System Testing

Course: Software Testing

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System Test 1: User Login Authentication

Test Type: System Testing

This test is classified as System Testing because it validates the complete Point of Sale system as a whole, including the user interface, business logic, and database layer**.**
The test verifies that a real user action (such as logging in or managing products) triggers the correct system behavior and results in accurate data being stored and retrieved from the MySQL database through JDBC.

Testing Level: End-to-End System Level

Validates the full system flow from user actions to database operations.

Objective

The objective of this system test is to verify that the Point of Sale (POS) system correctly authenticates a user by validating the entered username and password against the database and allows access to the system only when valid credentials are provided.

Description

This test validates the complete login workflow of the POS system. It checks the interaction between the user interface (Login UI), the controller layer, the data access layer (DAL), and the MySQL database. The test ensures that valid credentials result in a successful login, while invalid credentials are rejected with an appropriate error message.

Preconditions

- The POS application is successfully launched.
- The MySQL database server is running.
- The users table exists in the database.
- At least one valid user record (e.g., admin user) exists in the users table.
- The system is connected to the database.

Test Data

Field	Value
Username	admin
Password	root

Test Steps

1. Launch the POS application.
2. The Login screen is displayed.
3. Enter a valid username in the **Username** field.
4. Enter the corresponding password in the **Password** field.
5. Click the **Login** button.
6. The system sends the credentials to the controller.
7. The controller communicates with the DAL layer.
8. The DAL layer queries the users table in the database.
9. The database returns the matching user record.
10. The system processes the response and grants access.

Expected Result

- The system should successfully authenticate the user.
- No error messages should be displayed.
- The main POS dashboard should open after login.

Actual Result

- The system authenticated the user successfully.
- The login was completed without errors.
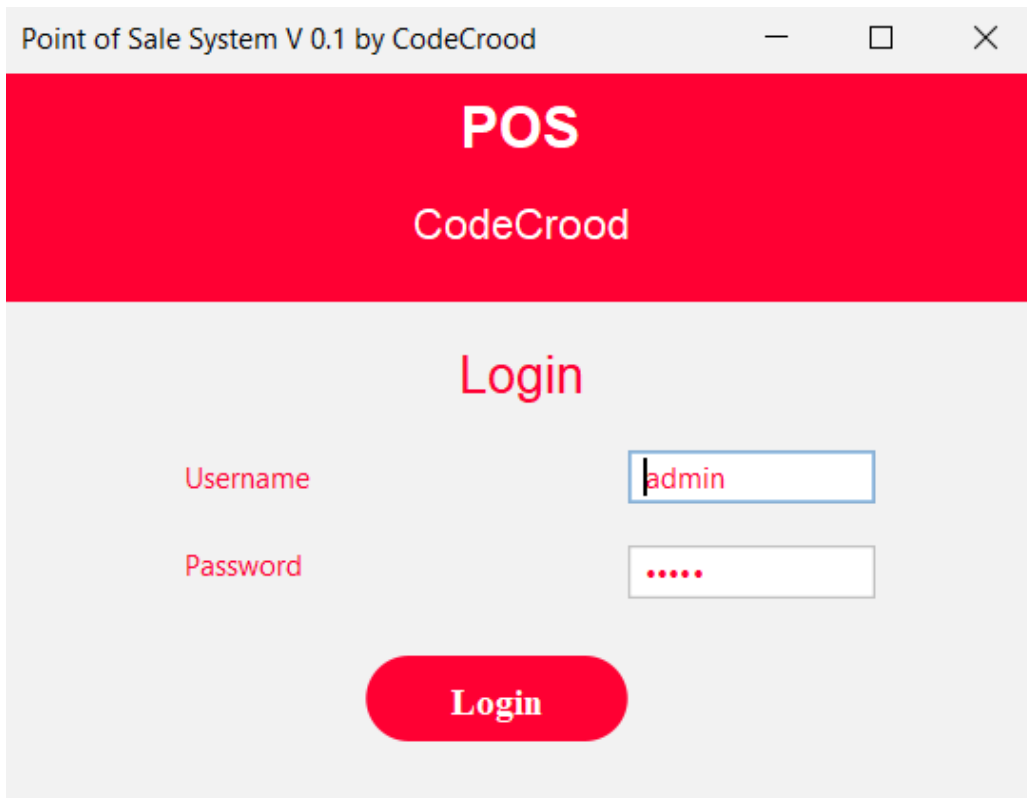- The main POS interface was displayed.

Test Result

PASS

System Components Involved

- Login User Interface (LoginUI)
- POS Controller
- Data Access Layer (DALManager)
- MySQL Database (users table)

Observations

- The system correctly validates credentials using the database.
- Error handling is triggered if incorrect credentials are entered.
- The test confirms proper integration between UI, controller, DAL, and database layers at the system level.

Point of Sale

Customer Information

Id	Name	Phone No
1	fawad	12345
3	fawad iqbal	1234568
6	saman	77-88-9
9	sam	9999988
10	fawad	03149972883
27	saman	77-88-9
38	fawad Iqbal	03149972883
40	wertyq	1234567890
41	fawad iqbal	1234568133
43	fawad Iqbal	03149972883
44	fawad iqbal	1234568133
45	fawad Iqbal	03149972883
46	fawad iqbal	03149972883
47	fawad Iqbal	03149972883
48	fawad iqbal	1234568133
49	fawad Iqbal	03149972883
50	fawad Iqbal	03149972883
51	fawad Iqbal	03149972883
52	fawad Iqbal	03149972883
53	fawad Iqbal	03149972883
54	fawad Iqbal	03149972883
55	wertyq	1234567890
57	ahmad1	1234567899
58	fawad iqbal	03149972883
62	OtherName_IntTest_456e66	0690000002

Sidebar: Customers, Supplier, Employees, Products, Category, Sales, Invoice, Reports

Add   Delete   Update   Search by Name: [   ]

MySQL Workbench

Local instance MySQL80 ×

File Edit View Query Database Server Tools Scripting Help

Navigator — SCHEMAS

Filter objects

- car_rental
  - Tables
  - Views
  - Stored Procedures
  - Functions
- car_rental_db
- db_courses
- ddl_exercise
- ddl_exercises
- library
- pos
  - Tables
  - Views
  - Stored Procedures
  - Functions
- pos_system

Administration Schemas

Information

No object selected

Object Info Session

```sql
INSERT INTO users (username, password, role)
VALUES
('admin', 'root', 'admin'),
('cashier', 'root', 'cashier');
```

SQL Additions

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

Context Help Snippets

Output — Action Output

#	Time	Action	Message	Duration / Fetch
1	00:41:30	SELECT DATABASE() LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec
2	00:42:15	USE pos	0 row(s) affected	0.000 sec
3	00:42:15	SELECT DATABASE() LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec
4	00:42:27	SHOW TABLES	6 row(s) returned	0.000 sec / 0.000 sec
5	00:42:40	SELECT * FROM users LIMIT 0, 1000	0 row(s) returned	0.000 sec / 0.000 sec
6	00:43:19	INSERT INTO users (username, password, role) VALUES ('admin', 'root', 'ad...	2 row(s) affected Records: 2 Duplicates: 0 Warnings: 0	0.000 sec