INDEX

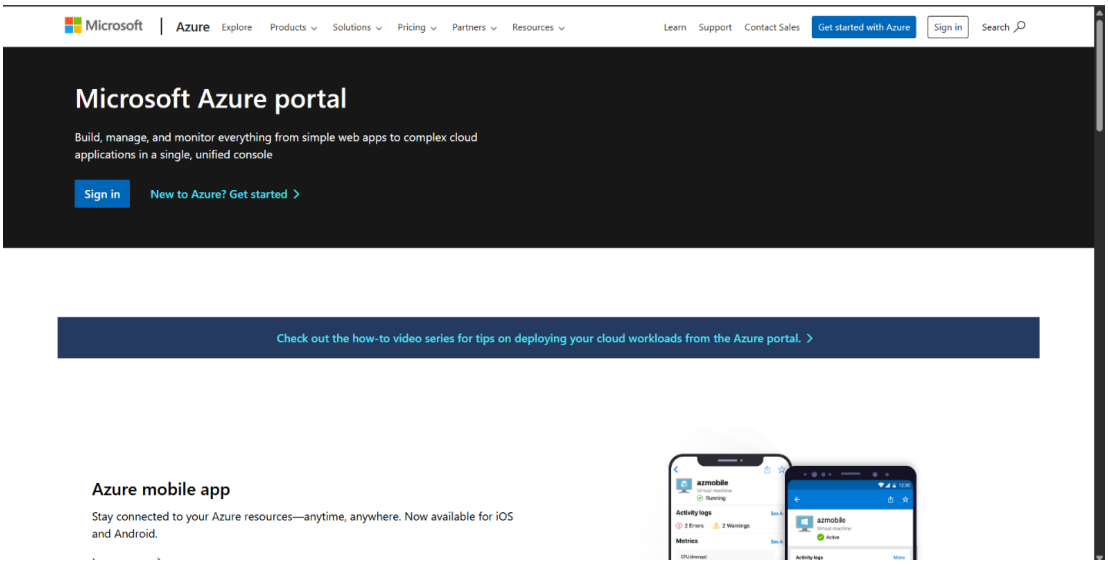
EXP NO: 1	AZURE DEVOPS ENVIRONMENT SETUP

Aim:

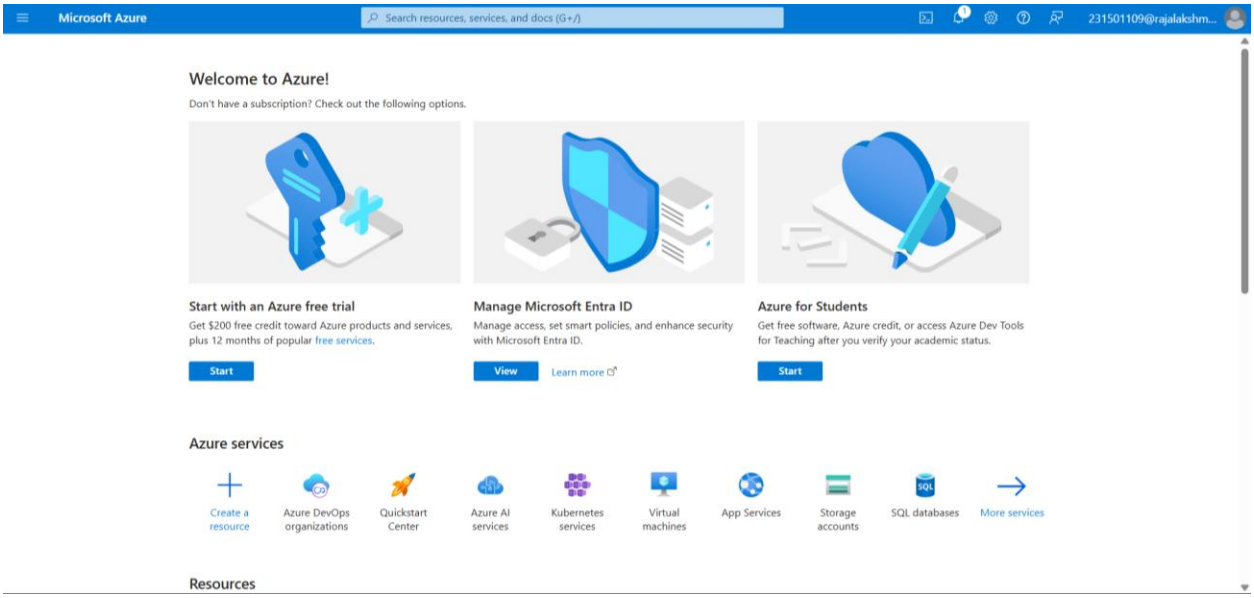
To set up and access the Azure DevOps environment by creating an organization through the Azure portal.

