

**RAJALAKSHMI ENGINEERING COLLEGE**  
**RAJALAKSHMI NAGAR, THANDALAM - 602 105**



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

(REGULATION 2023)

**CS23432  
Software Construction**

**DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING  
LABORATORY RECORD NOTEBOOK**

Name : MERVIN...ANTO....SANTHOSH..A.....

Year / Branch / Section : ..... 2/AIML/FA

Register No. : ..... 2116-231501099

Semester : ..... 4

Academic Year : ..... 2024-2025



**RAJALAKSHMI ENGINEERING COLLEGE (AUTONOMOUS)**  
**RAJALAKSHMI NAGAR, THANDALAM – 602 105**

**BONAFIDE CERTIFICATE**

NAME MERVIN ANTO SANTOSH A REGISTER NO. 2116-23150 1099

ACADEMIC YEAR 2024-25 SEMESTER- IV BRANCH: AIML-B.Tech

This Certification is the Bonafide record of work done by the above student

in the CS23432- Software Construction Laboratory during

the year 2024 – 2025.



Signature of Faculty -in- Charge

Submitted for the Practical Examination held on \_\_\_\_\_

Internal Examiner

External Exam

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**EXP NO: 1**

## AZURE DEVOPS ENVIRONMENT SETUP

### **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/get-started/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>

The screenshot shows the Microsoft Azure portal homepage. At the top, there is a navigation bar with links for Microsoft, Azure, Explore, Products, Solutions, Pricing, Partners, Resources, Search, Learn, Support, Contact Sales, Get started with Azure, and Sign in. Below the navigation bar, the title "Microsoft Azure portal" is displayed in a large white font. A sub-header below it reads "Build, manage, and monitor everything from simple web apps to complex cloud applications in a single, unified console". There are two buttons at the bottom left: "Sign in" and "New to Azure? Get started >". A dark blue banner at the bottom of the page contains the text "Check out the how-to video series for tips on deploying your cloud workloads from the Azure portal. >".

The screenshot shows the Azure mobile app running on a Mac desktop. The app's interface includes a header with the text "azmobile" and "azmobile Visual machine". Below the header, there are sections for "Activity logs" (showing 2 Errors and 2 Warnings), "See all", and "azmobile Visual machine". The desktop status bar at the bottom shows various system icons and the date/time: "Air: Severe Tomorrow", "ENG IN", "10:57 PM", and "5/25/2025".

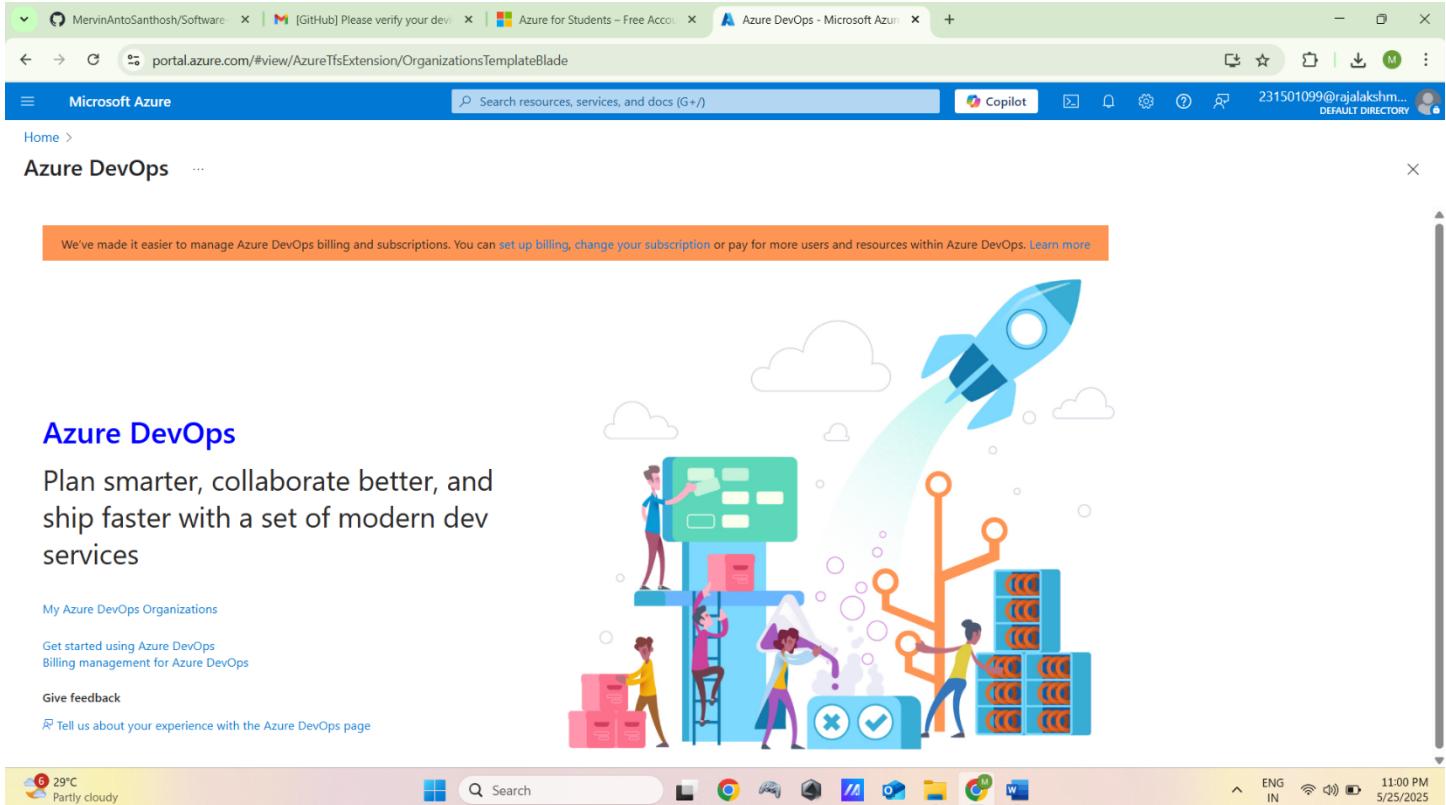
## 2. Azure home page

The screenshot shows the Microsoft Azure home page. At the top, there are several browser tabs: 'MervinAntoSanthosh/Software', '[GitHub] Please verify your dev...', 'Azure for Students - Free Acc...', and 'Home - Microsoft Azure'. The main content area has a blue header bar with the text 'Microsoft Azure' and a search bar that says 'Search resources, services, and docs (G+/-)'. Below this is a row of service icons: 'Create a resource', 'Azure DevOps organizations', 'SQL databases', 'Subscriptions', 'Azure Cosmos DB', 'Cost Management ...', 'Load balancers', 'Quickstart Center', 'Azure AI Foundry', and 'More services'. A large section titled 'Resources' follows, with tabs for 'Recent' (selected) and 'Favorite'. It lists resources by Name, Type, and Last Viewed. A message 'No resources have been viewed recently' is displayed, along with a 'View all resources' button. Below this is a 'Navigate' section with links for 'Subscriptions', 'Resource groups', 'All resources', and 'Dashboard'. A 'Tools' bar at the bottom includes icons for Finance headline, Trump threatens..., a search bar, and various system icons like battery and network.

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 again, but with the search bar now containing the text 'azure devops'. The search results are displayed in a sidebar on the right, under categories: Services, Microsoft Entra ID, Marketplace, Documentation, and Last Viewed. The 'Services' category lists 'Azure DevOps organizations', 'Azure Cosmos DB', 'Azure Database for MySQL servers', and 'Azure Deployment Environments'. The 'Marketplace' category lists 'Build Agents for Azure DevOps', 'Azure DevOps Auditing', 'Azure DevOps Backup Tool', and 'Self Hosted Runner for Azure DevOps'. The 'Documentation' category lists 'Billing overview - Azure DevOps'. The sidebar also includes 'Quickstart Center', 'Azure AI Foundry', and 'More services'. The bottom of the screen shows a taskbar with icons for weather (29°C), search, and various applications like File Explorer, Edge, and Word. The status bar at the bottom right shows the date and time: '10:59 PM 5/25/2025'.

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.

