




# Ticket System Microservice Project

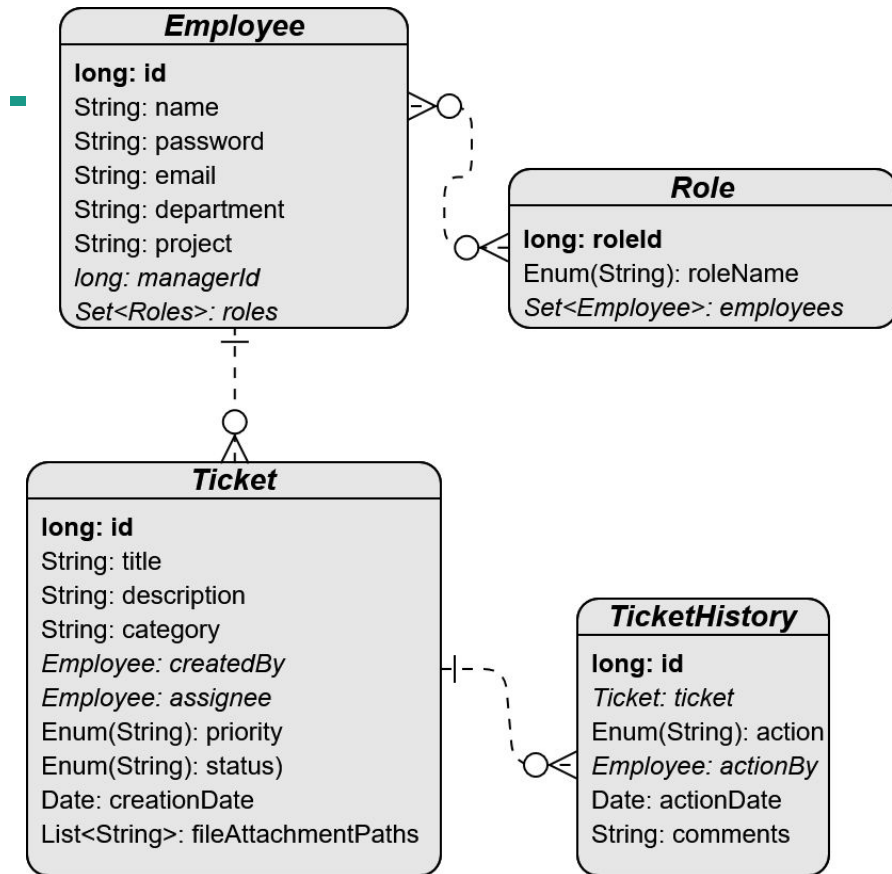
Jeremiah Dy

Project duration: 1 month (May 2025)

# Project Overview

- 
- This is a microservice based project intended to model an online ticket-support system, complete with functionality for users, managers, and admin personnel. Upon encountering a problem in the workplace, users can raise a ticket and provide information about their circumstance.
  - Managers can then view the ticket and either approve or reject them.
  - Upon approval, tickets are assigned to an admin employee, who then works on the problem until a solution is reached. Afterwards, the admin employee will resolve the ticket, automatically generating an email that lists the ticket details and lifetime for the user.
  - If the user is satisfied with their solution, they can close the ticket. However, if the user is unsatisfied, they can reopen the ticket, in which the admin employee will be able to work on it again.
  - At each stage in the ticket lifecycle, when the ticket's status is changed (created → pending → approval, etc.), a simple notification email is sent to the user to keep them updated.

# Ticket Entity Relationship Diagram



- Employee - Role
  - Many-to-many
  - An employee can have multiple roles, and vice versa
- Employee - Ticket
  - One-to-many
  - FK: *createdBy*
  - FK: *assignee*
  - An employee can create any number of tickets, but a ticket can only have one creator or assignee
- Ticket - TicketHistory
  - One-to-many
  - FK: *ticket*
  - A ticket will have multiple events in its historical record, but each individual TicketHistory event log will only refer to a single ticket

# Project Architecture

## *ticketinggateway*

- ❑ Spring-boot
- ❑ Maven
- ❑ Spring-security
- ❑ Spring Data JPA
- ❑ MySQL Database
- ❑ jQuery
- ❑ Bootstrap CSS

~~~~~

This microservice serves the **frontend** of the project application. It allows users to login/logout and create/modify/view tickets through HTTP requests to *ticketmicroservice*.

## *ticketmicroservice*

- ❑ Spring-boot
- ❑ Maven
- ❑ Spring Data JPA
- ❑ MySQL Database
- ❑ ActiveMQ
- ❑ Jackson (library)

~~~~~

This microservice serves the **backend** of the project application. It accesses the MySQL database to create and modify tickets and create a historical record of ticket lifecycle events. It also communicates to *notificationmicroservice* to send email notifications to users (e.g. MANAGERS and USERS).

