



**RAJALAKSHMI**  
**ENGINEERING COLLEGE**  
An AUTONOMOUS Institution  
Affiliated to ANNA UNIVERSITY, Chennai

**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**LAB MANUAL**

**CS23432 – Software Construction**

**(REGULATION 2023)**

**RAJALAKSHMI ENGINEERING COLLEGE**  
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<b>Exp.No: 1</b>	<b>AZURE DEVOPS ENVIRONMENT SETUP</b>
<b>Date:22/01/2025</b>	

**AIM:** To set up and access the Azure DevOps environment by creating an organization through the Azure Portal.

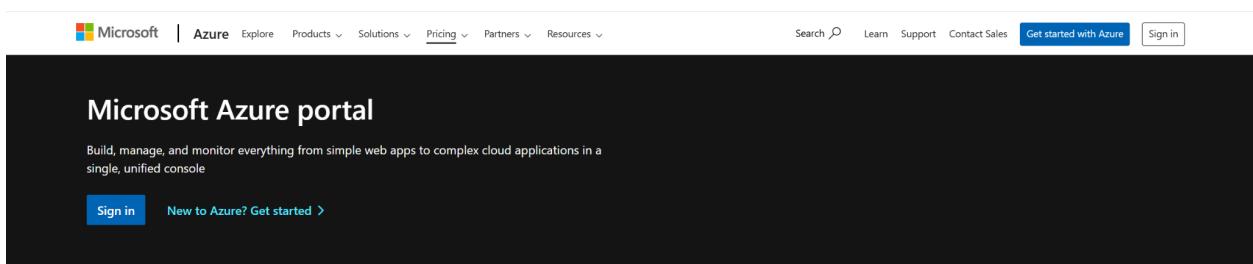
## INSTALLATION

1. Open your web browser and go to the Azure website:

<https://azure.microsoft.com/en-us/getstarted/azure-portal>.

Sign in using your Microsoft account credentials.

If you don't have a Microsoft account, you can create one here: <https://signup.live.com/?lic=1>



### Azure mobile app

Stay connected to your Azure resources—anytime, anywhere. Now available for iOS and Android.

[Learn more >](#)



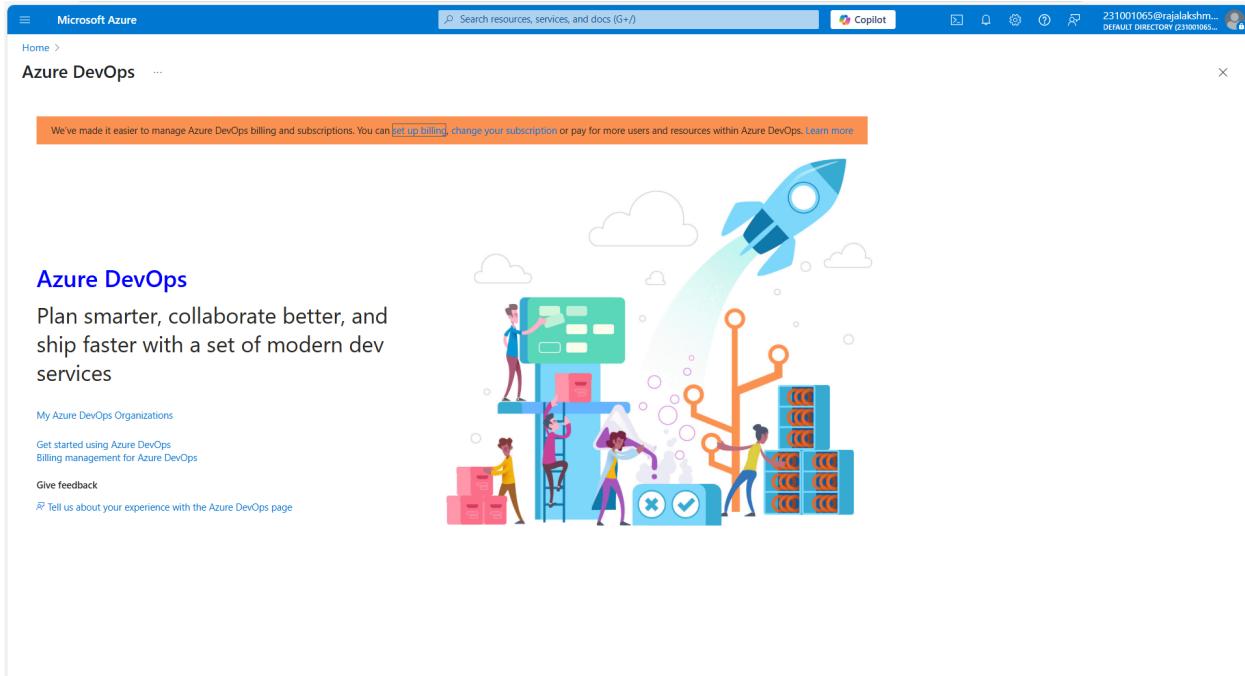
## 2. Azure home page

The screenshot shows the Microsoft Azure home page. At the top, there's a search bar and a Copilot button. Below the search bar, the "Azure services" section includes icons for Create a resource, Azure Load Testing, Resource groups, Quickstart Center, Azure AI foundry, Kubernetes services, Virtual machines, App Services, Storage accounts, and More services. The "Resources" section shows a list of recent resources: "Expense-Tracker-App" (Azure Load Testing, last viewed 11 minutes ago) and "Expense\_Tracker\_App" (Resource group, last viewed 12 minutes ago). The "Navigate" section has links for Subscriptions, Resource groups, All resources, and Dashboard. The "Tools" section includes Microsoft Learn, Azure Monitor, Microsoft Defender for Cloud, and Cost Management. The "Useful links" section has links for Technical Documentation, Azure Services, Recent Azure Updates, and Azure mobile app download links for the App Store and Google Play.

## 3. Open DevOps environment in the Azure platform by typing **Azure DevOps Organizations** in the search bar.

The screenshot shows the Microsoft Azure home page with a search bar containing "devops". The search results are displayed in the center, showing "Services" (Azure Native New Relic Service, Managed DevOps Pools, Azure DevOps organizations, Azure Native Dynatrace Service) and "Marketplace" (Static Web App, Rocky Linux 9, Build Agents for Azure DevOps, Azure Native New Relic Service: New Relic Azure Cloud Monitoring - Start for ...). The "Documentation" section lists "Introduction to DevOps - Training", "Course AZ-400T00-A: Designing and Implementing Microsoft DevOps solutions - T...", "Deploy applications with Azure DevOps learning path - Training", and "Managed DevOps Pools Overview - Managed DevOps Pools". The "Tools" section includes Microsoft Learn, Azure Monitor, Microsoft Defender for Cloud, and Cost Management. The "Useful links" section has links for Technical Documentation, Azure Services, Recent Azure Updates, and Azure mobile app download links for the App Store and Google Play.

4. Click on the ***My Azure DevOps Organization*** link and create an organization and you should be taken to the Azure DevOps Organization Home page.



**RESULT:** Successfully accessed the Azure DevOps environment and created a new organization through the Azure portal.

**Exp.No: 2**

**Date: 07/02/2025**

## **AZURE DEVOPS PROJECT SET UP AND USER STORY MANAGEMENT**

**AIM:** To set up an Azure DevOps project for efficient collaboration and agile work management.

### **STEPS:**

- 1.Create An Azure Account

The screenshot shows the 'Almost done...' step of creating an Azure DevOps organization. It includes fields for the organization name (dev.azure.com/ 2310010650554), location (India), and a CAPTCHA challenge (DKW3). A 'Continue' button is at the bottom.

Azure DevOps

231001065@rajalakshmi.edu.in [Switch directory](#)

**Almost done...**

Name your Azure DevOps organization \*

dev.azure.com/ 2310010650554

We'll host your projects in

India

Enter the characters you see

New    Audio

DK  
W3

Continue

## 2.Create the First Project in Your Organization

- a. After the organization is set up, you'll need to create your first **project**. This is where you'll begin to manage code, pipelines, work items, and more.
- b. On the organization's **Home page**, click on the **New Project** button.
- c. Enter the project name, description, and visibility options:  
*Name*: Choose a name for the project (e.g., LMS).  
*Description*: Optionally, add a description to provide more context about the project.  
*Visibility*: Choose whether you want the project to be **Private** (accessible only to those invited) or **Public** (accessible to anyone).
- d. Once you've filled out the details, click **Create** to set up your first project.

**Create new project**

Project name \*

Description

Visibility

Public  
Anyone on the internet can view the project. Certain features like TFVC are not supported.

Private  
Only people you give access to will be able to view this project.

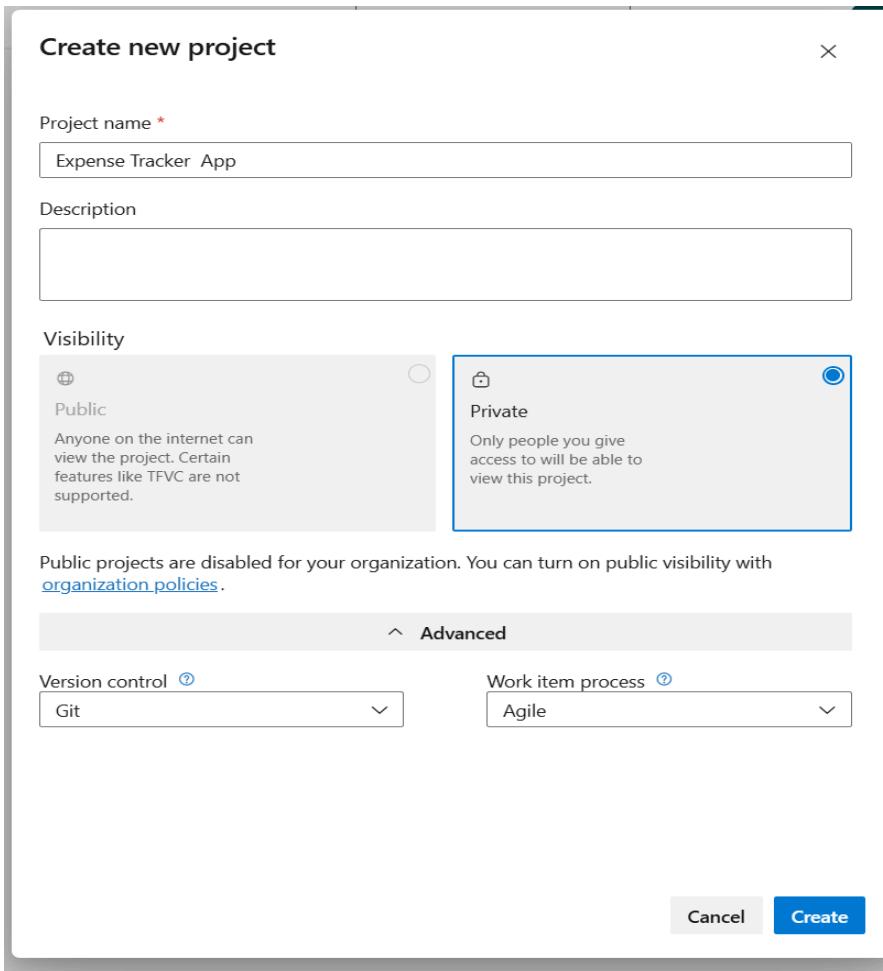
Public projects are disabled for your organization. You can turn on public visibility with [organization policies](#).

Advanced

Version control [?](#)  
Git

Work item process [?](#)  
Agile

Cancel **Create**



3. Once logged in, ensure you are in the correct organization. If you're part of multiple organizations, you can switch between them from the top left corner (next to your user profile). Click on the Organization name, and you should be taken to the Azure DevOps Organization Home page.

#### 4. Project dashboard

5. To manage user stories:

- From the **left-hand navigation menu**, click on **Boards**. This will take you to the main **Boards** page, where you can manage work items, backlogs, and sprints.
- On the **work items** page, you'll see the option to **Add a work item** at the top. Alternatively, you can find a + button or **Add New Work Item** depending on the view you're in. From the **Add a work item** dropdown, select **User Story**. This will open a form to enter details for this user story.