INSTALLATION

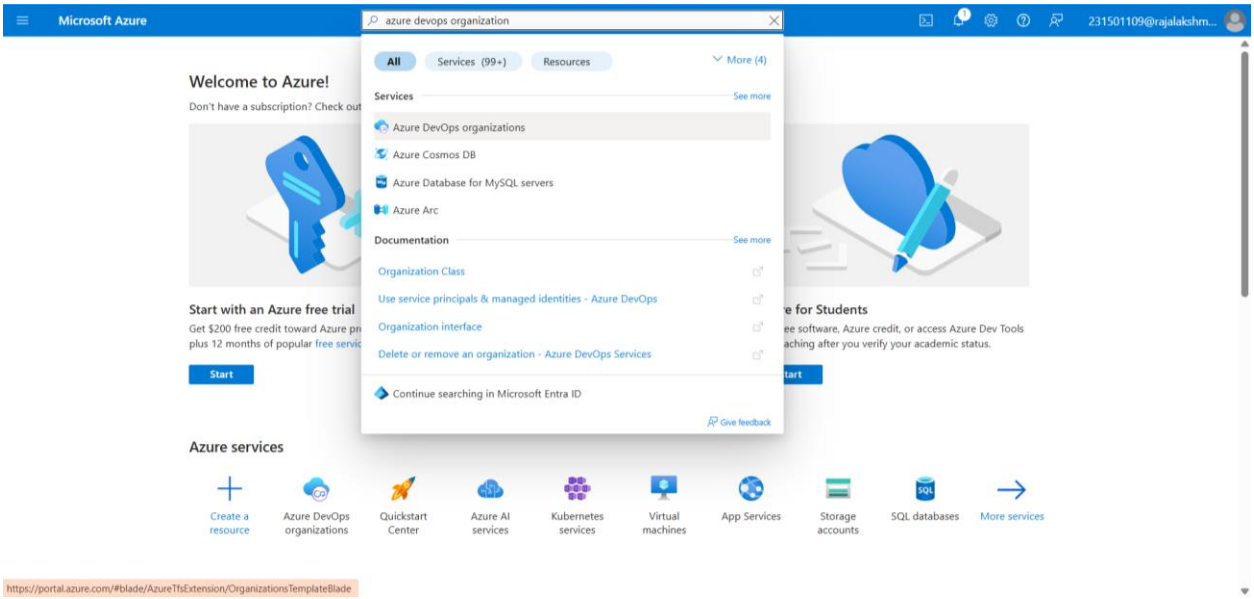
1. Open your web browser and go to the Azure website: https://azure.microsoft.com/en-us/get-started/azure-portal.
Sign in using your Microsoft account credentials.
If you don't have a Microsoft account, you can create one here: https://signup.live.com/?lic=1



