RAJALAKSHMI
ENGINEERING COLLEGE

SOFTWARE CONSTRUCTION

Laboratory Record Note Book

Name : HARISH S

Year / Branch / Section : 2nd /IT/FA

Register No. : 231001057

Semester : 4

Academic Year : 2024 - 2025

RAJALAKSHMI ENGINEERING COLLEGE
(AUTONOMOUS)

RAJALAKSHMI NAGAR, THANDALAM – 602 105

BONAFIDE CERTIFICATE

NAME HARISH S REGISTER NO 231001057

ACADEMIC YEAR 2024-25 **SEMESTER-** IV **BRANCH**: B. Tech Information Technology FA. 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 Examiner

2116231001057
CS23432

LAB PLAN

CS23432-SOFTWARE CONSTRUCTION LAB

Ex No	Date	Topic	Page No	Sign
1	21/01/2025	Study of Azure DevOps		
2	28/01/2025	Problem Statement		
3	04/02/2025	Agile Planning		
4	18/02/2025	Create User stories with Acceptance Criteria		
5	25/02/2025	Designing Sequence Diagrams using Azure DevOps-WIKI		
6	04/03/2025	Designing Class Diagram using Azure DevOps-WIKI		
7	11/03/2025	Designing Use case Diagram using Azure DevOps-WIKI		
8	18/03/2025	Designing Activity Diagrams using Azure DevOps-WIKI		
9	25/03/2025	Designing Architecture Diagram Using Star UML		
10	01/04/2025	Design User Interface		
11	08/04/2025	Implementation – Design a Web Page based on Scrum Methodology		
12	15/04/2025	Testing-Test Plan, Test Case and Load Testing		

EXP NO: 1	AZURE DEVOPS ENVIRONMENT SETUP

Aim:

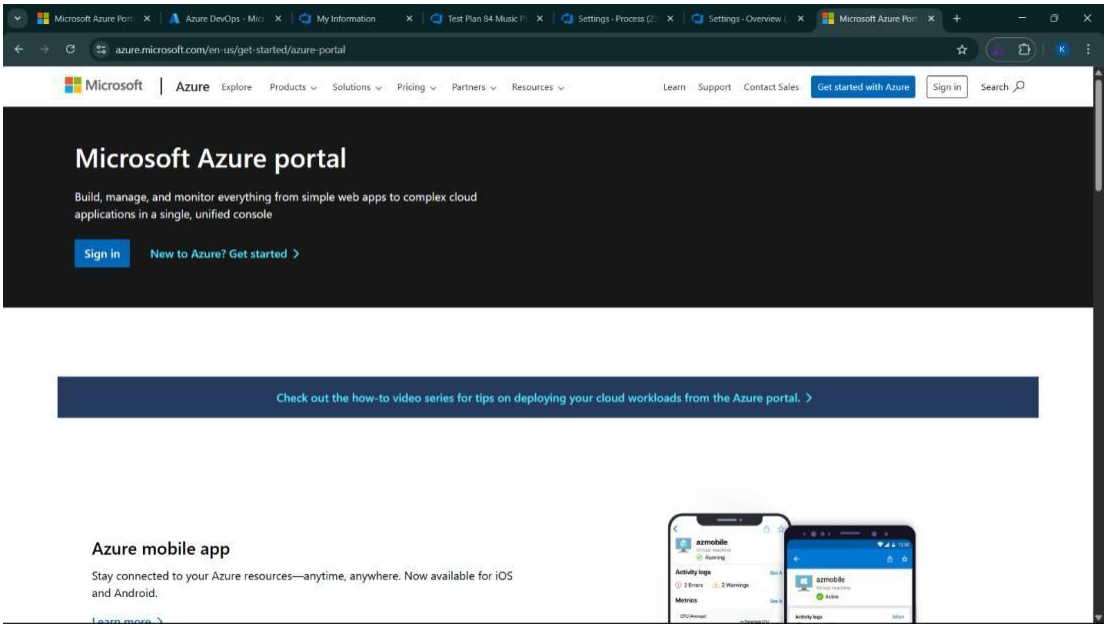
To set up and access the Azure DevOps environment by creating an organization through the Azure portal.

INSTALLATION

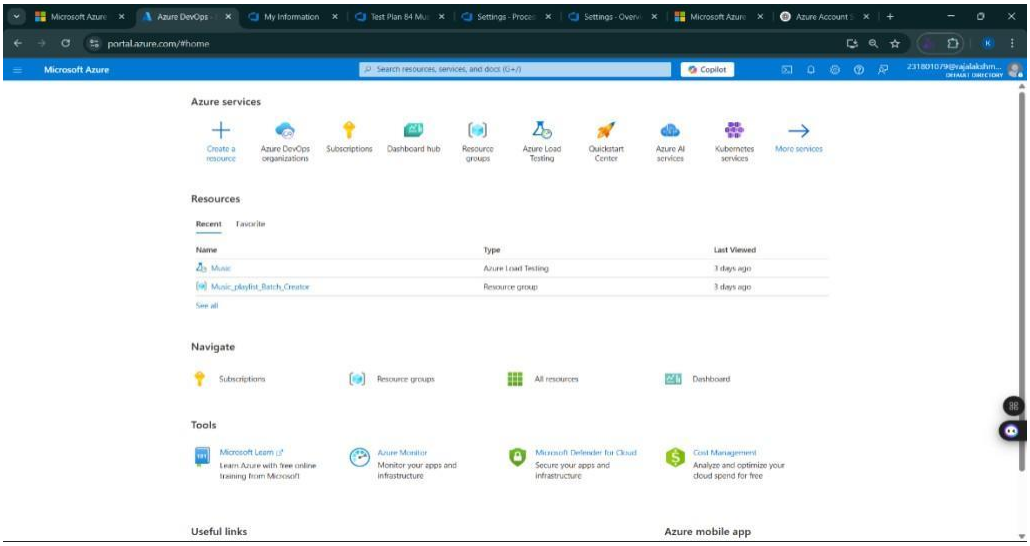
1.Open your web browser and go to the Azure website: https://azure.microsoft.com/en-us/get-started/azure-portal.

Sign in using your Microsoft account credentials.

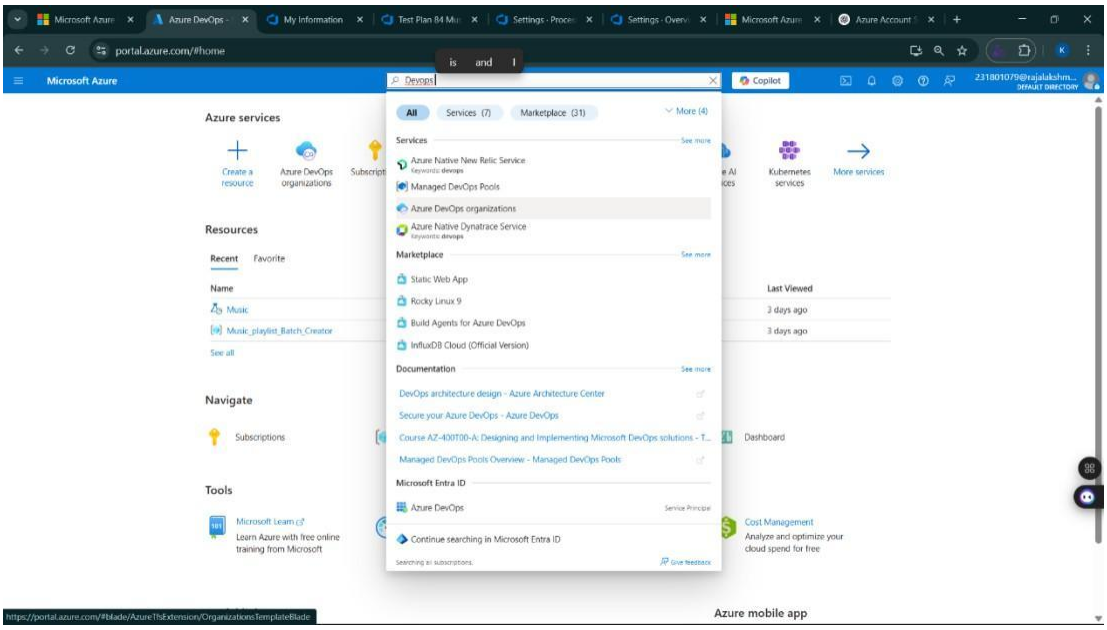
If you don't have a Microsoft account, you can create one here: https://signup.live.com/?lic=1



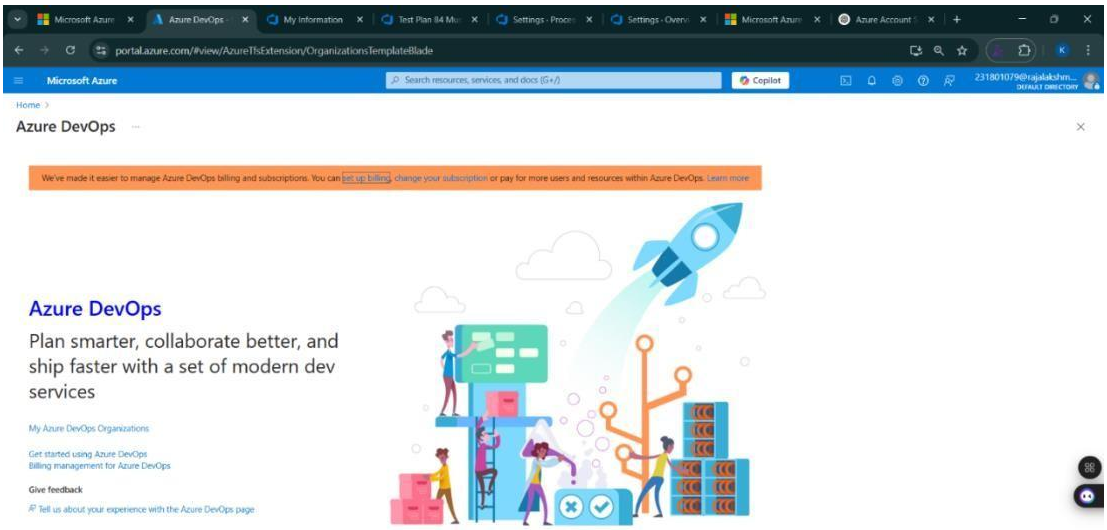
2. Azure home page



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



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:

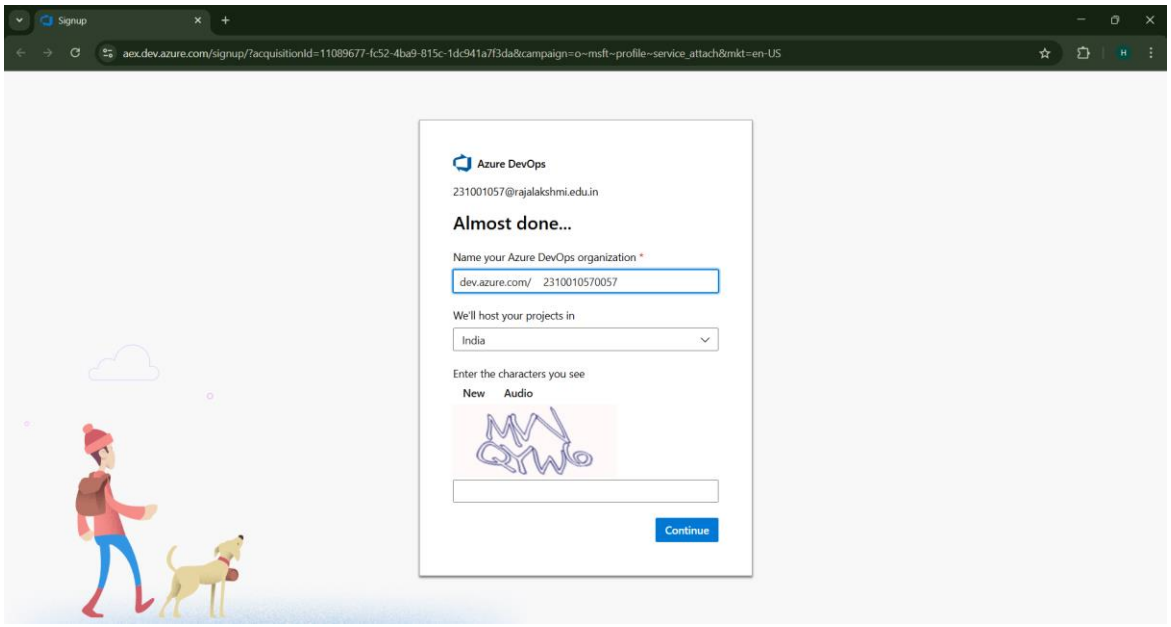
Successfully accessed the Azure DevOps environment and created a new organization through the Azure portal.

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

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.

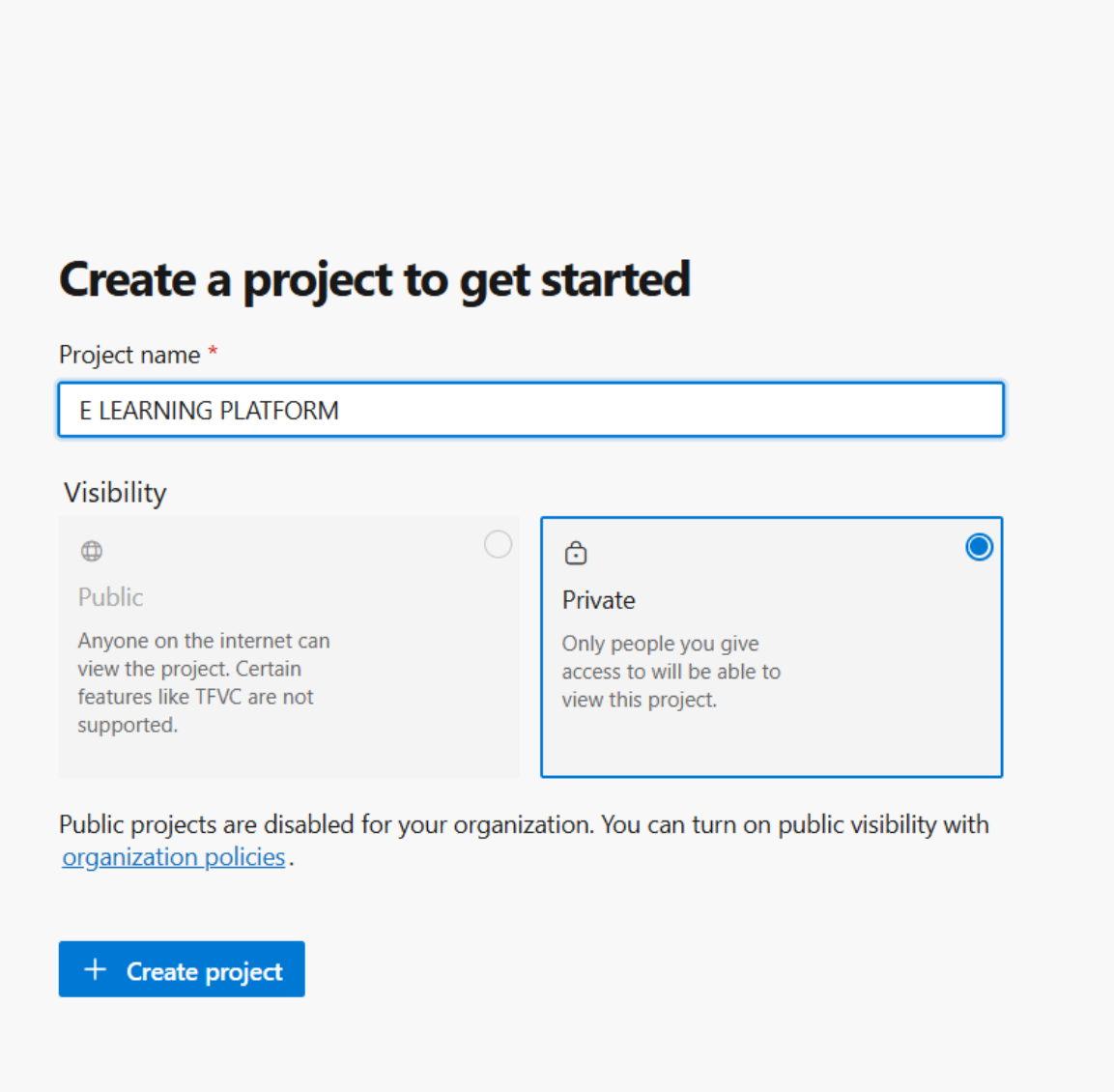
c. Enter the project name, description, and visibility options:

***Name**:* Choose a name for the project (e.g., LMS).

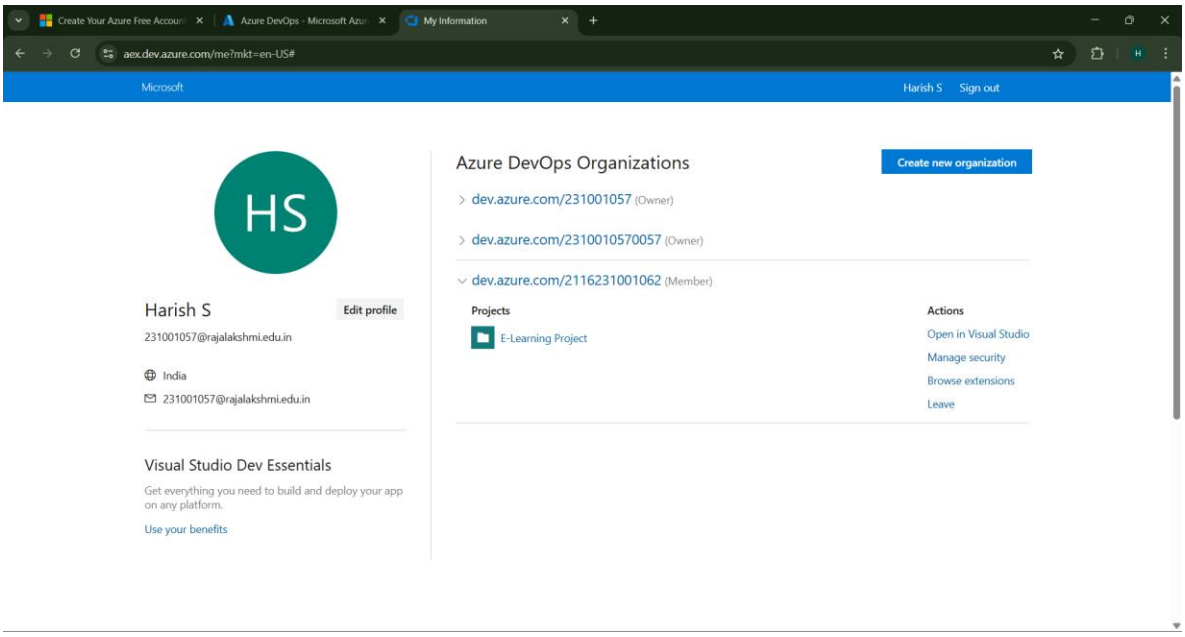
***Description**:* Optionally, add a description to provide more context about the project.