The screenshot shows the Azure Boards interface for the "the expense tracker app" project. The left sidebar includes links for Overview, Boards, Work items, Boards, Backlogs, Sprints, Queries, Delivery Plans, Analytics views, Repos, Pipelines, Test Plans, and Artifacts. The main area displays the "Backlog" tab under the "the expense tracker app Team" board. The backlog table lists six user stories:

#	Type	Title	State	Effort	Business Value
1	Epic	> User and Role Management	New		Business
2	Epic	> System Configuration	New		Business
3	Epic	> Expense Categorization	New		Business
4	Epic	> Reimbursement Processing	New		Business
5	Epic	> Budget Planning	New		Business
6	Epic	> Advanced Reports and Insights	New		Business

To the right of the backlog, there's a "Planning" section with a message about dragging and dropping work items into a sprint. It shows a backlog bar with items 1-6. Below this are three iterations: Iteration 1 (Planned Effort: 023 working days), Iteration 2 (No work scheduled yet), and Iteration 3 (No work scheduled yet). A "+ New Sprint" button is at the bottom.

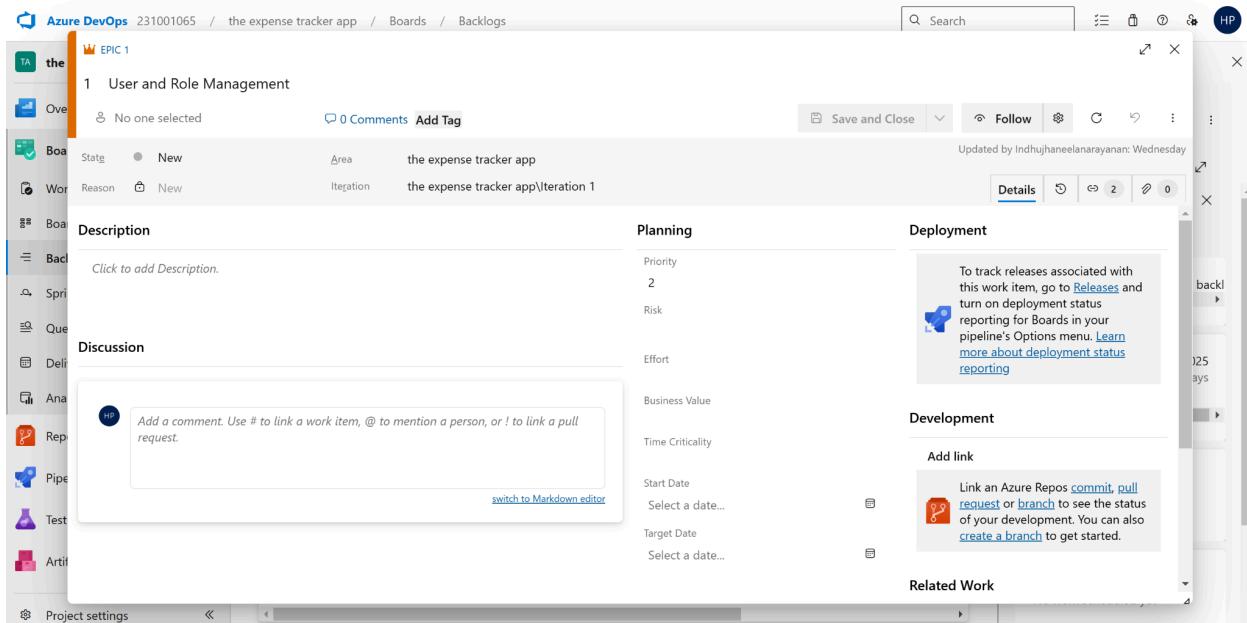
**RESULT:** Successfully created an Azure DevOps project with user story management and agile workflow setup.

<b>Exp.No: 3</b>
<b>Date: 14/02/2025</b>

## **SETTING UP EPICS FEATURES AND USER STORIES FOR PROJECT PLANNING**

**AIM:** To learn about how to create epics, user story, features, backlogs for your assigned project.

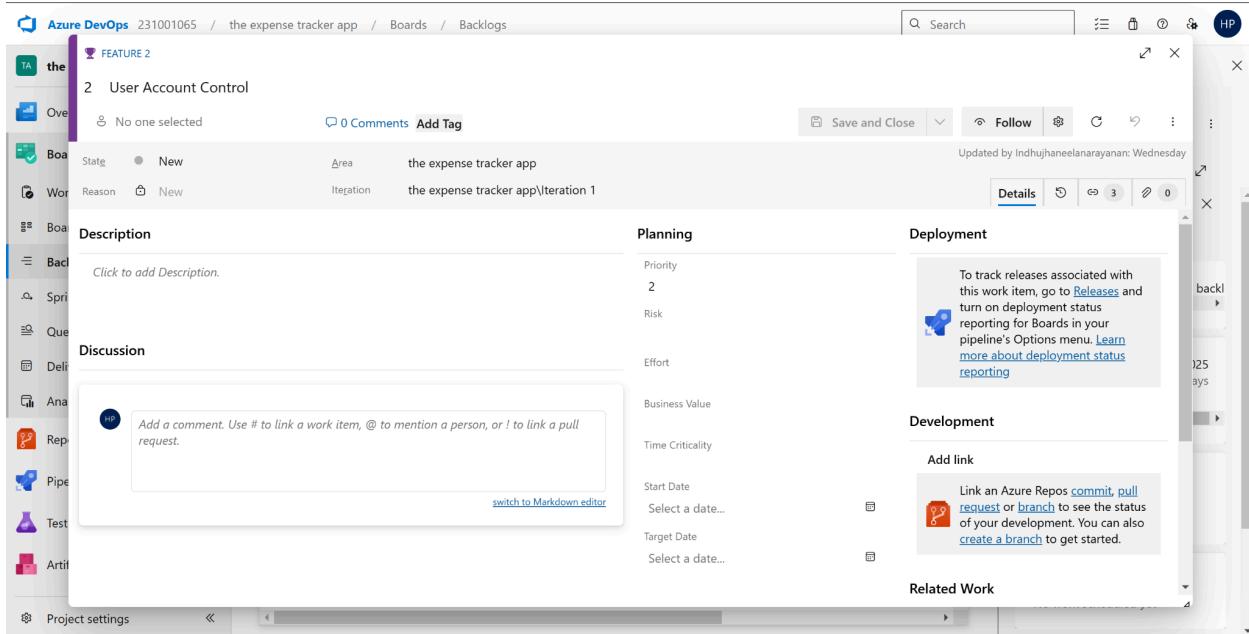
### **1.Fill in Epics**



The screenshot shows the Azure DevOps Backlogs interface. A new Epic is being created with the following details:

- Title:** EPIC 1
- Description:** 1 User and Role Management
- Comments:** 0
- Tags:** None selected
- State:** New
- Area:** the expense tracker app
- Iteration:** the expense tracker app\Iteration 1
- Priority:** 2
- Risk:** None
- Effort:** None
- Business Value:** None
- Time Criticality:** None
- Start Date:** None
- Select a date...**
- Target Date:** None
- Select a date...**
- Deployment:** To track releases associated with this work item, go to [Releases](#) and turn on deployment status reporting for Boards in your pipeline's Options menu. [Learn more about deployment status reporting](#)
- Development:** Add link
- Related Work:** Link an Azure Repos [commit](#), [pull request](#) or [branch](#) to see the status of your development. You can also [create a branch](#) to get started.

## 2.Fill in Features



Screenshot of the Azure DevOps interface showing the creation of a Feature. The URL is [https://dev.azure.com/IndhuJhaneelaranayanan/\\_work/items/edit/231001065](#). The feature title is "2 User Account Control".

**Description:** Click to add Description.

**Planning:**

- Priority: 2
- Risk:
- Effort:
- Business Value:
- Time Criticality:

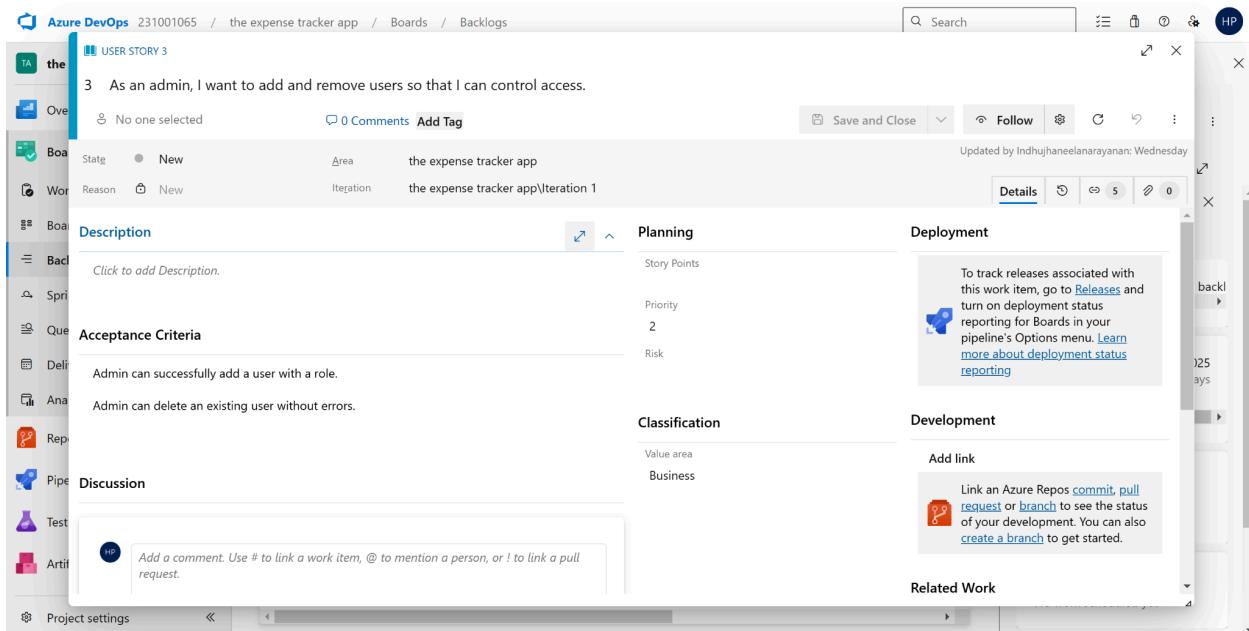
**Deployment:** To track releases associated with this work item, go to [Releases](#) and turn on deployment status reporting for Boards in your pipeline's Options menu. [Learn more about deployment status reporting](#)

**Development:**

Add link: Link an Azure Repos [commit](#), [pull request](#) or [branch](#) to see the status of your development. You can also [create a branch](#) to get started.

**Related Work:**

## 3.Fill in User Story Details



Screenshot of the Azure DevOps interface showing the creation of a User Story. The URL is [https://dev.azure.com/IndhuJhaneelaranayanan/\\_work/items/edit/231001065](#). The user story title is "3 As an admin, I want to add and remove users so that I can control access."

**Description:** Click to add Description.

**Acceptance Criteria:**

- Admin can successfully add a user with a role.
- Admin can delete an existing user without errors.

**Discussion:** Add a comment. Use # to link a work item, @ to mention a person, or ! to link a pull request.

**Planning:**

- Story Points:
- Priority: 2
- Risk:

**Classification:**

- Value area: Business

**Deployment:** To track releases associated with this work item, go to [Releases](#) and turn on deployment status reporting for Boards in your pipeline's Options menu. [Learn more about deployment status reporting](#)

**Development:**

Add link: Link an Azure Repos [commit](#), [pull request](#) or [branch](#) to see the status of your development. You can also [create a branch](#) to get started.

**Related Work:**

#### 4.Fill in Task Details

The screenshot shows the Azure DevOps interface for a task titled 'TASK 4'. The task description is '4 Design the user registration and deletion UI.' The task is set to 'New' status, belongs to the 'the expense tracker app' area, and is part of iteration 1. The task has no comments or tags. The 'Planning' section shows a priority of 2 and an activity of 'Click to add Description.'. The 'Deployment' section includes a note about tracking releases. The 'Effort (Hours)' section shows original estimate, remaining, and completed hours. The 'Development' section allows linking to Azure Repos. The 'Implementation' section indicates 'Integrated in Build'. The 'Related Work' section shows a linked item: 'As an admin, I want to add and remove users so that I can...'. The sidebar on the left shows project navigation options like Overview, Boards, Work items, Backlog, Sprints, Queries, Delivery, Analytics, Repos, Pipeline, Test Plan, and Artifacts. The bottom of the screen shows a progress bar and a footer with 'Project settings'.