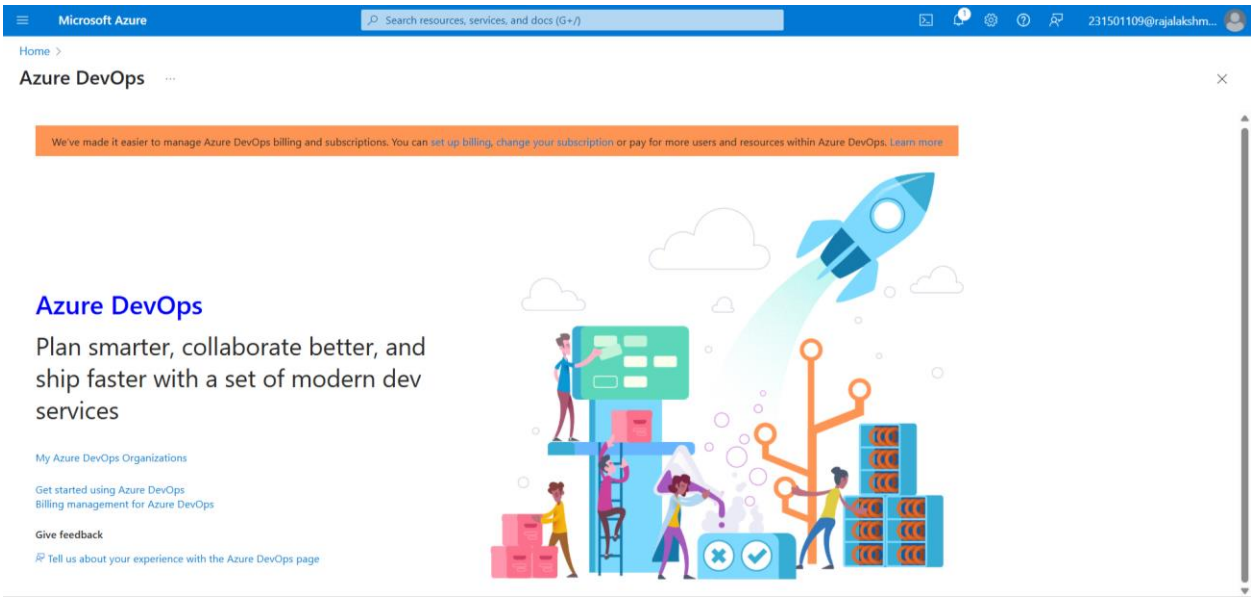
2. Azure home page



3. Open a 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:

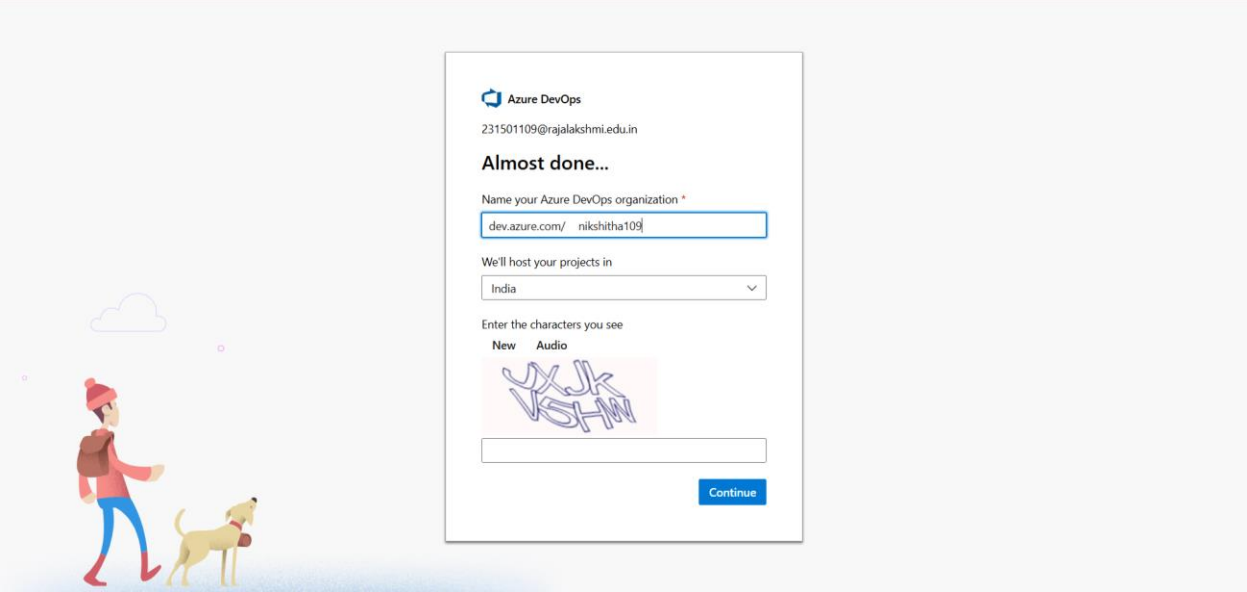
Successfully accessed the Azure DevOps environment and created a new organization through the Azure portal.

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.