***Visibility**:* Choose whether you want the project to be **Private** (accessible only to those invited) or **Public** (accessible to anyone).

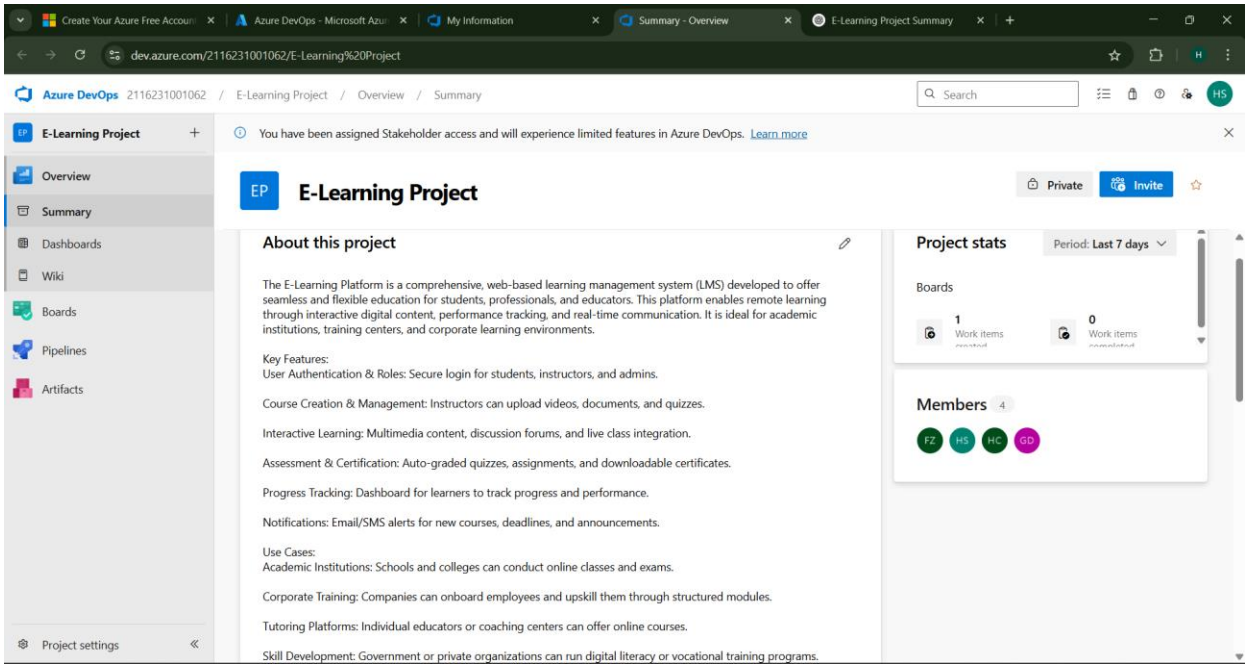
d. Once you've filled out the details, click **Create** to set up your first project.



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.



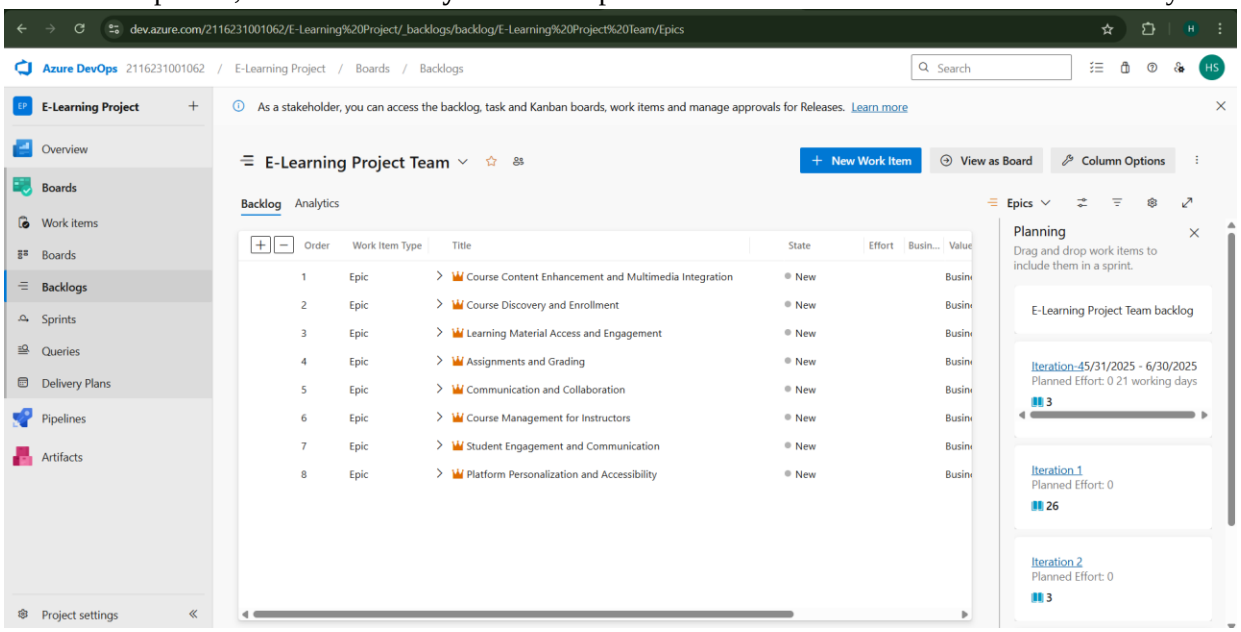
4. Project dashboard

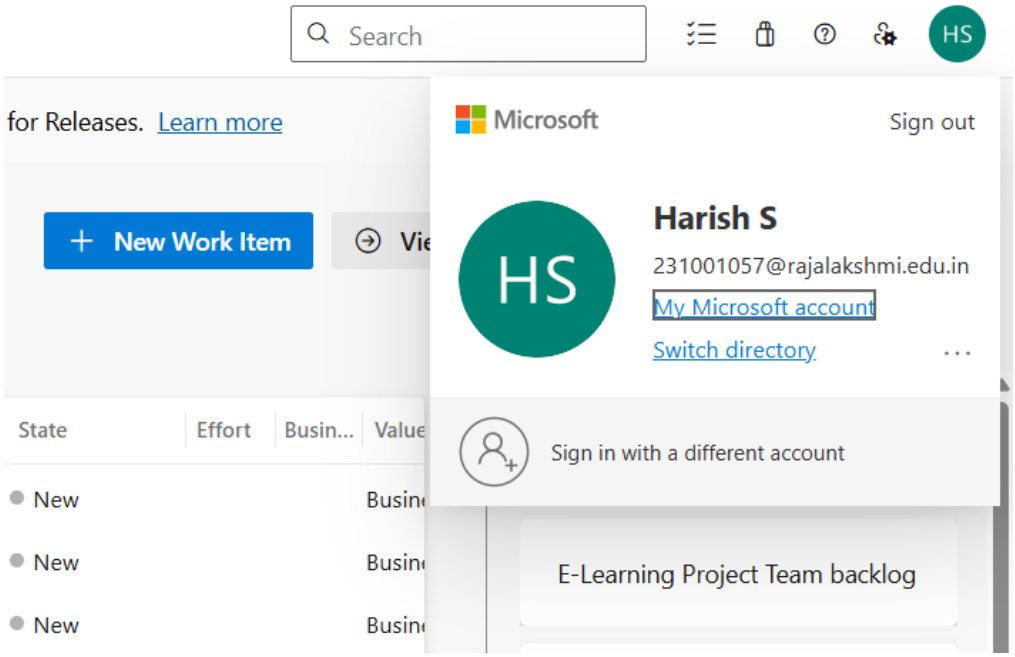


5. To manage user stories:

a. 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.

b. 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.





Result:

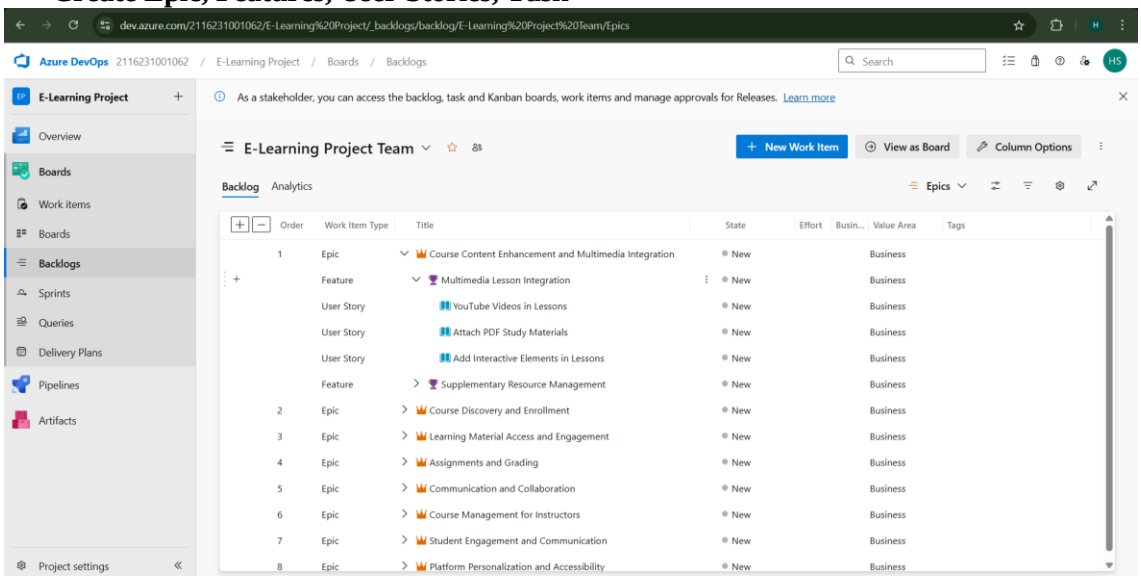
Successfully created an Azure DevOps project with user story management and an agile workflow setup.

EXP NO: 3	SETTING UP EPICS, FEATURES, AND USER STORIES FOR PROJECT PLANNING

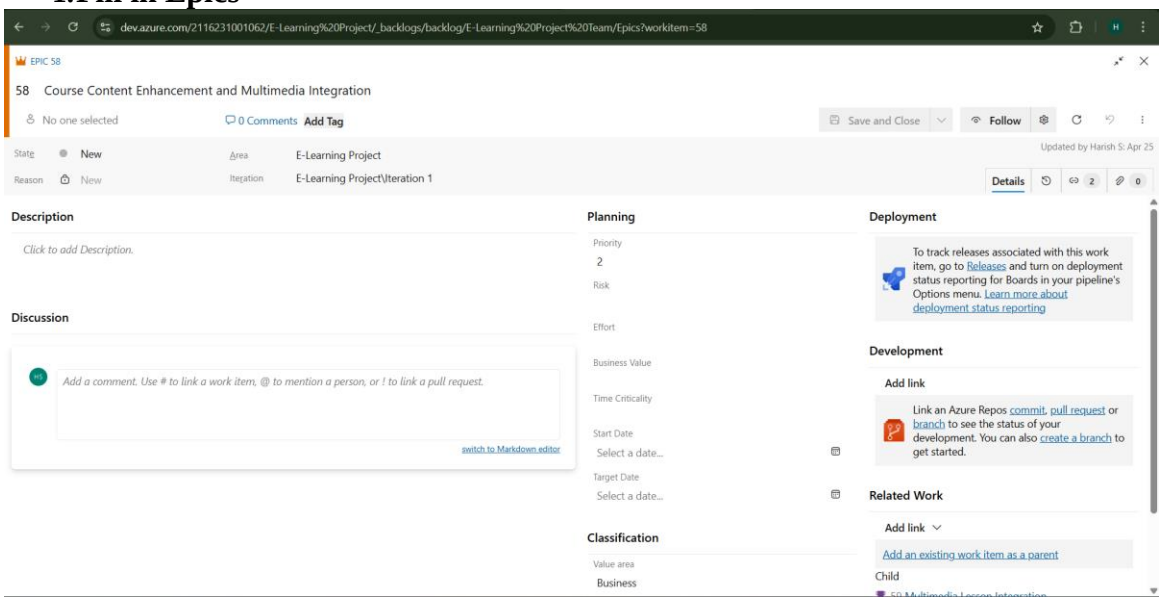
Aim:

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

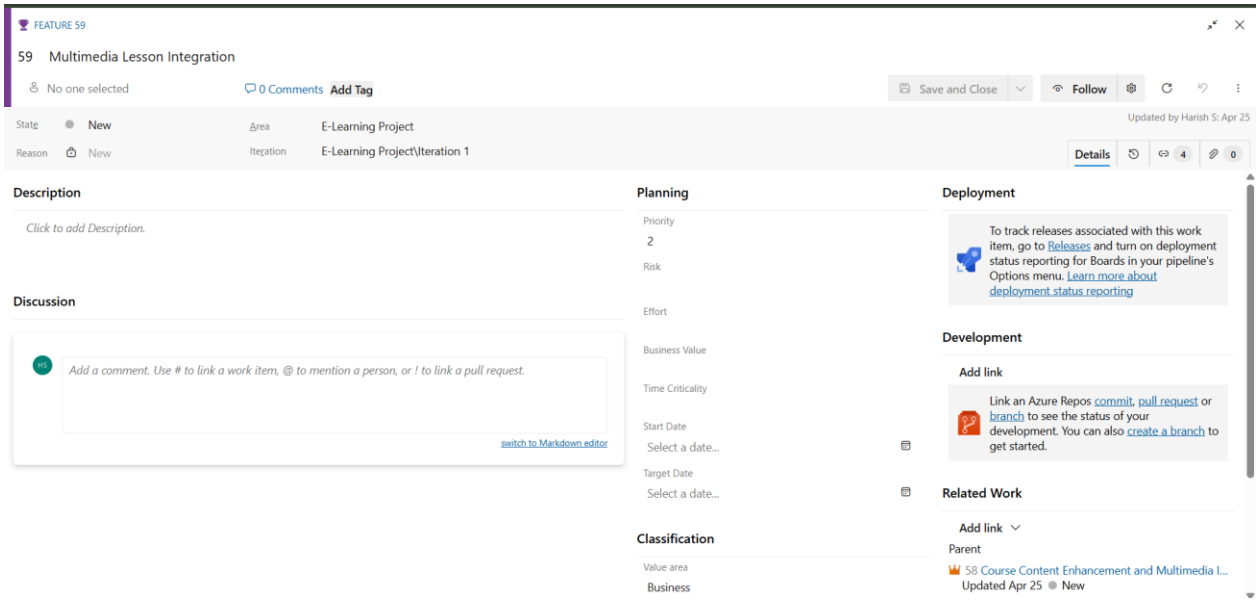
Create Epic, Features, User Stories, Task



