DATABASE ORGANISATION CS – 425

DELIVERABLE – 4

INVENTORY MANAGEMENT SYSTEM GROUP – 5

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1.Programming Language and Application Type

To showcase our team project on the "Inventory Management System," we employed Python as the programming language to implement essential Create, Read, Update, and Delete (CRUD) operations.

These operations include adding, reading, modifying, and deleting database records pertinent to our project. We developed a primary Python program that interfaces with a MySQL database to execute CRUD operations across all entities within our Inventory Management System, such as Product, Supplier, Order, Order_Details, Customer, Sale, Sale_Details, Warehouse, and Inventory_Stock. The program utilizes the mysql.connector library to connect with the MySQL database and perform SQL queries.

It offers a command-line interface for users to interact with the system, allowing them to select the entity and operation they wish to perform. This implementation highlights our capability to develop a functional database application using Python, reflecting our grasp of database operations and programming principles acquired in the CS 425 course.

2.CRUD Implementation

Our team has successfully created a command-line application named "inventory_tool.py" for our Inventory Management System project. This Python-based program efficiently performs Create, Read, Update, and Delete (CRUD) operations on our MySQL database.

The code is structured for optimal readability and ease of maintenance, featuring detailed comments that explain its functionality and implementation. By utilizing the mysql.connector library, the tool provides an intuitive interface for managing various entities including Product, Supplier, Order, Order_Details, Customer, Sale, Sale_Details, Warehouse, and Inventory_Stock.

This implementation showcases our proficiency in developing a comprehensive database application, reflecting the database management and programming skills we've acquired in our CS 425 course.

Program Menu

a) Table Menu

It lets the user select the table to perform CRUD operation. The menu table also consists quit option to let the user exit the program.

```
Inventory Management System
1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice (1-5): 1

Choose an entity:
1. Product
2. Supplier
3. Order
4. Order_Details
5. Customer
6. Sale
7. Sale_Details
8. Warehouse
9. Inventory_Stock

Enter your choice (1-9):
```

b) Operations Menu

It lets user select from the Create, Read, Update, Delete (CRUD)

```
Inventory Management System
1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice (1-5): 1
```

Test Case 1: Create Records

While executing this Testcase:

```
Inventory Management System
1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice (1-5): 1

Choose an entity:
1. Product
2. Supplier
3. Order
4. Order_Details
5. Customer
6. Sale
7. Sale_Details
8. Warehouse
9. Inventory_Stock
Enter your choice (1-9): 2
Enter Supplier Name: Home Appliance
Enter Supplier Address: 940w 31st Chicago, IL
Enter Supplier Contact Info: Home@appliance.com
Supplier record created successfully.
```

Verify result in table:

```
Inventory Management System
1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice (1-5): 2

Choose an entity:
1. Product
2. Supplier
3. Order
4. Order_Details
5. Customer
6. Sale
7. Sale_Details
8. Warehouse
9. Inventory_Stock
Enter your choice (1-9): 2
(1, 'Tech Supplies Inc.', '123 Tech St, Silicon Valley, CA', 'contact@techsupplies.com')
(2, 'Global Gadgets', '456 Gadget Ave, New York, NY', 'info@globalgadgets.com')
(3, 'Furnitures World', '789 Comfort Ln, Chicago, IL', 'sales@furnitureworld.com')
(4, 'Appliance Depot', '101 Kitchen Rd, Houston, TX', 'support@appliancedepot.com')
(5, 'Sports Gear Co.', '202 Athlete Blvd, Los Angeles, CA', 'info@sportsgearco.com')
(6, 'Electronics Emporium', '303 Circuit Ave, San Jose, CA', 'sales@electronicsemporium.com')
(7, 'Home Essentials', '404 Living St, Miami, FL', 'contact@homeessentials.com')
(8, 'Office Solutions', '505 Business Pkwy, Atlanta, GA', 'info@officesolutions.com')
(9, 'Fitness Fanatics', '606 Gym Rd, Denver, CO', 'support@fitnessfanatics.com')
(10, 'Kitchen Wonders', '707 Culinary Ln, Seattle, WA', 'sales@kitchenwonders.com')
(11, 'Tech Innovators', '808 Innovation Dr, Boston, MA', 'info@techinnovators.com')
(12, 'Comfort Living', '909 Relax Ave, Phoenix, AZ', 'contact@comfortliving.com')
(13, 'Gadget Galaxy', '1010 Starship Blvd, Austin, TX', 'support@gadgetgalaxy.com')
(14, 'Eco Friendly Goods', '1111 Green St, Portland, OR', 'info@ecofriendlygoods.com')
(15, 'Smart Home Solutions', '1212 Connected Rd, San Francisco, CA', 'sales@smarthomesolutions.com')
(16, 'Home Appliance', '940w 31st Chicago, IL', 'Home@appliance.com')
```

