Assignment-Courier Management System Documentation

~ P325_Sarvesh Sharma

Project Overview:

- **Purpose:** A courier management system designed to efficiently manage user information, courier assignments, services, payments, and employee records.
- Technologies Used: Python, MSSQL

Directory Structure:S:\GIT\Hexaware_Assignments\Courier Management System

- app: Contains the main execution module CourierManagementSystem.py.
- **dao:** Data access object classes for interacting with the database, including user, courier, courier service, employee, and payment DAOs.
- **entity:** Classes representing the tables defined in SQL, including User, Courier, CourierService, Employee, and Payment.
- myexceptions: Custom exceptions for handling specific errors within the application.
- util: Contains utility classes, including DBConnection.py for managing database connections.

S:\GIT\Hexaware Assignments\CourierManagementSystem

\vdash	— арр
	initру
	— CourierManagementSystem.py
\vdash	— dao
	initру
	├── UserDAO.py
	— UserDAOImpl.py
l	— CourierDAO.py

CourierDAOImpl.py
CourierServiceDAO.py
CourierServicesDAOImpl.py
EmployeeDAO.py
EmployeeDAOImpl.py
PaymentDAO.py
│
—— entity
User.py
Courier.py
Employee.py
Payment.py
— myexceptions
├── TrackingNumberNotFoundException.py
InvalidEmployeeIdException.py
—— util
DBConnection.py
— CourierManagement_DB.sql
└── venv
P325_Sarvesh Sharma_Assignment-Courier Management System .pdf

Project Flow:

- **Database Setup:** Created SQL file to define the following main tables:
 - User_table: Stores user information such as ID, name, email, password, contact number, and address.
 - Courier: Contains details about each courier, including sender and receiver information, weight, status, tracking number, and delivery date.
 - CourierServices: Defines various courier services with service IDs, names, and costs.
 - Employee: Records employee details including ID, name, email, contact number, role, salary, and associated courier.
 - Location: Maintains location data for deliveries.
 - Payment: Tracks payment information related to couriers and locations.

Entity Classes

- Defined classes for User, Courier, CourierService, Employee, Location, and Payment.
- Each class contains attributes with corresponding getter and setter methods.

DAO Implementation

- Developed interfaces for each entity (e.g., UserDAO, CourierDAO,
 CourierServiceDAO, EmployeeDAO, PaymentDAO) and their implementations (e.g., UserDAOImpl, CourierDAOImpl, CourierServicesDAOImpl,
 EmployeeDAOImpl, PaymentDAOImpl).
- Methods implemented include creating, updating, deleting, and fetching records for users, couriers, services, employees, and payments.

Utility Class

Created **DBConnection.py** to manage database connections for executing SQL queries.

Exception Handling

 Implemented custom exceptions such as InvalidEmployeeIdException, TrackingNumberNotFoundException to handle various error case

Main Application Logic

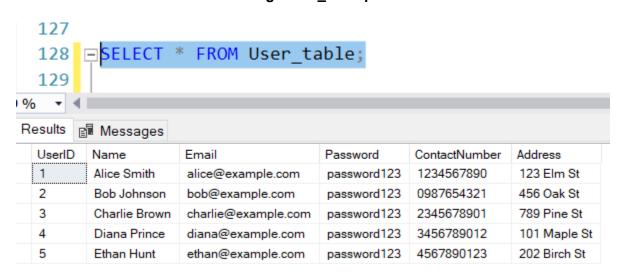
- Developed a menu-driven interface for user interactions.
- Allowed users to create, update, and delete users, couriers, and employees, as well as manage courier services and payments.
- Enabled functionalities for fetching all couriers, getting delivery history, and listing all courier services.