**RESULT:** Thus, the creation of epics, features, user story and task has been created successfully.

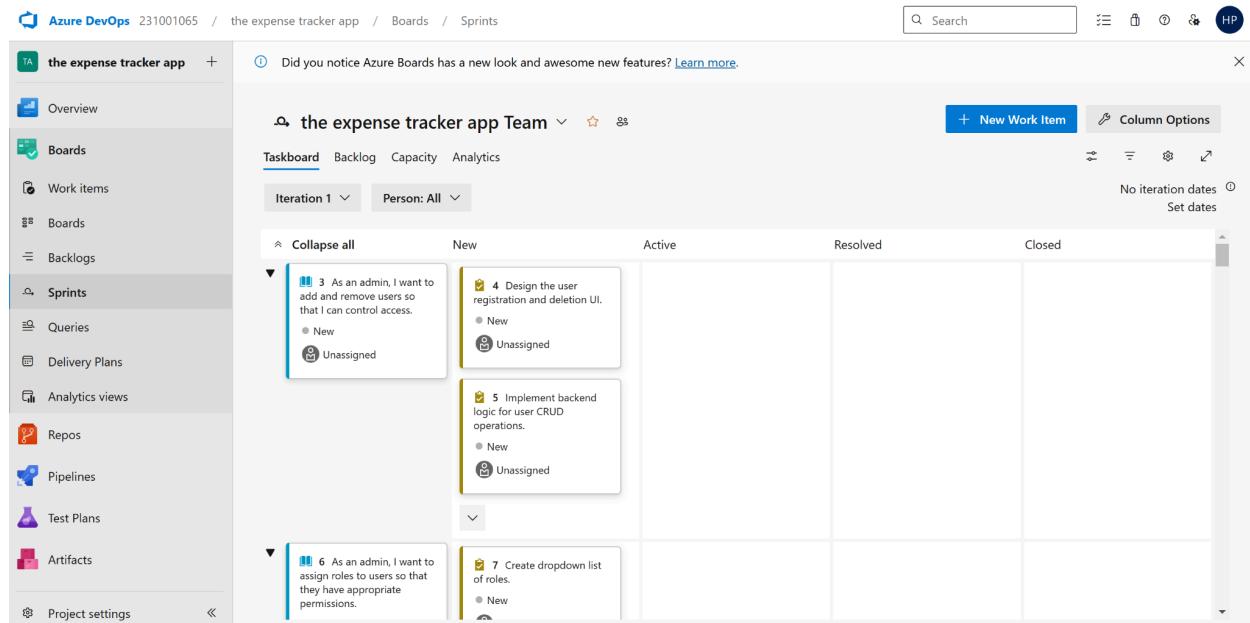
<b>Exp.No: 4</b>
<b>Date: 20/03/2025</b>

## **SPRINT PLANNING**

**AIM:** To assign user story to specific sprint for the expense tracking Project.

### **SPRINT PLANNING**

#### **Sprint 1**

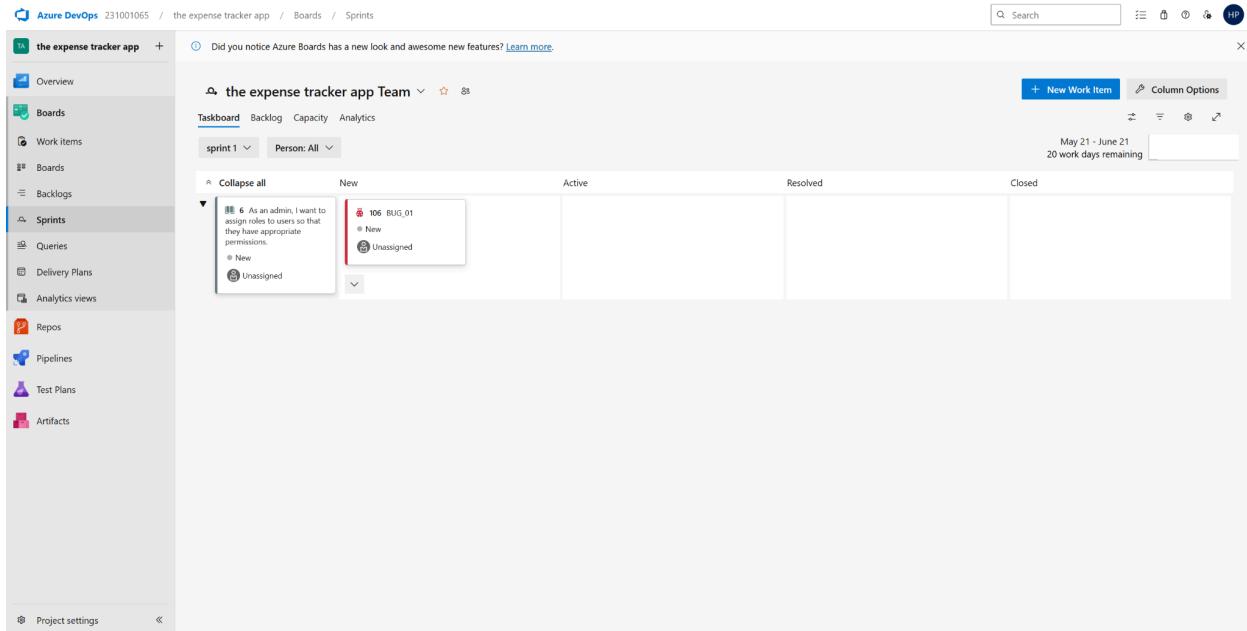


The screenshot shows the Azure DevOps Boards interface for the project "the expense tracker app". The left sidebar is collapsed, and the main area displays the backlog for "Iteration 1". The backlog is organized into columns: New, Active, Resolved, and Closed. There are four items visible in the New column:

- User Story 3: As an admin, I want to add and remove users so that I can control access. Status: New, Assigned to Unassigned.
- User Story 4: Design the user registration and deletion UI. Status: New, Assigned to Unassigned.
- User Story 5: Implement backend logic for user CRUD operations. Status: New, Assigned to Unassigned.
- User Story 6: As an admin, I want to assign roles to users so that they have appropriate permissions. Status: New, Assigned to Unassigned.

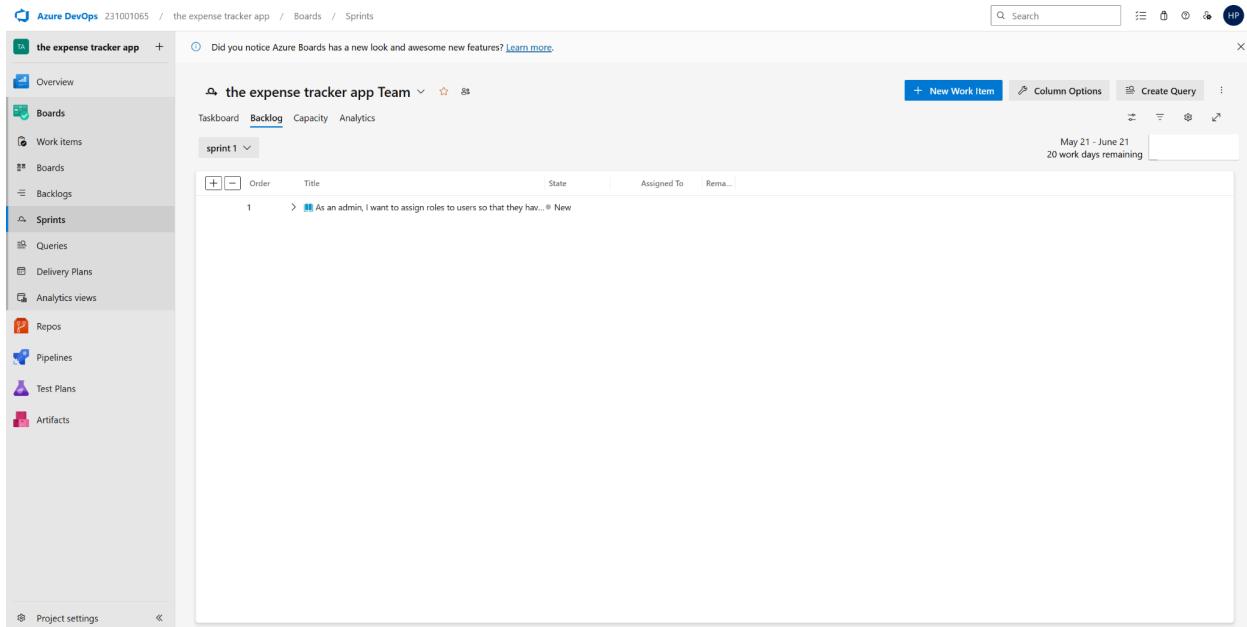
Below the backlog, there is a note: "Did you notice Azure Boards has a new look and awesome new features? [Learn more.](#)"

## Sprint 2



A screenshot of the Azure DevOps Boards interface for the "the expense tracker app" project. The left sidebar shows navigation options like Overview, Boards, Work items, Backlogs, Sprints, Queries, Delivery Plans, and Analytics views. The main area displays a Taskboard for "the expense tracker app Team". The board has columns for sprint 1: New, Active, Resolved, and Closed. A tooltip is shown over a work item titled "BUG\_01" which is labeled as "New" and "Unassigned". The top right shows a timeline from May 21 to June 21 with 20 work days remaining.

## Sprint 3



A screenshot of the Azure DevOps Boards interface for the "the expense tracker app" project. The left sidebar shows navigation options like Overview, Boards, Work items, Backlogs, Sprints, Queries, Delivery Plans, and Analytics views. The main area displays a Taskboard for "the expense tracker app Team". The board has columns for sprint 1: Order, Title, State, Assigned To, and Remarks. A single work item is listed under the Order column, showing an arrow icon and the text "As an admin, I want to assign roles to users so that they have appropriate permissions." The status is "New". The top right shows a timeline from May 21 to June 21 with 20 work days remaining.

## Sprint 4

The screenshot shows the Azure DevOps interface for the 'the expense tracker app' project. The left sidebar navigation bar is visible, showing options like Overview, Boards, Backlogs, Sprints, Queries, Delivery Plans, Analytics views, Repos, Pipelines, Test Plans, and Artifacts. The main area displays the 'Backlog' tab for the 'the expense tracker app Team'. A single work item is listed under the 'sprint 1' backlog:

Order	Title	State	Assigned To	Remainder
1	> As an admin, I want to assign roles to users so that they have access to the application.	New		

At the top right, there are buttons for 'New Work Item', 'Column Options', and 'Create Query'. A status bar at the bottom indicates the sprint duration: 'May 21 - June 21' and '20 work days remaining'.

**RESULT:** The Sprints are created for the expense tracking Project.

<b>Exp.No: 5</b>
<b>Date: 28/03/2025</b>

## POKER ESTIMATION

**AIM:** Create Poker Estimation for the user stories - expense tracking application Project.

### POKER ESTIMATION

The screenshot shows the Azure DevOps interface for creating a User Story. The story is titled "USER STORY 6" and describes the requirement: "As an admin, I want to assign roles to users so that they have appropriate permissions." The story is set to "New" status and belongs to the "the expense tracker app" area and iteration. In the "Planning" section, the "Story Points" are assigned as 2. The "Development" section includes a note about tracking releases via Azure Repos and a link to add development links. The "Classification" section indicates the value area is "Business".