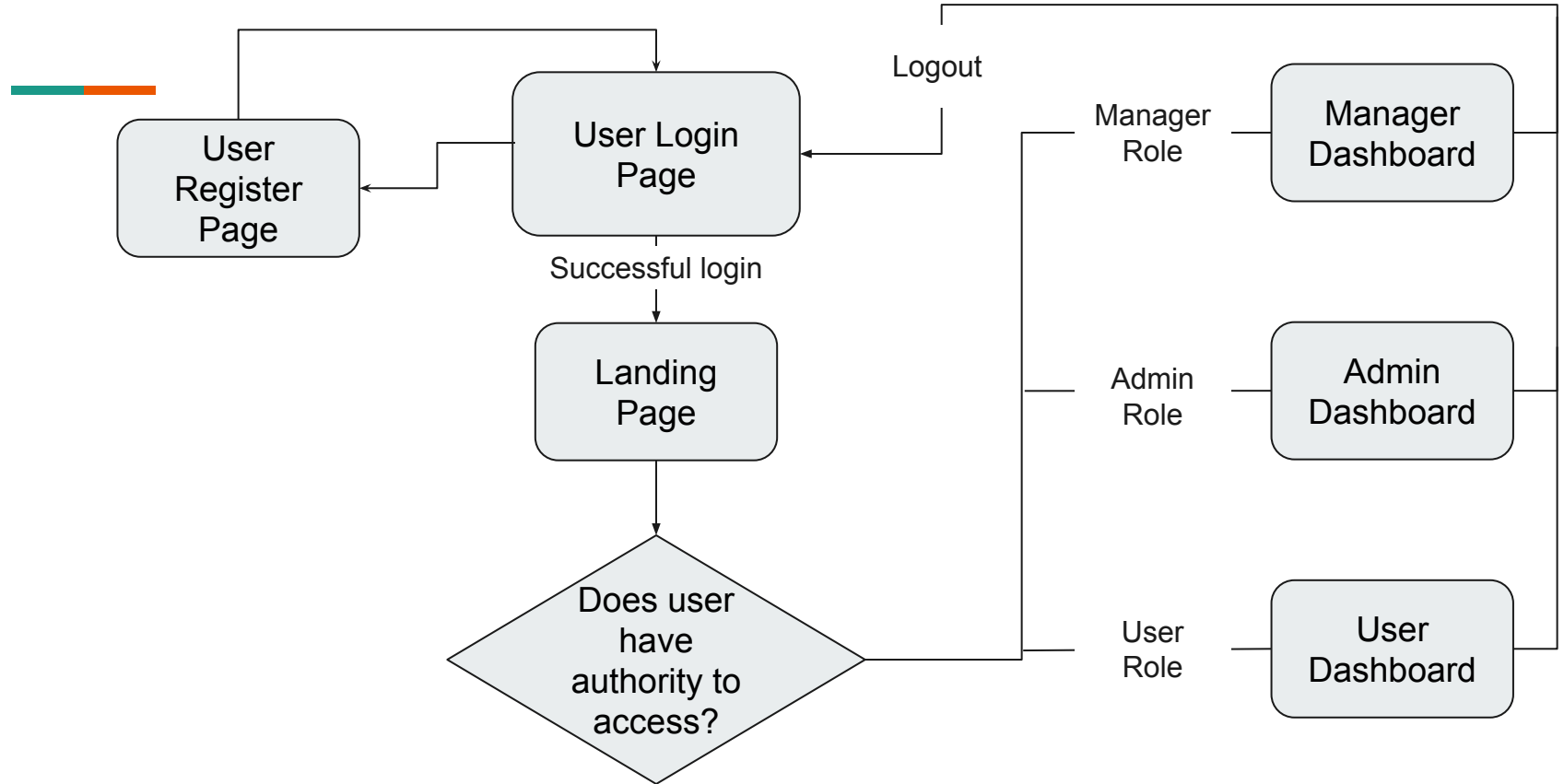
## *notificationmicroservice*

- ❑ Spring-boot
- ❑ Maven
- ❑ ActiveMQ
- ❑ Quartz Scheduler
- ❑ iText PDF v.5
- ❑ Jackson (library)

~~~~~

This microservice serves the **notification portion** of the project application. Upon receiving JMS messages from *ticketmicroservice* through an ActiveMQ broker, it will generate an email and send it to the email address associated with that user. It also uses Quartz to periodically send a JMS message to *ticketmicroservice* to check ticket statuses and perform routine tasks (e.g. sending reminder emails, auto-closing inactive tickets).