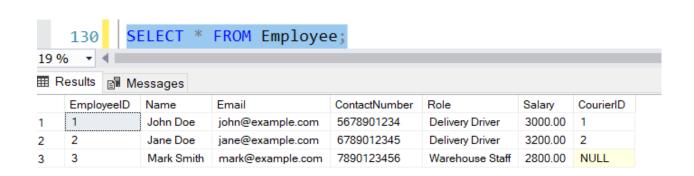
Sample Data

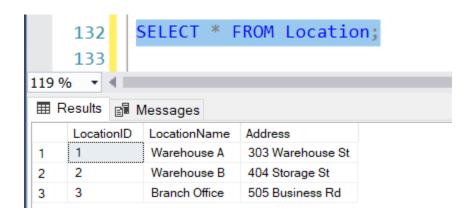
Inserted sample data into the database for testing

Outputs:

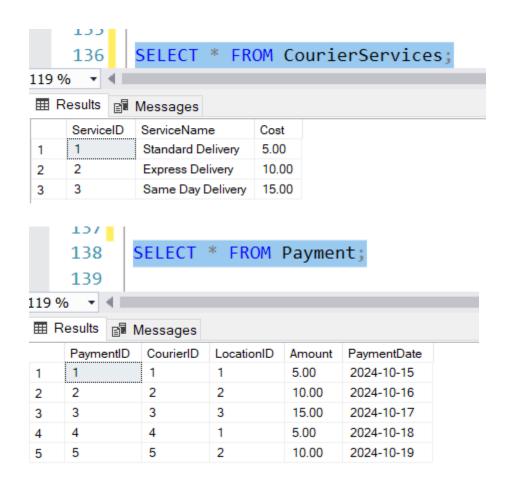
> Tables defined in CourierManagement DB.sql:





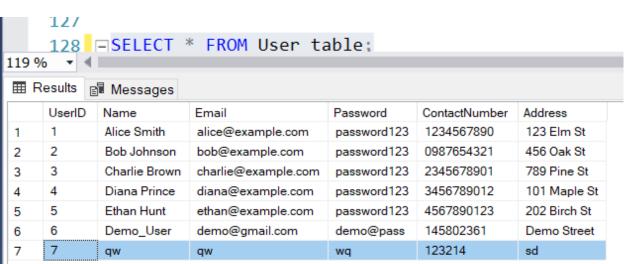






> 1. Create User:

```
**** Courier Management System ****
 1. Create User
 2. Delete User
 3. Fetch User Details
 4. Create Employee
 5. Update Employee
6. Fetch All Employees
7. Delete Employee
8. Insert New Courier
 9. Update Courier Status
10. Get Delivery History
11. Create Courier Service
12. Update Courier Service
13. Delete Courier Service
14. Fetch Courier Service Details
15. List All Courier Services
16. Read Payment
0. Exit
Enter your choice: 1
Enter User ID: 7
Enter User Name: qw
Enter Email: qw
Enter Password: wq
Enter Contact Number: 123214
Enter Address: sd
User created successfully!
```



> 2. Delete User

**** Courier Management System **** 1. Create User 2. Delete User 3. Fetch User Details 4. Create Employee 5. Update Employee 6. Fetch All Employees 7. Delete Employee 8. Insert New Courier 9. Update Courier Status 10. Get Delivery History 11. Create Courier Service 12. Update Courier Service 13. Delete Courier Service 14. Fetch Courier Service Details 15. List All Courier Services 16. Read Payment Exit Enter your choice: 2 Enter User ID to delete: 7 User deleted successfully!

19		-SELECT 3	* FROM User ta	apre:		
	Results	Messages				
	UserID	Name	Email	Password	ContactNumber	Address
1	1	Alice Smith	alice@example.com	password123	1234567890	123 Elm St
2	2	Bob Johnson	bob@example.com	password123	0987654321	456 Oak St
3	3	Charlie Brown	charlie@example.com	password123	2345678901	789 Pine St
4	4	Diana Prince	diana@example.com	password123	3456789012	101 Maple St
5	5	Ethan Hunt	ethan@example.com	password123	4567890123	202 Birch St
6	6	Demo_User	demo@gmail.com	demo@pass	145802361	Demo Street