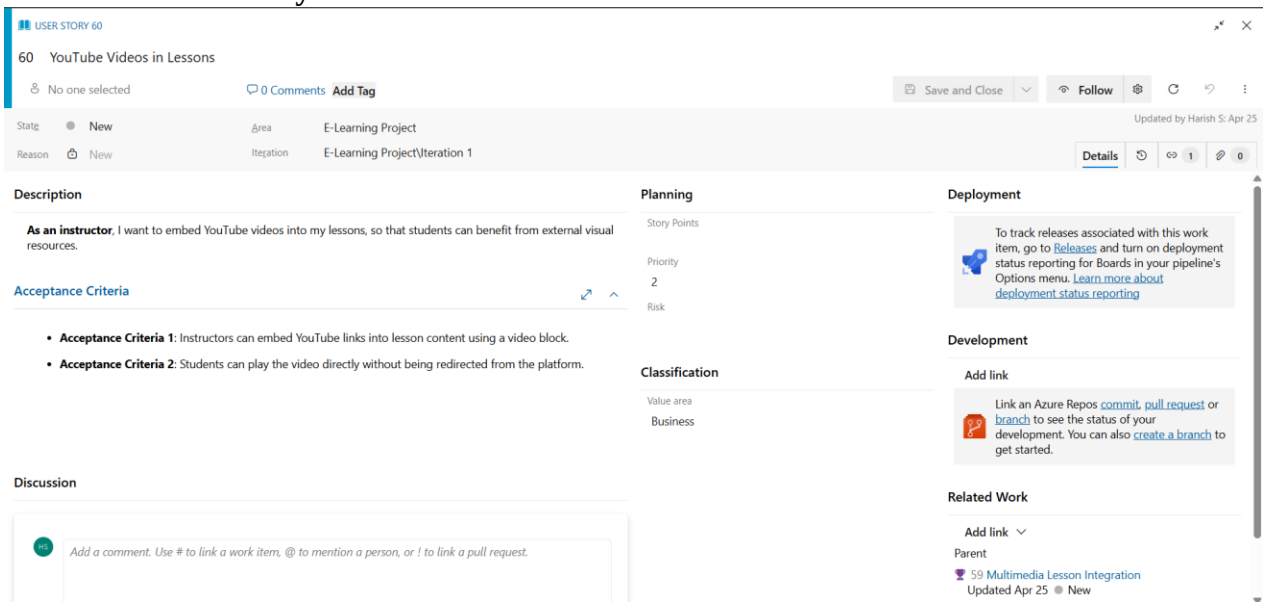
1.Fill in Epics



2.Fill in Features



3.Fill in User Story Details



Result:

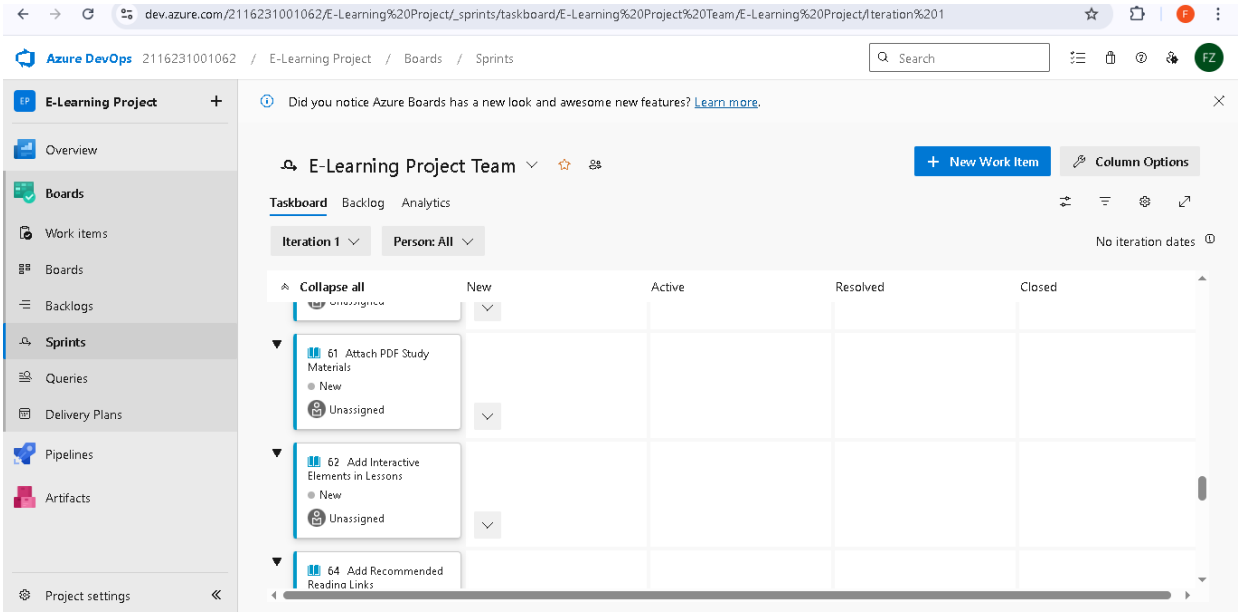
Thus, the creation of epics, features, user story and task has been created successfully.

EXP NO: 4	SPRINT PLANNING

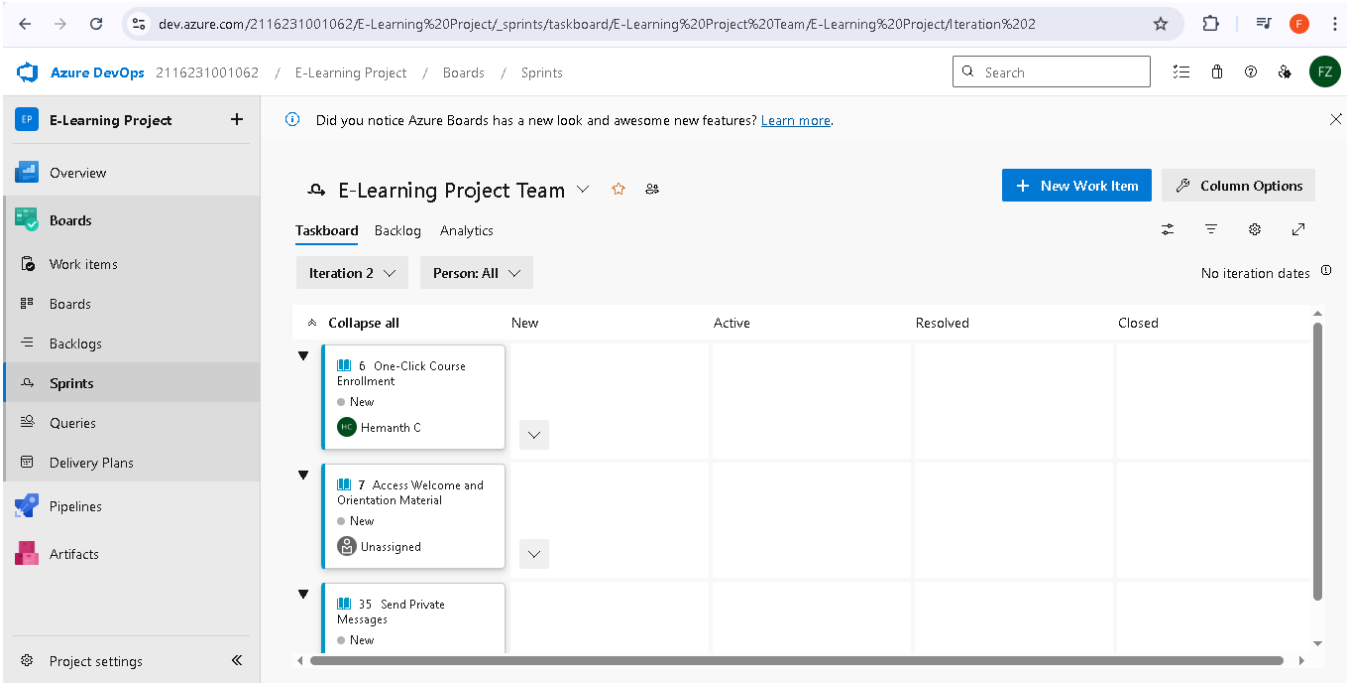
Aim:

To assign user story to specific sprint for the Music Playlist Batch Creator Project.

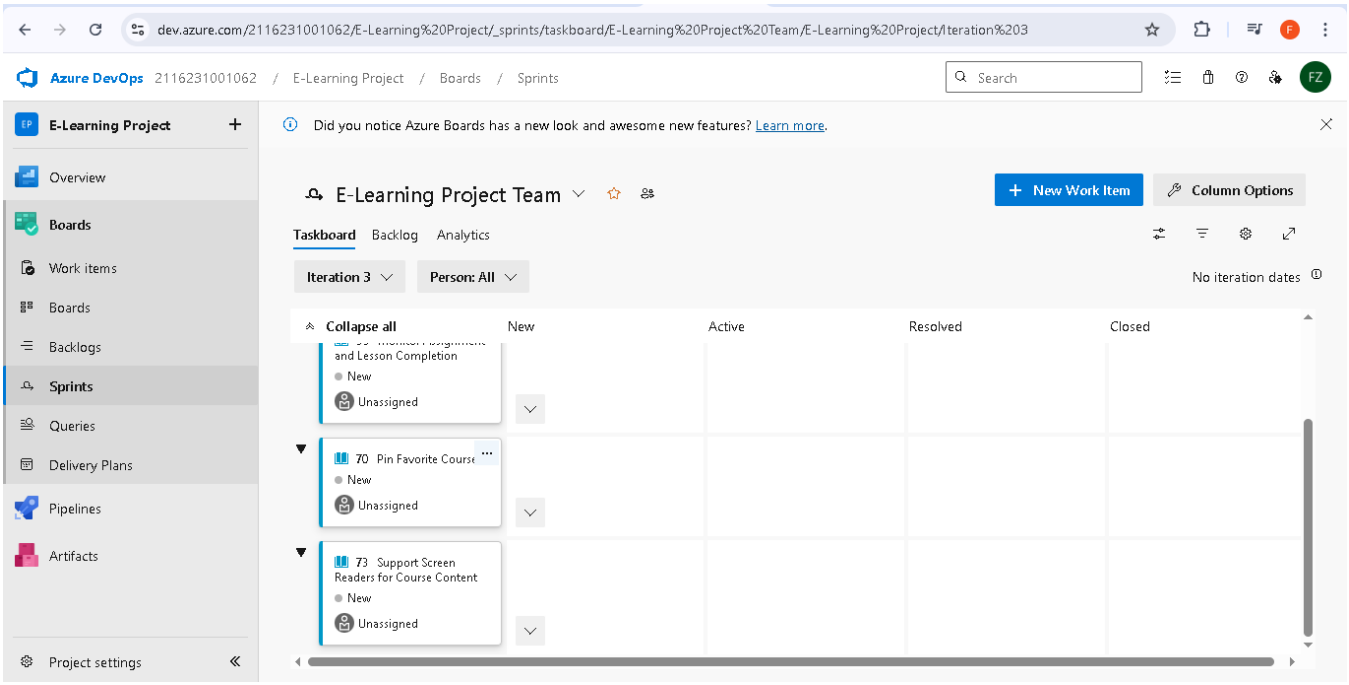
Sprint Planning
Sprint 1



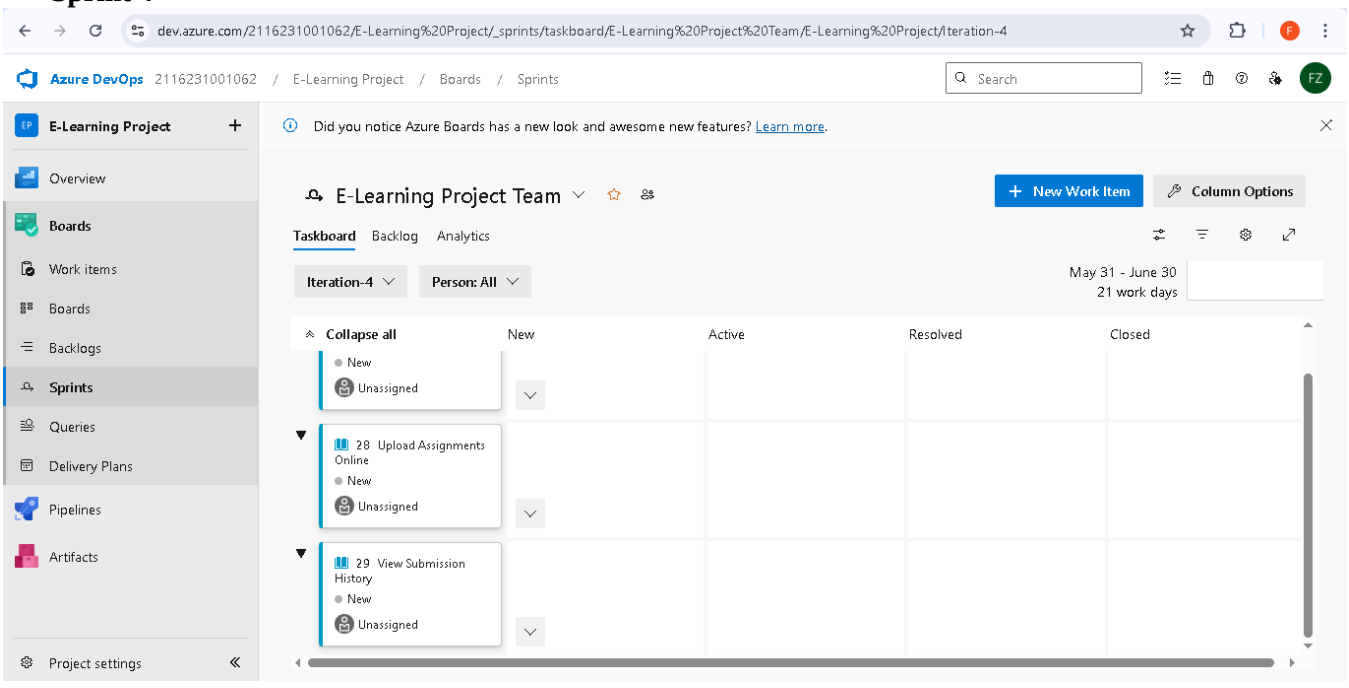
Sprint-2


dev.azure.com/2116231001062/E-Learning%20Project/_sprints/taskboard/E-Learning%20Project%20Team/E-Learning%20Project/Iteration%202
Azure DevOps 2116231001062 / E-Learning Project / Boards / Sprints
Search
FZ
E-Learning Project
Overview
Boards
Work items
Boards
Backlogs
Sprints
Queries
Delivery Plans
Pipelines
Artifacts
Project settings
Did you notice Azure Boards has a new look and awesome new features? Learn more.
E-Learning Project Team
New Work Item
Column Options
Taskboard
Backlog
Analytics
Iteration 2
Person: All
No iteration dates
Collapse all
New
Active
Resolved
Closed
6 One-Click Course Enrollment
New
Hemanth C
7 Access Welcome and Orientation Material
New
Unassigned
35 Send Private Messages
New

Sprint 3



Sprint 4



Result:

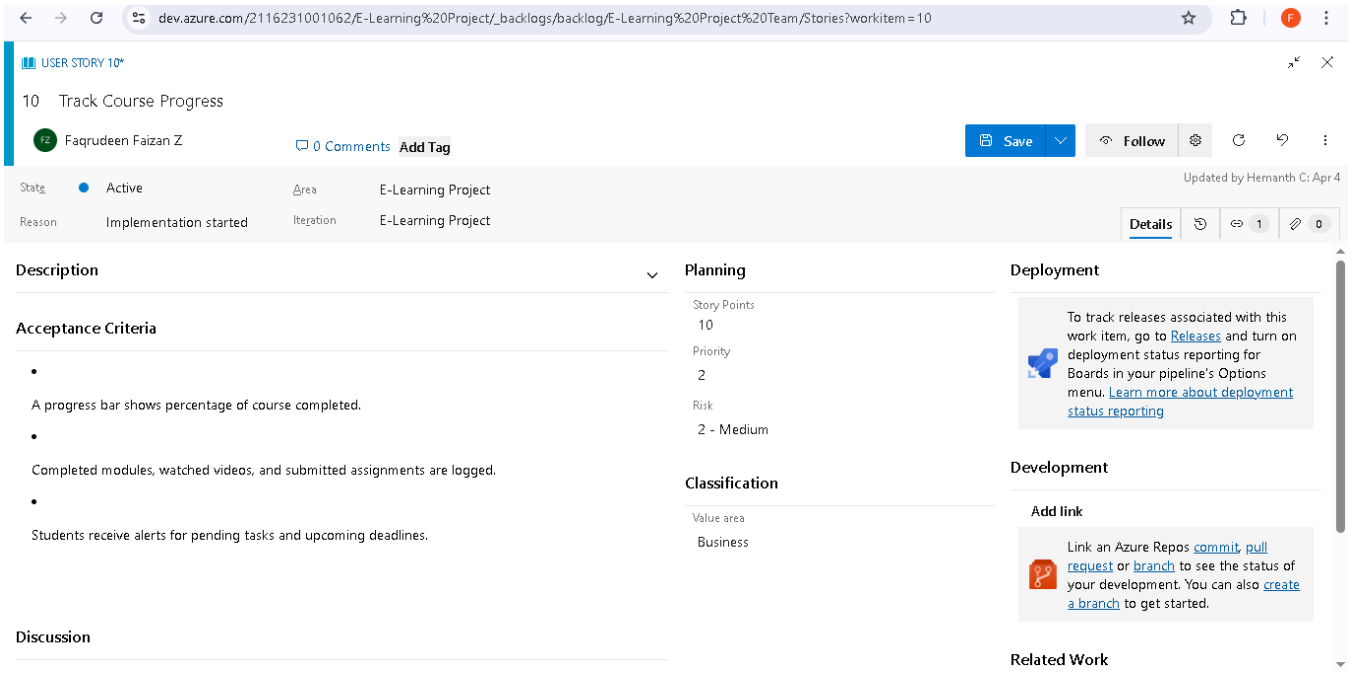
The Sprints are created for the E-Learning Project.