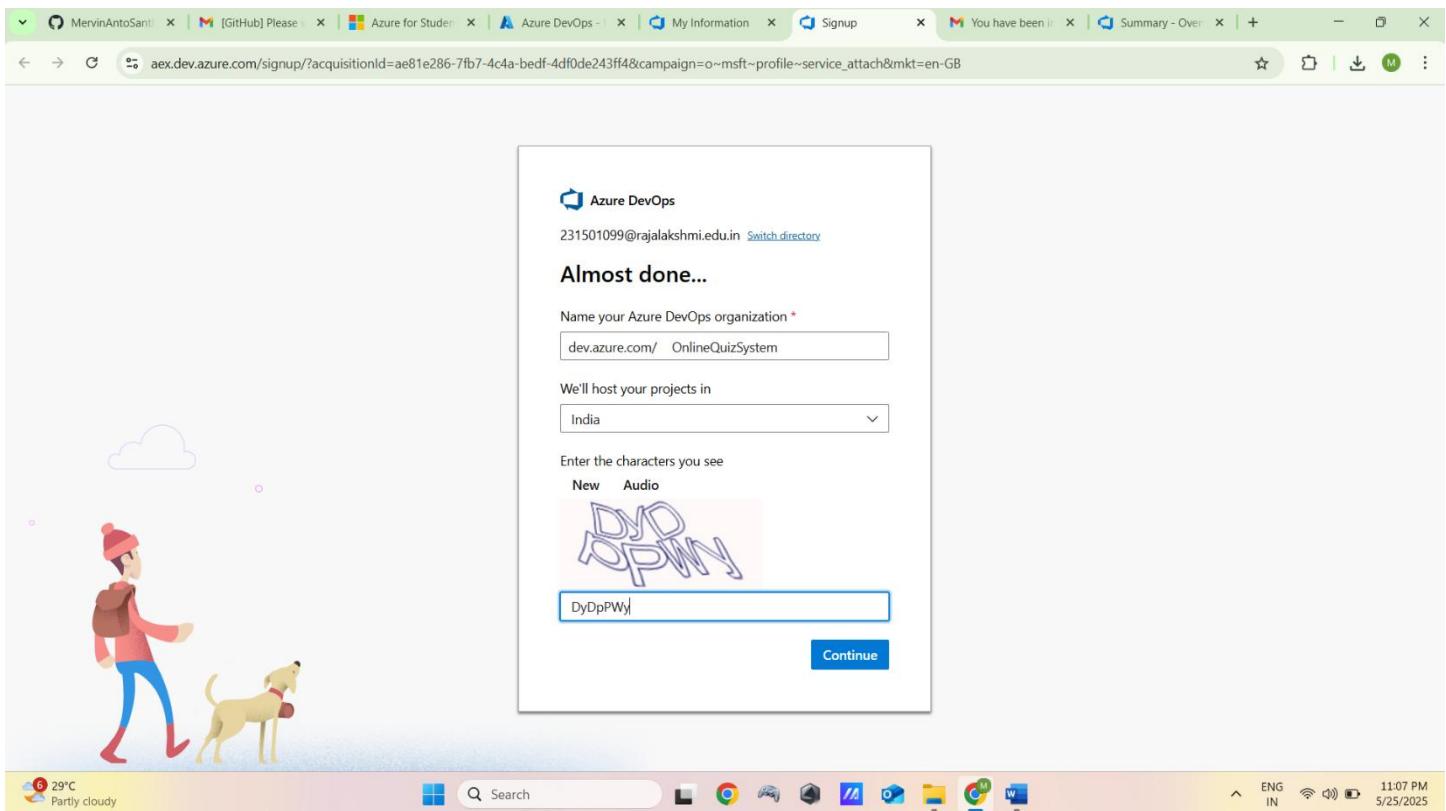
**EXP NO: 2**

## **AZURE DEVOPS PROJECT SETUP AND USER STORY MANAGEMENT**

### **Aim:**

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

### **1. Create An Azure Account**



### **2. Create the First Project in Your Organization**

- 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.
- On the organization's **Home page**, click on the **New Project** button.
- 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).
- Once you've filled out the details, click **Create** to set up your first project.

Star  M 

## Create new project

Project name \*

Description

A web app to take quizzes across multiple topics with student and instructor modules

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.

By creating this project, you agree to the Azure DevOps [code of conduct](#)

 Advanced

Version control 

Work item process 

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.

The screenshot shows the Azure DevOps Organizations dashboard. At the top right, it displays the user's name "Mervin Anto Santhosh A" and a "Sign out" button. On the left, there is a profile section with a large green circular icon containing the letters "MA". Below the icon, the user's name "Mervin Anto Santhosh A" and email "231501099@rajalakshmi.edu.in" are listed, along with a "Edit profile" button. A dropdown menu shows "Microsoft account" and "India" with the email "231501099@rajalakshmi.edu.in". A "Visual Studio Dev Essentials" section is present, describing it as a platform for building and deploying apps. A "Use your benefits" link is also visible. The main content area is titled "Azure DevOps Organizations" and lists "dev.azure.com/231501099" as the owner. It shows three projects: "Online quiz system", "PROJECTS 1", and "Project 1", with a "New project" link. An "Actions" section includes a "Create new organization" button and a "Open in Visual Studio" link. Below this, another entry for "dev.azure.com/OnlineQuizSystem" is shown as a member.

#### 4. Project dashboard

The screenshot shows the Microsoft Work items dashboard. The top navigation bar includes links for "Work items", "You have 0", "WhatsApp", "Meet", and "CS23432". The main area features a search bar and filter options for "Column Options", "Import Work Items", and "Recycle Bin". A "Types" dropdown and "Assigned to" dropdown are also present. A "Sign in with a different account" link is located in the top right. The main content area displays a table of work items:

Assigned To	Type	State	Project
Mervin Anto Santhosh A	New	New	Online Quiz System
Mervin Anto Santhosh A	New	New	Online Quiz System
Mervin Anto Santhosh A	New	New	Online Quiz System
Mervin Anto Santhosh A	New	New	Online Quiz System
Mervin Anto Santhosh A	New	New	Online Quiz System

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 the new User Story.

The screenshot shows the Azure DevOps interface for the 'Online Quiz System' project. The left sidebar has 'Work items' selected. The main area displays a table of 'Work items' with the following columns: ID, Title, Assigned To, State, Area Path, and Tags. There are 10 user stories listed, all assigned to 'Mervin Anto Santhosh A' and marked as 'New'. The stories are: 1. User Registration and Authentication, 2. Instructor Registration and Access Control, 3. Quiz Creation and Management, 4. Question Bank with Image Upload, 5. Quiz Attempt and Submission, 6. Score Calculation and Result Display, 7. Student Performance Reports, 8. Instructor Analytics and Reporting, 9. Responsive Frontend UI, and 10. Load Testing and Deployment.

ID	Title	Assigned To	State	Area Path	Tags
1	User Registration and Authentication	Mervin Anto Santhosh A	New	Online Quiz System	
2	Instructor Registration and Access Control	Mervin Anto Santhosh A	New	Online Quiz System	
3	Quiz Creation and Management	Mervin Anto Santhosh A	New	Online Quiz System	
4	Question Bank with Image Upload	Mervin Anto Santhosh A	New	Online Quiz System	
5	Quiz Attempt and Submission	Mervin Anto Santhosh A	New	Online Quiz System	
6	Score Calculation and Result Display	Mervin Anto Santhosh A	New	Online Quiz System	
7	Student Performance Reports	Mervin Anto Santhosh A	New	Online Quiz System	
8	Instructor Analytics and Reporting	Mervin Anto Santhosh A	New	Online Quiz System	
9	Responsive Frontend UI	Mervin Anto Santhosh A	New	Online Quiz System	
10	Load Testing and Deployment	Mervin Anto Santhosh A	New	Online Quiz System	

**Result:**

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

**EXP NO: 3**

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

### **Aim:**

To learn about how to create epics, user story, features, backlog for your assigned project.

### **Create Epic, Features, User Stories, Task**

The screenshot shows the Azure DevOps interface for the 'Online Quiz System' project. The left sidebar includes 'Overview', 'Boards', 'Work items', 'Backlogs' (selected), 'Sprints', 'Queries', 'Delivery Plans', 'Repos', 'Pipelines', and 'Artifacts'. The top navigation bar shows the URL: dev.azure.com/OnlineQuizSystem/Online%20Quiz%20System/\_backlogs/backlog/Online%20Quiz%20System%20Team/Epics. The main area displays the 'Backlog' board for the 'Online Quiz System Team'. The backlog table has columns: Order, Work Item Type, Title, State, Effort, Business Value, and Priority. The backlog contains 8 epics, 1 feature, and 7 user stories. A 'Planning' panel on the right lists the backlog items and shows a progress bar for the sprint. The bottom status bar indicates a 'Rain warning in effect' and the date '5/25/2025'.

Order	Work Item Type	Title	State	Effort	Business Value	Priority
1	Epic	User Registration and Authentication	New	Bus	10	High
	Feature	Email-based Signup and Login	New	Bus	5	Medium
	User Story	As a user, I want to sign up using my email and password.	New	Bus	2	Low
	User Story	As a user, I want to log in securely so that my account ...	New	Bus	2	Low
	Feature	Forgot Password Recovery	New	Bus	2	Low
2	Epic	Instructor Registration and Access Control	New	Bus	10	High
3	Epic	Quiz Creation and Management	New	Bus	10	High
4	Epic	Question Bank with Image Upload	New	Bus	10	High
5	Epic	Quiz Attempt and Submission	New	Bus	10	High
6	Epic	Score Calculation and Result Display	New	Bus	10	High
7	Epic	Student Performance Reports	New	Bus	10	High
8	Epic	Instructor Analytics and Reporting	New	Bus	10	High

## 1. Fill in Epics

The screenshot shows the Azure DevOps interface for the Online Quiz System. A work item titled "1 User Registration and Authentication" is selected. The work item details include:

- State:** New
- Area:** Online Quiz System
- Iteration:** Online Quiz System
- Comments:** 0
- Tags:** Add Tag

The work item has the following sections:

- Description:** Develop secure user registration and login functionalities with validation and password encryption.
- Discussion:** A comment box with placeholder text: "Add a comment. Use # to link a work item, @ to mention a person, or ! to link a pull request." A link to "switch to Markdown editor" is provided.
- 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 a GitHub commit, pull request or branch to see the status of your development. You can also create a branch to get started. [Learn more](#).
- Related Work:** (empty)

The left sidebar shows navigation links for OS, Online Quiz System, Boards, Work items, Backlogs, Sprints, Queries, and Delivery. The bottom navigation bar includes Project settings, a search bar, and system icons for weather, battery, and connectivity.

## 2. Fill in Features

The screenshot shows the Azure DevOps interface for the Online Quiz System. A work item titled "11 Email-based Signup and Login" is displayed. The work item details include:

- State:** New
- Area:** Online Quiz System
- Reason:** New
- Iteration:** Online Quiz System

The work item has a description placeholder: "Click to add Description." and a discussion box with a comment placeholder: "Add a comment. Use # to link a work item, @ to mention a person, or ! to link a pull request." There are sections for Planning (Priority: 2, Risk), Deployment (status reporting info), Development (add link, GitHub commit/pull request info), and Related Work.

At the bottom, there are project settings, a search bar, and system status indicators (29°C, Partly cloudy, ENG IN, 11:47 PM, 5/25/2025).

### 3. Fill in User Story details

The screenshot shows the Azure DevOps interface for the Online Quiz System. A user story titled '31 As a user, I want to sign up using my email and password so that I can access the quiz system.' is being edited. The story is categorized under 'Online Quiz System' and 'Online Quiz System\Quiz Setup'. It is currently in 'New' state and 'Iteration' is set to 'Online Quiz System\Quiz Setup'. The 'Planning' section shows Story Points as 2, Priority as 1, and Risk as 1 - High. The 'Classification' section indicates the value area is Business. On the right side, there are sections for 'Deployment' (with instructions to track releases), 'Development' (with instructions to link GitHub commits or branches), and 'Related Work'. The bottom of the screen shows the Windows taskbar with various pinned icons and the system tray indicating it's 11:50 PM on 5/25/2025.

#### Result:

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

**EXP NO: 4**

# SPRINT PLANNING

## Aim:

To assign user story to specific sprint for the Project Online Quiz System.