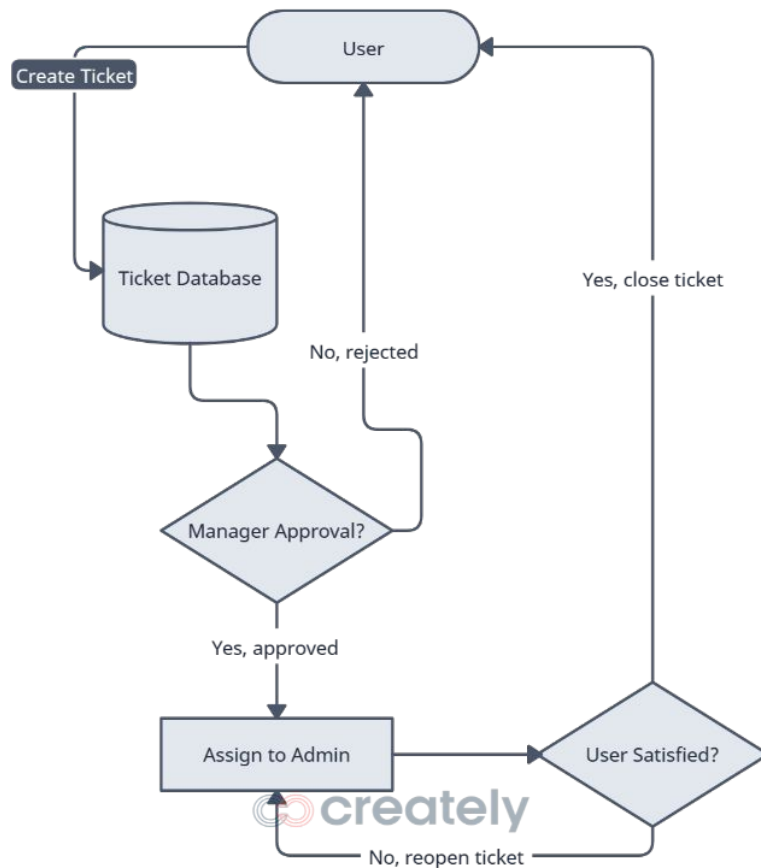
# User Login Flow Diagram



# Ticket Lifecycle Flow Diagram

- User creates a ticket\*
- Manager sees ticket
  - Approved? Assign to Admin\*
  - Rejected? End of ticket life\*
- Admin resolves assigned ticket\*
- User views resolved ticket
  - User satisfied? Close ticket\*
  - User unsatisfied? Reopen ticket and send back to Admin employee\*

\* Denotes a DB change and email notification



# CRON Jobs using Quartz



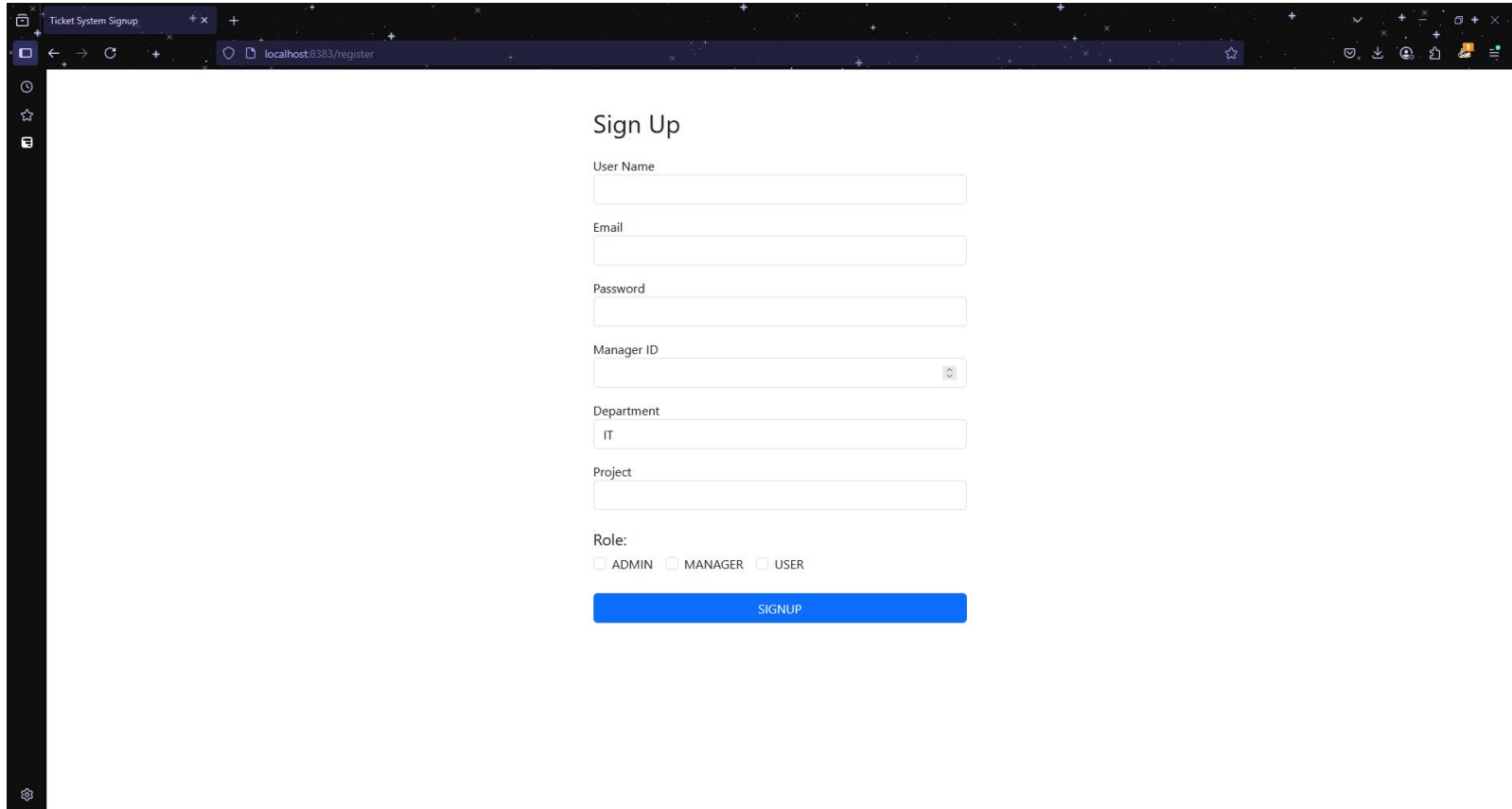
Quartz jobs are used to send JavaMessageService notifications from *notificationmicroservice* to *ticketmicroservice*. Upon receiving this JMS message, *ticketmicroservice* will check for pending tickets and automatically close any inactive, RESOLVED tickets. Email notifications are sent to MANAGERS for pending tickets. Similarly, email notifications are sent upon auto-close of any inactive tickets.