**RESULT:** The Estimation/Story Points is created for the project using Poker Estimation.

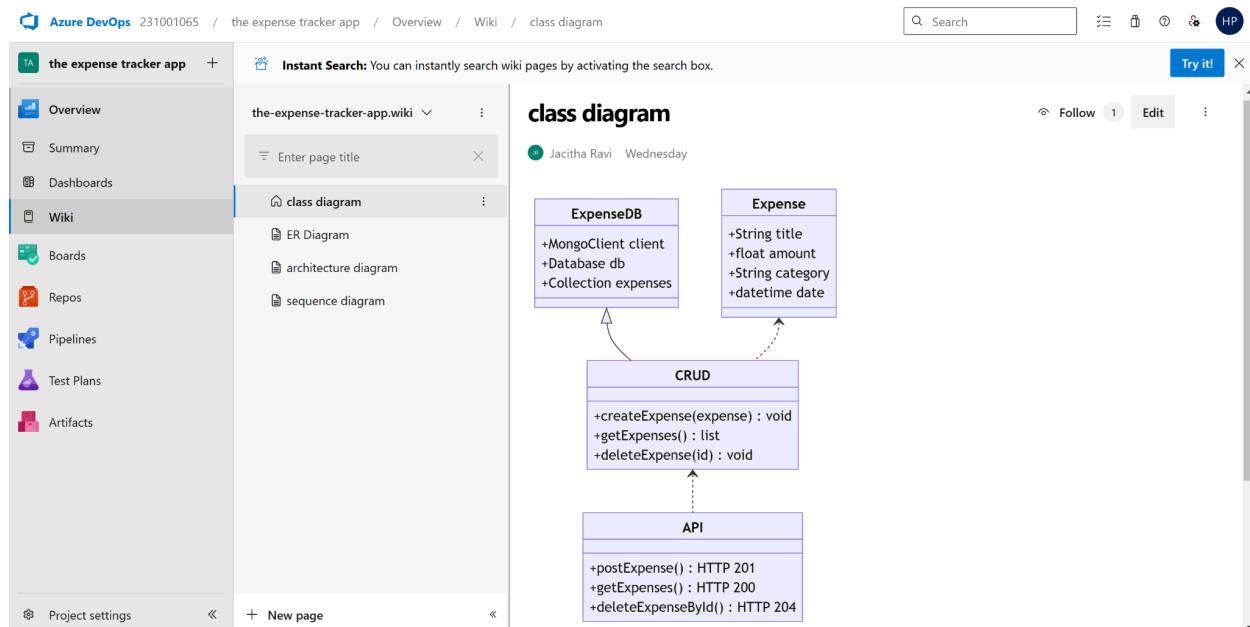
**Exp.No: 6**

## **DESIGNING CLASS AND SEQUENCE DIAGRAMS FOR PROJECT ARCHITECTURE**

**Date: 04/04/2025**

**AIM:** To Design a Class Diagram and Sequence Diagram for the given Project.

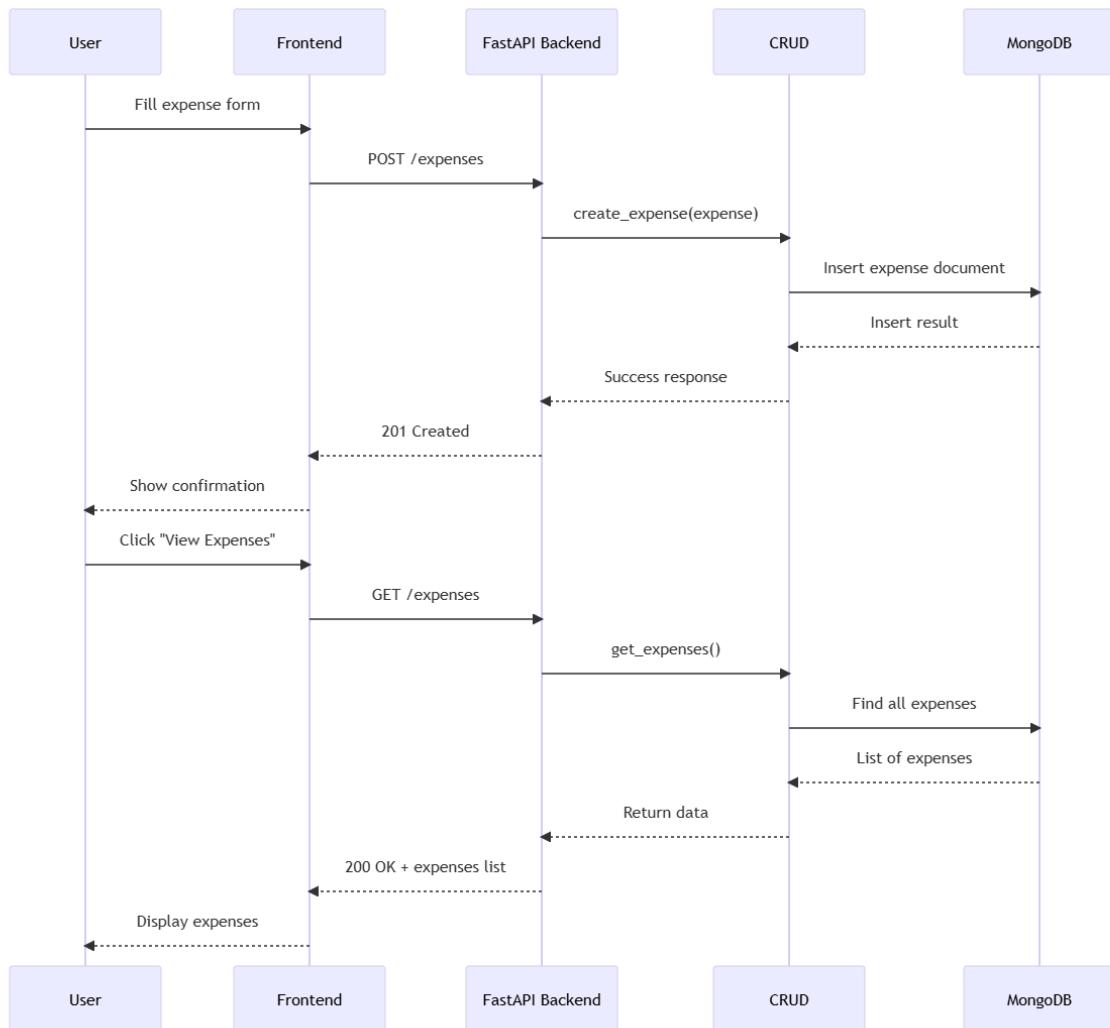
### **6A. CLASS DIAGRAM**



### **6B. SEQUENCE DIAGRAM**

## sequence diagram

Jacitha Ravi Wednesday



**RESULT:** The Class Diagram and Sequence Diagram is designed Successfully for the expense tracking application

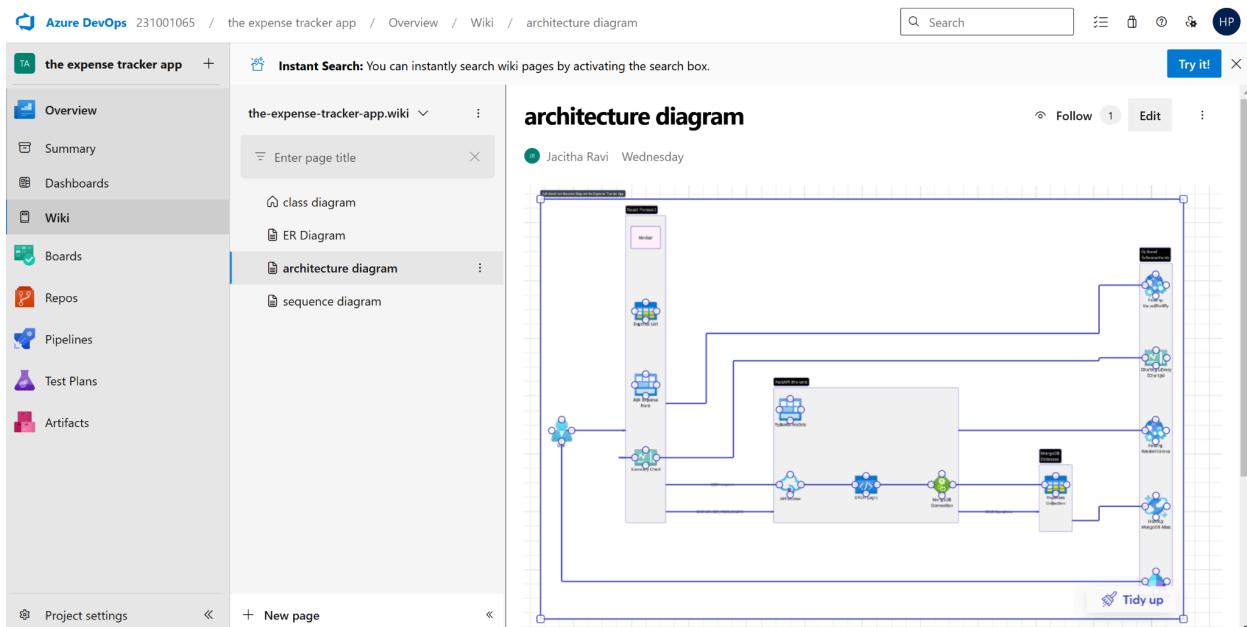
**Exp.No: 7**

**Date: 16/04/2025**

## **DESIGNING ARCHITECTURAL AND ER DIAGRAMS FOR PROJECT STRUCTURE**

**AIM:** To Design an Architectural Diagram and ER Diagram for the given Project.

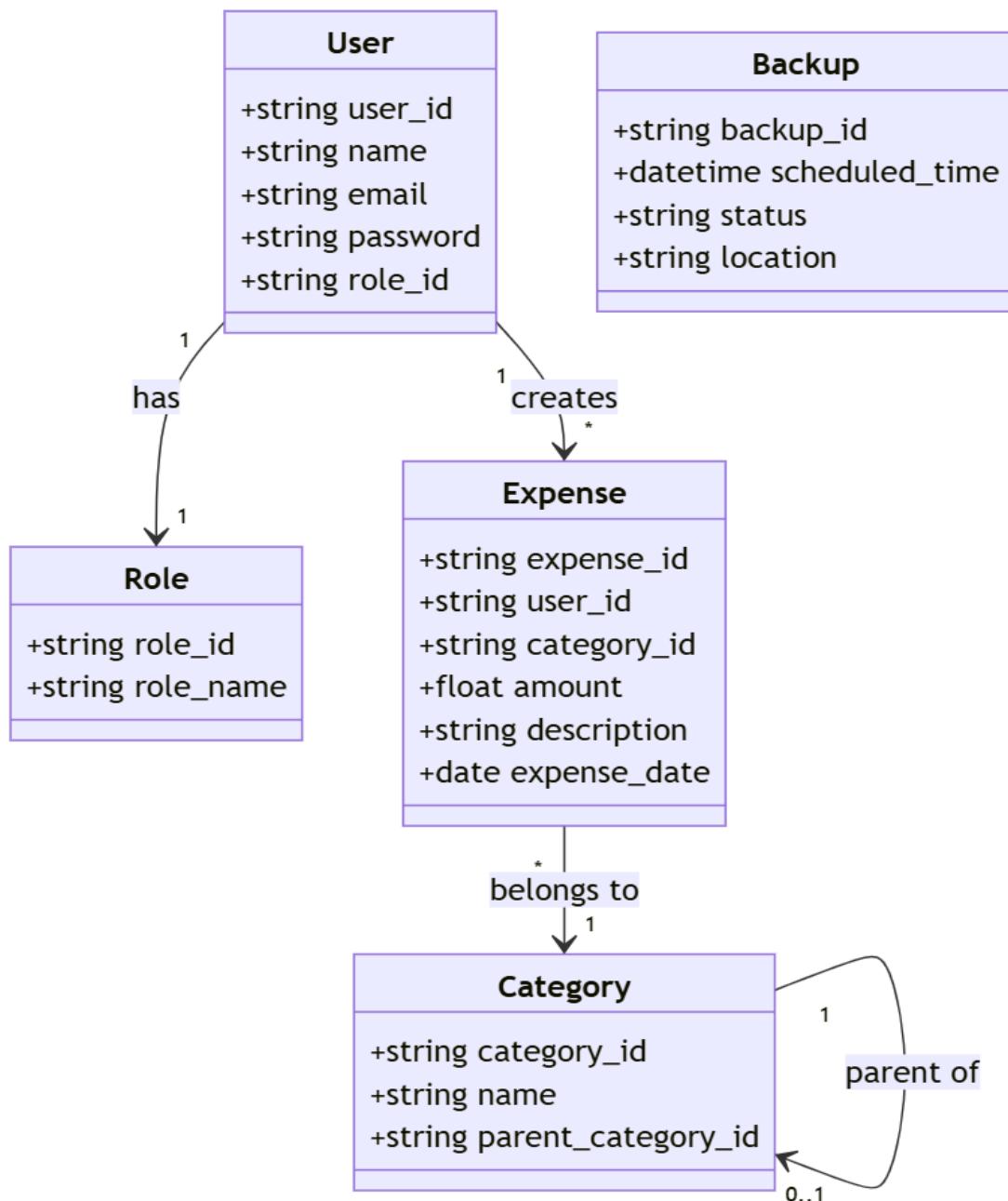
### **7A. ARCHITECTURAL DIAGRAM**



## 7B. ER DIAGRAM

# ER Diagram

Indhujhaneelaranarayanan Friday



**RESULT:** The Architecture Diagram and ER Diagram is designed Successfully for the expense tracking application

<b>Exp.No: 8</b>	<b>TESTING-TEST PLANS AND TEST CASES</b>
<b>Date: 18/04/2025</b>	

**AIM:** Test Plans and Test Case and write two test cases for at least five user stories showcasing the happy path and error scenarios in azure DevOps platform.