## Sprint Planning

### Sprint 1

The screenshot shows the Azure DevOps Boards interface for the 'Online Quiz System'. The left sidebar navigation includes 'Overview', 'Boards', 'Work items', 'Backlogs', 'Sprints' (which is currently selected), 'Queries', 'Delivery Plans', 'Repos', 'Pipelines', and 'Artifacts'. The main area displays the 'Online Quiz System Team' backlog. The backlog table has columns for 'New', 'Active', 'Resolved', and 'Closed'. Three user stories are listed:

- Story 31: As a user, I want to sign up using my email and password so that I can access the quiz system. Status: New.
- Story 83: test 1. Status: New.
- Story 32: As a user, I want to log in securely so that my account and scores are protected. Status: Unassigned.
- Story 33: As a user, I want to reset my password using my registered email so that I can recover my account. Status: Unassigned.

The bottom of the screen shows the Windows taskbar with various pinned icons and the system tray indicating the date and time as 5/25/2025 at 11:54 PM.

## Sprint 2

The screenshot shows the Azure DevOps Taskboard for the Online Quiz System Team. The left sidebar lists project navigation options like Overview, Boards, Work items, Boards, Backlogs, Sprints (selected), Queries, Delivery Plans, Repos, Pipelines, and Artifacts. The main area displays a grid of work items under the 'Quiz Attempt and Evaluation' category. The first three items are visible:

- Item 41: As an instructor, I want to delete quizzes that are no longer relevant.  
Status: New  
Assigned to: Mervin Anto Santhos...
- Item 45: As an instructor, I want to upload images with questions to support visual understanding.  
Status: New  
Assigned to: Unassigned
- Item 46: As a student, I want to view image-based questions while attempting quizzes.  
Status: New

The top right corner shows a date range from 1 March - 31 March (21 work days). The bottom right corner shows the system status: 29°C Partly cloudy, ENG IN, 11:55 PM, 5/25/2025.

## Sprint 3

The screenshot shows the Azure DevOps Taskboard for the Online Quiz System Team. The left sidebar lists project navigation options like Overview, Boards, Work items, Boards, Backlogs, Sprints (selected), Queries, Delivery Plans, Repos, Pipelines, and Artifacts. The main area displays a grid of work items under the 'Reports, Analytics and Deployment' category. The first three items are visible:

- Item 58: As a student, I want to filter reports by quiz name or date.  
Status: New  
Assigned to: Mervin Anto Santhos...
- Item 59: As an instructor, I want to see how many students attempted each quiz.  
Status: New  
Assigned to: Mervin Anto Santhos...
- Item 60: As an instructor, I want to view detailed responses for each question.  
Status: New

The top right corner shows a date range from 1 April - 29 April (21 work days). The bottom right corner shows the system status: 29°C Partly cloudy, ENG IN, 11:55 PM, 5/25/2025.

## Result:

The Sprints are created for the Project Online Quiz System.

**EXP NO: 5**

# **POKER ESTIMATION**

## **Aim:**

Create Poker Estimation for the user stories – Online Quiz System Project.

## **Poker Estimation**

The screenshot shows a user story card in the Azure DevOps interface. The story is titled "32 As a user, I want to log in securely so that my account and scores are protected." It has a state of "New" and is assigned to the "Online Quiz System" area. The iteration is "Online Quiz System\User and Quiz Setup". The planning section shows Story Points at 3, Priority at 1, and Risk at 1 - High. The classification section shows the value area as "Business". The deployment section provides instructions to track releases associated with the work item. The development section links to GitHub for commits and pull requests. The related work section is currently empty. The bottom of the screen shows a Windows taskbar with various icons and the date/time as 5/25/2025, 11:58 PM.

## **Result:**

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

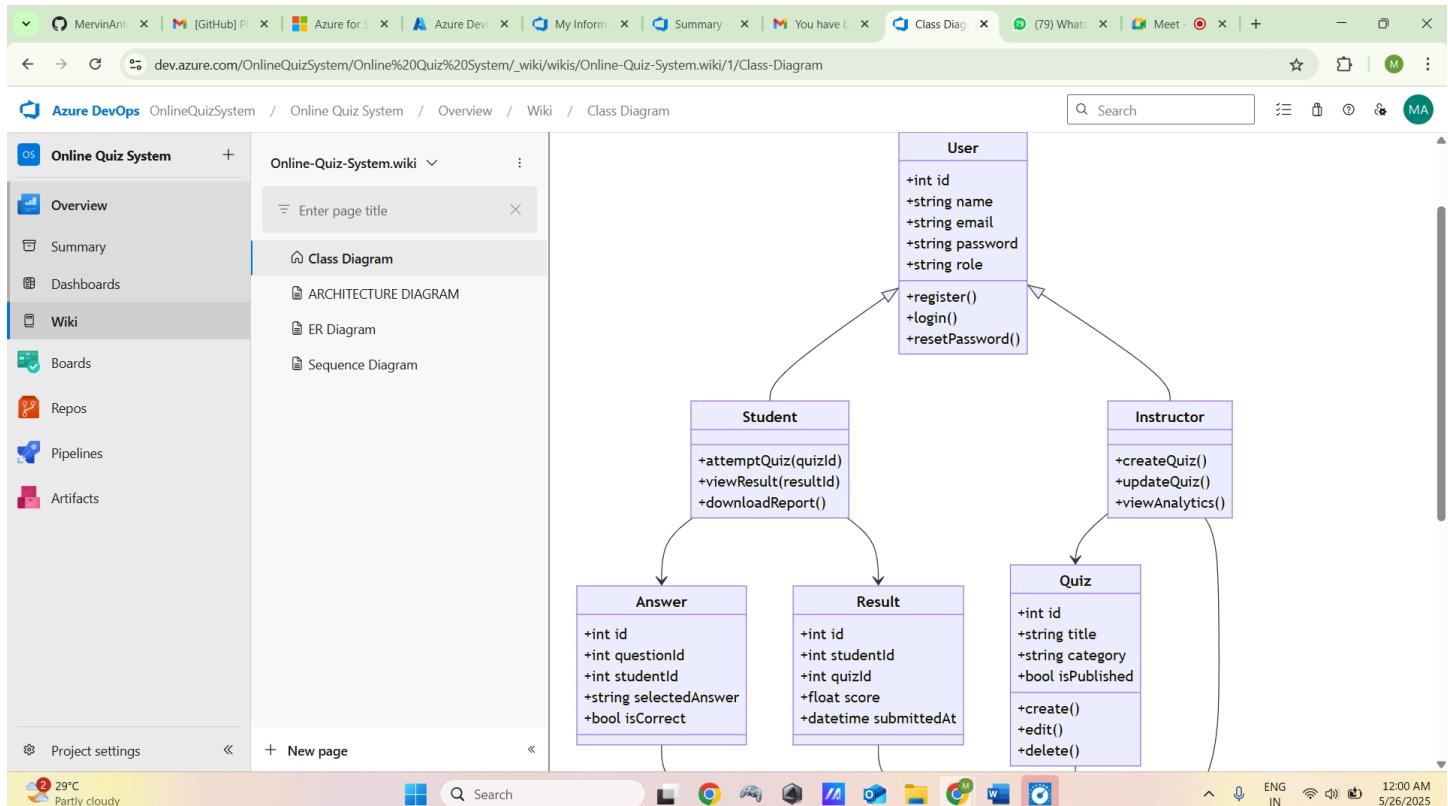
**EXP NO: 6**

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

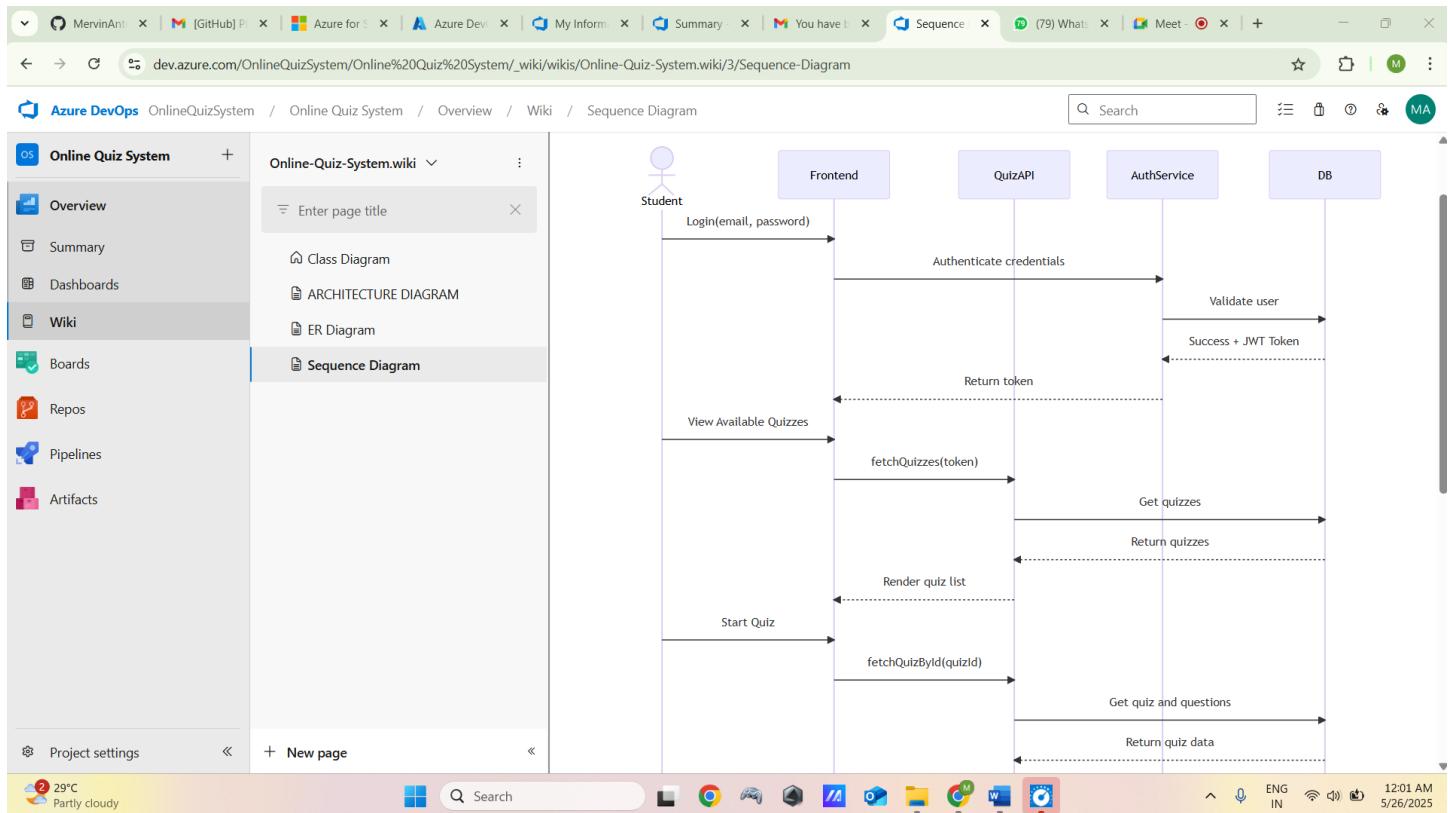
### **Aim:**

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

### **6A. Class Diagram**



## 6B. Sequence Diagram



### Result:

The Class Diagram and Sequence Diagram is designed Successfully for the Project Online Quiz System.