CLOSED ticket ID: 2  
Title: test  
Description: test  
Priority: MEDIUM  
Category: test  
comments: Automatically closed ticket on2025-05-27after 5 or more days of inactivity post ticket resolution

## Pending tickets: 2025-05-27

| ID: | Title:    | Created By: | Priority | Creation Date           | Category  |
|-----|-----------|-------------|----------|-------------------------|-----------|
| 4   | ol ticket | 1           | MEDIUM   | 2024-05-26 00:00:00.000 | ol ticket |

# User Signup

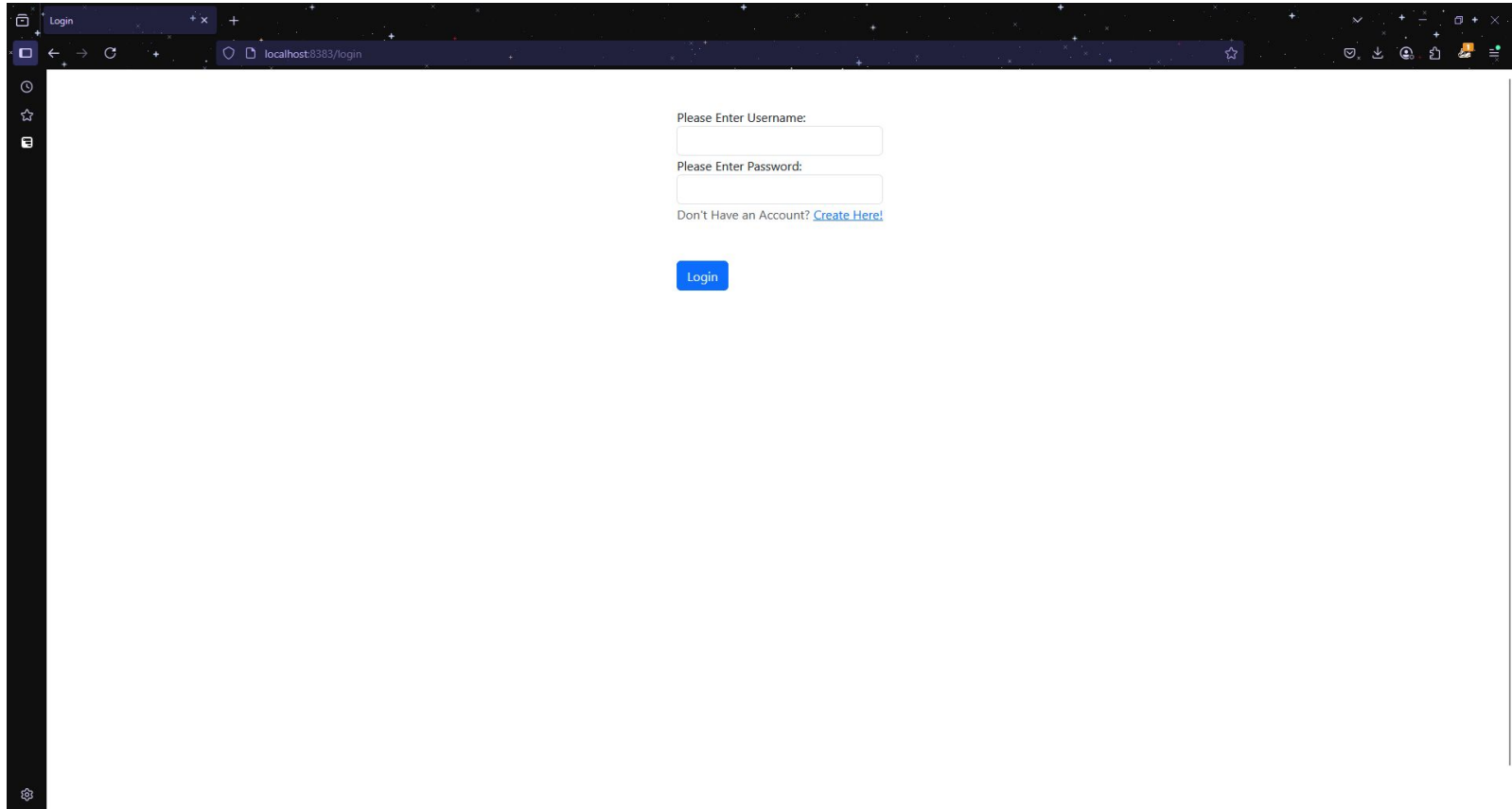


The screenshot shows a web browser window with a dark theme. The browser's address bar displays 'localhost:8383/register'. The page title is 'Ticket System Signup'. On the left side of the browser window, there is a vertical sidebar with icons for home, star, and document, and a settings gear icon at the bottom. The main content area features a 'Sign Up' form with the following fields and options:

- Sign Up** (Section Header)
- User Name**: A text input field.