## **TEST PLANNING AND TEST CASE**

### **Test Case Design Procedure**

## **1. Understand Core Features of the Application**

- **User Authentication** (Login, Forgot Password, MFA)
- **Internal & External Fund Transfers** (Transfer to own or other accounts)
- **Mobile Recharge and Bill Payments**
- **Debit/Credit Card Management** (PIN generation, block/unblock, view card info)
- **Loan and Insurance Services** (Apply, view schedules, premium tracking)
- **Investment Options** (Mutual Funds, Fixed Deposits)
- **Account Dashboard** (Balance overview, recent transactions)

## 2. Define User Interactions

Each test case reflects realistic user actions:

- Logging in securely
- Transferring funds to own or others' accounts

- Paying bills or recharging mobiles
- Blocking cards when lost
- Applying for loans or insurance

### 3. Design Happy Path Test Cases

- Focused on successful flows where inputs are valid and systems behave as expected.
- Examples:
  - User logs in with valid credentials
  - Transfers funds successfully
  - Views loan schedule or maturity details

### 4. Design Error Path Test Cases

- Focused on handling invalid, missing, or unexpected inputs.
- Examples:
  - Login fails due to incorrect password
  - Fund transfer fails due to insufficient balance
  - Card unblock denied without authentication

### 5. Break Down Steps and Expected Results

Each test case includes:

- Clear step-by-step actions
- Specific expected results for each step  
This ensures reproducibility and easy automation later.

### 6. Use Clear Naming and IDs

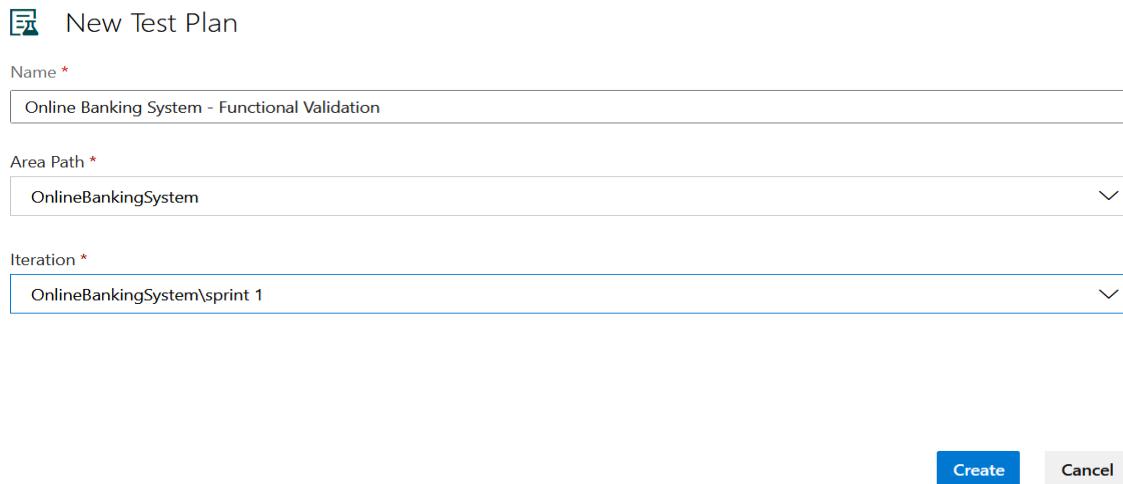
- Example:
  - TC01 – Login with Valid Credentials
  - TC05 – Fund Transfer Blocked (Insufficient Balance)
  - TC11 – Credit Card Bill Payment Successful
- Helps trace test cases to user stories and features in Azure DevOps

## 7. Separate Test Suites

Organize test cases based on functional modules:

- TS01 – User Authentication
- TS02 – Fund Transfers & Recharges
- TS03 – Cards & Loans
- TS04 – Investments & Insurance
- TS05 – Account Management & Security

## 1.New test plan



The screenshot shows the 'New Test Plan' dialog box. It has three input fields: 'Name \*' containing 'Online Banking System - Functional Validation', 'Area Path \*' containing 'OnlineBankingSystem', and 'Iteration \*' containing 'OnlineBankingSystem\sprint 1'. At the bottom right are 'Create' and 'Cancel' buttons.

Name *	Online Banking System - Functional Validation
Area Path *	OnlineBankingSystem
Iteration *	OnlineBankingSystem\sprint 1

**Create**    **Cancel**

## 2. Test suite

The screenshot shows the Azure DevOps Test Plans interface. On the left, there's a sidebar with various project management and testing tools. The main area displays a 'Test Suites' list under the 'Expense Tracker Test Plan'. One specific test suite, '10 : As an admin, I want to view user activity logs to monitor usage. (ID: 100)', is highlighted and expanded. This suite contains two test points: 'Admin successfully views activity logs for a specific user' (Passed) and 'Display appropriate message when no logs are found for a selected date range' (Failed). There are also other suites listed below it, such as '3 : As an admin, I want to ...', '6 : As an admin, I want to as...', and '25 : As an admin, I want to ...'. The top right corner of the interface has a search bar and several small icons.

## 3. Test case

Give two test cases for at least five user stories showcasing the happy path and error scenarios in azure DevOps platform.

Online Banking System– Test Plans

### User Stories – Banking Application

- **US199:** As an admin, I want to remove and add users, so that I can control access.
- **US196:** As a admin, I want to assign roles to users so that they have appropriate permissions.
- **US198:** As a admin, I want to view user activity logs to monitor usage.
- **US201:** As a user, I want schedule automatic data backups.

### TS01 – User Authentication & Role Management

#### TC01 – Login with Valid Credentials

- **Test Type:** Happy Path

- **Description:** User logs in using correct email and password
- **Steps:**

1. Navigate to login page
2. Enter valid email and password
3. Click "Login"

- **Expected Result:** User is redirected to dashboard

- **Priority:** High

### **TC02 – Login Fails with Incorrect Password**

- **Test Type:** Error Path

- **Description:** Login attempt with incorrect password

- **Steps:**

1. Enter valid email
2. Enter wrong password
3. Click "Login"

- **Expected Result:** Error message "Invalid credentials" is shown

- **Priority:** High

### **TC03 – Assign Role to User Successfully**

- **Test Type:** Happy Path

- **Description:** Admin assigns 'Accountant' role to a user

- **Steps:**

1. Login as admin

2. Go to User Management
  3. Select user and assign 'Accountant' role
- **Expected Result:** Confirmation message “Role assigned successfully”
  - **Priority:** High

#### **TC04 – Role Assignment Fails (Non-existent User)**

- **Test Type:** Error Path
  - **Description:** Try assigning a role to a user not in the system
  - **Steps:**
    1. Enter an invalid email in Role Assignment
    2. Try to assign a role
- **Expected Result:** Error message “User not found”
  - **Priority:** Medium

---

## **TS02 – User Activity Monitoring**

#### **TC05 – View Activity Logs for Existing User**

- **Test Type:** Happy Path
- **Description:** Admin views logs of user activity
- **Steps:**

1. Login as admin
  2. Navigate to “Activity Monitoring”
  3. Select user and date range
- **Expected Result:** Logs are displayed with timestamp and actions
  - **Priority:** High

#### **TC06 – No Logs Found for Date Range**

- **Test Type:** Error Path
  - **Description:** No activity in selected date range
  - **Steps:**
    1. Select future date range for user logs
- **Expected Result:** “No logs found for selected date range” message
  - **Priority:** Medium

#### **TS03 – Backup & Recovery**

##### **TC07 – Schedule Automatic Backup Successfully**

- **Test Type:** Happy Path
- **Description:** Admin schedules backup for 2:00 AM daily
- **Steps:**

1. Go to Backup Settings
  2. Set frequency and time
  3. Click Save
- **Expected Result:** “Backup scheduled successfully” confirmation
  - **Priority:** High

#### **TC08 – Backup Fails Due to Invalid Directory**

- **Test Type:** Error Path
  - **Description:** Admin sets inaccessible folder as backup path
  - **Steps:**
    1. Set invalid path
    2. Click Save
- **Expected Result:** “Invalid directory path” error
  - **Priority:** Medium

#### **TS04 – Expense & Category Management**

##### **TC09 – Add New Expense Successfully**

- **Test Type:** Happy Path
- **Description:** User adds an expense to "Food" category

- **Steps:**
  1. Go to Add Expense
  2. Fill in details (amount, date, category)
  3. Submit
- **Expected Result:** “Expense added” message and record appears
- **Priority:** High

#### **TC10 – Add Expense Fails (Missing Amount)**

- **Test Type:** Error Path
- **Description:** User submits form without amount
- **Steps:**
  1. Leave amount field empty
  2. Submit
- **Expected Result:** “Amount is required” validation message
- **Priority:** High

## Test Cases

TEST CASE 202\*

## 202 Successful Pin Generation

AM Abinaya Manivannan [0 Comments](#) [Add Tag](#)

State: Design Area: OnlineBankingSystem Updated by Abinaya Manivannan: 24m ago  
Reason: New Iteration: OnlineBankingSystem\sprint 1

**Steps**

Test Type: Happy Path

**Deployment**

To track releases associated with this work item, go to [Releases](#) and turn on deployment status reporting for Boards in your pipeline's Options menu. [Learn more about deployment status reporting](#)

**Development**

Add link

Link an Azure Repos [commit](#), [pull request](#) or [branch](#) to see the status of your development. You can also [create a branch](#) to get started.

NEW TEST CASE \*

Fund Transfer

Aarthi A P 0 Comments Add Tag

State: Design Area: OnlineBankingSystem  
Reason: New Iteration: OnlineBankingSystem\sprint 1

**Steps**

At

Steps	Action	Expected result
1.	Log in and go to the "Fund Transfer" section	Fund Transfer page is displayed
2.	Select source and destination accounts, enter valid amount	Amount is accepted; no validation error
3.	Click "Transfer" and confirm the transaction	Success message is shown and balances are updated

Click or type here to add a step

**Deployment**

To track releases associated with this work item, go to [Releases](#) and turn on deployment status reporting for Boards in your pipeline's Options menu. [Learn more about deployment status reporting](#)

**Development**

Add link

Link an Azure Repos commit, pull request or branch to see the status of your development. You can also [create a branch](#) to get started.

**Related Work**

Add link

[Add an existing work item as a parent](#)

**Status**

Priority: 2

**NEW TEST CASE \***

### Fund Transfer – Insufficient Balance

Aarthi A P    0 Comments Add Tag

Save and Close

State	Design	Area	OnlineBankingSystem
Reason	New	Iteration	OnlineBankingSystem\sprint 1

**Steps**

Click or type here to add a step

Parameter values

**Custom**

Test Type: Error Path

**Deployment**

**Development**

**Related Work**

**Status**

Priority: 2  
Automation status: Not Automated

**Gleek**

9|eek\_

---

**TEST CASE 204\***

### 204 Fund Transfer

Aarthi A P    0 Comments Add Tag

Save and Close

Follow

Updated by Aarthi A P 5m ago

State	Design	Area	OnlineBankingSystem
Reason	New	Iteration	OnlineBankingSystem\sprint 1

**Steps**

Click or type here to add a step

Parameter values

**Custom**

Test Type: Happy Path

**Deployment**

**Development**

**Related Work**

**Status**

Priority: 2  
Automation status: Not Automated

**Gleek**

9|eek\_

NEW TEST CASE \*

### PIN mismatch during generation

AM Abinaya Manivannan 0 Comments Add Tag

Save and Close

State Design Area OnlineBankingSystem  
Reason New Iteration OnlineBankingSystem\sprint 1

Steps Summary Associated Automation

**Steps**

Steps	Action	Expected result	Attach
1.	Log in to the system and navigate to the "Generate Debit Card PIN" section.	The user is successfully logged in, and the "Generate Debit Card PIN" page or section is displayed.	
2.	Enter the required card details, a new 4-digit PIN, and re-enter a <i>different</i> 4-digit PIN for confirmation.	The system accepts the card details and both PIN entries without immediate error. The new PIN entered in the first instance is different from the confirmation PIN entered in the second instance.	
3.	Click on "Generate PIN" and observe the system feedback.	An error message is displayed to the user indicating that the PIN do not match and the debit card PIN is <i>not</i> generated.	

Parameter values

**Custom**

Test Type Error Path

**Deployment**

To track releases associated with this work item, go to [Releases](#) and turn on deployment status reporting for Boards in your pipeline's Options menu. [Learn more about deployment status reporting](#)

**Development**

Add link

Link an Azure Repos [commit](#), [pull request](#) or [branch](#) to see the status of your development. You can also [create a branch](#) to get started.