EXP NO: 5	POKER ESTIMATION

Aim:

Create Poker Estimation for the user stories - E-Learning Project.

Poker Estimation



Result:

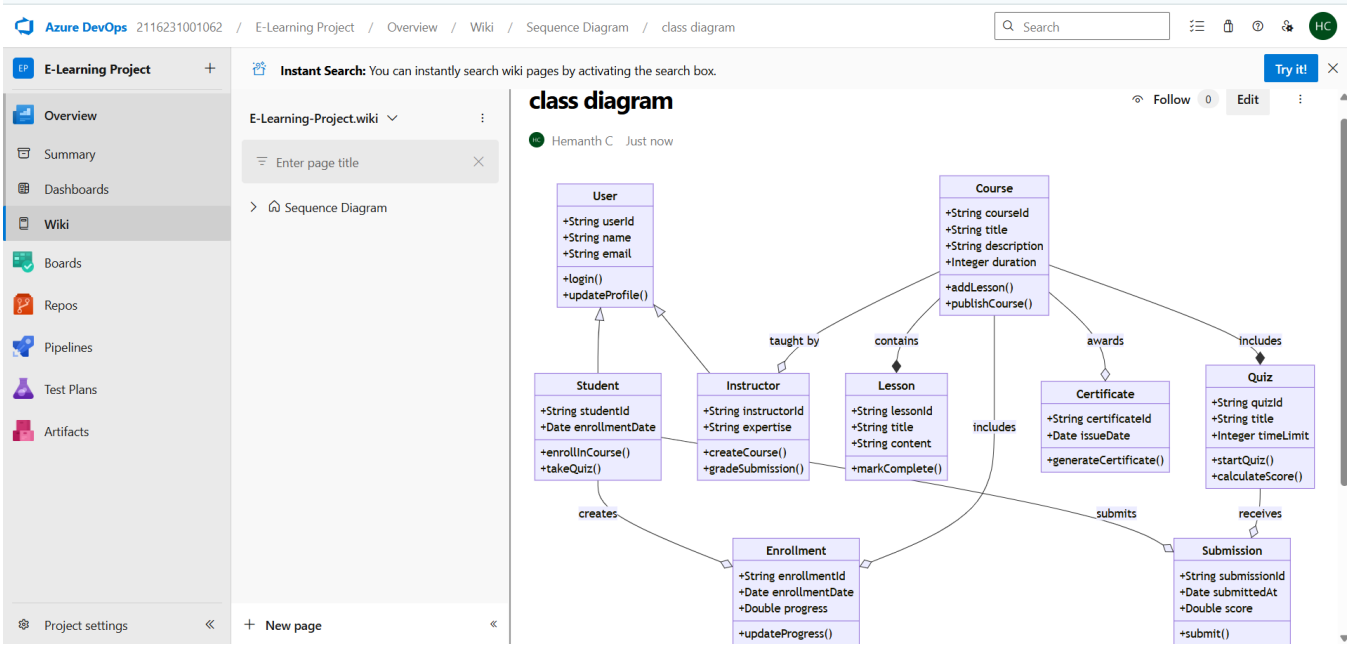
The Estimation/Story Points is created for the project using Poker Estimation.

EXP NO: 6	DESIGNING CLASS AND SEQUENCE DIAGRAMS FOR PROJECT ARCHITECTURE

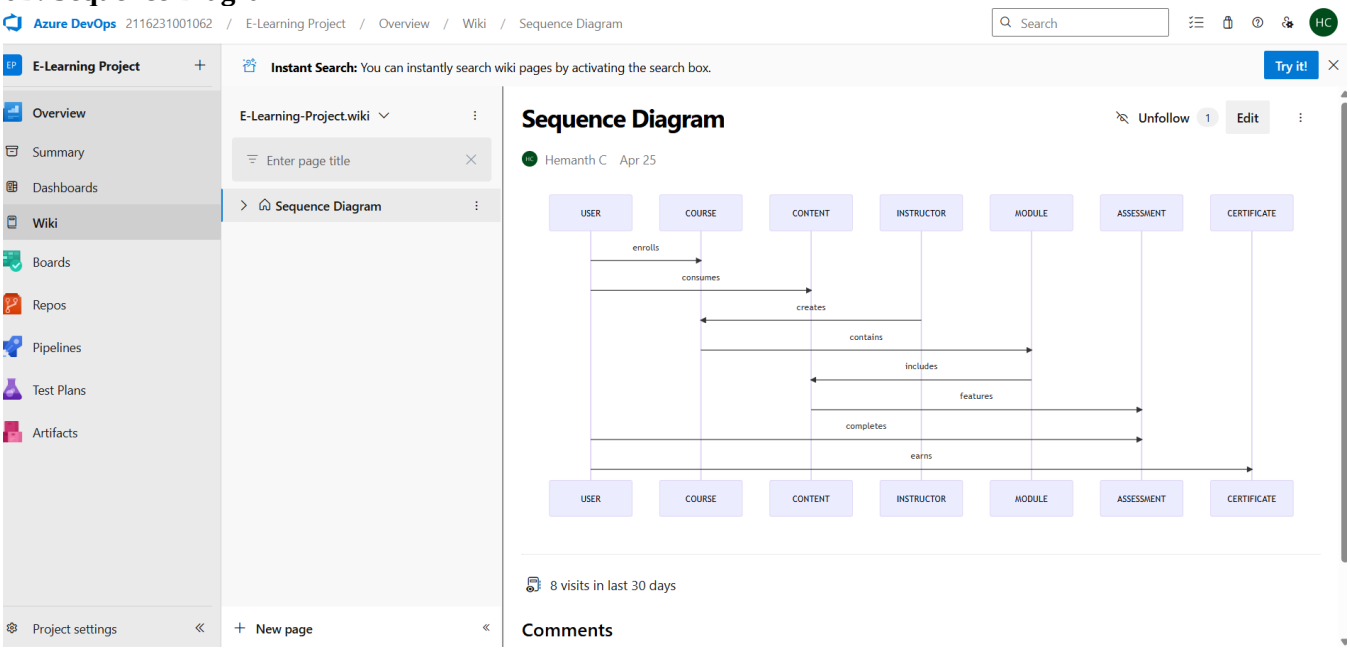
Aim:

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

6A. Class Diagram



6B. Sequence Diagram



Result:

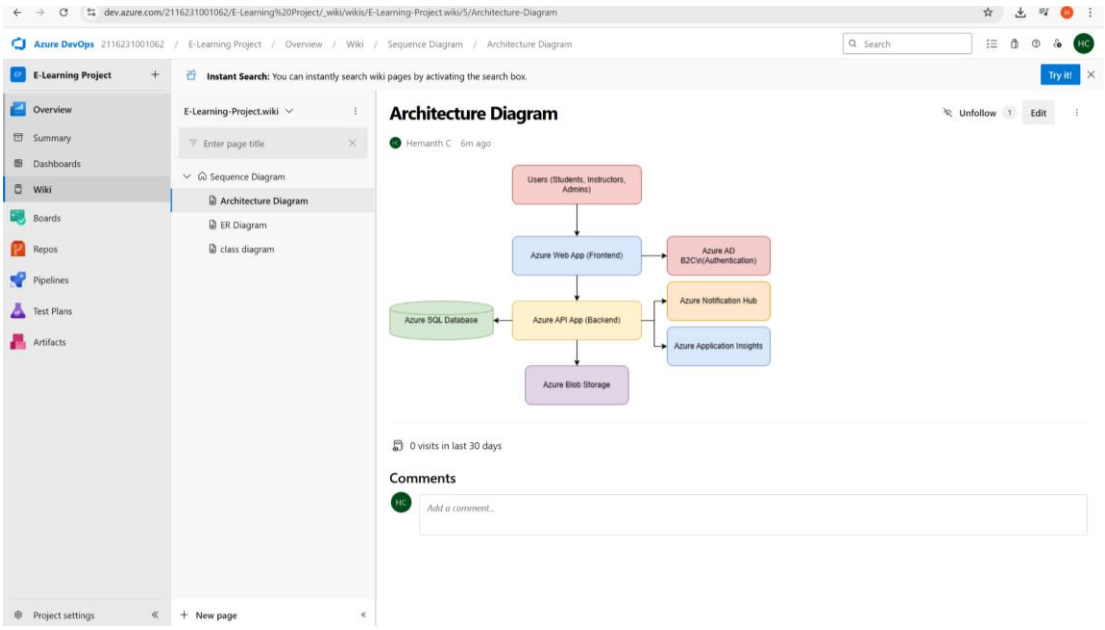
The Class Diagram and Sequence Diagram is designed Successfully for the E-learning platform project.

EXP NO: 7	DESIGNING ARCHITECTURAL AND ER DIAGRAMS FOR PROJECT STRUCTURE

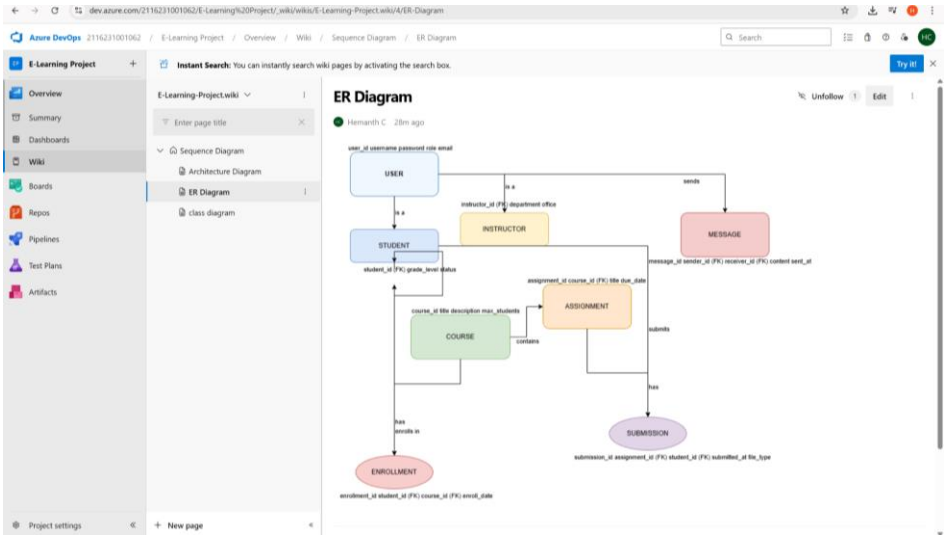
Aim:

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

7A. Architectural Diagram



7B.ER Diagram


ER Diagram
Unfollow
Edit
Hemanth C 28m ago
USER
STUDENT
INSTRUCTOR
MESSAGE
ASSIGNMENT
COURSE
SUBMISSION
ENROLLMENT
is a
is a
sends
has
enrolls in
contains
submits
has

Result :

The Architecture Diagram and ER Diagram is designed successfully for E-Learning platform project.

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

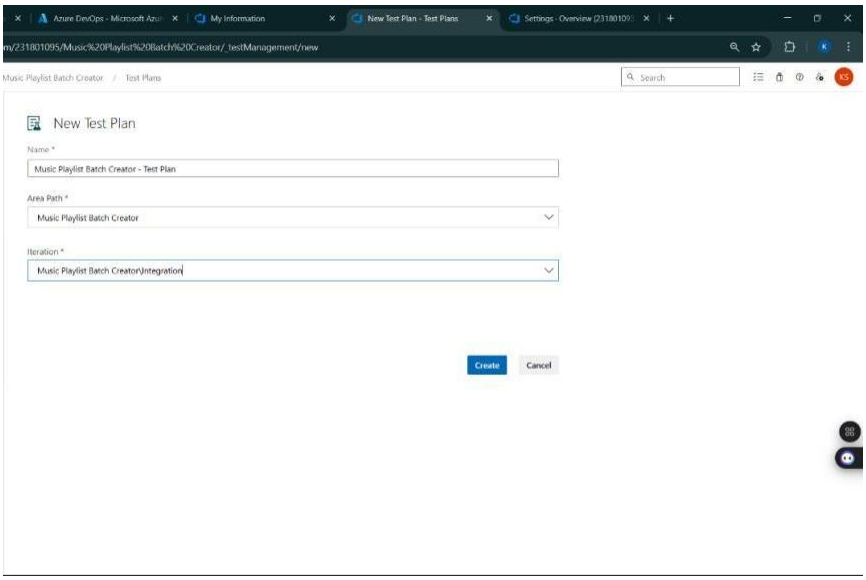
1. **Understand Core Features of the Application**
    - User Signup & Login
    - Viewing and Managing course
    - Fetching Real-time Metadata
    - Editing course (rename, reorder, record)
    - Creating smart course playlists based on categories
2. **Define User Interactions**
    - Each test case simulates a real user behaviour (e.g., logging in , adding a course).
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 , or creates a category-based .
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 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, Editing, Recommendation System).

- Improves organization and test execution flow in Azure DevOps.

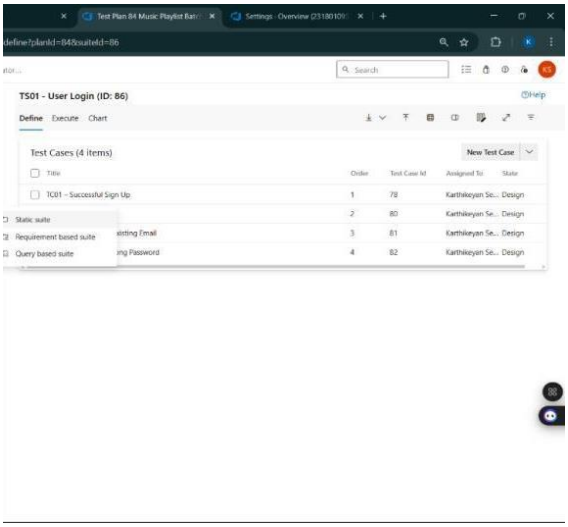
8. Prioritize and Review

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

1.New test plan



2.Test suite



3. **Test case**

TC01 – Successful Sign Up

Action:

- Go to the Sign-Up page.
- Enter a valid name, email, and password.
- Click "Sign Up".

Expected Results:

- Form is displayed properly.
- Fields accept valid input.
- Account is created, and the user is redirected to the dashboard.

Type: Happy Path

TC02 – Sign Up with Existing Email

Action:

- Go to the Sign-Up page.
- Enter a name and an already registered email.
- Click "Sign Up".

Expected Results:

- Fields accept input.
- Error message "Email already registered" is shown.

Type: Error Path

Test Suite: TS02 - Course Dashboard (ID: 202)

TC03 – View Enrolled Courses

Action:

- Login successfully.
- Navigate to "My Courses".

Expected Results:

- All enrolled courses are listed with thumbnails and progress indicators.

Type: Happy Path

TC04 – Courses Not Loading

Action:

- Disconnect internet.
- Navigate to "My Courses".

Expected Results:

- Page loads with placeholder.
- Error message "Unable to load courses. Please check your connection." is shown.

Type: Error Path

Test Suite: TS03 - Course Enrollment (ID: 203)

TC05 – Successful Course Enrollment

Action:

- Login successfully.
- Navigate to "Course Catalog".
- Select a course and click "Enroll".

Expected Results:

- Course is added to "My Courses" list.

- Confirmation message "Successfully enrolled" is shown.

Type: Happy Path

TC06 – Enrollment Failure Due to Server Issue

Action:

- Login successfully.
- Select a course and click "Enroll".
- Simulate backend server error.

Expected Results:

- Enrollment fails.
- Error message: "Unable to enroll at this moment. Try again later."

Type: Error Path

Test Suite: TS04 - Quiz System (ID: 204)

TC07 – Take and Submit Quiz Successfully

Action:

- Navigate to an enrolled course.
- Click on "Start Quiz".
- Answer all questions.
- Click "Submit".

Expected Results:

- Quiz is submitted.
- Immediate feedback and score are displayed.

Type: Happy Path

TC08 – Quiz Submission Timeout

Action:

- Start a quiz.
- Wait until the session times out without submitting.