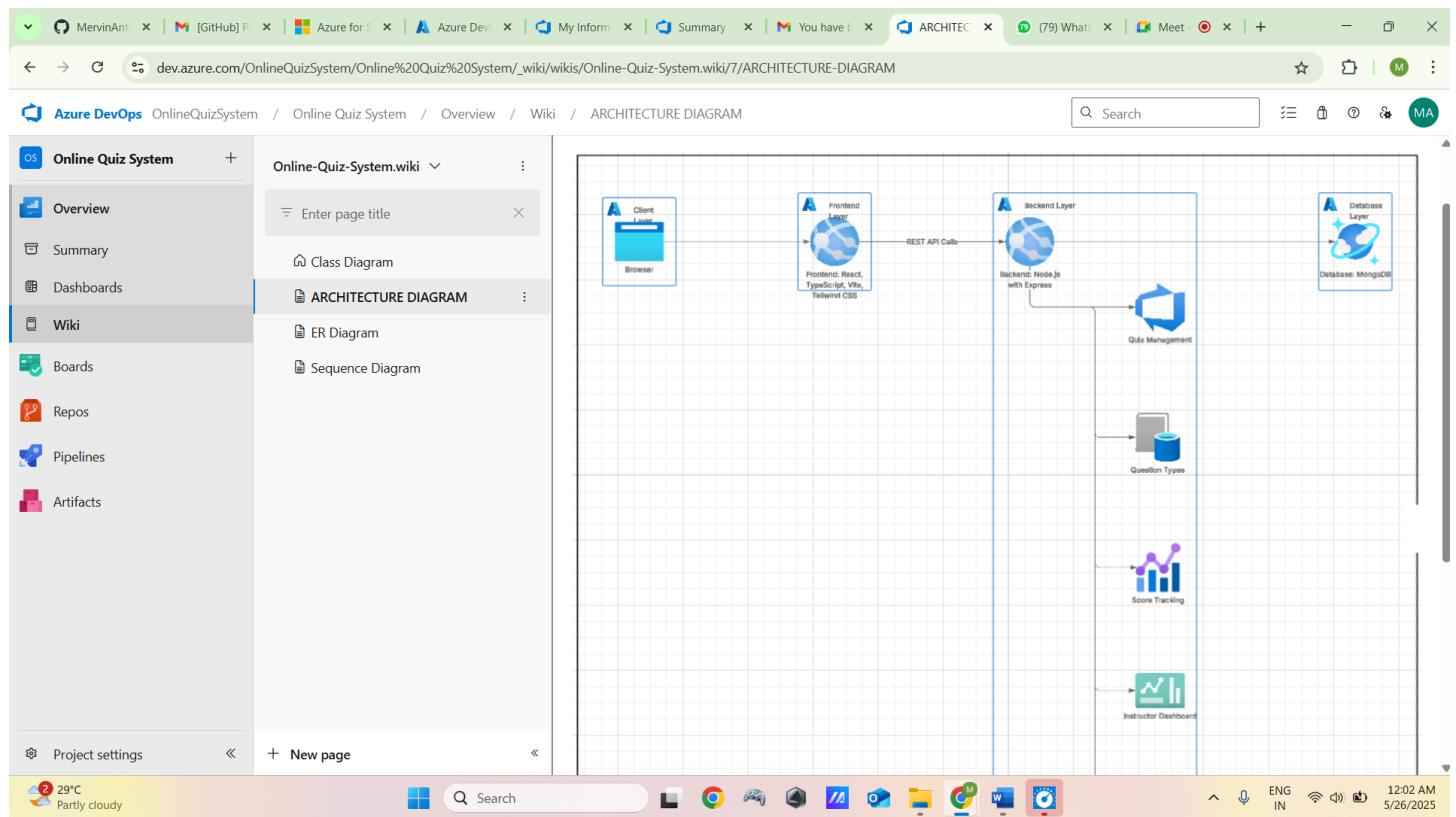
**EXP NO: 7**

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

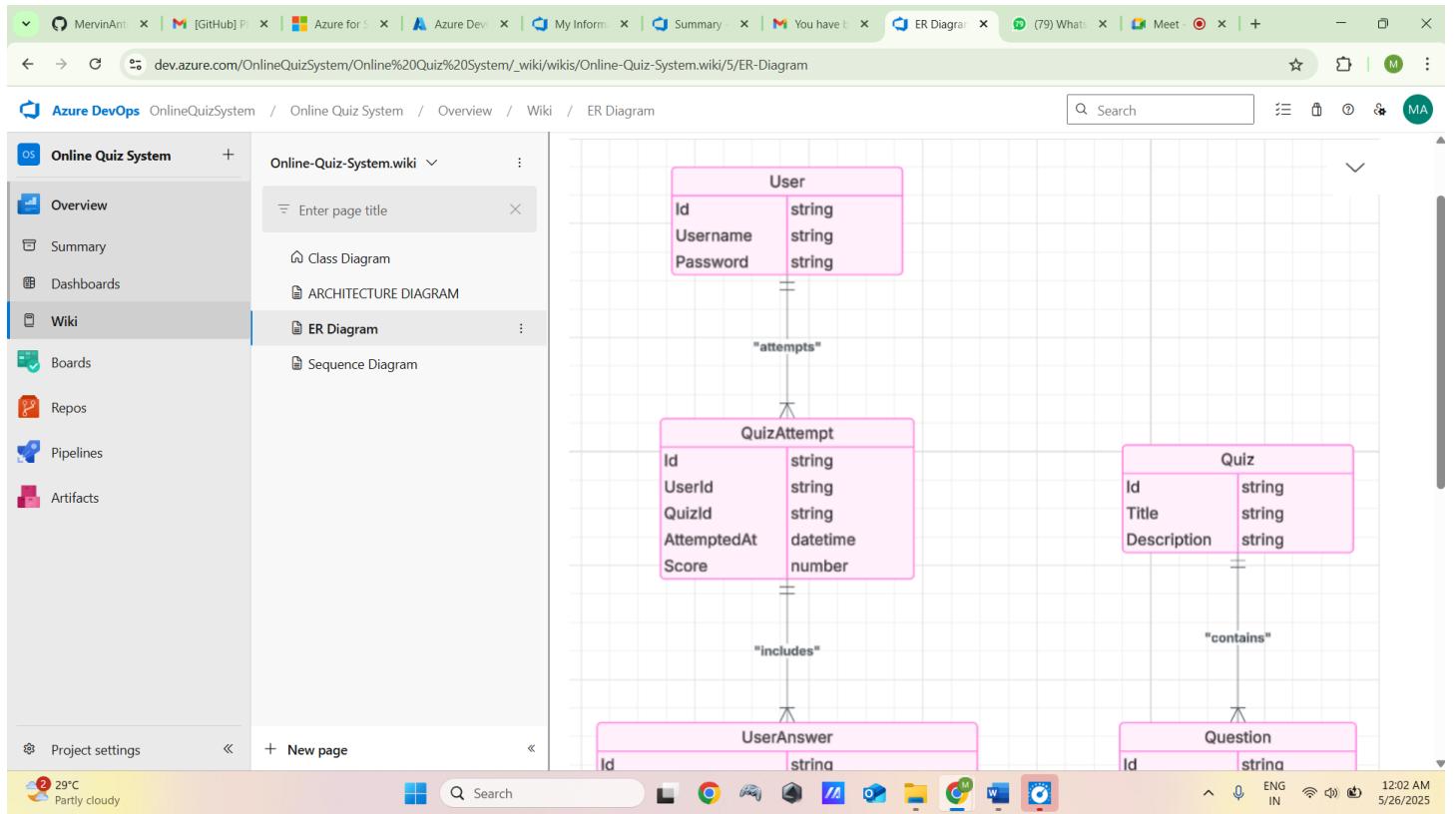
### **Aim:**

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

### **7A. Architectural Diagram**



## 7B.ER Diagram



### Result:

The Architecture Diagram and ER Diagram is designed successfully for the Online Quiz System.

**EXP NO: 8**

## **TESTING – TEST PLANS AND TEST CASES**

### **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 Signup & Login
- Viewing and Managing Playlists
- Fetching Real-time Metadata
- Editing playlists (rename, reorder, record)
- Creating smart audio playlists based on categories (mood, genre, artist, etc.)

##### **2. Define User Interactions**

- Each test case simulates a real user behaviour (e.g., logging in, renaming a playlist, adding a song).

##### **3. Design Happy Path Test Cases**

- Focused on validating that all features function as expected under normal conditions.
- Example: User logs in successfully, adds item to playlist, or creates a category-based playlist.

##### **4. Design Error Path Test Cases**

- Simulate negative or unexpected scenarios to test robustness and error handling.
- Example: Login fails with invalid credentials, save fails when offline, no recommendations found.

##### **5. Break Down Steps and Expected Results**

- Each test case contains step-by-step actions and a corresponding expected outcome.
- Ensures clarity for both testers and automation scripts.

##### **6. Use Clear Naming and IDs**

- Test cases are named clearly (e.g., TC01 – Successful Login, TC10 – Save Playlist Fails).
- Helps in quick identification and linking to user stories or features.