> 3. Fetch User Details

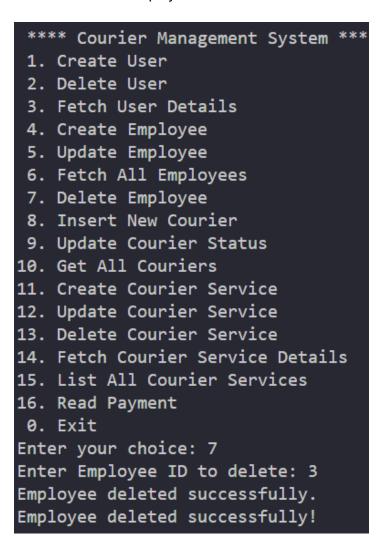
```
**** Courier Management System ****
1. Create User
2. Delete User
3. Fetch User Details
4. Create Employee
5. Update Employee
6. Fetch All Employees
7. Delete Employee
8. Insert New Courier
9. Update Courier Status
10. Get Delivery History
11. Create Courier Service
12. Update Courier Service
13. Delete Courier Service
14. Fetch Courier Service Details
15. List All Courier Services
16. Read Payment
0. Exit
Enter your choice: 3
Enter User ID to fetch details: 3
User Details: ID: 3, Name: Charlie Brown, Email: charlie@example.com, Address: 789 Pine St
```

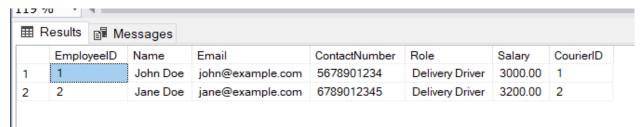
> 4. Create Employee

```
**** Courier Management System ****
 1. Create User
 2. Delete User
 3. Fetch User Details
 4. Create Employee
 5. Update Employee
 6. Fetch All Employees
 7. Delete Employee
 8. Insert New Courier
 9. Update Courier Status
10. Get Delivery History
11. Create Courier Service
12. Update Courier Service
13. Delete Courier Service
14. Fetch Courier Service Details
15. List All Courier Services
16. Read Payment
0. Exit
Enter your choice: 4
Enter Employee ID: 4
Enter Employee Name: New_Employee
Enter Email: emp@gmail.com
Enter Contact Number: 7880235480
Enter Role: Intern
Enter Salary: 15000
Employee created successfully!
```

■ Results ■ Messages										
	EmployeeID	Name	Email	ContactNumber	Role	Salary	CourierID			
1	1	John Doe	john@example.com	5678901234	Delivery Driver	3000.00	1			
2	2	Jane Doe	jane@example.com	6789012345	Delivery Driver	3200.00	2			
3	3	Mark Smith	mark@example.com	7890123456	Warehouse Staff	2800.00	NULL			
4	4	New_Employee	emp@gmail.com	7880235480	Intern	15000.00	NULL			

> 5. Delete Employee





> 6. Fetch All Employees

```
**** Courier Management System ****
 1. Create User
 2. Delete User
 3. Fetch User Details
 4. Create Employee
 5. Update Employee
 6. Fetch All Employees
 7. Delete Employee
 8. Insert New Courier
9. Update Courier Status
10. Get Delivery History
11. Create Courier Service
12. Update Courier Service
13. Delete Courier Service
14. Fetch Courier Service Details
15. List All Courier Services
16. Read Payment
0. Exit
Enter your choice: 6
Employee ID: 1, Name: John Doe, Role: Delivery Driver
Employee ID: 2, Name: Jane Doe, Role: Delivery Driver
Employee ID: 3, Name: Mark Smith, Role: Warehouse Staff
Employee ID: 4, Name: New_Employee, Role: Intern
```