## 4.Installation of test

### Test and feedback

chrome web store

Discover Extensions Themes

Search extensions and themes

**Test & Feedback**

Featured 4.2 ★ (175 ratings) Share

Extension Workflow & Planning 200,000 users

Add to Chrome

Capture & Annotate

CAPTURE

1. Screenshots  
2. Notes  
3. Screen recordings  
4. Image action log  
5. Page load data

Overview

New bug

incorrect price

1. New bug  
2. New recording  
3. New screenshot  
4. New notes  
5. New image action log  
6. New page load data

PCs

Change the color of button as per UX mock

Overview

Showing it as an extension

The screenshot shows the Azure DevOps Test Plans interface for the 'the expense tracker app' project. The left sidebar is visible with options like Overview, Boards, Repos, Pipelines, Test Plans, Test plans, Progress report, Parameters, Configurations, Runs, and Artifacts. The 'Test plans' section is currently selected. The main area displays the 'Expense Tracker Test Plan' with a progress bar indicating 100% run, 62% passed, and a link to 'View report'. A test suite titled '10 : As an admin, I want to view user activity logs to monitor...' is expanded, showing three test points: 'Admin successfully views activity logs for a specific user' (Passed) and 'Display appropriate message when no logs are found for a selected date range' (Failed). A context menu is open in the top right corner, showing extensions like 'React Developer Tools' and 'Test & Feedback', along with options to 'Manage extensions' and 'Get extensions for Microsoft Edge'. The browser address bar shows the URL: https://dev.azure.com/231001065/the%20expense%20tracker%20app/\_testPlans/execute?planId=91&suitId=100.

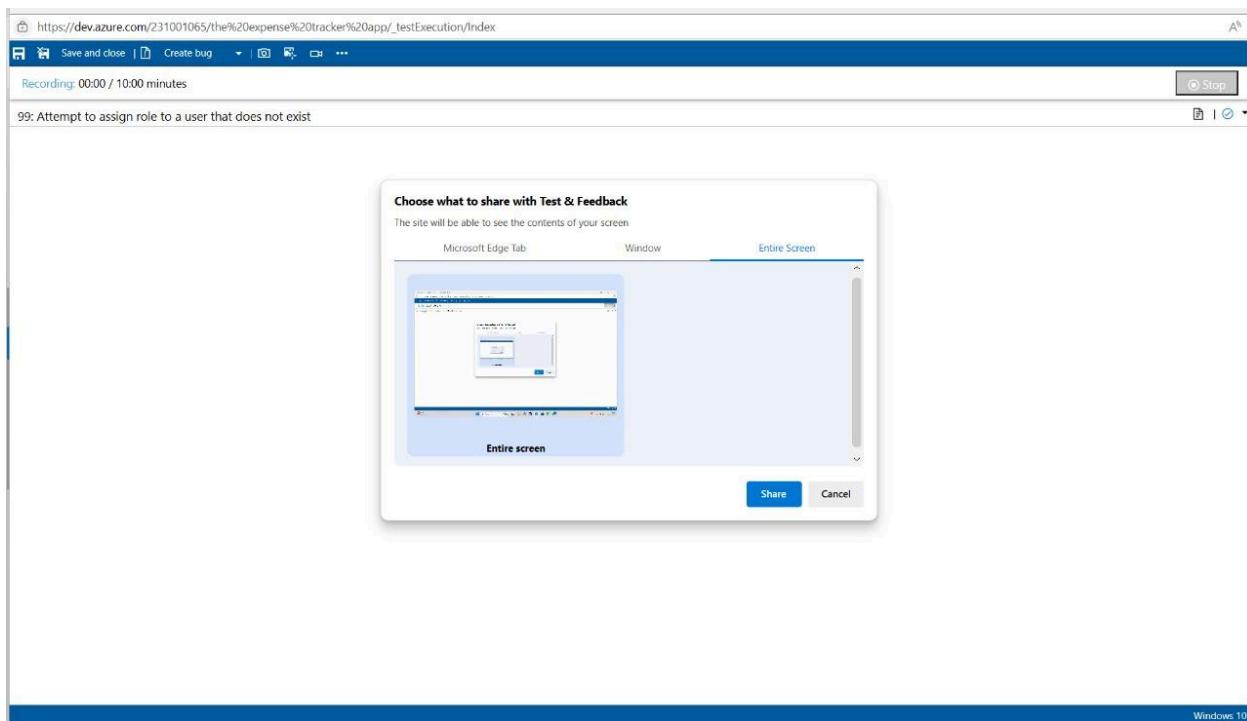
## 5. Running the test cases

The screenshot shows the Azure DevOps interface for the 'the expense tracker app' project. The left sidebar is the navigation menu. The 'Test Plans' section is selected. In the main area, a 'Test Suites' list is displayed under the 'Expense Tracker Test Plan'. One item, '10 : As an admin, I want to view user activity logs to monitor usage. (ID: 100)', is highlighted with a blue selection bar. To the right, a detailed view of this test case is shown, including its title, status (Passed), and ID (101). A table lists two test points: 'Admin successfully views activity logs for a specific user' (Passed) and 'Display appropriate message when no logs are found for a selected date range' (Failed).

The screenshot shows the Azure DevOps interface for the 'the expense tracker app' project. The left sidebar is the navigation menu. The 'Runs' section is selected. In the main area, the 'Recent test runs' section is visible, showing a list of six recent runs. The first run, '25 : As an admin, I want to schedule automatic data backups. (Manual)', is highlighted with a blue selection bar. The table includes columns for State, Run ID, Title, Completed Date, and Build Number.

State	Run Id.	Title	Completed Date	Build Number
Needs investigation	7	25 : As an admin, I want to schedule automatic data backups. (Manual)	23-05-2025 02:40:46	
Needs investigation	6	10 : As an admin, I want to view user activity logs to monitor usage. (Manual)	23-05-2025 02:40:21	
Needs investigation	5	3 : As an admin, I want to add and remove users so that I can control access...	23-05-2025 02:39:52	
Needs investigation	4	3 : As an admin, I want to add and remove users so that I can control access...	23-05-2025 02:39:35	
Completed	3	6 : As an admin, I want to assign roles to users so that they have appropriate...	23-05-2025 02:35:17	
Completed	2	6 : As an admin, I want to assign roles to users so that they have appropriate...	23-05-2025 02:32:07	

## 6.Recording the test case



## 7.Creating the bug

## 8. Test case results

The screenshot shows the Azure DevOps interface for a test plan. On the left, the navigation bar includes 'OnlineBankingSystem', 'Overview', 'Boards', 'Repos', 'Pipelines', 'Test Plans' (selected), 'Test plans', 'Progress report', 'Parameters', 'Configurations', 'Runs', and 'Artifacts'. Under 'Test Plans', 'Test suites' are listed: 'TS03 : As a user, I want to generate', 'TS04 : As a user, I want to ope...', 'TS01 : As a user, I want to log ...', 'TS02 : As a user, I want to tran...', and 'TS05 : As a user, I want to pay...'. The 'Execute' tab is selected for 'TS03'. The 'Test Case Results' section displays a table of test points:

Outcome	TimeSta...	Configuration	Run by	Tester	Test
Passed	Just now	Windows 10	Abinaya Maniv...	Abinaya Maniv...	Online
Failed	Just now	Windows 10	Abinaya Maniv...	Abinaya Maniv...	Online
Passed	21m ago	Windows 10	Abinaya Maniv...	Abinaya Maniv...	Online
Passed	26m ago	Windows 10	Abinaya Maniv...	Abinaya Maniv...	Online

[Open execution history for current test point](#)

## 9. Test report summary

The screenshot shows the Azure DevOps interface for work items. The left sidebar includes 'the expense tracker app' (selected), 'Overview', 'Boards', 'Work items' (selected), 'Boards', 'Backlogs', 'Sprints', 'Queries', 'Delivery Plans', 'Analytics views', 'Repos', 'Pipelines', 'Test Plans', and 'Artifacts'. The 'Work items' section shows a bug report for 'BUG\_01' (ID 106). The details include:

- Reason:** New
- Iteration:** the expense tracker app\sprint 1
- Repro Steps:** 23-05-2025 02:33 Bug filed on "Attempt to assign role to a user that does not exist"
- Test Configuration:** Windows 10
- System Info:**

Browser - Name	Microsoft Edge 136
Browser - Language	en-US
Browser - Height	912
Browser - Width	1536
Browser - User agent	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/136.0.0.0 Safari/537.36 Edg/136.0.0.0
Operating system - Name	Windows NT 10.0: Win64; x64
Operating system - Architecture	x86_64
Operating system - Processor model	12th Gen Intel(R) Core(TM) i5-12450H
Operating system - Number of processors	12
- Planning:**
  - Resolved Reason:
  - Story Points:
  - Priority: 2
  - Severity: 3 - Medium
  - Activity:
- Deployment:** To track releases associated with this work item, go to [Releases](#) and turn on deployment status reporting for Boards in your pipeline's Options menu. [Learn more about deployment status reporting](#)
- Development:** Add link
- Effort (Hours):** Original Estimate:
- Remaining:**
- Completed:**
- Related Work:** Add link

- Assigning bug to the developer and changing state

The screenshot shows the Azure DevOps interface for the 'OnlineBankingSystem' project. The left sidebar navigation bar is visible, with 'Work items' selected. The main content area displays a work item titled '213 BUG\_NO\_1'. The work item details include:

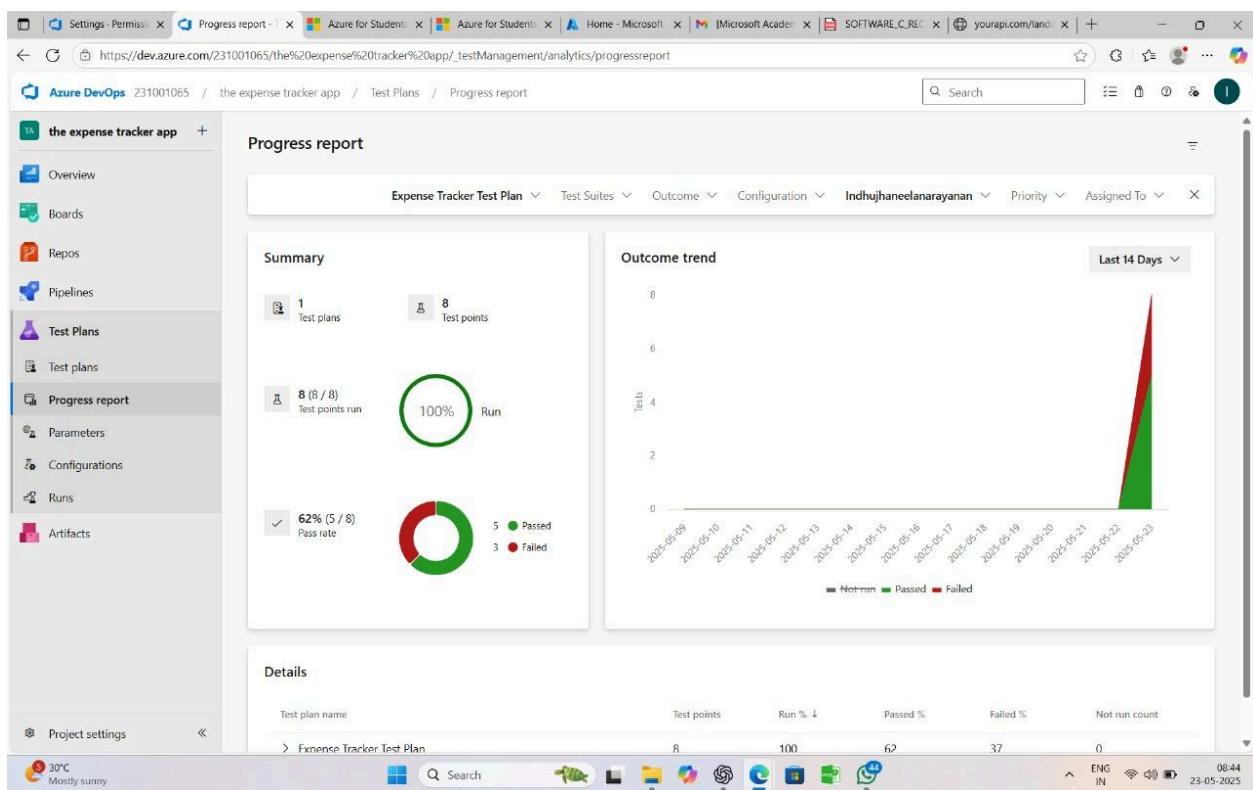
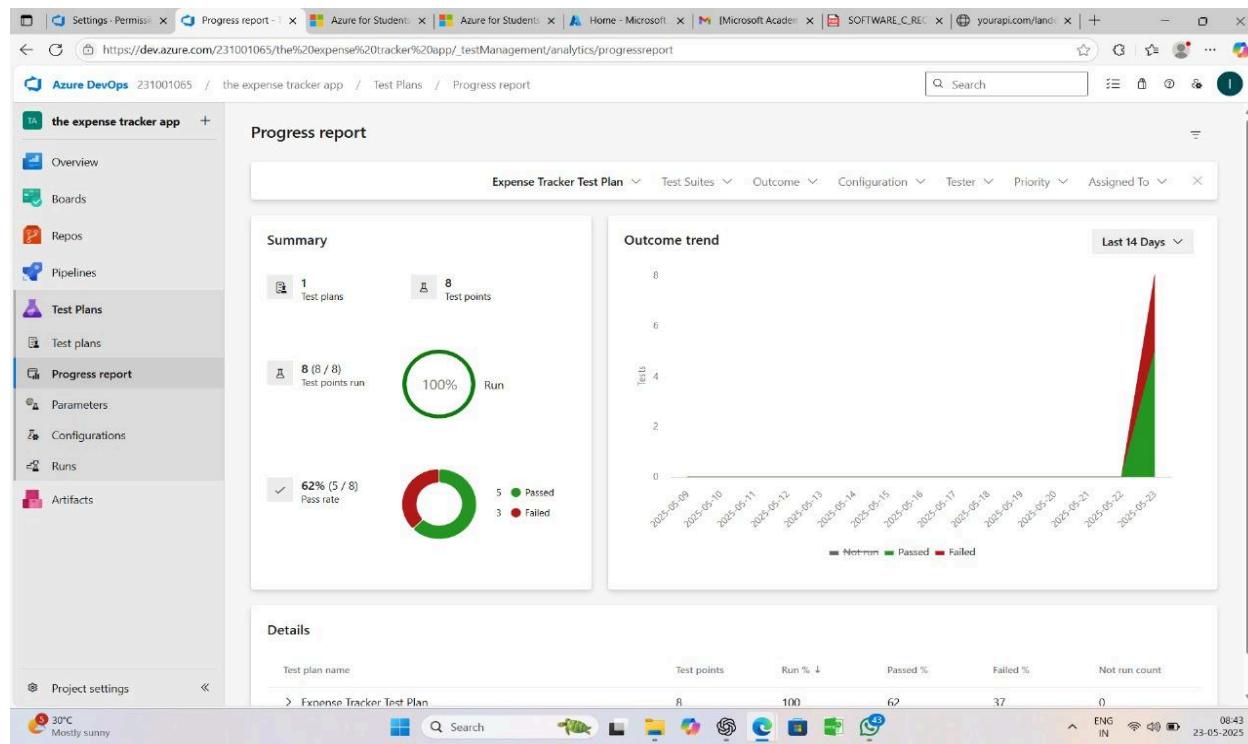
- Title:** BUG\_NO\_1
- Assignee:** Aarthi A P
- Comments:** 0 Comments
- Add Tag:** Add Tag
- State:** New
- Reason:** New
- Area:** OnlineBankingSystem
- Iteration:** OnlineBankingSystem\sprint 1
- Updated by:** Aarthi A P: May 5