##### **7. Separate Test Suites**

- Grouped test cases based on functionality (e.g., Login, Playlist Editing, Recommendation System).

- Improves organization and test execution flow in Azure DevOps.

## 8. Prioritize and Review

- Critical user actions are marked high-priority.
- Reviewed for completeness and traceability against feature requirements.

### 1. New test plan

The screenshot shows the Azure DevOps interface for the 'Online Quiz System'. On the left, the navigation bar includes 'Overview', 'Boards', 'Work items', 'Repos', 'Pipelines', and 'Artifacts'. The 'Work items' section is currently selected. The main area displays a 'Recently updated' list with one item: '83 test 1'. The details for this work item are shown in a card:

- Description:** Click to add Description.
- Planning:** Priority: 2, 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](#)
- Effort (Hours):** Original Estimate: , Remaining: , Completed:
- Development:** Add link: Link a GitHub [commit](#), [pull request](#) or [branch](#) to see the status of your development. You can also [create a branch](#) to get started. [Learn more](#)

### 2. Test suite

The screenshot shows the Azure DevOps interface for 'Test Plans'. The left sidebar includes 'Overview', 'Boards', 'Repos', 'Pipelines', 'Test Plans', 'Test plans', 'Progress report', and 'Runs'. The 'Test plans' section is selected. A specific test plan is open, showing a test point for scenario 31:

**31 : As a user, I want to sign up using my email and password so that I can access the quiz system. (ID: 75) [Help](#)**

The test point details are as follows:

Title	Outcome	Order	Test Case Id
Test1	Passed	1	72
te	Failed	2	78

A callout box highlights the test point title: '31 : As a user, I want to sign up using my email and password so that I can access the quiz system. (2)'.

## User Story 1: Secure Sign-Up and Login (ID: 79)

Test Plan: Test 1 – User Login

- TC01 – Successful Sign Up

Type: Happy Path

Action:

- Navigate to the Sign-Up page
  - Enter valid name, email, and password
  - Click "Sign Up"
- Expected Result:**
- Fields accept values
  - Account is created
  - User is redirected to the dashboard

- TC02 – Secure Login

Type: Happy Path

Action:

- Go to Login page
- Enter valid credentials
- Click "Login"

**Expected Result:**

- Login is successful
- User lands on the dashboard

- TC03 – Sign Up with Existing Email

Type: Error Path

Action:

- Use an already registered email
- Click "Sign Up"

**Expected Result:**

- Error: "Email already registered"

- TC04 – Login with Wrong Password

Type: Error Path

Action:

- Enter valid email and wrong password
- Click "Login"

**Expected Result:**

- Error: "Invalid username or password"

---

## User Story 2: View Quiz List (ID: 76)

Test Plan: Test 2 – View Quizzes

- TC05 – View Quiz Page

Type: Happy Path

Action:

- Login
- Navigate to "Available Quizzes"

**Expected Result:**

- All available quizzes are displayed clearly

- TC06 – Quiz Loading Failure

Type: Error Path

Action:

- Disconnect from the internet
- Try accessing "Available Quizzes"

**Expected Result:**

- Error: "Unable to load quizzes"

### User Story 3: Real-Time Score Display (ID: 65)

Test Plan: Test 2 – Real-Time Results

- TC07 – Score Display After Submission

Type: Happy Path

Action:

- Complete a quiz
- Submit answers
- Observe the result panel

Expected Result:

- Score is calculated and displayed instantly

- TC08 – Score Not Displaying

Type: Error Path

Action:

- Submit quiz with a backend issue

Expected Result:

- Error: “Unable to fetch results, please try again”
- 

### User Story 4: Edit Quiz Details (ID: 68)

Test Plan: Test 3 – Quiz Editing

- TC09 – Rename Quiz Successfully

Type: Happy Path

Action:

- Admin navigates to quiz list
- Clicks "Edit" on a quiz
- Changes quiz name and saves

Expected Result:

- Quiz name updates successfully

- TC10 – Rename with Blank Name

Type: Error Path

Action:

- Click "Edit"
- Leave the quiz name blank
- Click "Save"

Expected Result:

- Error: “Quiz name cannot be empty”

- TC11 – Change Quiz Question Order

Type: Happy Path

Action:

- Open quiz editor
- Drag and drop questions to reorder
- Click "Save"

Expected Result:

- Question order is saved

- TC12 – Reordering Fails Due to Error

Type: Error Path

Action:

- Try reordering during server error
- Click "Save"

Expected Result:

- Error: “Failed to update. Try again later”
- 

### User Story 5: Generate Quiz Based on Categories (ID: 73)

Test Plan: Test 3 – Smart Quiz Generation

- TC13 – Generate Quiz Based on Subject**  
**Type: Happy Path**  
**Action:**
  - Select subject and difficulty
  - Click "Generate Quiz"**Expected Result:**
  - New quiz is created based on selected filters
- TC14 – Fail to Generate Quiz (Missing/Invalid Input)**  
**Type: Error Path**  
**Action:**
  - Click "Generate" without selecting subject**Expected Result:**
  - Error: "Please select a valid subject/category"

## Test Case

The screenshot shows a Microsoft Edge browser window with multiple tabs open. The active tab is 'dev.azure.com/OnlineQuizSystem/Online%20Quiz%20System/\_workitems/edit/88'. The page displays a work item for 'TEST CASE 88' titled 'TC89 Instructor Registration Separate from Students'. The work item is assigned to 'Mervin Anto Santhosh A' and has 0 comments. It is in the 'Design' state, area 'Online Quiz System', reason 'New', and iteration 'Online Quiz System\User and Quiz Setup'. The 'Steps' section contains four numbered steps: 1. Navigate to the Sign Up page of the quiz system. 2. Select the Instructor option. 3. Fill in valid details in all required fields and click Register. 4. After submission, the system registers the instructor and redirects to the Instructor dashboard or shows a success message. The 'Expected result' column provides descriptions for each step. The 'Deployment' section includes instructions for tracking releases and reporting status. The 'Development' section allows linking to GitHub commits, pull requests, or branches. The bottom of the screen shows the Windows taskbar with various pinned icons.

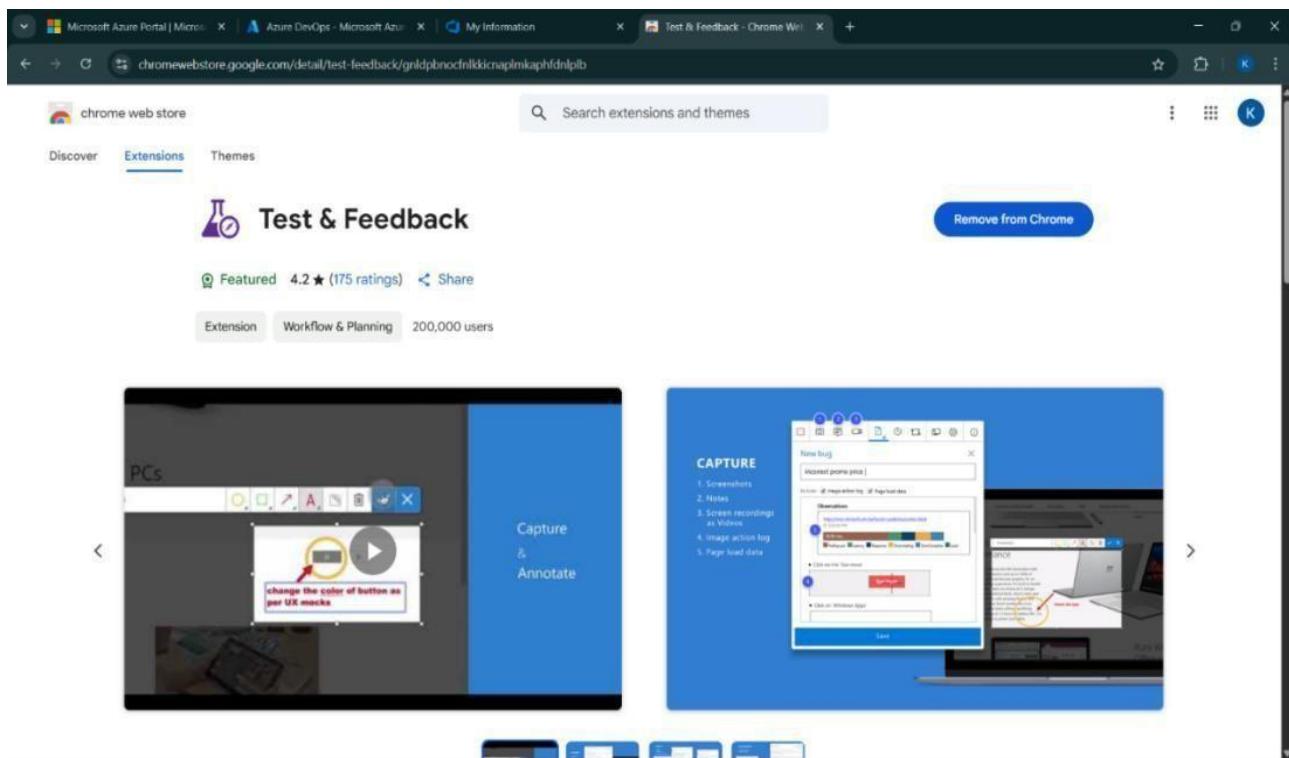
The screenshot shows the Azure DevOps interface for a project named "Online Quiz System". The main view is a "Work items" board. A specific work item, "TC91 Instructor Exclusive Access to Quiz Creation Pages", is selected. This is a "Test Case" type work item, created by Mervin Anto Santhosh A. It has a state of "Design" and a reason of "New". The area is "Online Quiz System" and the iteration is "Online Quiz System/User and Quiz Setup". The "Steps" tab is active, showing three steps:

- Log in using valid **instructor credentials**. Expected result: Instructor is successfully logged in and red to the instructor dashboard.
- Navigate to the **Quiz Creation** page from the dashboard menu. Expected result: The Quiz Creation page loads successfully options to create and manage quizzes.
- Log out and attempt to access the **Quiz Creation** page using a **student account or without logging in**. Expected result: Access is denied with an error message (e.g., "Unauthorized access" or "Access restricted instructors only").