Expected Results:

- Quiz auto-submits.
- Message: "Session expired. Auto-submitted."
- Partial feedback shown if applicable.

Type: Error Path

Test Suite: TS05 - Progress Tracking (ID: 205)

TC09 – Real-Time Progress Updates

Action:

- Start watching a lesson video.
- Mark lesson as completed.

Expected Results:

- Progress bar updates instantly.
- Course dashboard reflects updated status.

Type: Happy Path

TC10 – Progress Not Updating Due to Session Expiry

Action:

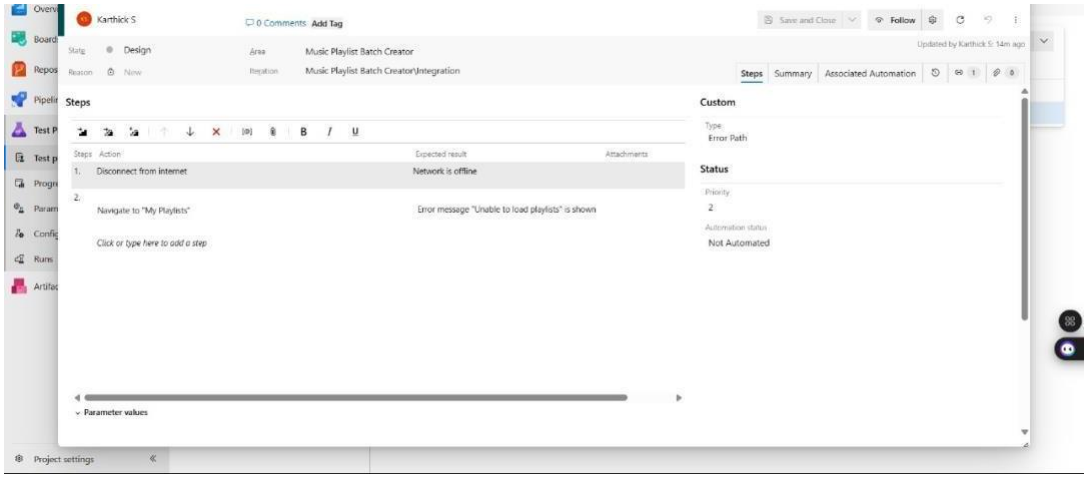
- Start a lesson.
- Stay idle until session expires.
- Try to mark lesson as completed.

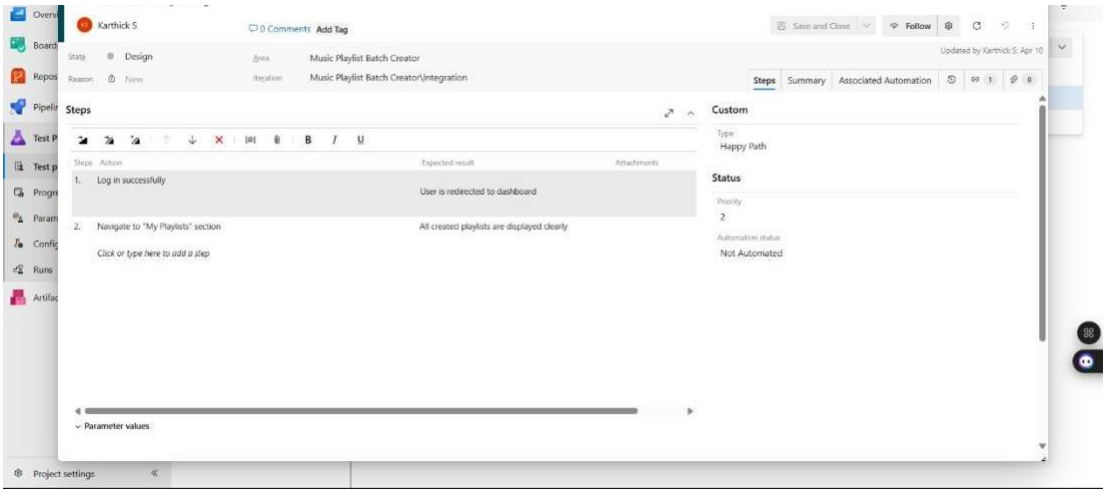
Expected Results:

- Action fails.
- Message: "Session expired. Please log in again to continue."