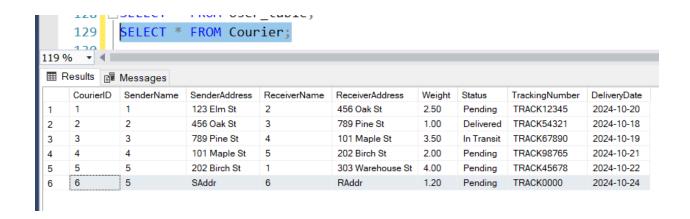
> 7. Fetch Employee by ID

```
**** Courier Management System ****
 1. Create User
 2. Delete User
3. Fetch User Details
4. Create Employee
5. Delete Employee
6. Fetch All Employees
7. Fetch Employee by ID
8. Insert New Courier
9. Update Courier Status
10. Get All Couriers
11. Create Courier Service
12. Update Courier Service
13. Delete Courier Service
14. Fetch Courier Service Details
15. List All Courier Services
16. Read Payment
0. Exit
Enter your choice: 7
Enter Employee ID to fetch: 2
Employee Details:
ID: 2
Name: Jane Doe
Email: jane@example.com
Contact Number: 6789012345
Role: Delivery Driver
Salary: 3200.00
```

```
14/
    128 SELECT * FROM User_table;
    129
           SELECT * FROM Employee;
    130
            SELECT * FROM Location;
.9 % ▼ ◀ ■
Results 📳 Messages
   EmployeeID
                         Email
                                          ContactNumber
                                                       Role
                                                                             CourierID
              Name
                                                                     Salary
    1
               John Doe
                         john@example.com
                                          5678901234
                                                       Delivery Driver
                                                                     3000.00
    2
               Jane Doe
                         jane@example.com
                                          6789012345
                                                       Delivery Driver
                                                                     3200.00
    3
               Mark Smith
                         mark@example.com 7890123456
                                                       Warehouse Staff 2800.00 NULL
```

> 8. Insert New Courier

```
**** Courier Management System ****
 1. Create User
 2. Delete User
 3. Fetch User Details
 4. Create Employee
 5. Update Employee
 6. Fetch All Employees
 7. Delete Employee
 8. Insert New Courier
 9. Update Courier Status
10. Get Delivery History
11. Create Courier Service
12. Update Courier Service
13. Delete Courier Service
14. Fetch Courier Service Details
15. List All Courier Services
16. Read Payment
Exit
Enter your choice: 8
Enter Courier ID: 6
Enter Sender Name (UserID): 5
Enter Sender Address: SAddr
Enter Receiver Name (UserID): 6
Enter Receiver Address: RAddr
Enter Weight: 1.2
Enter Status: Pending
Enter Tracking Number: TRACK0000
Enter Delivery Date (YYYY-MM-DD): 2024-10-24
Courier order created successfully!
```



> 9. Update Courier Status

```
**** Courier Management System ****
 1. Create User
 2. Delete User
 3. Fetch User Details
 4. Create Employee
 Update Employee
 6. Fetch All Employees
7. Delete Employee
8. Insert New Courier
 9. Update Courier Status
10. Get Delivery History
11. Create Courier Service
12. Update Courier Service
13. Delete Courier Service
14. Fetch Courier Service Details
15. List All Courier Services
16. Read Payment
 0. Exit
Enter your choice: 9
Enter Courier ID to update status: 6
Enter New Status: Updated_Status
Courier status updated successfully!
```