The "Deployment" section indicates that the work item is associated with a release pipeline. The "Development" section includes a link to a GitHub repository and a note about creating a branch. The bottom of the screen shows a taskbar with various application icons and system status.

### 3. Installation of test

The screenshot shows the Chrome Web Store page for the "Test & Feedback" extension. The extension has a rating of 4.2 stars based on 175 ratings and over 200,000 users. It is categorized under "Workflow & Planning". The page features two main screenshots: one showing a user interface for "Capture & Annotate" and another showing a "CAPTURE" dialog box with various options like "Screenshots", "Notes", "Screen recordings as Videos", "Image action log", and "Page load data". A prominent "Add to Chrome" button is located at the top right.



## Test and feedback

Showing it as an extension

A screenshot of the Azure DevOps interface, specifically the 'Test Plans' section. The left sidebar shows navigation options like Overview, Boards, Repos, Pipelines, Test Plans, Test plans, Progress report, Runs, and Artifacts. The 'Test plans' option is selected. The main area displays a test plan titled '40 : As an instructor, I want to select question types while creating a quiz. (ID: 97)'. It includes a 'Test Suites' section with a list of test cases, and a 'Test Points (1 item)' table with one row: 'test 10' with an outcome of 'Passed'.

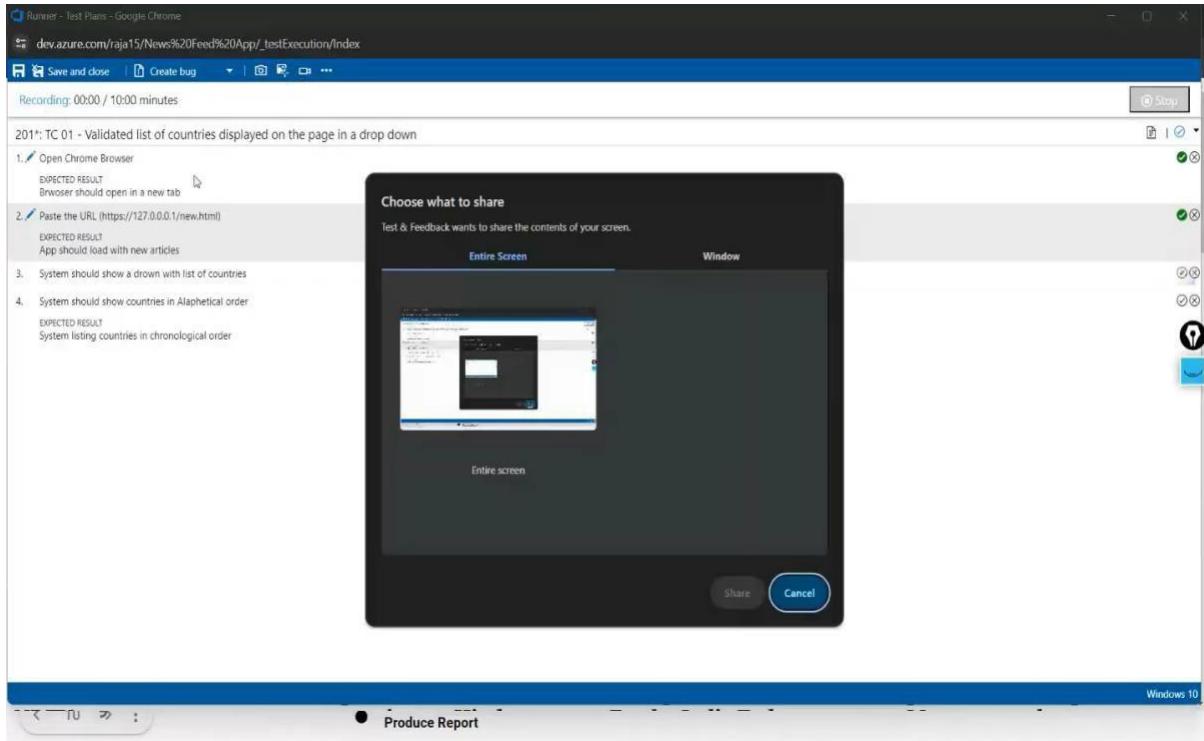
## 4. Running the test cases

The screenshot shows the Azure DevOps Test Plans interface for the Online Quiz System project. The left sidebar navigation includes 'Overview', 'Boards', 'Repos', 'Pipelines', 'Test Plans' (selected), 'Test plans', 'Progress report', 'Runs', and 'Artifacts'. The main area displays a test suite titled '36 : As an instructor, I want to be redirected to my dashboard after login. (ID: 87)'. The 'Execute' tab is selected, showing 'Test Points (1 item)'. A single test point, 'test 6', is listed with an outcome of 'Passed' (indicated by a green dot). The status bar at the bottom right shows 'Windows 10'.

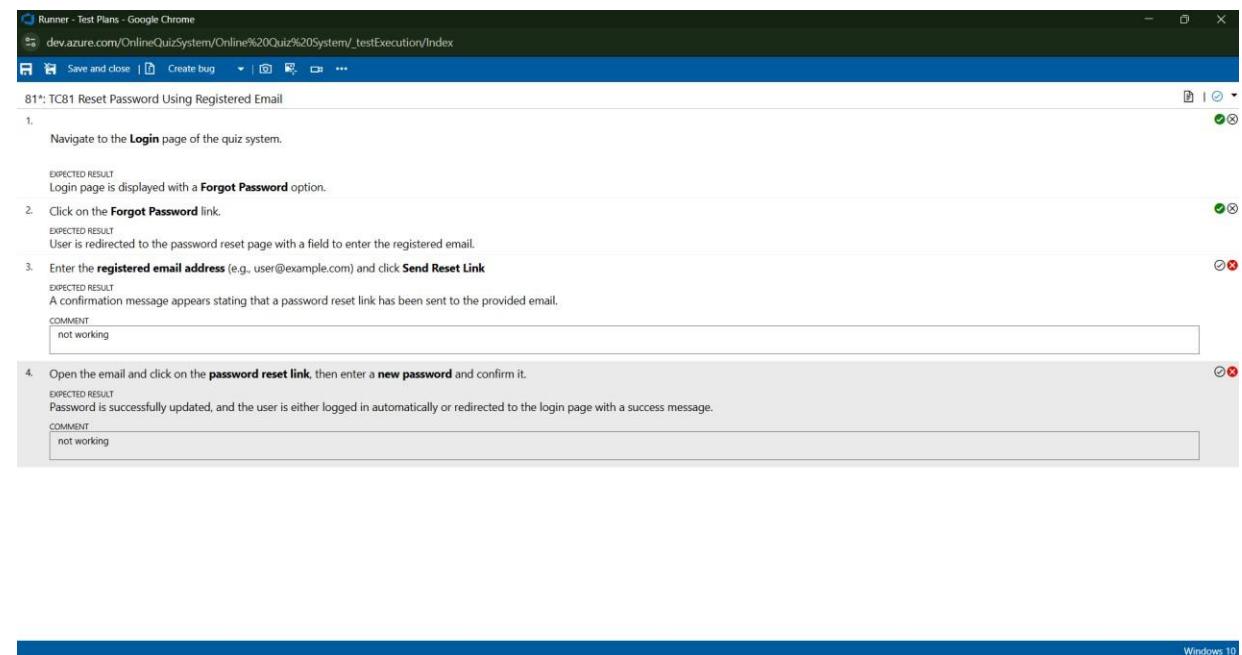
The screenshot shows the 'Runner - Test Plans - Google Chrome' window. The URL is 'dev.azure.com/OnlineQuizSystem/Online%20Quiz%20System/\_testExecution/Index'. The page displays a test case titled '84\*: TC77 Password Reset Link via Email'. The steps are:

1. Navigate to the **Login** page of the quiz system.  
EXPECTED RESULT:  
quiz system.  
Login page is displayed with a "Forgot Password" link.
2. Click on the **Forgot Password** link.  
EXPECTED RESULT:  
User is redirected to the password reset page with an input field to enter the email address.
3. Enter a valid **registered email address** (e.g., user@example.com) and click the **Send Reset Link** button.  
EXPECTED RESULT:  
A confirmation message is shown (e.g., "Password reset link has been sent to your email").
4. Open the registered email inbox and check for the reset email.  
EXPECTED RESULT:  
The user receives an email with a working password reset link.

## 5. Recording the test case



## 6. Creating the bug



## 7. Test case results

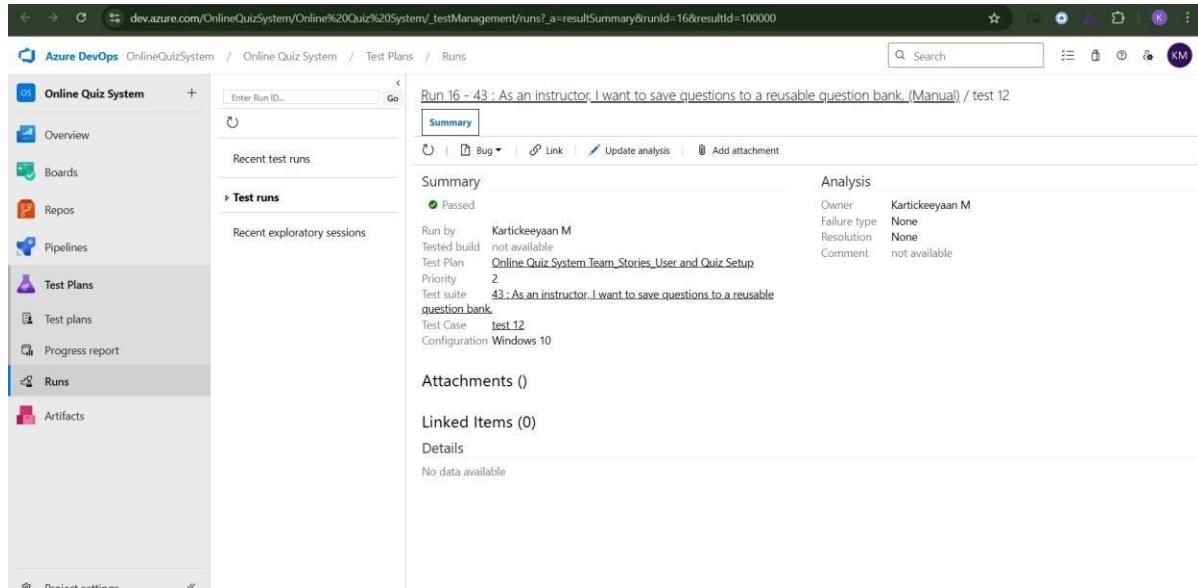
The screenshot shows the Azure DevOps interface for a project named "OnlineQuizSystem". The left sidebar has sections for Overview, Boards, Repos, Pipelines, Test Plans, Test plans, Progress report, Runs, and Artifacts. The "Test plans" section is selected. The main area displays a "Test Suites" list with various test cases. One specific test case, "40 : As an instructor, I want to select question types while creating a quiz", is highlighted. To the right, a "Test Case Results" card is shown, listing the outcome, timestamp, configuration, run by, tester, and test point for each execution. The results include Passed, Paused, Failed, and Pending status.