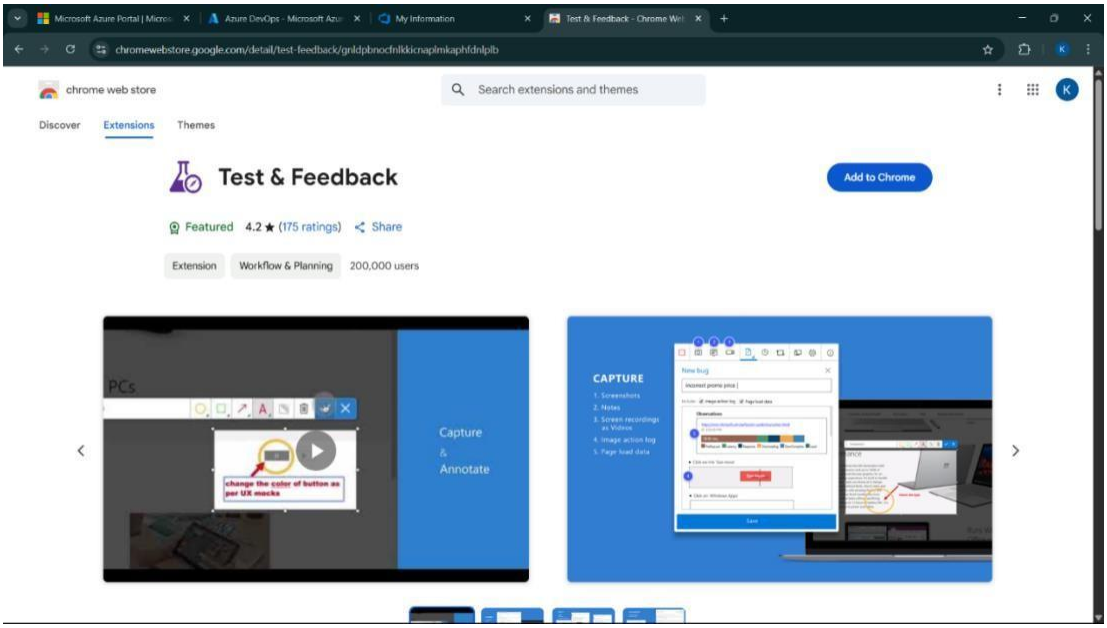
Type: Error Path

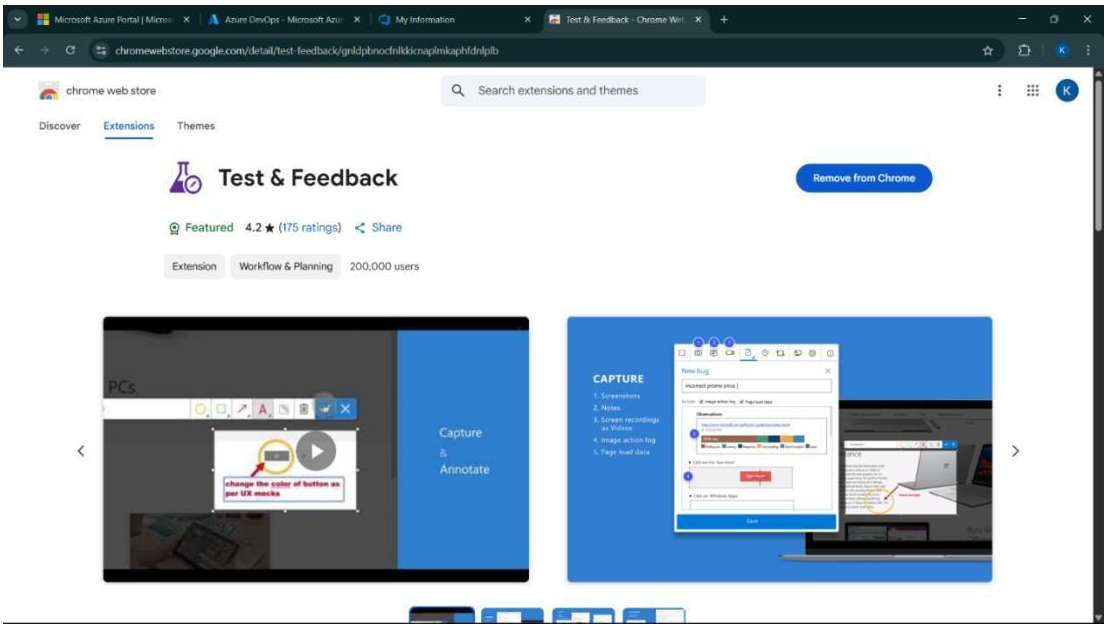
Test Cases



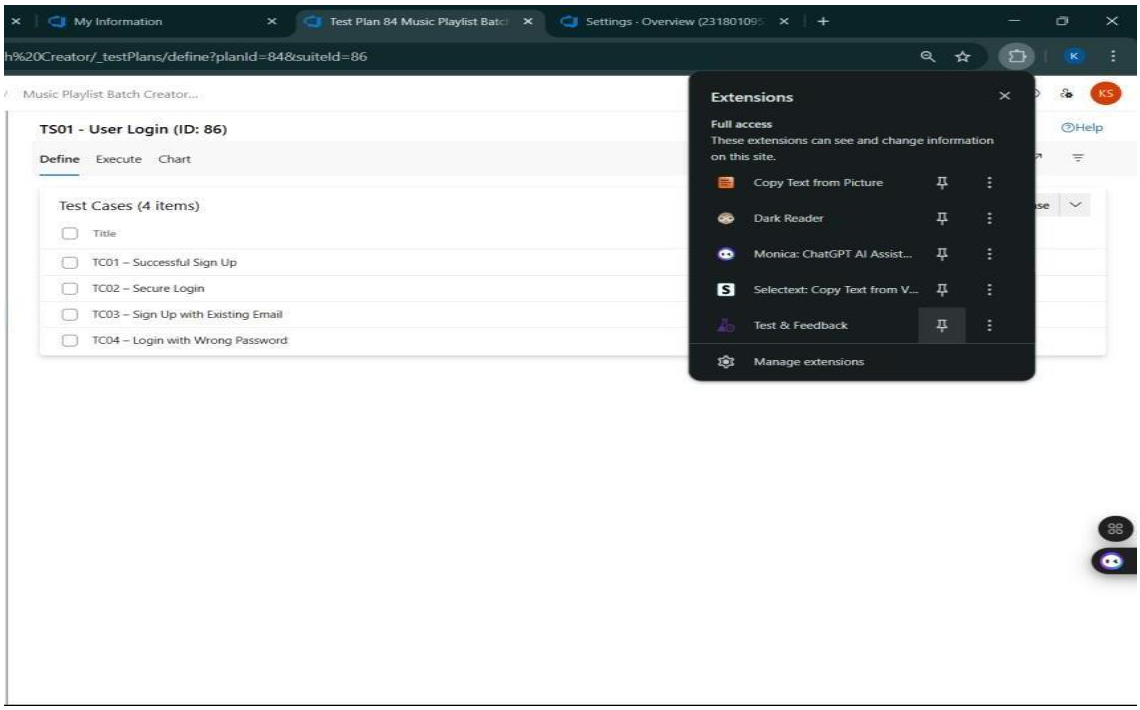


4.Installation of test

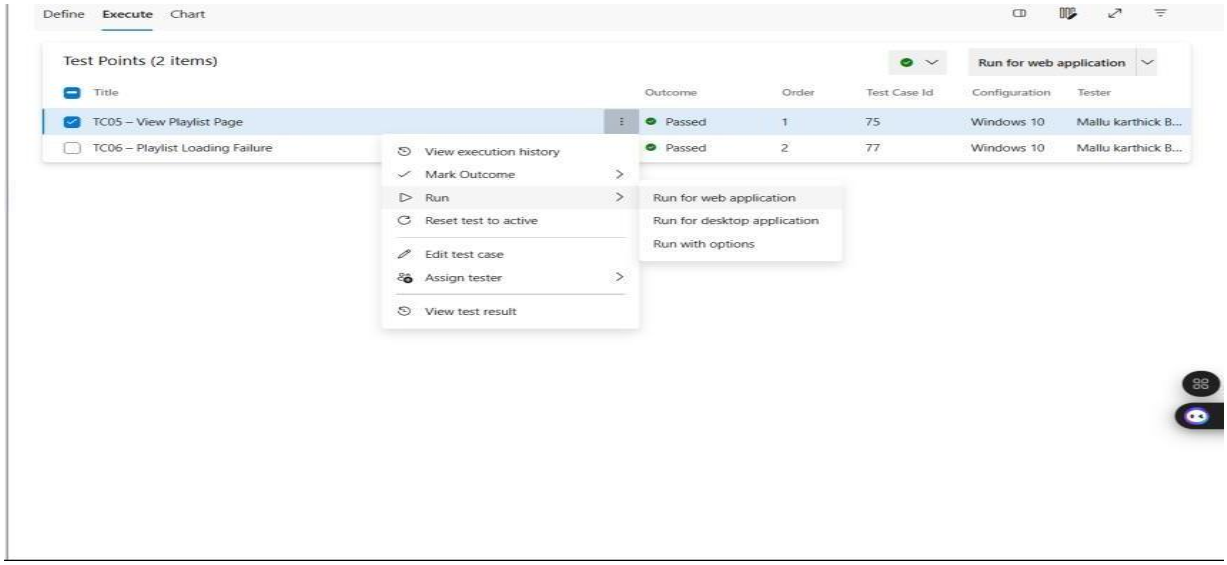


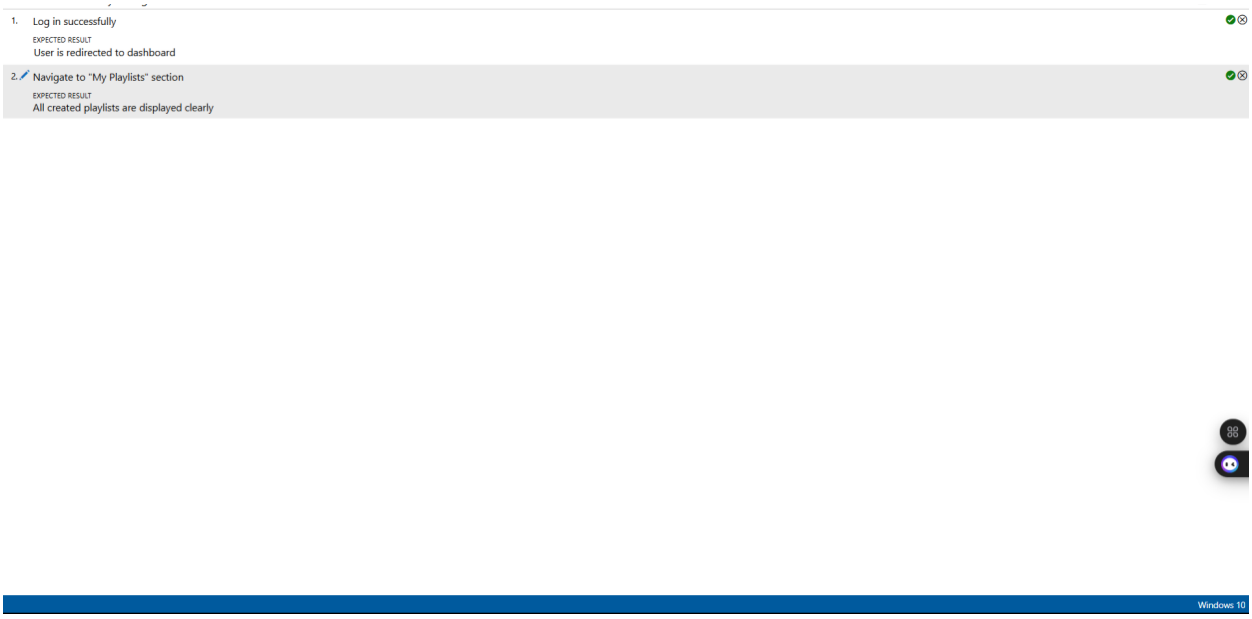


Test and feedback
Showing it as an extension

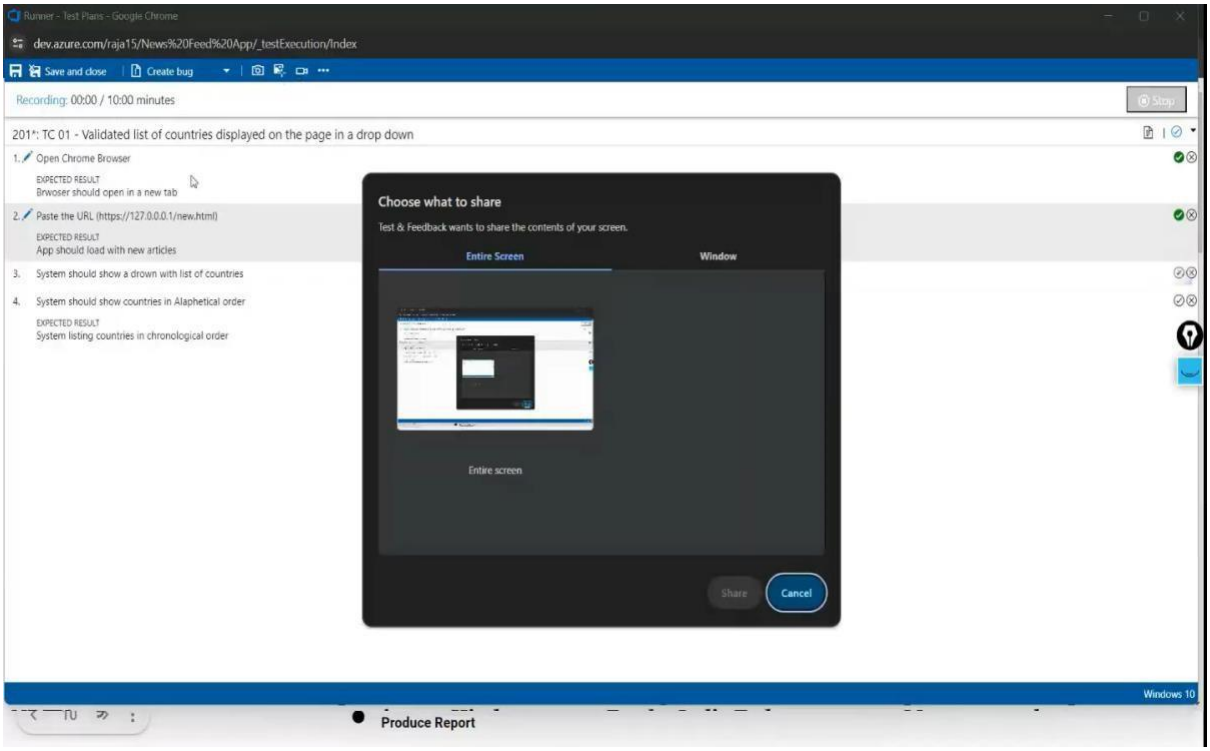


5.Running the test cases

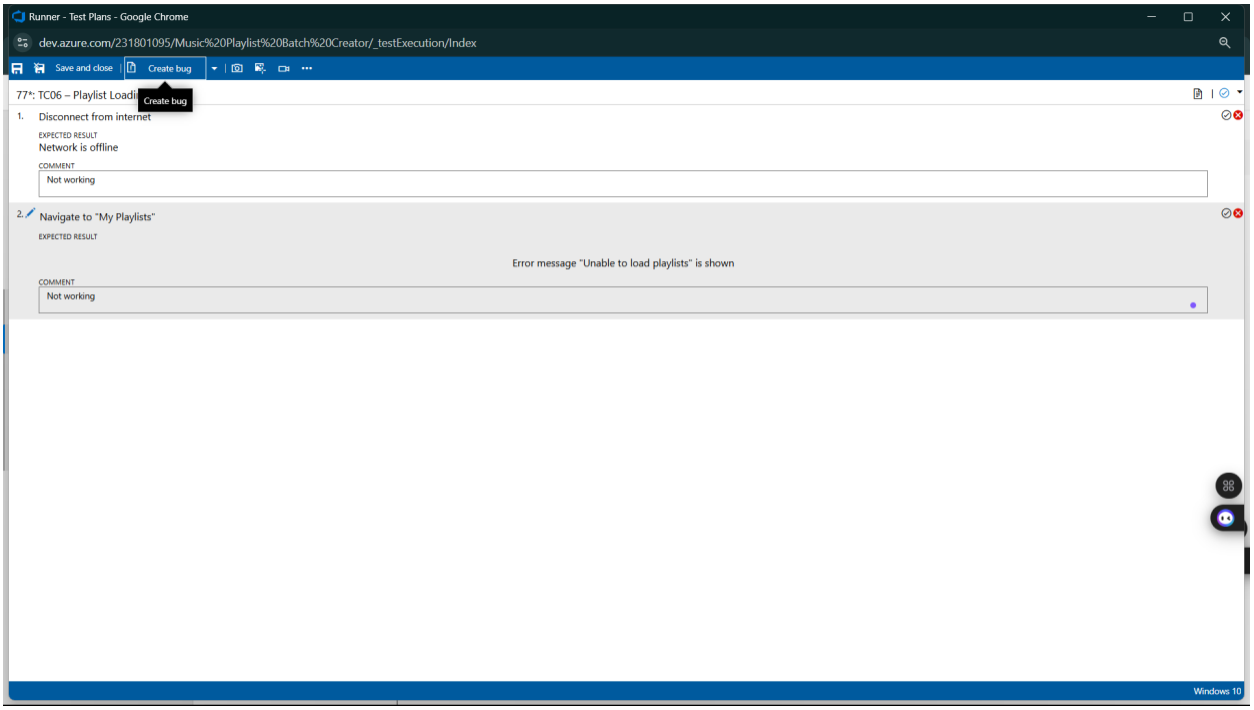


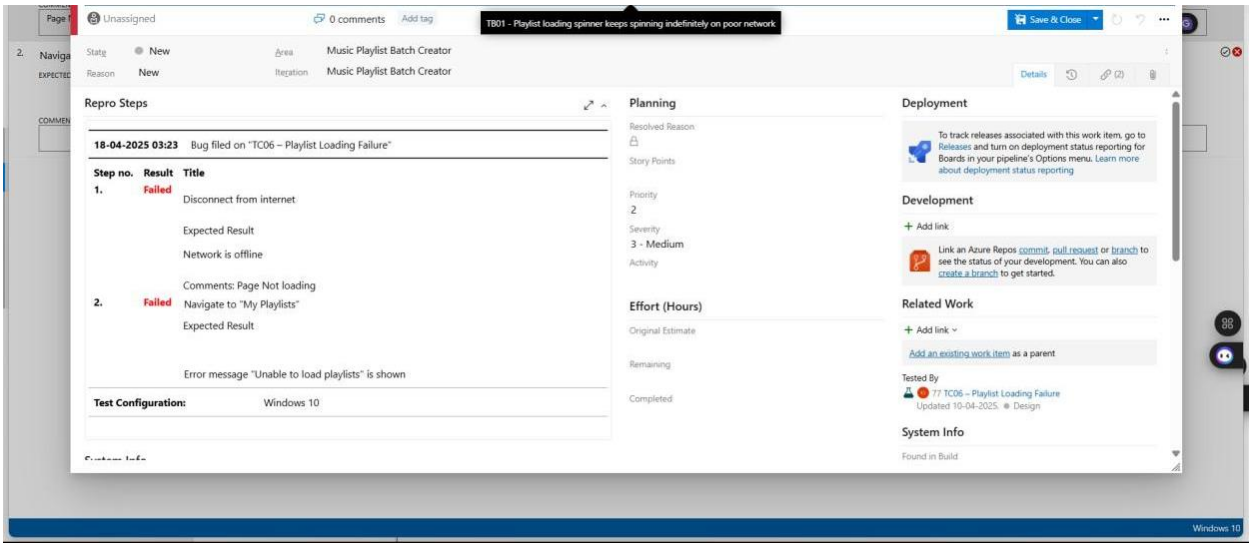


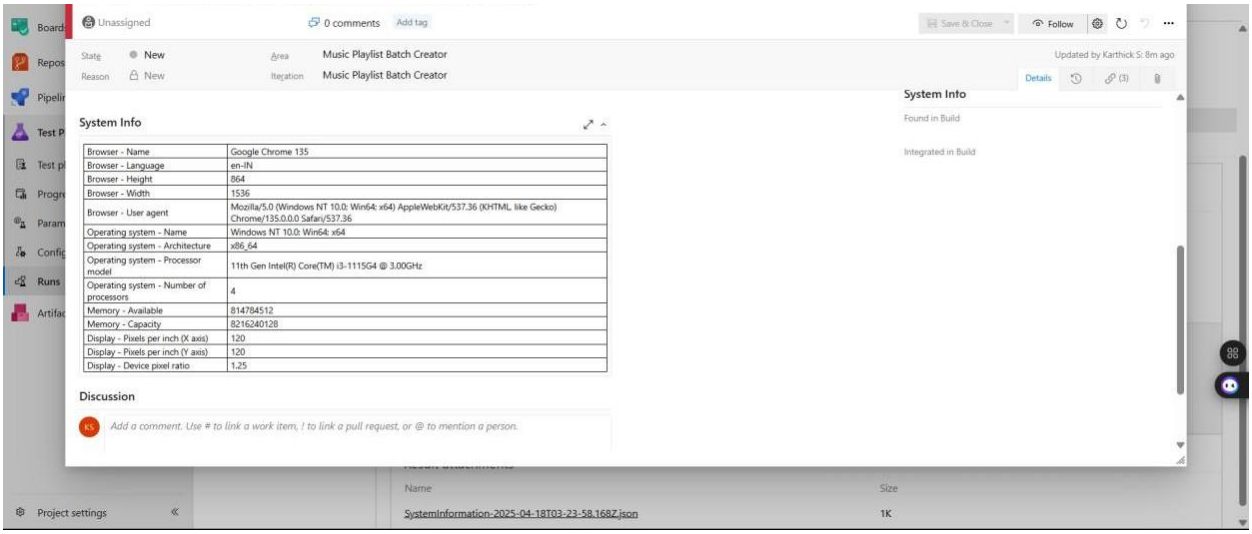
6.Recording the test case



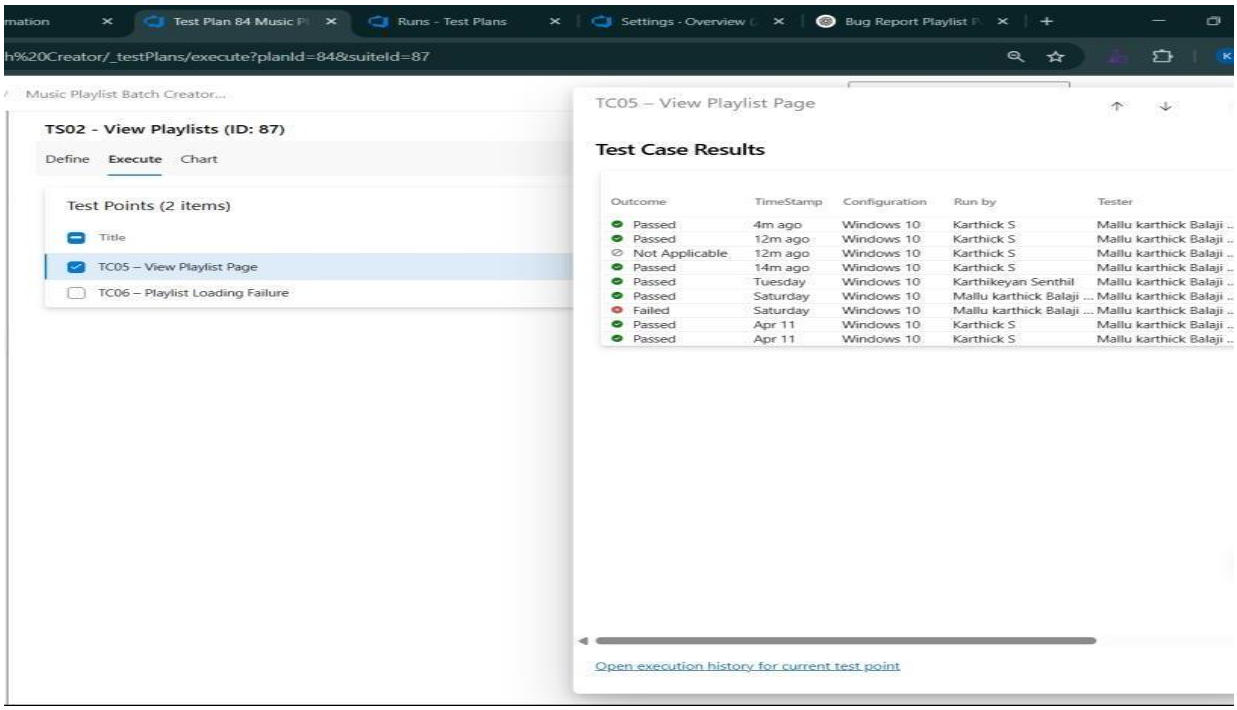
7.Creating the bug




Unassigned
0 comments
Add tag
TB01 - Playlist loading spinner keeps spinning indefinitely on poor network
Save & Close
State New
Reason New
Area Music Playlist Batch Creator
Iteration Music Playlist Batch Creator
Details
Repro Steps
18-04-2025 03:23 Bug filed on "TC06 – Playlist Loading Failure"
Step no. Result Title
1. Failed
Disconnect from internet
Expected Result
Network is offline
Comments: Page Not loading
2. Failed
Navigate to "My Playlists"
Expected Result
Error message "Unable to load playlists" is shown
Test Configuration: Windows 10
Planning
Resolved Reason
Story Points
Priority
2
Severity
3 - Medium
Activity
Effort (Hours)
Original Estimate
Remaining
Completed
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
Tested By
77 TC06 – Playlist Loading Failure
Updated 10-04-2025. Design
System Info
Found in Build
Windows 10

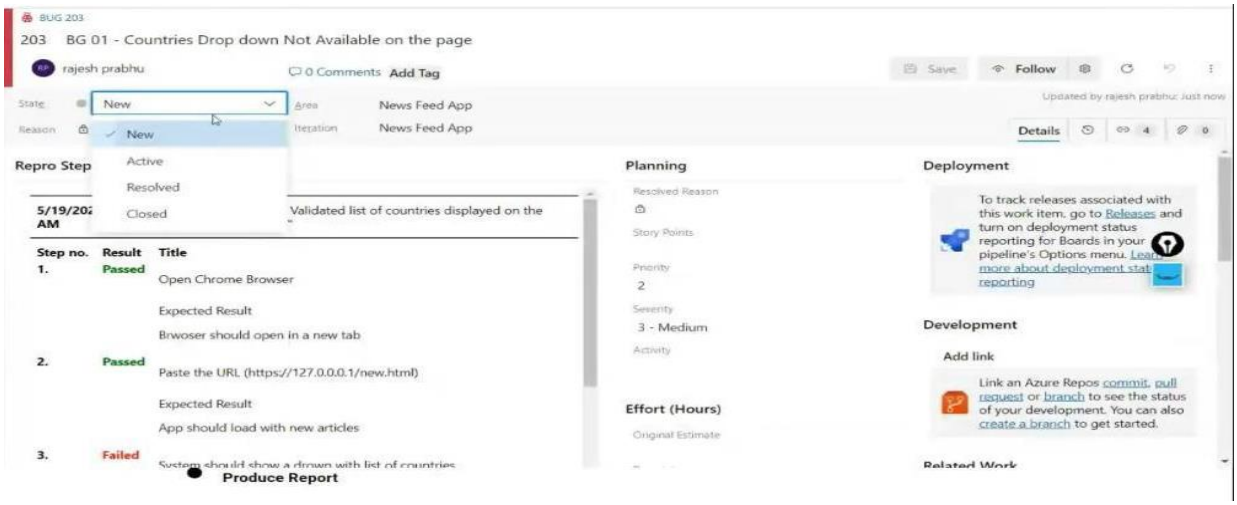

Unassigned
0 comments
Add tag
Save & Close
Follow
State New
Reason New
Area Music Playlist Batch Creator
Iteration Music Playlist Batch Creator
Updated by Karthick S: 8m ago
Details
System Info
Browser - Name	Google Chrome 135
Browser - Language	en-IN
Browser - Height	864
Browser - Width	1536
Browser - User agent	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/135.0.0.0 Safari/537.36
Operating system - Name	Windows NT 10.0; Win64; x64
Operating system - Architecture	x86_64
Operating system - Processor model	11th Gen Intel(R) Core(TM) i3-1115G4 @ 3.00GHz
Operating system - Number of processors	4
Memory - Available	814784512
Memory - Capacity	8216240128
Display - Pixels per inch (X axis)	120
Display - Pixels per inch (Y axis)	120
Display - Device pixel ratio	1.25
Discussion
Add a comment. Use # to link a work item, ! to link a pull request, or @ to mention a person.
System Into
Found in Build
Integrated in Build
Name
Size
SystemInformation-2025-04-18T03-23-58.168Z.json
1K
Project settings