	Results 📲	Messages							
	CourierID	SenderName	SenderAddress	ReceiverName	ReceiverAddress	Weight	Status	TrackingNumber	DeliveryDate
1	1	1	123 Elm St	2	456 Oak St	2.50	Pending	TRACK12345	2024-10-20
2	2	2	456 Oak St	3	789 Pine St	1.00	Delivered	TRACK54321	2024-10-18
3	3	3	789 Pine St	4	101 Maple St	3.50	In Transit	TRACK67890	2024-10-19
ı	4	4	101 Maple St	5	202 Birch St	2.00	Pending	TRACK98765	2024-10-21
5	5	5	202 Birch St	1	303 Warehouse St	4.00	Pending	TRACK45678	2024-10-22
6	6	5	SAddr	6	RAddr	1.20	Updated_Status	TRACK0000	2024-10-24

```
**** Courier Management System ****
 1. Create User
 2. Delete User
 3. Fetch User Details
4. Create Employee
 5. Update Employee
 6. Fetch All Employees
7. Delete Employee
 8. Insert New Courier
 9. Update Courier Status
10. Get All Couriers
11. Create Courier Service
12. Update Courier Service
13. Delete Courier Service
14. Fetch Courier Service Details
List All Courier Services
16. Read Payment
Exit
Enter your choice: 10
All Couriers:
ID: 1, Sender: 1, Receiver: 2, Status: Pending
ID: 2, Sender: 2, Receiver: 3, Status: Delivered
ID: 3, Sender: 3, Receiver: 4, Status: In Transit
ID: 4, Sender: 4, Receiver: 5, Status: Pending
ID: 5, Sender: 5, Receiver: 1, Status: Pending
ID: 6, Sender: 5, Receiver: 6, Status: Updated Status
```

> 11. Create Courier Service

```
**** Courier Management System ****
 1. Create User
 2. Delete User
 3. Fetch User Details
 4. Create Employee
 5. Update Employee
 6. Fetch All Employees
7. Delete Employee
 8. Insert New Courier
9. Update Courier Status
10. Get All Couriers
11. Create Courier Service
12. Update Courier Service
13. Delete Courier Service
14. Fetch Courier Service Details
15. List All Courier Services
16. Read Payment
Exit
Enter your choice: 11
Enter Service ID: 4
Enter Service Name: InstantDelivery
Enter Cost: 50
Courier service created successfully!
```

ServiceID ServiceName Cost 1 Standard Delivery 5.00 2 Express Delivery 10.00	119 % ▼ ◀								
1 Standard Delivery 5.00 2 Express Delivery 10.00	■ Results								
2 Express Delivery 10.00	Service	eID	ServiceName	Cost					
,,	1 1		Standard Delivery	5.00					
	2 2		Express Delivery	10.00					
3 Same Day Delivery 15.00	3 3		Same Day Delivery	15.00					
4 InstantDelivery 50.00	4 4		InstantDelivery	50.00					

> 12. Update Courier Service

```
**** Courier Management System ****
1. Create User
 2. Delete User
 3. Fetch User Details
4. Create Employee
Update Employee
6. Fetch All Employees
7. Delete Employee
8. Insert New Courier
9. Update Courier Status
10. Get All Couriers
11. Create Courier Service
12. Update Courier Service
13. Delete Courier Service
14. Fetch Courier Service Details
15. List All Courier Services
16. Read Payment
0. Exit
Enter your choice: 12
Enter Service ID to update: 4
Enter New Service Name (Leave blank for no change):
Enter New Cost (Leave blank for no change): 100
Courier service updated successfully!
```

119 % 🔻 🖣							
■R	esults		Messages				
	Service	elD	ServiceName	Cost			
1	1		Standard Delivery	5.00			
2	2		Express Delivery	10.00			
3	3		Same Day Delivery	15.00			
4	4		InstantDelivery	100.00			

> 13. Delete Courier Service

```
**** Courier Management System ****
  1. Create User
  2. Delete User
  3. Fetch User Details
  4. Create Employee
5. Update Employee
  6. Fetch All Employees
  7. Delete Employee
  8. Insert New Courier
  9. Update Courier Status
 10. Get All Couriers
 11. Create Courier Service
 12. Update Courier Service
 13. Delete Courier Service
 14. Fetch Courier Service Details
 15. List All Courier Services
 16. Read Payment
  Exit
 Enter your choice: 13
 Enter Service ID to delete: 4
 Courier service deleted successfully!
```

119 % ▼ ◀								
⊞ F	Results		Messages					
	Servic	elD	ServiceName	Cost				
1	1		Standard Delivery	5.00				
2	2		Express Delivery	10.00				
3	3		Same Day Delivery	15.00				