Test Case 2: Read Records

While executing this Testcase:

```
Inventory Management System
1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice (1-5): 2

Choose an entity:
1. Product
2. Supplier
3. Order
4. Order_Details
5. Customer
6. Sale
7. Sale_Details
8. Warehouse
9. Inventory_Stock
Enter your choice (1-9): 2
(1, 'Tech Supplies Inc.', '123 Tech St, Silicon Valley, CA', 'contact@techsupplies.com')
(2, 'Global Gadgets', '456 Gadget Ave, New York, NY', 'info@globalgadgets.com')
(3, 'Furnitures World', '789 Comfort Ln, Chicago, IL', 'sales@furnitureworld.com')
(4, 'Appliance Depot', '101 Kitchen Rd, Houston, TX', 'support@appliancedepot.com')
(5, 'Sports Gear Co.', '202 Athlete Blvd, Los Angeles, CA', 'info@sportsgearco.com')
(6, 'Electronics Emporium', '303 Circuit Ave, San Jose, CA', 'sales@electronicsemporium.com')
(7, 'Home Essentials', '404 Living St, Miami, FL', 'contact@homeessentials.com')
(8, 'Office Solutions', '505 Business Pkwy, Atlanta, GA', 'info@officesolutions.com')
(9, 'Fitness Fanatics', '606 Gym Rd, Denver, CO', 'support@fitnessfanatics.com')
(10, 'Kitchen Wonders', '707 Culinary Ln, Seattle, WA', 'sales@kitchenwonders.com')
(11, 'Tech Innovators', '808 Innovation Dr, Boston, MA', 'info@techinnovators.com')
(12, 'Comfort Living', '909 Relax Ave, Phoenix, AZ', 'contact@comfortliving.com')
(13, 'Gadget Galaxy', '1010 Starship Blvd, Austin, TX', 'support@gadgetgalaxy.com')
(14, 'Eco Friendly Goods', '1111 Green St, Portland, OR', 'info@ecofriendlygoods.com')
(15, 'Smart Home Solutions', '1212 Connected Rd, San Francisco, CA', 'sales@smarthomesolutions.com')
(16, 'Home Appliance', '940w 31st Chicago, IL', 'Home@appliance.com')
```

Test Case 3: Update Records

While executing this Testcase:

```
Inventory Management System
1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice (1-5): 3

Choose an entity:
1. Product
2. Supplier
3. Order
4. Order_Details
5. Customer
6. Sale
7. Sale_Details
8. Warehouse
9. Inventory_Stock
Enter your choice (1-9): 5
Enter Customer ID to update: 2
Enter field to update (Cname/Caddress/Email/Phone): Cname
Enter new value: Jonny Smith
Customer record updated successfully.
```

Verify update in Table:

```
Inventory Management System
1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice (1-5): 2

Choose an entity:
1. Product
2. Supplier
3. Order
4. Order_Details
5. Customer
6. Sale
7. Sale_Details
8. Warehouse
9. Inventory_Stock
Enter your choice (1-9): 5
(1, 'John Doe', '123 Main St, Anytown, USA', 'john.doe@email.com', '555-1234')
(2, 'Jonny Smith', '456 Oak Rd, Somewhere, USA', 'jane.smith@email.com', '555-5678')
(3, 'Bob Johnson', '789 Pine Ave, Nowhere, USA', 'bob.johnson@email.com', '555-9012')
(4, 'Alice Brown', '101 Elm St, Everywhere, USA', 'alice.brown@email.com', '555-3456')
(5, 'Charlie Davis', '202 Maple Dr, Anywhere, USA', 'charlie.davis@email.com', '555-7890')
(6, 'Eva Wilson', '303 Cedar Ln, Someplace, USA', 'eva.wilson@email.com', '555-2345')
(7, 'Frank Miller', '404 Birch Rd, Othertown, USA', 'frank.miller@email.com', '555-6789')
(8, 'Grace Lee', '505 Walnut Ave, Thisplace, USA', 'grace.lee@email.com', '555-0123')
(9, 'Henry Taylor', '606 Spruce St, Thatplace, USA', 'henry.taylor@email.com', '555-4567')
(10, 'Ivy Clark', '707 Fir Blvd, Newtown, USA', 'ivy.clark@email.com', '555-8901')
(11, 'Jack Wright', '808 Ash Ln, Oldtown, USA', 'jack.wright@email.com', '555-2345')
(12, 'Karen Young', '909 Poplar Rd, Bigcity, USA', 'karen.young@email.com', '555-6789')
(13, 'Liam Hall', '1010 Willow Dr, Smalltown, USA', 'liam.hall@email.com', '555-0123')
(14, 'Mia Scott', '1111 Beech Ave, Midtown, USA', 'mia.scott@email.com', '555-4567')
(15, 'Noah King', '1212 Chestnut St, Downtown, USA', 'noah.king@email.com', '555-8901')
```

Test Case 4: Delete Records

While executing this Testcase:

```
Inventory Management System
1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice (1-5): 4

Choose an entity:
1. Product
2. Supplier
3. Order
4. Order_Details
5. Customer
6. Sale
7. Sale_Details
8. Warehouse
9. Inventory_Stock
Enter your choice (1-9): 3
Enter Order ID to delete: 2
Order record deleted successfully.
```

Test Case 5: Exit Option

```
Order record deleted successfully.

Inventory Management System
1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice (1-5): 5
Program terminated.
```

3. Error Handling and User Experience

Here we show the error handling test case and how our program lets the user to handle edge case with clear instruction.

- While Selecting Invalid Operation Number,
  The program clearly instructs the user for any edge case in invalid operation number.

```
Inventory Management System
1. Create Record
2. Read Records
3. Update Record
4. Delete Record
5. Exit
Enter your choice (1-5): 7

Choose an entity:
1. Product
2. Supplier
3. Order
4. Order_Details
5. Customer
6. Sale
7. Sale_Details
8. Warehouse
9. Inventory_Stock
Enter your choice (1-9): 2
Invalid choice. Please try again.
```

4. Code Quality and Documentation

We have tried to maintain well-documented code with clear comments and explanations including proper naming conventions and code organization. We are providing a documentation file that guides users in setting up and using the application.

5. Functionality Demonstration(Loom Video)

We are providing high-quality Loom video recording that clearly demonstrates the Inventory Management System functionality which explains the CRUD operations, highlighting key features and functionality. The video is well-organized, engaging, and effectively conveys the application's usage through testing and showcases different scenarios.