- Email**: A text input field.
- Password**: A text input field.
- Manager ID**: A text input field with a small dropdown arrow on the right.
- Department**: A text input field containing the value 'IT'.
- Project**: A text input field.
- Role:**
  - ☐ ADMIN
  - ☐ MANAGER
  - ☐ USER
- SIGNUP**: A blue button with white text.



# User Login



The image shows a web browser window with a dark theme. The address bar displays 'localhost:8383/login'. The page content is centered and includes a login form with two input fields, a link to create an account, and a login button.

Login

localhost:8383/login

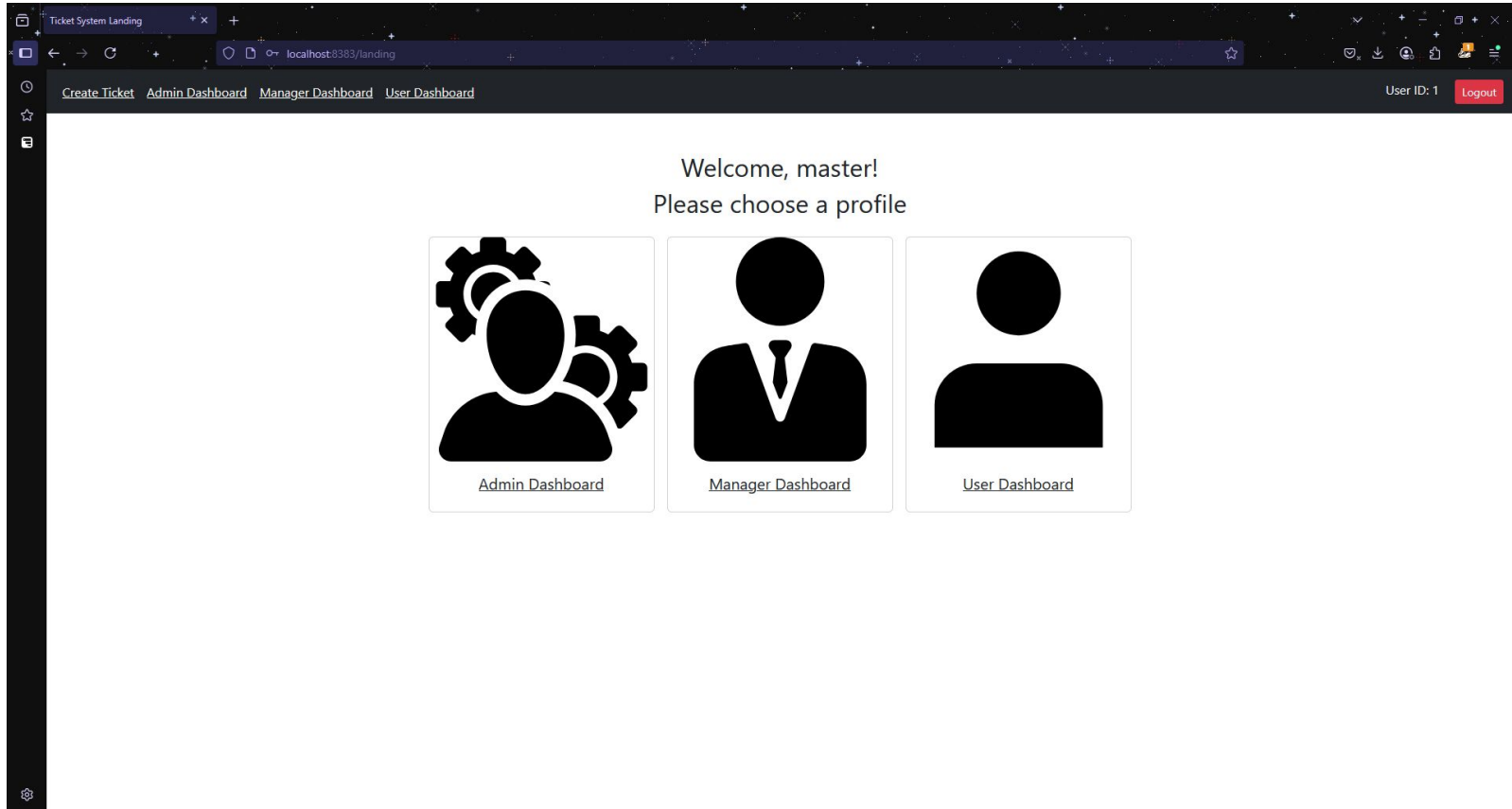
Please Enter Username:

Please Enter Password:

Don't Have an Account? [Create Here!](#)

Login

# Landing



# User Dashboard (active tickets)

The screenshot shows a web browser window with the address bar displaying 'localhost:8383/userDashboard'. The page has a dark sidebar on the left with icons for home, search, and settings. The main content area is titled 'User Dashboard' and features a 'Create Ticket' link. Below the title is a dropdown menu labeled 'Active Tickets'. A table displays the active tickets, with one ticket listed. The table has columns for ID, Title, Created By, Assigned To, Priority, Status, Creation Date, Category, Details, and Delete. The first ticket has ID 1, Title 'ticket 1', Created By 4, Assigned To 'NOT ASSIGNED', Priority 'LOW', Status 'PENDING\_APPROVAL', Creation Date '2025-05-29 04:11:58.0', Category 'Technical Help', and a 'Delete' button. A 'Details: 1' button is also present in the Details column.