The 'Repro Steps' section contains three steps:

- Step no.**: 1. **Result**: Passed **Title**: Log in and go to the "Fund Transfer" section **Expected Result**: Fund Transfer page is displayed
- Step no.**: 2. **Result**: Failed **Title**: Select source account with low balance, enter transfer amount greater than available balance **Expected Result**: Validation error or warning message is shown (e.g., "Insufficient balance")
- Step no.**: 3. **Result**: Failed **Title**: Click "Transfer" and try to proceed **Expected Result**: Fund transfer

The right side of the page displays sections for **Planning**, **Deployment**, **Development**, and **Related Work**. The **Planning** section includes fields for Resolved Reason, Story Points, Priority, Severity, and Activity. The **Deployment** section provides instructions for tracking releases. The **Development** section includes an 'Add link' button and a note about linking to Azure Repos. The **Related Work** section includes an 'Add link' button and a 'Parent' field.

## 10. Progress report



## 11.Changing the test template

The screenshot shows the Azure DevOps Settings page for organization 231001065. The left sidebar is titled 'Organization Settings' and includes sections for General (Overview, Projects, Users, Billing, Global notifications, Usage, Extensions, Microsoft Entra), Security (Security overview, Policies, Permissions), Boards, Pipelines, and Agent pools. The main content area is titled 'All processes' and lists several process templates:

Name	Description	Team projects
Basic (default)	This template is flexible for any process and great for teams getting started with A...	0
Agile	This template is flexible and will work great for most teams using Agile planning m...	0
231001065 Agile		1
Scrum	This template is for teams who follow the Scrum framework.	0
CMMI	This template is for more formal projects requiring a framework for process impro...	0

## 12.View the new test case template

The screenshot shows the 'Add a field to Test Case' dialog. On the left, there are tabs for Definition, Options, and Layout, with 'Definition' selected. The main area has a heading 'Add a field to store custom, queryable data about your work items.' and two options: 'Use an existing field' (radio button is unselected) and 'Create a field' (radio button is selected). For 'Create a field', the 'Name' field contains 'Test Type', the 'Type' field is set to 'Text (single line)', and the 'Description' field contains 'Optionally provide a description for the field'. At the bottom right are 'Add field' and 'Cancel' buttons.

The screenshot shows the Azure DevOps interface for managing process settings. The left sidebar is titled "Organization Settings" and includes sections for General, Security, Boards, and Pipelines. The "Process" section is currently selected. The main area displays the "Test Case" configuration page under "All processes > 231001065 Agile". The "Steps" tab is active, showing a field labeled "Text (multiple lines)". Other tabs include "Summary", "Associated Aut...", "Recent test results", "Deployment", "Development", "Related Work", and "Status". A "Custom" section on the right contains a "Test Type" field. A top banner provides a warning about the deprecation of Windows Server 2019 support.

**RESULT:** The test plans and test cases for the user stories is created in Azure DevOps with Happy Path and Error Path

<b>Exp.No: 9</b>	<b>LOAD TESTING AND PERFORMANCE TESTING</b>
<b>Date: 25/04/2025</b>	

**AIM:** To create an Azure Load Testing resource and run a load test to evaluate the performance of a target endpoint.

## **LOAD TESTING**

### **Steps to Create an Azure Load Testing Resource:**

Before you run your first test, you need to create the Azure Load Testing resource:

1. Sign in to Azure Portal  
Go to <https://portal.azure.com> and log in.
2. Create the Resource
  - o Go to *Create a resource* → Search for “Azure Load Testing”.
  - o Select Azure Load Testing and click Create.
3. Fill in the Configuration Details
  - o *Subscription*: Choose your Azure subscription
  - o *Resource Group*: Create new or select an existing one.
  - o *Name*: Provide a unique name (no special characters).
  - o *Location*: Choose the region for hosting the resource.
4. (Optional) Configure tags for categorization and billing.
5. Click Review + Create, then Create.
6. Once deployment is complete, click Go to resource.

Microsoft Azure

Home > Create a resource > Marketplace > Azure Load Testing >

### Create a load testing resource

Basics    Encryption    Tags    Review + create

Azure Load Testing is a fully managed load-testing service that makes it easy to generate high-scale load and identify performance bottlenecks. [Learn more](#)

**Project details**  
Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription: Azure for Students  
Resource group: (New) BankProject

**Instance details**  
Name: MYBANKAPP  
Region: East Asia

Previous    Next    Review + create

Microsoft Azure

Home > Create a resource > Marketplace > Azure Load Testing >

### Create a load testing resource

Validation passed.

Basics    Encryption    Tags    Review + create

**Basics**  
Subscription: Azure for Students  
Resource group: BankProject  
Name: MYBANKAPP  
Region: East Asia

**Encryption**  
Encryption type: MMK

Microsoft Azure

Microsoft.CloudNativeTesting1746461401491 | Overview

Deployment

Search    Delete    Cancel    Redeploy    Download    Refresh

**Overview**

Your deployment is complete

Deployment name: Microsoft.CloudNativeTesting1746461401491  
Subscription: Azure for Students  
Resource group: BankProject

**Deployment details**

Start time: 5/5/2025, 9:40:23 PM  
Correlation ID: ab036e0a-0f70-4d67-9550-f59c511ecd62

**Next steps**

Go to resource

**Give feedback**  
Tell us about your experience with deployment

**Cost management**  
Get notified to stay within your budget and prevent unexpected charges on your bill.  
[Set up cost alerts >](#)

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Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support.  
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## Steps to Create and Run a Load Test:

Once your resource is ready:

1. Go to your Azure Load Testing resource and click Add HTTP requests > Create.
2. Basics Tab o *Test Name*: Provide a unique name.
  - o *Description*: (Optional) Add test purpose.
  - o *Run After Creation*: Keep checked.
3. Load Settings o *Test URL*: Enter the target endpoint (e.g., https://yourapi.com/products).
4. Click Review + Create → Create to start the test.

The screenshot shows the 'Create a URL-based test' wizard in the Microsoft Azure portal. The 'Basics' tab is selected. The 'Test name' field contains 'Test\_5/5/2025, 9:41:40 PM'. The 'Test description' field is empty. The 'Run test after creation' checkbox is checked. The 'Debug mode' checkbox is checked, with a note explaining it runs in debug mode with one engine for up to 10 minutes. The 'Enable advanced settings' checkbox is checked. A tooltip at the bottom left says 'Configure a test with multiple requests in the 'Test plan' tab.' At the bottom, there are 'Previous', 'Next', and 'Review + create' buttons, with 'Review + create' being blue and bold.

**Basics** Test plan Parameters Load Monitoring Test criteria Review + create

Get started by creating a test for a URL, or configure an advanced load test for multiple URLs with additional options. [Learn more](#)

**Test details**  
Provide a test name and a description. Test name and description will help you identify a test in the list of tests created in this resource.

Test name \*

Test description

Run test after creation

Debug mode   
If this is enabled, the first test run will run in debug mode providing debug logs along with request and response data for failed requests. The test run in debug mode will run with only one engine and up to 10 minutes duration. [Learn more](#)

Enable advanced settings

Configure a test with multiple requests in the 'Test plan' tab.