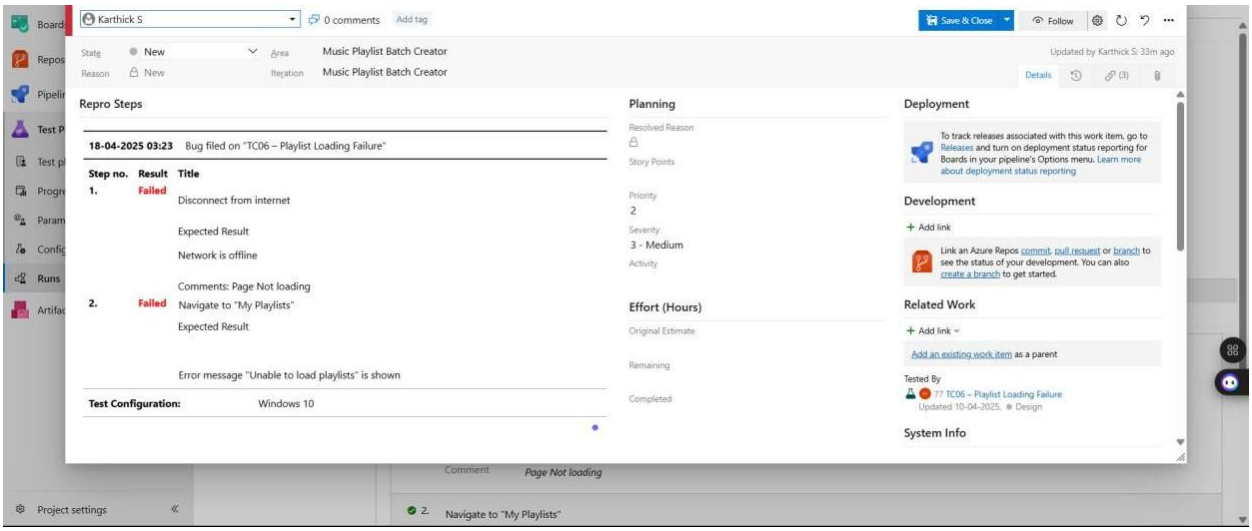
8.Test case results



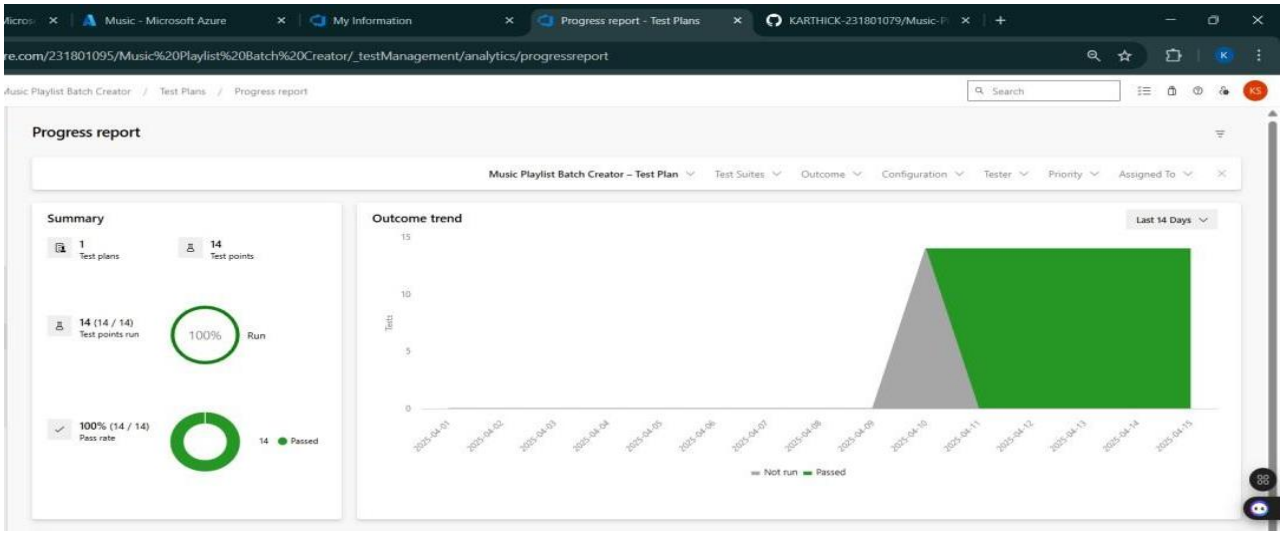
9.Test report summary

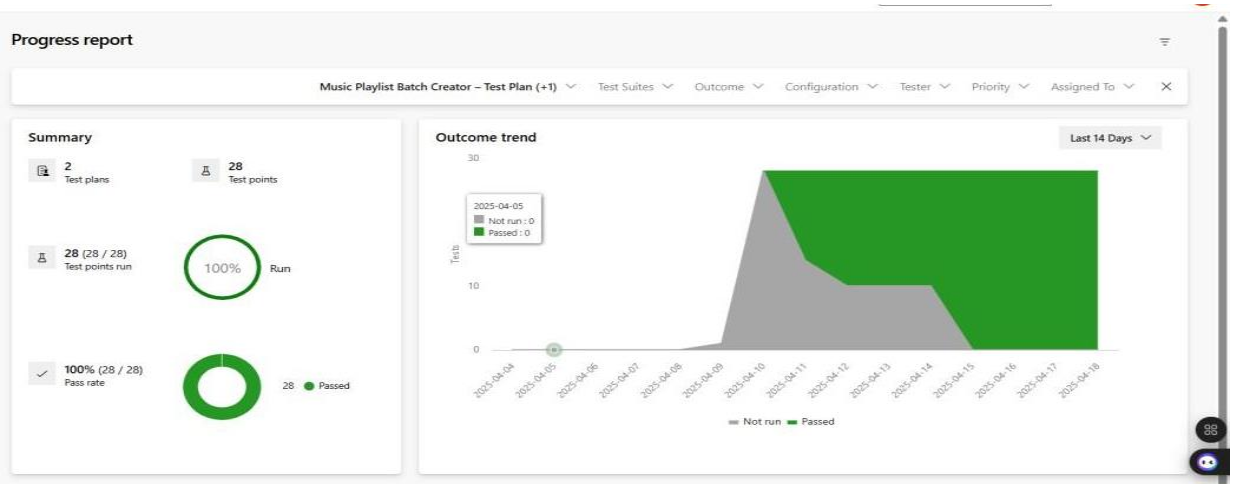
- Assigning bug to the developer and changing state



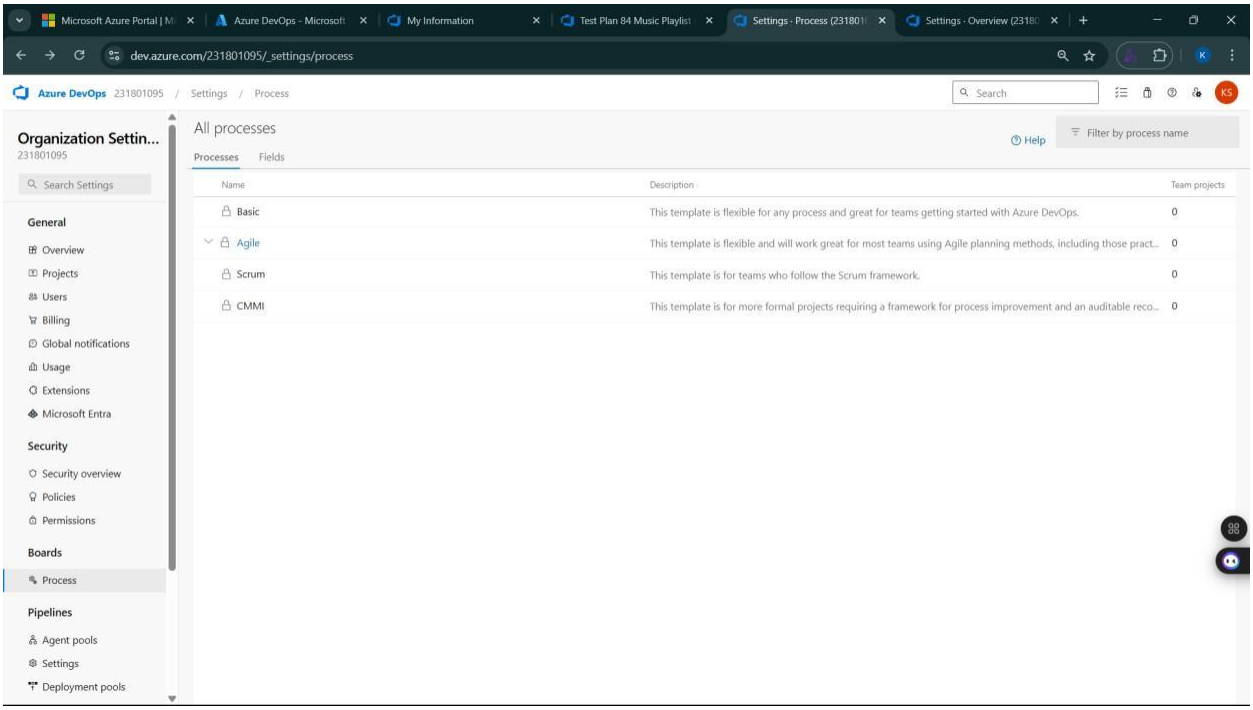


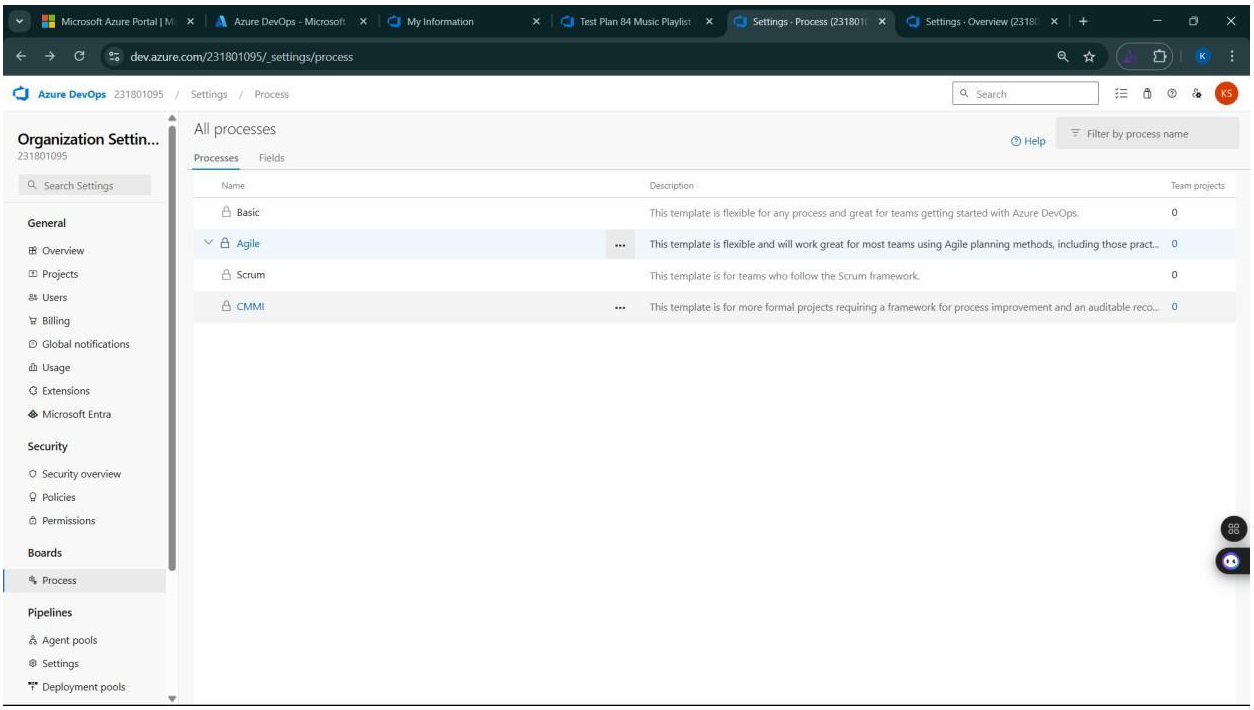
10. Progress report





11. Changing the test template




Microsoft Azure Portal | M
Azure DevOps - Microsoft
My Information
Test Plan 84 Music Playlist
Settings · Process (231801
Settings · Overview (2318
dev.azure.com/231801095/_settings/process
Azure DevOps 231801095 / Settings / Process
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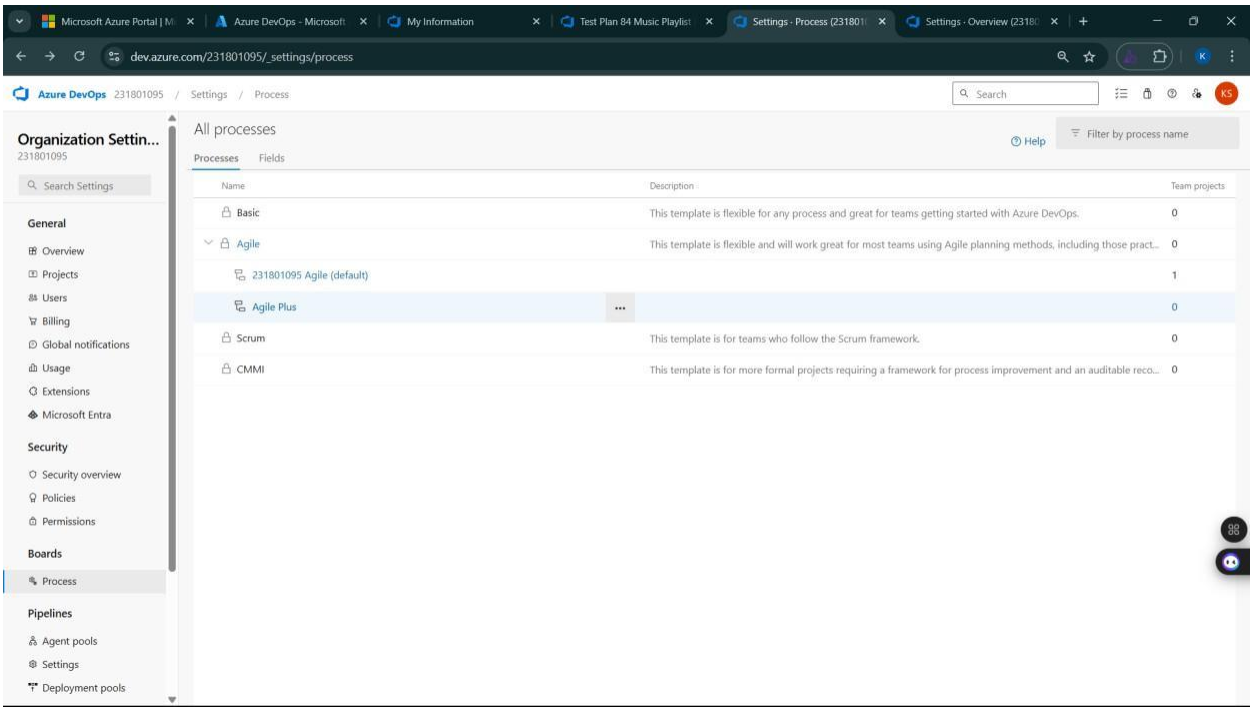
231801095
Search Settings
General
Overview
Projects
Users
Billing
Global notifications
Usage
Extensions
Microsoft Entra
Security
Security overview
Policies
Permissions
Boards
Process
Pipelines
Agent pools
Settings
Deployment pools
All processes
Help
Filter by process name
Processes
Fields
Name
Description
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