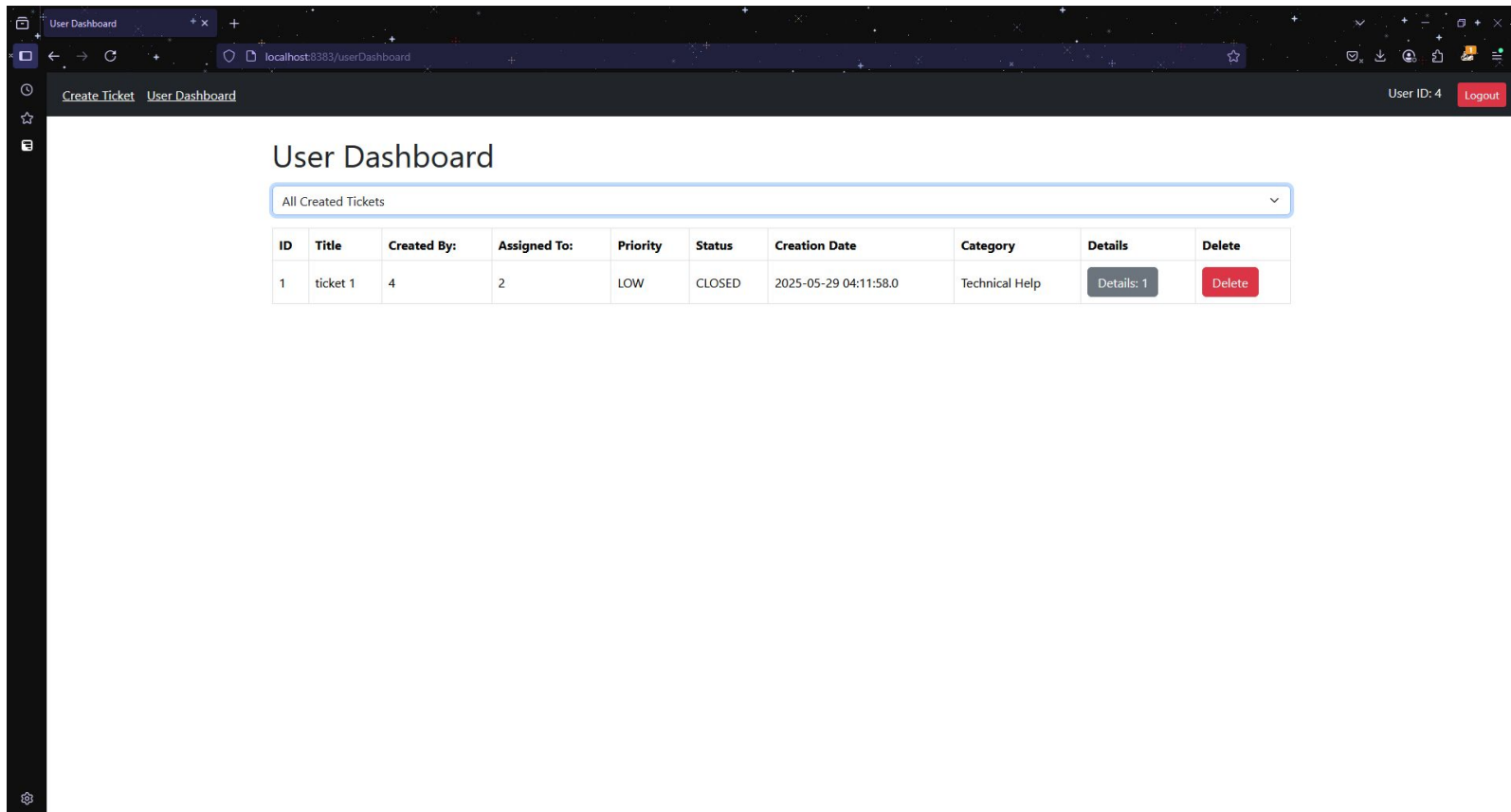
User Dashboard

Create Ticket User Dashboard User ID: 4 Logout

Active Tickets

| ID | Title    | Created By: | Assigned To: | Priority | Status           | Creation Date         | Category       | Details    | Delete |
|----|----------|-------------|--------------|----------|------------------|-----------------------|----------------|------------|--------|
| 1  | ticket 1 | 4           | NOT ASSIGNED | LOW      | PENDING_APPROVAL | 2025-05-29 04:11:58.0 | Technical Help | Details: 1 | Delete |

# User Dashboard (closed/rejected tickets)



The screenshot shows a web browser window with the address bar displaying `localhost:8383/userDashboard`. The page has a dark sidebar on the left with icons for home, search, and settings. The main content area is titled "User Dashboard" and features a dropdown menu labeled "All Created Tickets". Below the dropdown is a table with the following data:

| ID | Title    | Created By: | Assigned To: | Priority | Status | Creation Date         | Category       | Details    | Delete |
|----|----------|-------------|--------------|----------|--------|-----------------------|----------------|------------|--------|
| 1  | ticket 1 | 4           | 2            | LOW      | CLOSED | 2025-05-29 04:11:58.0 | Technical Help | Details: 1 | Delete |

The "Details: 1" button is highlighted in grey, and the "Delete" button is red.