Previous Next Review + create

**Create a URL-based test** ...

**Validation passed.**

**Basics** Test plan Parameters Load Monitoring Test criteria Review + create

**Test tool** JMeter  
**Test name** Test\_5/5/2025, 9:41:40 PM  
**Test description**   
**Debug mode** Disabled

**Test plan**  
**Test method** URL  
**Requests** Request1  
**Input data files**

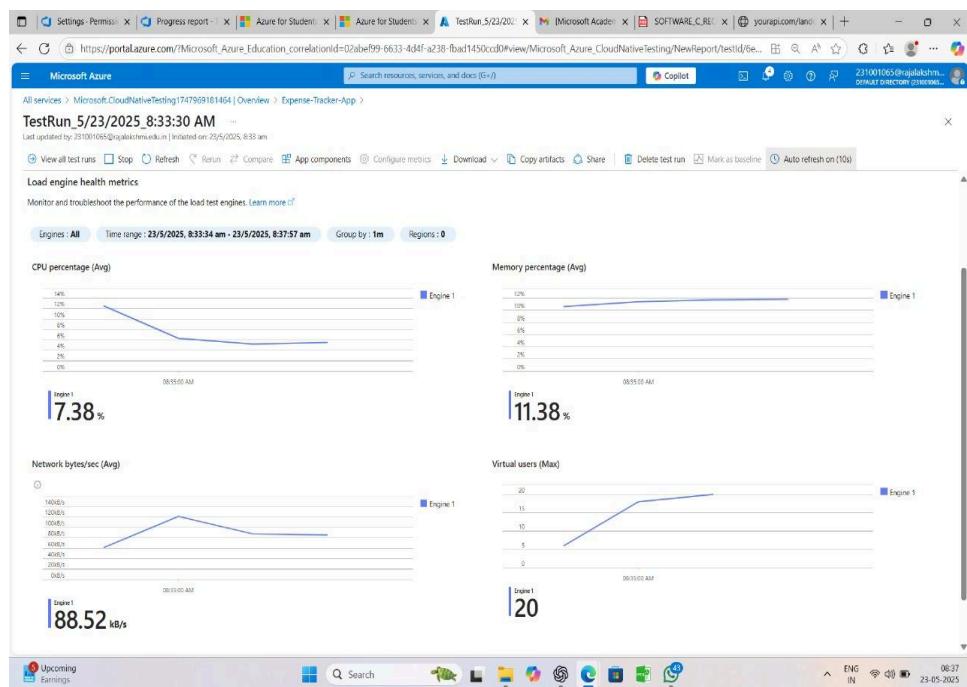
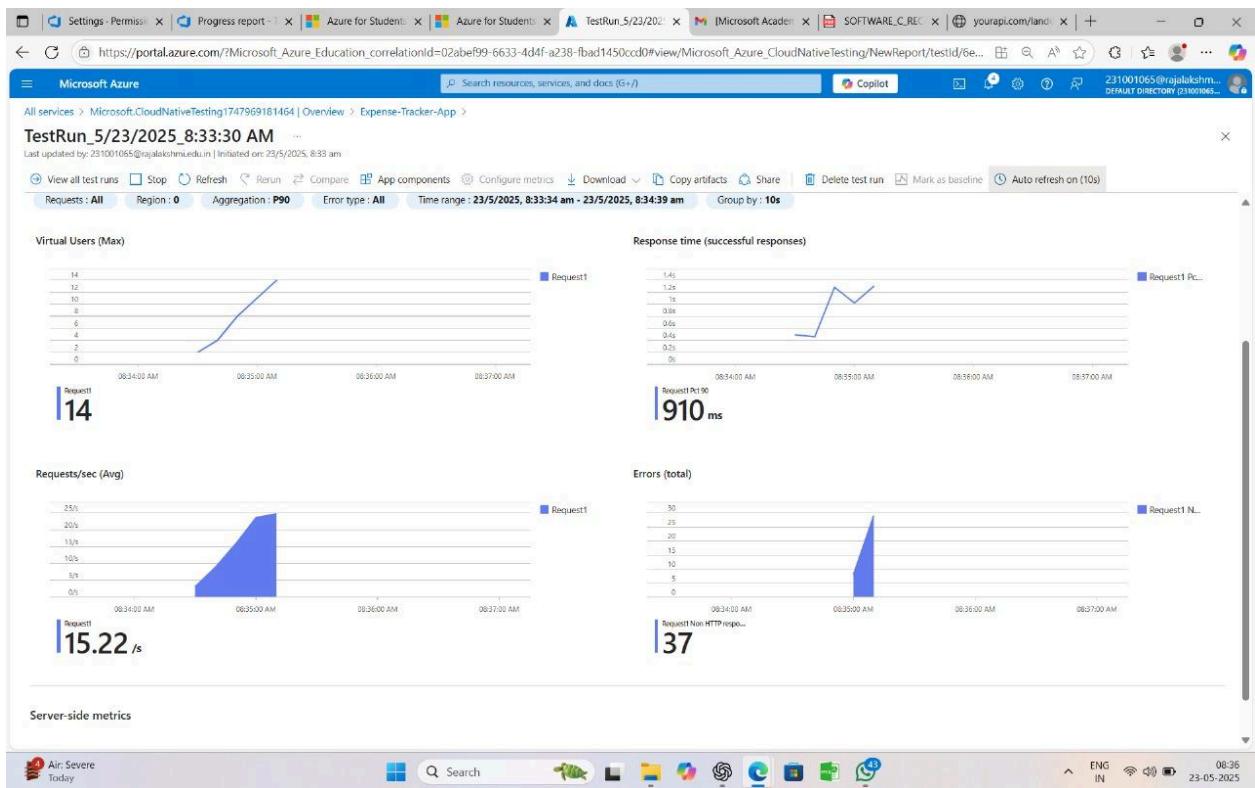
**Load**  
**Engine instances** 1  
**Load pattern** Linear  
**Concurrent users per engine** 50  
**Test duration (minutes)** 20  
**Ramp-up time (minutes)** 1

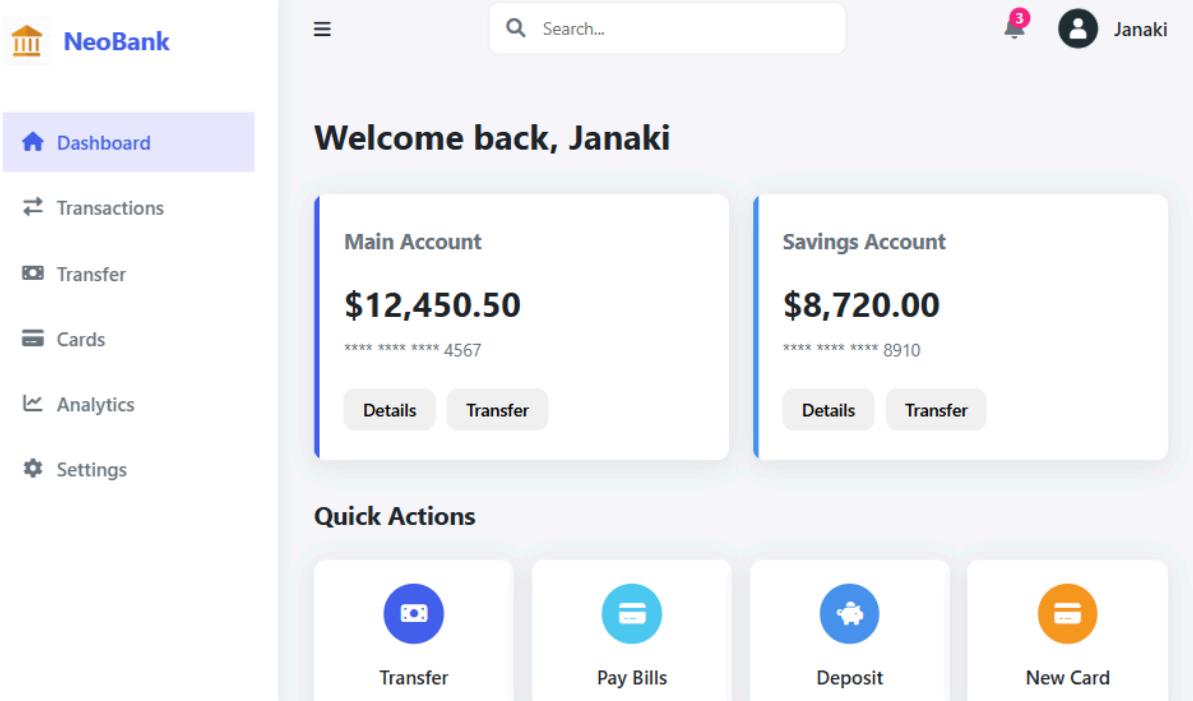
**Load distribution**  
**East Asia** 1

**Resources**  
**Resources** 0

Previous Next Create

## Load Testing





The screenshot shows the NeoBank dashboard for a user named Janaki. The top navigation bar includes a search bar and notifications indicating 3 unread messages. The main header says "Welcome back, Janaki". On the left sidebar, "Dashboard" is selected, while other options like "Transactions", "Transfer", "Cards", "Analytics", and "Settings" are available. The central area displays two account summaries: "Main Account" with a balance of \$12,450.50 and "Savings Account" with a balance of \$8,720.00. Below these are four "Quick Actions" buttons: Transfer (blue), Pay Bills (light blue), Deposit (light blue), and New Card (orange). A large "Search..." input field is located at the top right of the main content area.

**Main Account**

\$12,450.50

\*\*\*\*\* \* 4567

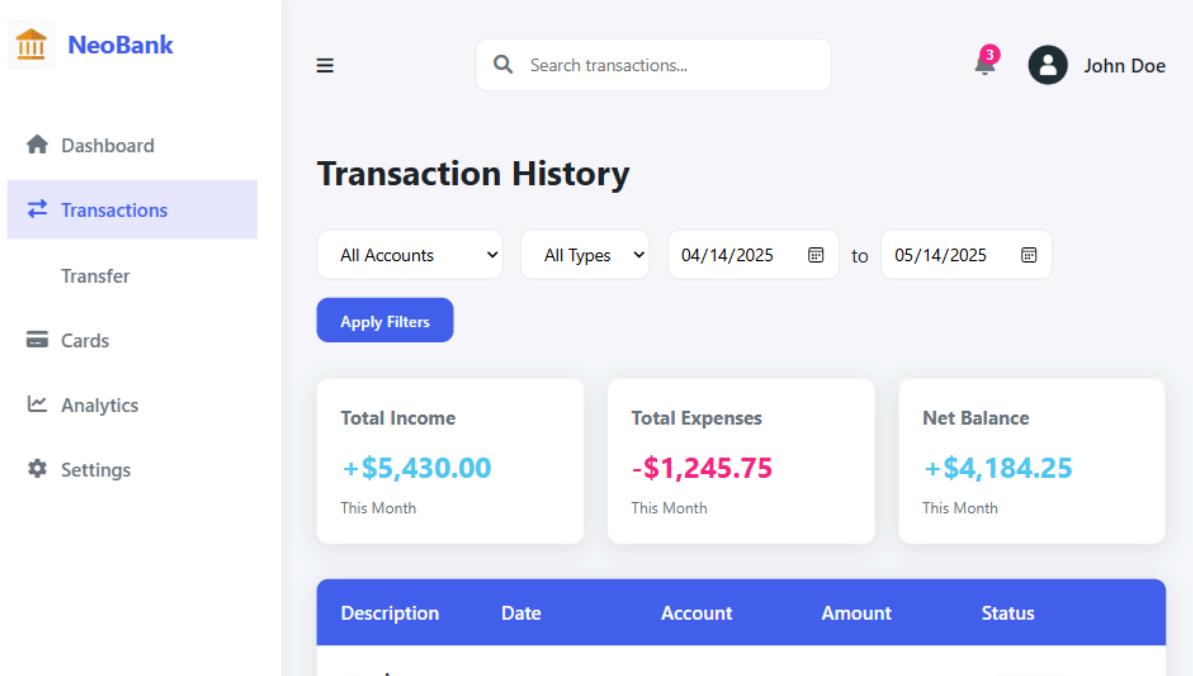
**Savings Account**

\$8,720.00

\*\*\*\*\* \* 8910

**Quick Actions**

Transfer Pay Bills Deposit New Card



The screenshot shows the NeoBank transaction history for a user named John Doe. The top navigation bar includes a search bar and notifications indicating 3 unread messages. The main header says "Transaction History". On the left sidebar, "Transactions" is selected, while other options like "Dashboard", "Transfer", "Cards", "Analytics", and "Settings" are available. The central area displays summary statistics: Total Income (\$5,430.00), Total Expenses (-\$1,245.75), and Net Balance (\$4,184.25), all for the "This Month" period. Below these are three cards: "Total Income" (+\$5,430.00), "Total Expenses" (-\$1,245.75), and "Net Balance" (+\$4,184.25). At the bottom, a table header for the transaction list includes columns for Description, Date, Account, Amount, and Status. A single row for an Amazon purchase is visible at the bottom of the list.

**Transaction History**

All Accounts All Types 04/14/2025 to 05/14/2025

**Total Income** +\$5,430.00 This Month

**Total Expenses** -\$1,245.75 This Month

**Net Balance** +\$4,184.25 This Month

Description	Date	Account	Amount	Status
Amazon				

**RESULT:** Successfully created the Azure Load Testing resource and executed a load test to assess the performance of the specified endpoint.

**Exp.No: 10**

**Date: 02/05/2025**

## **GITHUB PROJECT STRUCTURE & NAMING CONVENTIONS**

**AIM:** To provide a clear and organized view of the project's folder structure and file naming conventions, helping contributors and users easily understand, navigate, and extend the Online Banking System project.

### **GITHUB PROJECT STRUCTURE**

Name	Last commit message	Last commit date
.gitignore	Add files via upload	4 minutes ago
Diagrams	Create Diagrams	4 minutes ago
Progress report	Create Progress report	2 minutes ago
Test plans and test cases	Create Test plans and test cases	1 minute ago
azure account pic	Create azure account pic	now
eslint.config.js	Add files via upload	4 minutes ago
load testing	Create load testing	3 minutes ago
package-lock.json	Add files via upload	4 minutes ago
package.json	Add files via upload	4 minutes ago
poker estimation	Create poker estimation	3 minutes ago
postcss.config.js	Add files via upload	4 minutes ago
spaces	Create spaces	10 minutes ago
sprint	Create sprint	2 minutes ago
tailwind.config.js	Add files via upload	4 minutes ago
tsconfig.app.json	Add files via upload	4 minutes ago
tsconfig.json	Add files via upload	4 minutes ago
tsconfig.node.json	Add files via upload	4 minutes ago
vite.config.ts	Add files via upload	4 minutes ago

**RESULT:** The GitHub repository clearly displays the organized project structure and consistent naming conventions, making it easy for users and contributors to understand and navigate the codebase.