> 14. Fetch Courier Service Details

```
**** Courier Management System ****
 1. Create User
 2. Delete User
 3. Fetch User Details
 4. Create Employee
 5. Update Employee
 6. Fetch All Employees
 7. Delete Employee
 8. Insert New Courier
 9. Update Courier Status
10. Get All Couriers
11. Create Courier Service
12. Update Courier Service
13. Delete Courier Service
14. Fetch Courier Service Details
15. List All Courier Services
16. Read Payment
0. Exit
Enter your choice: 14
Enter Service ID to fetch details: 2
Courier Service Details: ID: 2, Name: Express Delivery, Cost: 10.00
```

> 15. List All Courier Services

```
**** Courier Management System ****
 1. Create User
 2. Delete User
 3. Fetch User Details
4. Create Employee
 5. Update Employee
 6. Fetch All Employees
 7. Delete Employee
8. Insert New Courier
9. Update Courier Status
10. Get All Couriers
11. Create Courier Service
12. Update Courier Service
13. Delete Courier Service
14. Fetch Courier Service Details
15. List All Courier Services
16. Read Payment
0. Exit
Enter your choice: 15
Service ID: 1, Name: Standard Delivery, Cost: 5.00
Service ID: 2, Name: Express Delivery, Cost: 10.00
Service ID: 3, Name: Same Day Delivery, Cost: 15.00
Service ID: 4, Name: InstantDelivery, Cost: 100.00
```

> 16. Read Payment

```
**** Courier Management System ****
 1. Create User
 2. Delete User
 3. Fetch User Details
4. Create Employee
5. Update Employee
6. Fetch All Employees
7. Delete Employee
8. Insert New Courier
9. Update Courier Status
10. Get All Couriers
11. Create Courier Service
12. Update Courier Service
13. Delete Courier Service
14. Fetch Courier Service Details
15. List All Courier Services
16. Read Payment
Exit
Enter your choice: 16
Enter Payment ID to read: 3
Payment Details: ID: 3, Amount: 15.00, Date: 2024-10-17
```

119 % •									
⊞ Results									
PaymentID	CourierID	LocationID	Amount	PaymentDate					
1	1	1	5.00	2024-10-15					
2	2	2	10.00	2024-10-16					
3	3	3	15.00	2024-10-17					
4	4	1	5.00	2024-10-18					
5	5	2	10.00	2024-10-19					
-	PaymentID 1 2 3 4	PaymentID CourierID 1 1 2 2 3 3 4 4	PaymentID CourierID LocationID 1 1 1 2 2 2 3 3 3 4 4 1	PaymentID CourierID LocationID Amount 1 1 1 5.00 2 2 2 10.00 3 3 15.00 4 4 1 5.00					

> 17. 0 Exit

```
**** Courier Management System ****
 1. Create User
 2. Delete User
 3. Fetch User Details
 4. Create Employee
 5. Update Employee
 6. Fetch All Employees
 7. Delete Employee
 8. Insert New Courier
 9. Update Courier Status
10. Get All Couriers
11. Create Courier Service
12. Update Courier Service
13. Delete Courier Service
14. Fetch Courier Service Details
15. List All Courier Services
16. Read Payment
0. Exit
Enter your choice: 0
Exiting Courier Management System...
```

> 18. 99 Invalid Argument

```
**** Courier Management System ****
 1. Create User
 2. Delete User
3. Fetch User Details
 4. Create Employee
 5. Update Employee
 6. Fetch All Employees
 7. Delete Employee
 8. Insert New Courier
 9. Update Courier Status
10. Get All Couriers
11. Create Courier Service
12. Update Courier Service
13. Delete Courier Service
14. Fetch Courier Service Details
15. List All Courier Services
16. Read Payment
0. Exit
Enter your choice: 99
Invalid choice! Please try again.
```