# Manager Dashboard (pending tickets)

Manager Dashboard

localhost:8383/managerDashboard

Create Ticket Manager Dashboard

User ID: 3 Logout

## Manager Dashboard

Tickets Awaiting Approval

| ID | Title    | Created By: | Assigned To: | Priority | Status           | Creation Date         | Category       | Details    | Actions                                              | Delete |
|----|----------|-------------|--------------|----------|------------------|-----------------------|----------------|------------|------------------------------------------------------|--------|
| 1  | ticket 1 | 4           | NOT ASSIGNED | LOW      | PENDING_APPROVAL | 2025-05-29 04:11:58.0 | Technical Help | Details: 1 | <div>Choose Assignee</div> <div>Approve Reject</div> | Delete |

**Comments**

Your message...

# Manager Dashboard (all tickets)

The screenshot shows a web browser window with the title "Manager Dashboard". The address bar displays "localhost:8383/managerDashboard". The browser's top bar includes navigation icons and a user profile section showing "User ID: 3" and a "Logout" button. The dashboard itself has a dark sidebar on the left with icons for home, search, and settings. The main content area is titled "Manager Dashboard" and features a search bar with the text "Get All Tickets". Below the search bar is a table with the following data:

| ID | Title    | Created By: | Assigned To: | Priority | Status   | Creation Date         | Category       | Details    | Delete |
|----|----------|-------------|--------------|----------|----------|-----------------------|----------------|------------|--------|
| 1  | ticket 1 | 4           | 2            | LOW      | ASSIGNED | 2025-05-29 04:11:58.0 | Technical Help | Details: 1 | Delete |

Below the table is a "Comments" section with a text input field labeled "Your message..." and a small icon in the bottom right corner.

# Admin Dashboard (assigned tickets)

The screenshot shows a web browser window with the URL `localhost:8383/adminDashboard`. The page has a dark sidebar on the left with icons for home, tickets, and settings. The main content area has a top navigation bar with `Create Ticket` and `Admin Dashboard` links, and a user profile section showing `User ID: 2` and a `Logout` button. The main heading is `Admin Dashboard`. Below it is a filter dropdown set to `Active Assigned Tickets`. A table displays one ticket with the following data:

| ID | Title    | Created By: | Assigned To: | Priority | Status   | Creation Date         | Category       | Details    | Actions                  |
|----|----------|-------------|--------------|----------|----------|-----------------------|----------------|------------|--------------------------|
| 1  | ticket 1 | 4           | 2            | LOW      | ASSIGNED | 2025-05-29 04:11:58.0 | Technical Help | Details: 1 | <button>Resolve</button> |

Below the table is a `Comments` section with a text input field labeled `Your message...` and a submit button.

# Admin Dashboard (all previously assigned tickets)

The screenshot shows a web browser window with the URL `localhost:8383/adminDashboard`. The page has a dark sidebar on the left with icons for navigation. The main content area is titled "Admin Dashboard" and features a dropdown menu set to "All Assigned Tickets". Below this is a table with the following data:

| ID | Title    | Created By: | Assigned To: | Priority | Status   | Creation Date         | Category       | Details    |
|----|----------|-------------|--------------|----------|----------|-----------------------|----------------|------------|
| 1  | ticket 1 | 4           | 2            | LOW      | RESOLVED | 2025-05-29 04:11:58.0 | Technical Help | Details: 1 |

Below the table is a "Comments" section with a text input field labeled "Your message...".



# Ticket Details (User)

Ticket Details

localhost:8383/ticketDetails/2

Create TicketAdmin DashboardManager DashboardUser Dashboard

User ID: 1Logout

Ticket Details & History

Ticket ID: 2

Title: test ticket 2

Description: description test ticket 2

Created By: 1

Assigned To: 2

Priority: HIGH

Status: CLOSED

Creation Date: 2025-05-29 04:25:39.0

Category: Connection Problems

File Attachments

IMG\_9074\_1\_smaller\_emp1\_1748528739182.png

Comments

Your message...