Microsoft Azure Portal | M
Azure DevOps - Microsoft
My Information
Test Plan 84 Music Playlist
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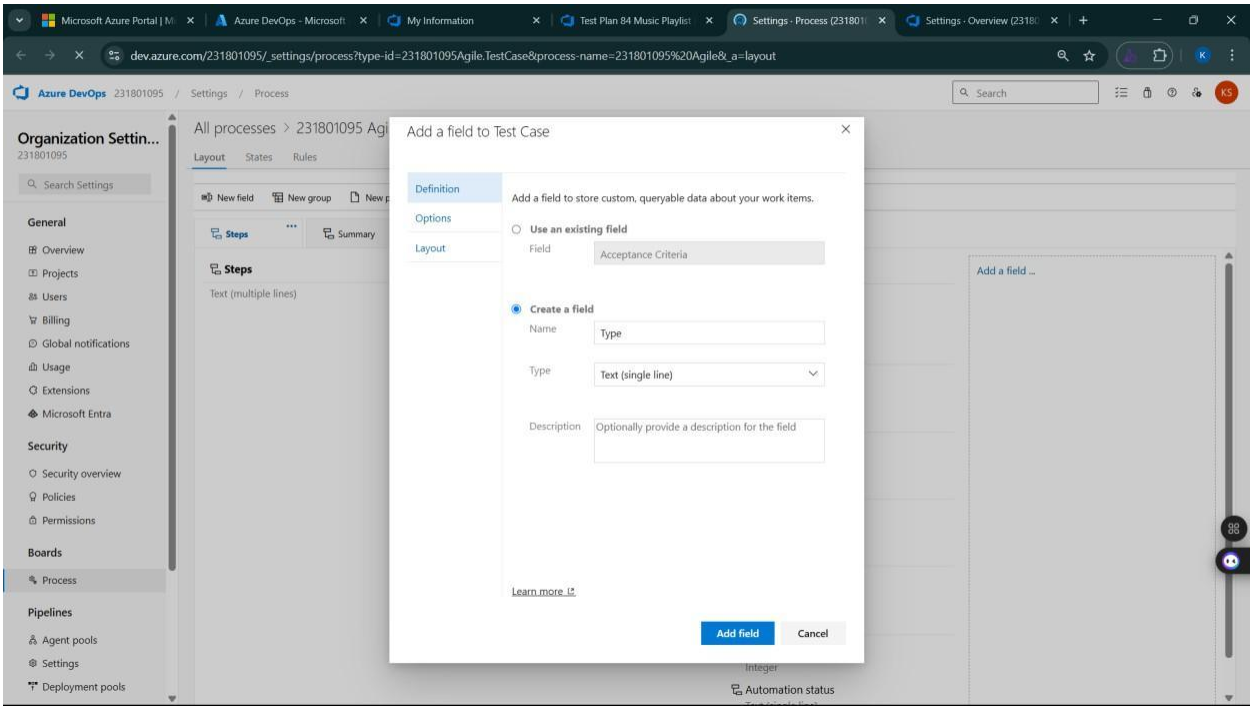
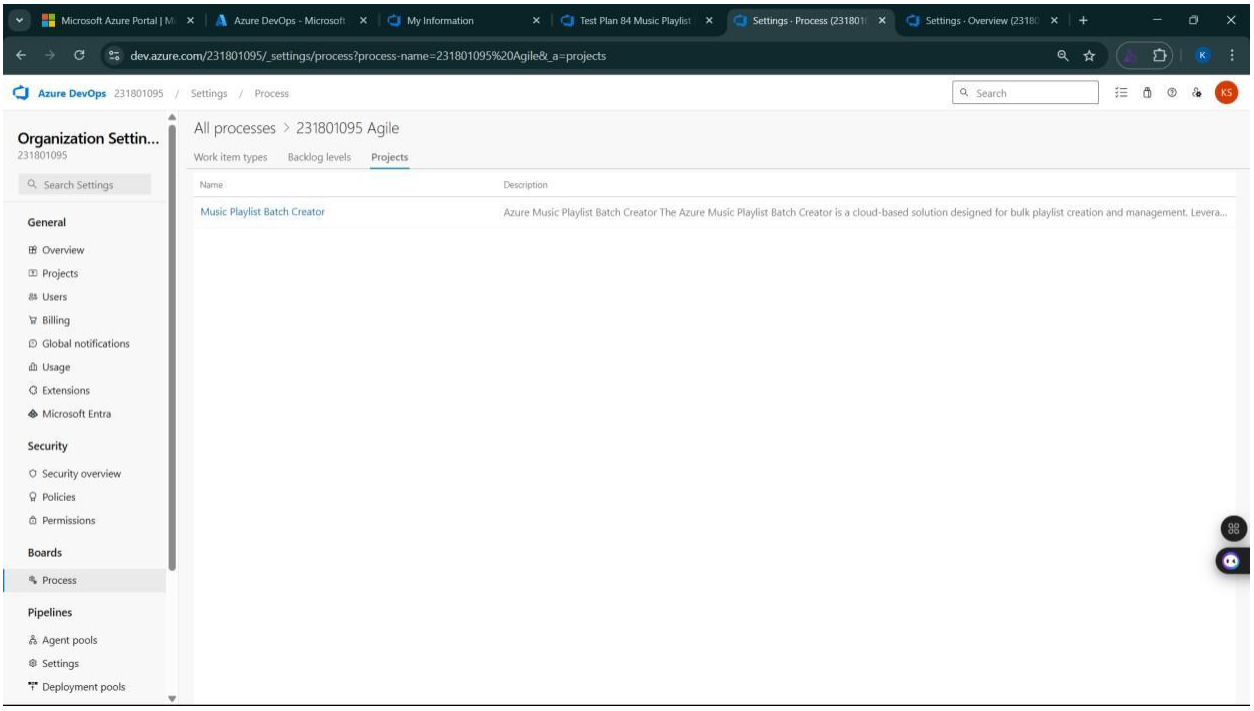
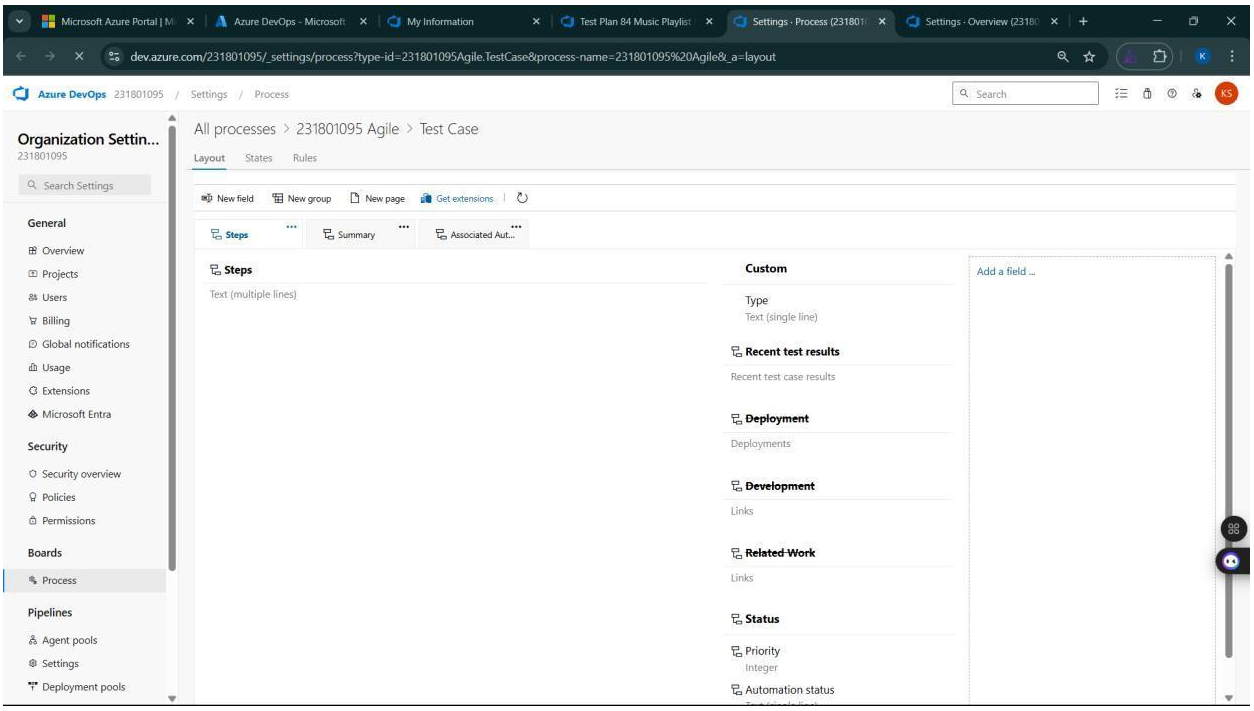
Azure DevOps 231801095 / Settings / Process
Search
Organization Settin...
231801095
Search Settings
General
Overview
Projects
Users
Billing
Global notifications
Usage
Extensions
Microsoft Entra
Security
Security overview
Policies
Permissions
Boards
Process
Pipelines
Agent pools
Settings
Deployment pools
All processes
Help
Filter by process name
Processes
Fields
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)
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

12. View the new test case template







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	LOAD TESTING AND PERFORMANCE TESTING

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:

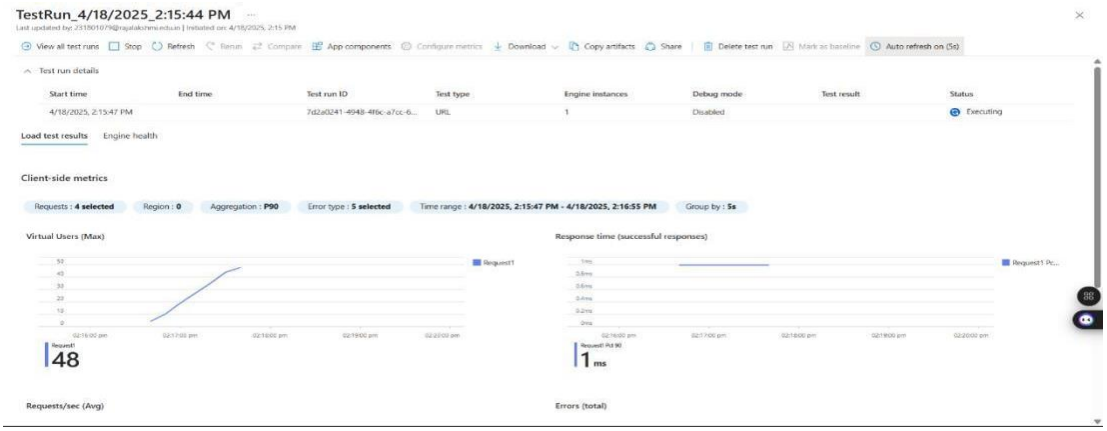
1. Sign in to Azure Portal
   Go to https://portal.azure.com and log in.
2. Create the Resource
   - Go to *Create a resource* → Search for "Azure Load Testing".
   - Select Azure Load Testing and click Create.
3. Fill in the Configuration Details
   - Subscription*:* Choose your Azure subscription.
   - *Resource Group:* Create new or select an existing one.
   - *Name:* Provide a unique name (no special characters).
   - *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.

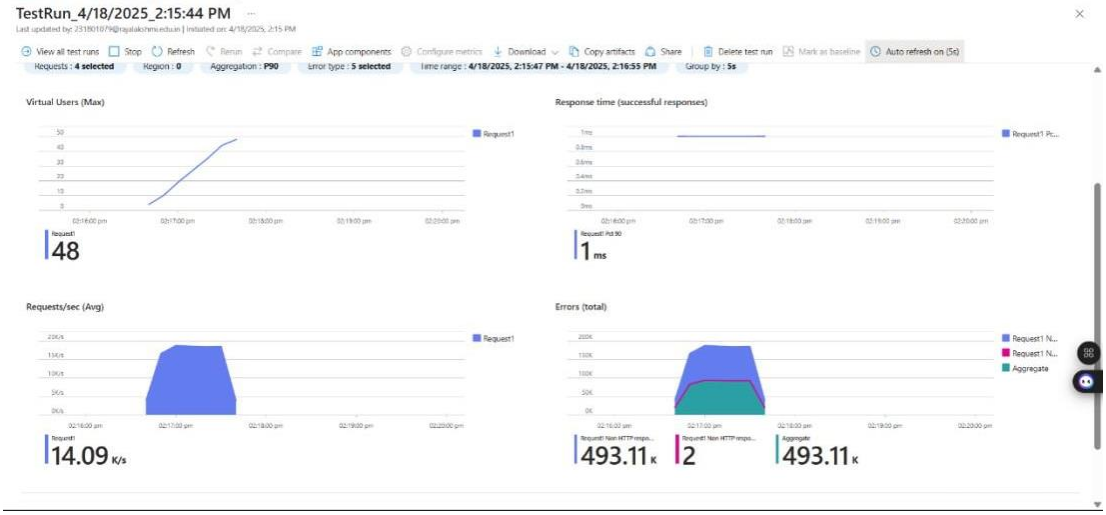
Steps to Create and Run a Load Test:

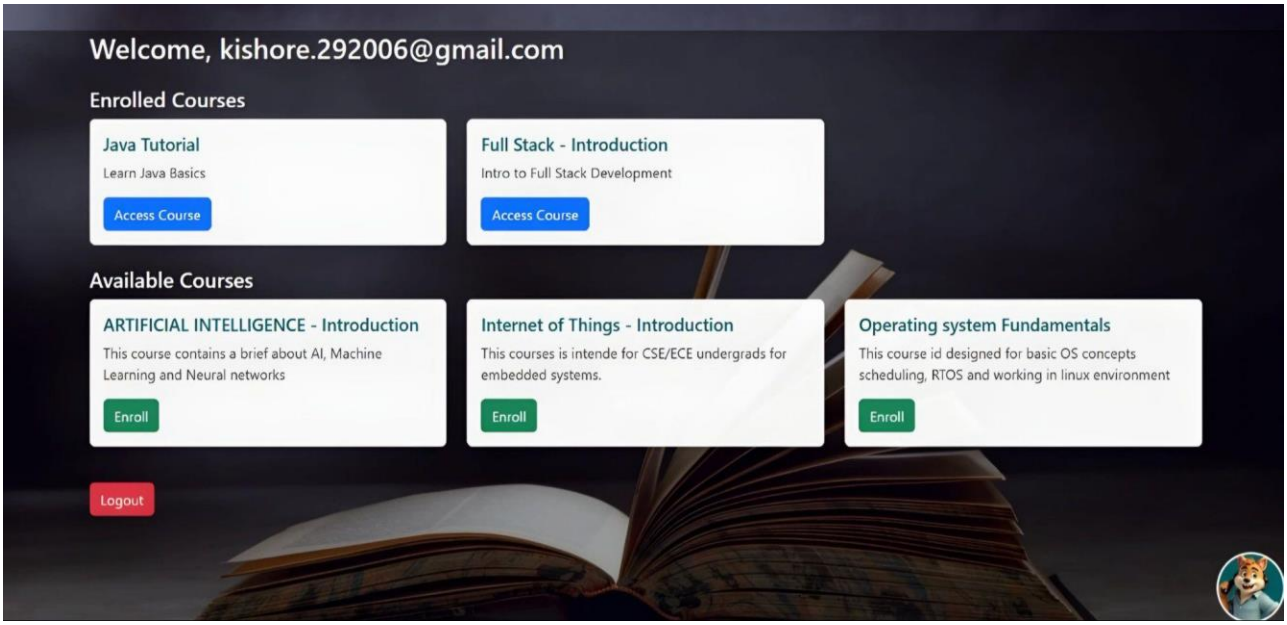
Once your resource is ready:

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

Load Testing







Result:

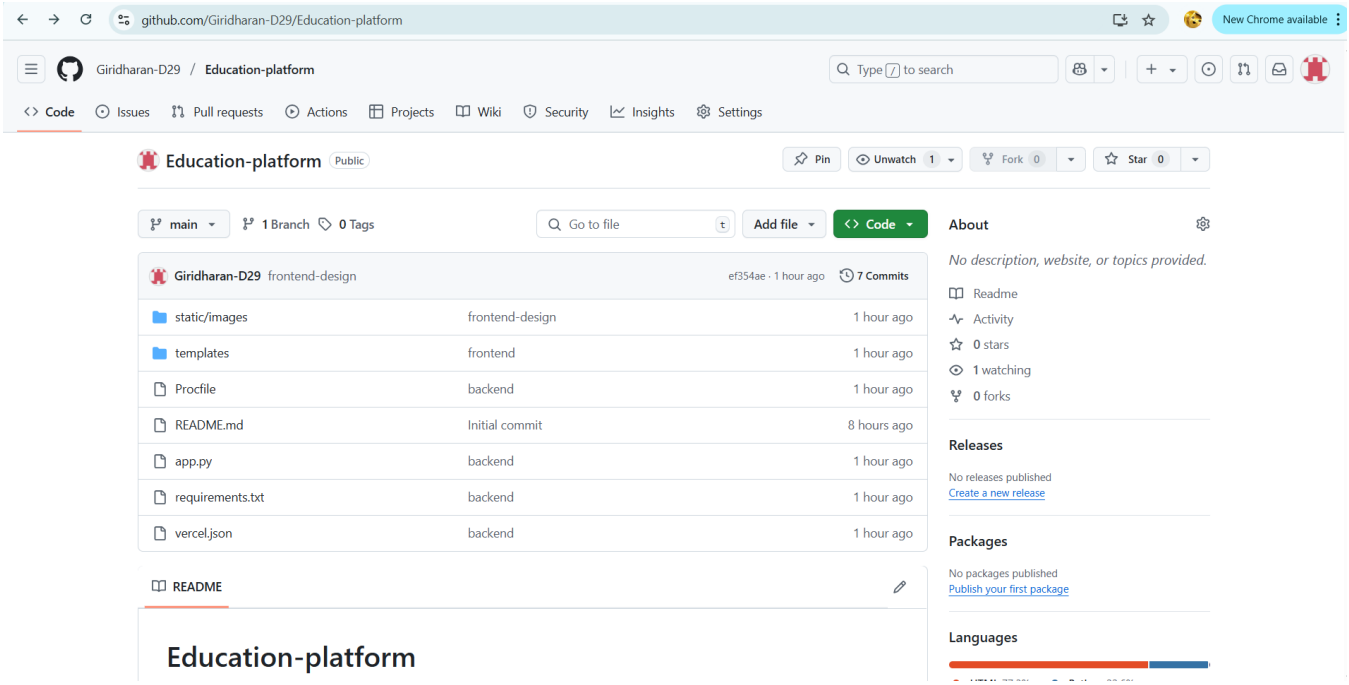
Successfully created the Azure Load Testing resource and executed a load test to assess the performance of the specified endpoint.

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 E-learning platform 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.