Outcome	TimeSta...	Configuration	Run by	Tester	Test
Passed	Just now	Windows 10	Karticeeyaan M	Karticeeyaan M	Online Quiz System
Passed	Just now	Windows 10	Karticeeyaan M	Karticeeyaan M	Online Quiz System
Paused	Just now	Windows 10	Karticeeyaan M	Karticeeyaan M	Online Quiz System
Failed	Just now	Windows 10	Karticeeyaan M	Karticeeyaan M	Online Quiz System
Passed	3 May	Windows 10	Karticeeyaan M	Karticeeyaan M	Online Quiz System

## 8. Test report summary

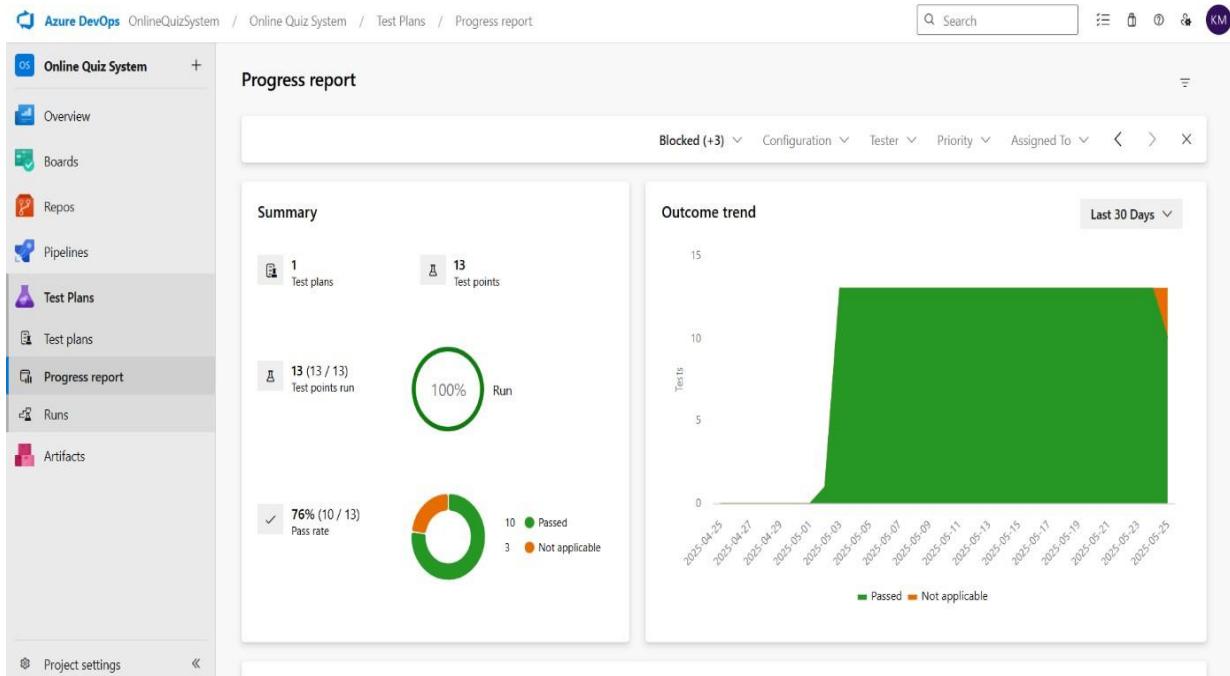
The screenshot shows the Azure DevOps interface for a project named "raja15". The left sidebar has sections for News Feed App, Overview, Boards, Work items, Backlogs, Sprints, Queries, Delivery Plans, Analytics views, Repos, Pipelines, Test Plans, Artifacts, and Project settings. The "Work items" section is selected. A specific bug report titled "BUG 203 BG 01 - Countries Drop down Not Available on the page" is displayed. The report details the repro step, validation, planning, deployment, development, and effort hours. It shows a state transition from New to Resolved, and a reason for closure. The bug is assigned to "rajesh prabhu".

- Assigning bug to the developer and changing state

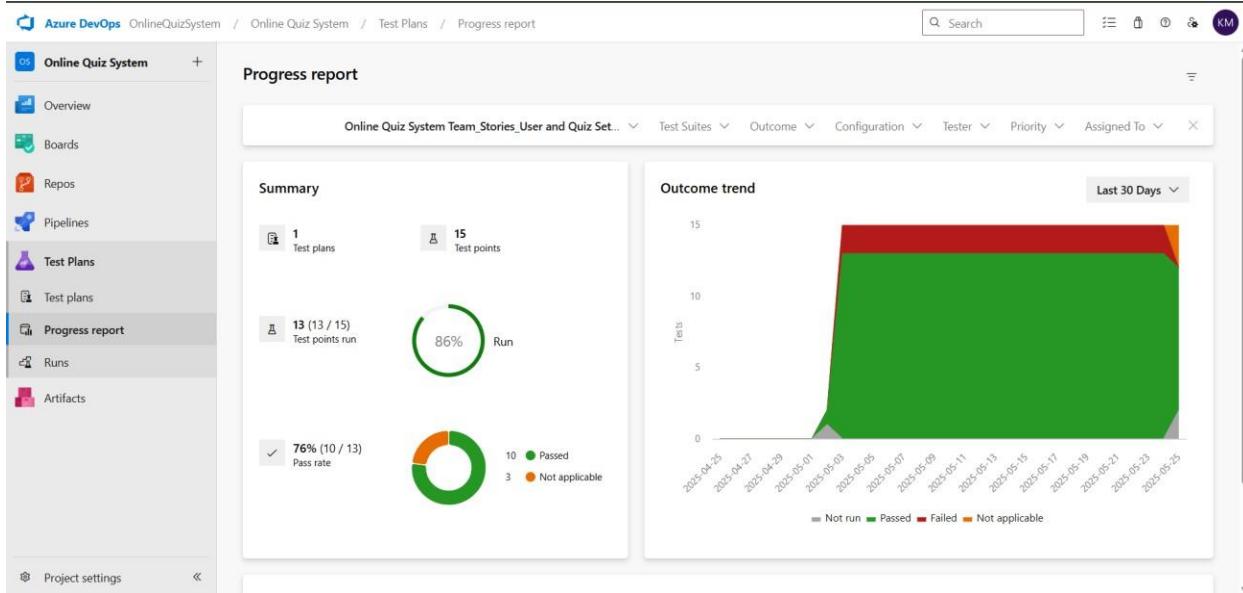


A screenshot of the Azure DevOps interface showing a test run summary. The URL is dev.azure.com/OnlineQuizSystem/Online%20Quiz%20System/\_testManagement/runs? a=resultSummary&runtId=16&resultId=100000. The left sidebar shows 'Test Plans' selected. The main area displays a summary of a run titled 'Run 16 - 43 : As an instructor, I want to save questions to a reusable question bank. (Manual) / test 12'. The summary section shows the run is passed, run by Kartickeeyaan M, tested build not available, and the test plan is 'Online Quiz System Team\_Stories\_User and Quiz Setup'. The analysis section shows the owner is Kartickeeyaan M, failure type None, resolution None, and comment not available. There are sections for attachments, linked items (0), and details (No data available).

## 9. Progress report



A screenshot of the Azure DevOps interface showing a progress report. The URL is dev.azure.com/OnlineQuizSystem/Online Quiz System/\_testManagement/testPlans/Progress report. The left sidebar shows 'Test Plans' selected. The main area displays a progress report with a summary section showing 1 test plan, 13 test points, and a 100% pass rate. It also includes an outcome trend chart for the last 30 days, which shows a sharp increase in tests from May 1st to May 13th, with most tests being passed.



## 10. Changing the test template

All processes

Name	Description	Team projects
Basic	This template is flexible for any process and great for teams getting started with Azure DevOps.	0
Agile	This template is flexible and will work great for most teams using Agile planning methods, including those pract...	0
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 improvement and an auditable reco...	0

The screenshot shows the 'All processes' list in the Azure DevOps Settings - Process page. The 'Agile' template is selected, and its details are displayed:

Name	Description	Team projects
Basic	This template is flexible for any process and great for teams getting started with Azure DevOps.	0
Agile	This template is flexible and will work great for most teams using Agile planning methods, including those pract...	0
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 improvement and an auditable reco...	0

The screenshot shows the 'All processes' list in the Azure DevOps Settings - Process page. A new instance of the Agile template has been added and is listed under the Agile category:

Name	Description	Team projects
Basic	This template is flexible for any process and great for teams getting started with Azure DevOps.	0
Agile	This template is flexible and will work great for most teams using Agile planning methods, including those pract...	0
231801095 Agile (default)	This template is flexible and will work great for most teams using Agile planning methods, including those pract...	1
Agile Plus		0
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 improvement and an auditable reco...	0

## 11. View the new test case template

The screenshot shows the 'Add a field to Test Case' dialog box overlaid on the Azure DevOps settings interface. The dialog box has a 'Definition' tab selected, showing the option to 'Create a field'. The 'Name' field is set to 'Type' and the 'Type' field is set to 'Text (single line)'. A 'Description' field is present but empty. At the bottom are 'Add field' and 'Cancel' buttons.

The screenshot shows the 'Work item types' section of the Azure DevOps settings. It lists a single work item type named 'Music Playlist Batch Creator' with a detailed description: 'The Azure Music Playlist Batch Creator is a cloud-based solution designed for bulk playlist creation and management. Levera...'. The 'General' section of the sidebar is visible on the left.