Delete

| Action Date:            | Action By: | Action Status: | Comments                        |
|-------------------------|------------|----------------|---------------------------------|
| 2025-05-29 04:27:13.434 | 1          | CLOSED         |                                 |
| 2025-05-29 04:26:48.842 | 2          | RESOLVED       | Resolving reopened ticket ID: 2 |
| 2025-05-29 04:26:32.558 | 1          | REOPENED       |                                 |
| 2025-05-29 04:26:16.713 | 2          | RESOLVED       | Resolved by ADMIN:2             |
| 2025-05-29 04:25:49.811 | 3          | ASSIGNED       | Ticket ID: 2 - ASSIGNED by: 3   |
| 2025-05-29 04:25:49.794 | 3          | APPROVED       |                                 |
| 2025-05-29 04:25:39.000 | 1          | CREATED        | testing                         |

# Ticket Details (Manager)

Ticket Details

localhost:8383/ticketDetails/1

Create TicketManager Dashboard

User ID: 3Logout

Ticket ID: 1

Title: ticket 1

Description: description: ticket 1

Created By: 4

Assigned To: NOT ASSIGNED

Priority: LOW

Status: PENDING\_APPROVAL

Creation Date: 2025-05-29 04:11:58.0

Category: Technical Help

File Attachments

IMG\_4279\_emp4\_1748527918738.png

Comments

Your message...

Choose Assignee

ApproveRejectDelete

| Action Date:            | Action By: | Action Status: | Comments                 |
|-------------------------|------------|----------------|--------------------------|
| 2025-05-29 04:11:58.000 | 4          | CREATED        | this is a test, ticket 1 |

# Ticket Details (Admin)

Ticket Details

← → ↺

localhost:8383/ticketDetails/1

☆

🔍 ⬇️ 👤 📄 🗑️ ⌵

Create TicketAdmin Dashboard

User ID: 2Logout

Ticket ID: 1

Title: ticket 1

Description: description: ticket 1

Created By: 4

Assigned To: 2

Priority: LOW

Status: ASSIGNED

Creation Date: 2025-05-29 04:11:58.0

Category: Technical Help

File Attachments

IMG\_4279\_emp4\_1748527918738.png

Comments

Your message...

Resolve

| Action Date:            | Action By: | Action Status: | Comments                                                      |
|-------------------------|------------|----------------|---------------------------------------------------------------|
| 2025-05-29 04:13:25.575 | 3          | ASSIGNED       | Ticket ID: 1 - ASSIGNED by: 3                                 |
| 2025-05-29 04:13:25.559 | 3          | APPROVED       | Manager ID: 3 is assigning ticket:1 to ADMIN employee with ID |
| 2025-05-29 04:11:58.000 | 4          | CREATED        | this is a test, ticket 1                                      |

# Email Notification - Manager (pending tickets)

Pending tickets: 2025-05-27

| ID: | Title:    | Created By: | Priority | Creation Date           | Category  |
|-----|-----------|-------------|----------|-------------------------|-----------|
| 4   | ol ticket | 1           | MEDIUM   | 2024-05-26 00:00:00.000 | ol ticket |

Pending tickets: 2025-05-27

No pending tickets today!

# Email Notification - User (ticket updated)

CREATED ticket ID: 2

Title: test ticket 2

Description: description test ticket 2

Priority: HIGH

Category: Connection Problems

comments: testing

APPROVED ticket ID: 2

Title: test ticket 2

Description: description test ticket 2

Priority: HIGH

Category: Connection Problems

comments:

REOPENED ticket ID: 2

Title: test ticket 2

Description: description test ticket 2

Priority: HIGH

Category: Connection Problems

comments:

CLOSED ticket ID: 2

Title: test ticket 2

Description: description test ticket 2

Priority: HIGH

Category: Connection Problems

comments:

# Email Notification - User (ticket resolved)

## Resolving ticket ID: 2

Resolved by: 2  
Title: test ticket 2  
Description: description test ticket 2  
Priority: HIGH  
Category: Connection Problems  
comments: Resolving reopened ticket ID: 2

One attachment • Scanned by Gmail ⓘ



## TICKET ID: 3

### Ticket Details

Title: ticket 3  
Creation Date: 2025-05-29 04:42:54.0  
Resolved By: 1  
Priority: MEDIUM  
Category: Technical Help

### Description

ticket 3

### Ticket History

| actionDate              | actionBy | action   | comments                      |
|-------------------------|----------|----------|-------------------------------|
| 2025-05-29 04:42:54.000 | 1        | CREATED  | ticket 3                      |
| 2025-05-29 04:42:57.646 | 1        | APPROVED |                               |
| 2025-05-29 04:42:57.742 | 1        | ASSIGNED | Ticket ID: 3 - ASSIGNED by: 1 |
| 2025-05-29 04:43:02.489 | 1        | RESOLVED |                               |
| 2025-05-29 04:49:25.439 | 1        | REOPENED |                               |
| 2025-05-29 04:49:30.470 | 1        | RESOLVED |                               |
| 2025-05-29 04:53:32.990 | 1        | REOPENED |                               |
| 2025-05-29 04:53:35.941 | 1        | RESOLVED |                               |