	Wireless optical mouse	20

10 rows in set (0.00 sec)

mysql> /* Primary Keys:

/*>

/*> CustomerID is the primary key in the Customers table.

/*> ProductID is the primary key in the Products table.

/*> OrderID is the primary key in both the Orders and OrderDetails tables.

/*> OrderDetailID is the primary key in the OrderDetails table.

/*> InventoryID is the primary key in the Inventory table.

/*> Foreign Keys:

/*>

/*> CustomerID in the Orders table is a foreign key referencing CustomerID in the Customers table.

/*> OrderID in the OrderDetails table is a foreign key referencing OrderID in the Orders table.

/*> ProductID in the OrderDetails table is a foreign key referencing ProductID in the Products table.

/*> ProductID in the Inventory table is a foreign key referencing ProductID in the Products table.*/*

mysql>

```
mysql> select * from orders;
```

ordderid	customerid	orderdate	totalamount
1	1	2023-01-10	150
2	2	2023-01-12	200
3	1	2023-02-05	75
4	3	2023-02-15	120
5	2	2023-03-03	300
6	1	2023-03-18	50
7	3	2023-04-02	180
8	2	2023-04-20	90
9	1	2023-05-08	250
10	3	2023-05-25	110

```
10 rows in set (0.00 sec)
```

```
mysql> select * from products;
```

productid	productname	description	price
1	Laptop	High-performance laptop	1200
2	Smartphone	Latest smartphone model	800
3	Headphones	Noise-canceling headphones	150
4	Camera	Digital camera with advanced features	600
5	Fitness Tracker	Track your health and fitness	50
6	Coffee Maker	Automatic coffee maker	100
7	Bluetooth Speaker	Portable Bluetooth speaker	80
8	Desk Chair	Ergonomic office chair	200
9	Smart TV	Ultra HD Smart TV	1000
10	Wireless Mouse	Wireless optical mouse	20

```
10 rows in set (0.00 sec)
```

```
mysql> _
```



```
mysql> /*      7      */
mysql> UPDATE Customers SET Email = 'sharath1@gmail.com', Address = 'green park'
-> WHERE CustomerID = 10;
Query OK, 1 row affected (0.27 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

```
mysql> select * from customers;
```

customerid	firstname	lastname	email	phone	address
1	John	Doe	john.doe@example.com	1234	123 Main St
2	Jane	Smith	jane.smith@example.com	9876	456 Oak Ave
3	Alice	Johnson	alice.johnson@example.com	5551	789 Pine Rd
4	Bob	Williams	bob.williams@example.com	1239	101 Cedar Ln
5	Eva	Brown	eva.brown@example.com	7890	202 Maple Blvd
6	Michael	Davis	michael.davis@example.com	3216	303 Elm St
7	Olivia	Jones	olivia.jones@example.com	6547	404 Birch Ave
8	Samuel	Taylor	samuel.taylor@example.com	8901	505 Oak Dr
9	Sophia	Wilson	sophia.wilson@example.com	4567	606 Pine Ct
10	William	Clark	sharath1@gmail.com	7890	green park
11	sharath	akula	sharath@gmail.com	1430	140 Street

```
11 rows in set (0.00 sec)
```

```
mysql> _
```



```
mysql> /* 6 */
mysql> INSERT INTO Orders (ordderid, customerid, orderdate, totalamount)
-> VALUES (11,3,'2023-05-27', 145);
ERROR 1062 (23000): Duplicate entry '11' for key 'orders.PRIMARY'
mysql> select * from orders;
```

ordderid	customerid	orderdate	totalamount
1	1	2023-01-10	150
2	2	2023-01-12	200
3	1	2023-02-05	75
4	3	2023-02-15	120
5	2	2023-03-03	300
6	1	2023-03-18	50
7	3	2023-04-02	180
8	2	2023-04-20	90
9	1	2023-05-08	250
10	3	2023-05-25	110
11	3	2023-05-27	145

11 rows in set (0.00 sec)

```
mysql>
```



ERROR 1054 (42S22): Unknown column 'Category' in 'where clause'

mysql> UPDATE Products SET Price = Price * 1.1 ;

Query OK, 10 rows affected (0.63 sec)

Rows matched: 10 Changed: 10 Warnings: 0

mysql> select * from products;

productid	productname	description	price
1	Laptop	High-performance laptop	1320
2	Smartphone	Latest smartphone model	880
3	Headphones	Noise-canceling headphones	165
4	Camera	Digital camera with advanced features	660
5	Fitness Tracker	Track your health and fitness	55
6	Coffee Maker	Automatic coffee maker	110
7	Bluetooth Speaker	Portable Bluetooth speaker	88
8	Desk Chair	Ergonomic office chair	220
9	Smart TV	Ultra HD Smart TV	1100
10	Wireless Mouse	Wireless optical mouse	22

10 rows in set (0.00 sec)

mysql>

```
mysql> DELETE FROM Orders WHERE OrderID =2;
ERROR 1054 (42S22): Unknown column 'OrderID' in 'where clause'
mysql> DELETE FROM Orders WHERE OrdderID =2;
ERROR 1451 (23000): Cannot delete or update a parent row: a foreign key constraint fails (`techshop`.`orderdetails`, CONSTRAINT `orderdetails_ibfk_1` FOREIGN KEY (`orderid`) REFERENCES `orders` (`ordderid`))
mysql> select * from orderdetails;
```

orderdetailid	orderid	productid	quantity
3	2	3	4
4	2	1	3
5	3	2	1
6	3	3	2
7	4	1	1
8	4	3	3
9	5	2	2
10	5	1	4

```
8 rows in set (0.00 sec)

mysql> /* for assignment -1 task 3 and 4 belongs to joins mam */
mysql>
```