The screenshot shows the Azure DevOps Settings - Process page. The URL in the address bar is [dev.azure.com/231801095/\\_settings/process?type\\_id=231801095Agile.TestCase&process-name=231801095%20Agile&\\_a=layout](https://dev.azure.com/231801095/_settings/process?type_id=231801095Agile.TestCase&process-name=231801095%20Agile&_a=layout). The page title is "All processes > 231801095 Agile > Test Case". The left sidebar is titled "Organization Settings" and includes sections for General, Security, Boards, Pipelines, and Process. The "Process" section is currently selected. The main content area shows a "Steps" field with the placeholder "Text (multiple lines)". To the right, there are sections for "Custom" (Type: Text (single line)), "Recent test results", "Deployment", "Development", "Related Work", and "Status". A "Search" bar is at the top right, and a "K5" icon is in the top right corner.

### Result:

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

EXP NO: 9	<b>LOAD TESTING AND PERFORMANCE TESTING</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:

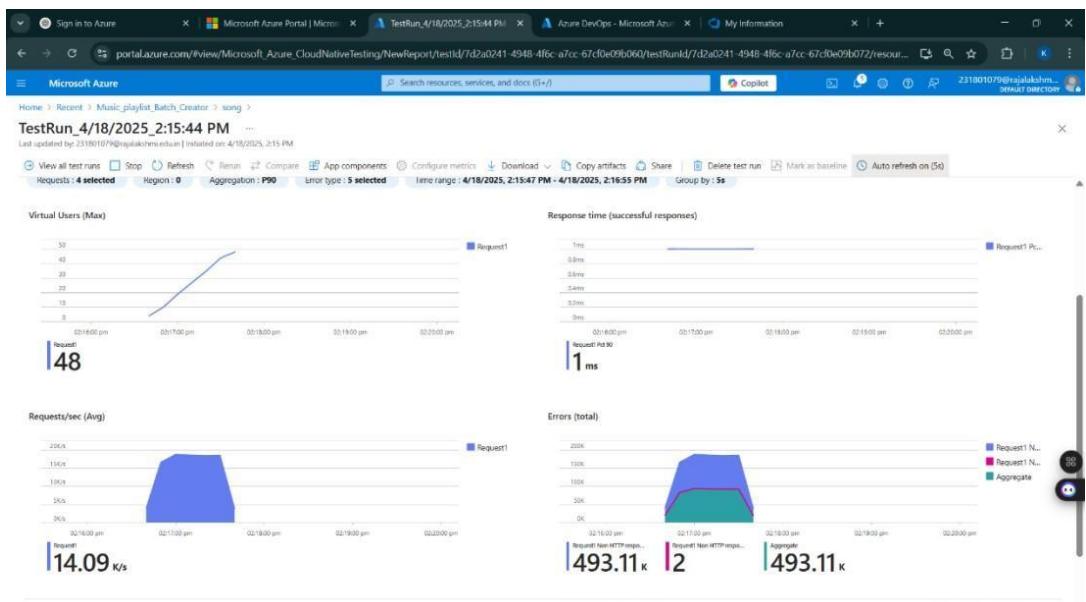
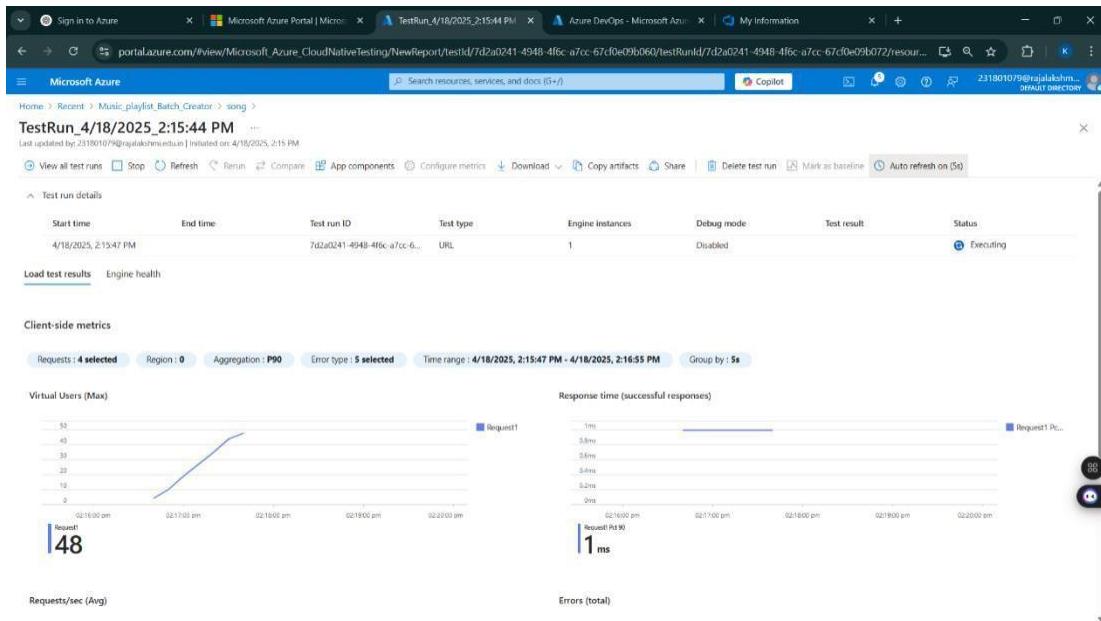
1. Sign in to Azure Portal  
Go to <https://portal.azure.com> and log in.
2. Create the Resource
  - o Go to *Create a resource* → Search for “Azure Load Testing”.
  - o Select Azure Load Testing and click Create.
3. Fill in the Configuration Details
  - o *Subscription*: Choose your Azure subscription.
  - 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.

**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.

## Load Testing



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#### Performance Tracking

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QuizMaster

Student Demo (student) [Logout](#)

## Student Dashboard

View and take available quizzes

### Available Quizzes

**Operating System**  
Introduction to Linux  
🕒 10 min • 🗂 2 questions

**Software Construction**  
Class Diagram  
🕒 10 min • 🗂 3 questions

**Web Technologies**  
HTML & CSS  
🕒 10 min • 🗂 3 questions

[Start Quiz](#) [Start Quiz](#) [Start Quiz](#)

QuizMaster

Student Demo (student) [Logout](#)

### Operating System

Question 2 of 2  
Best fit is used for memory allocation in the disk 🕒 9:44 5 points

True

False

[Previous](#) [Review & Submit](#)

1 2

### Result:

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

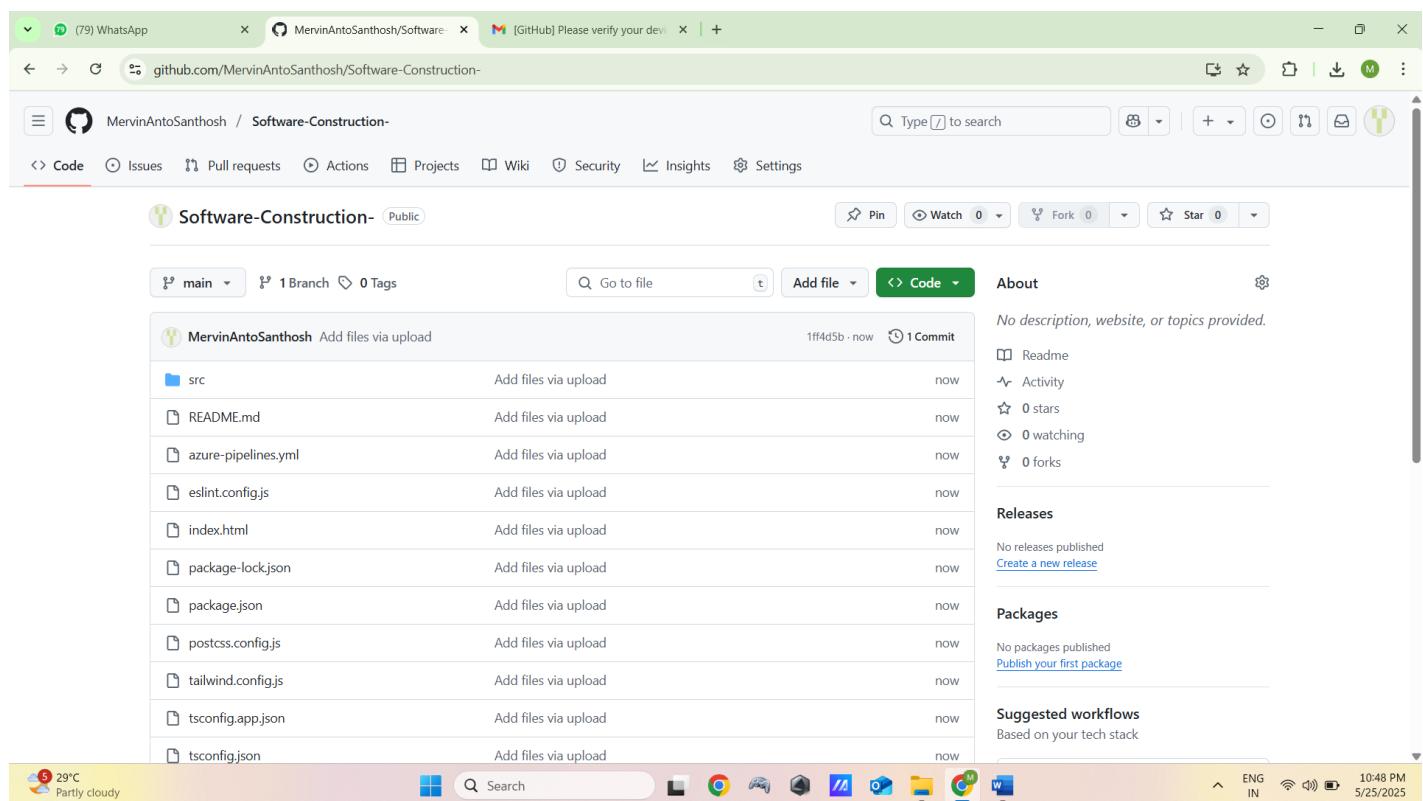
**EXP NO: 10**

## **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 Music Playlist Batch Creator project.

### **GitHub Project Structure**



### **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.