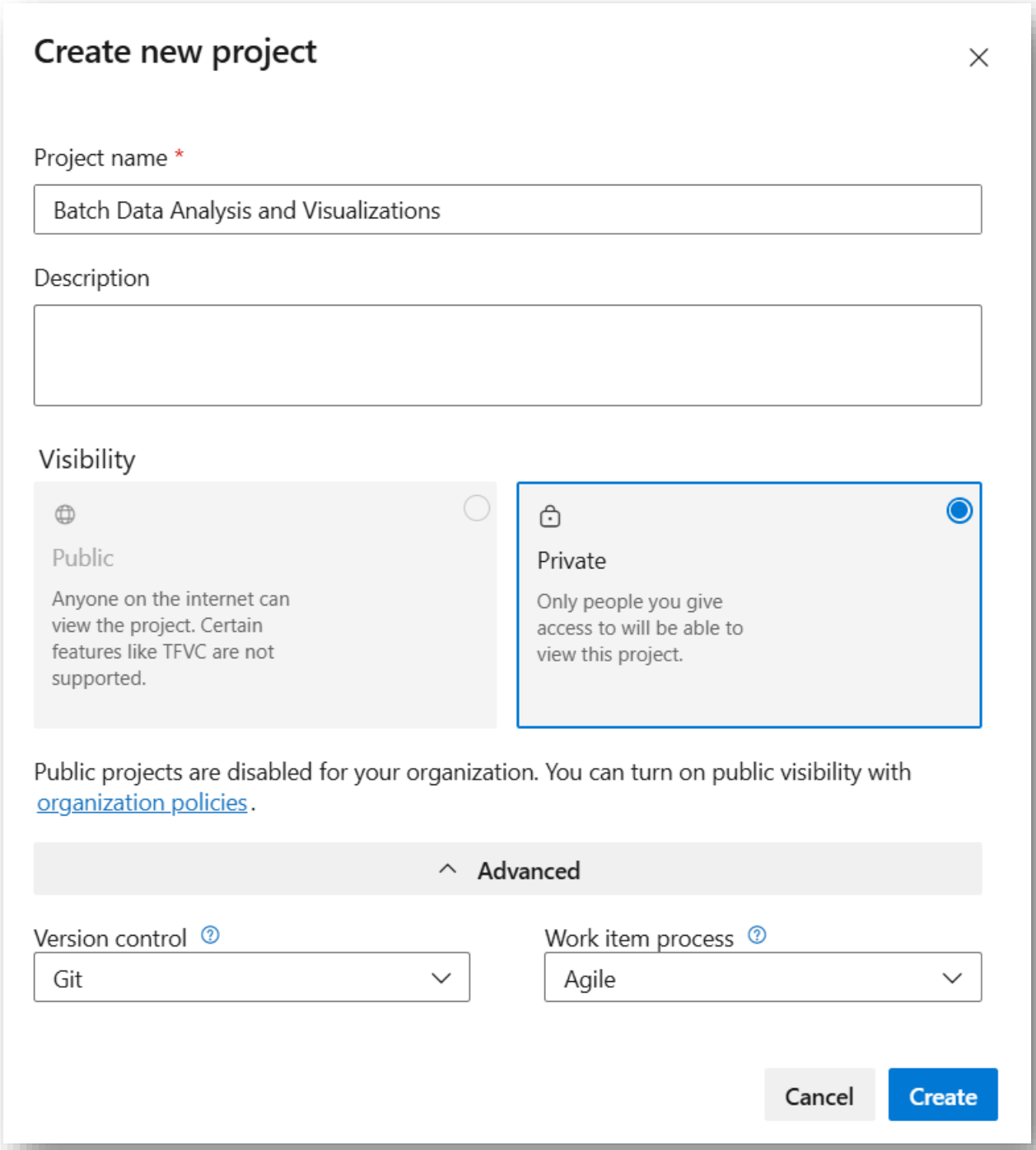
c. Enter the project name, description, and visibility options:

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

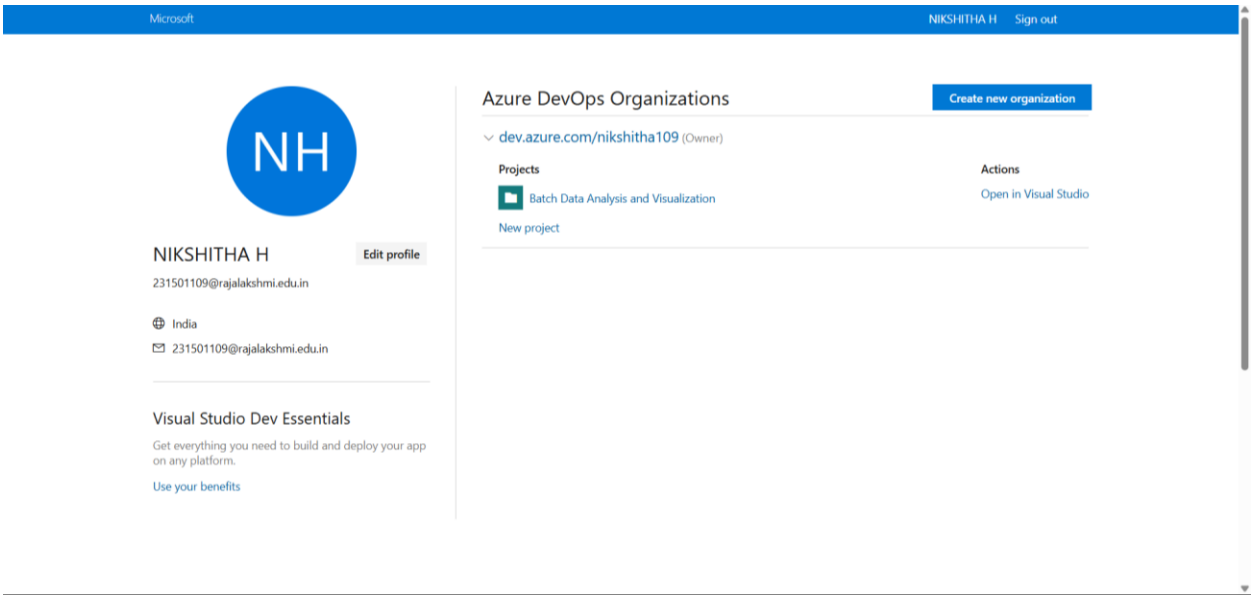
***Description**:* Optionally, add a description to provide more context about the project.

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

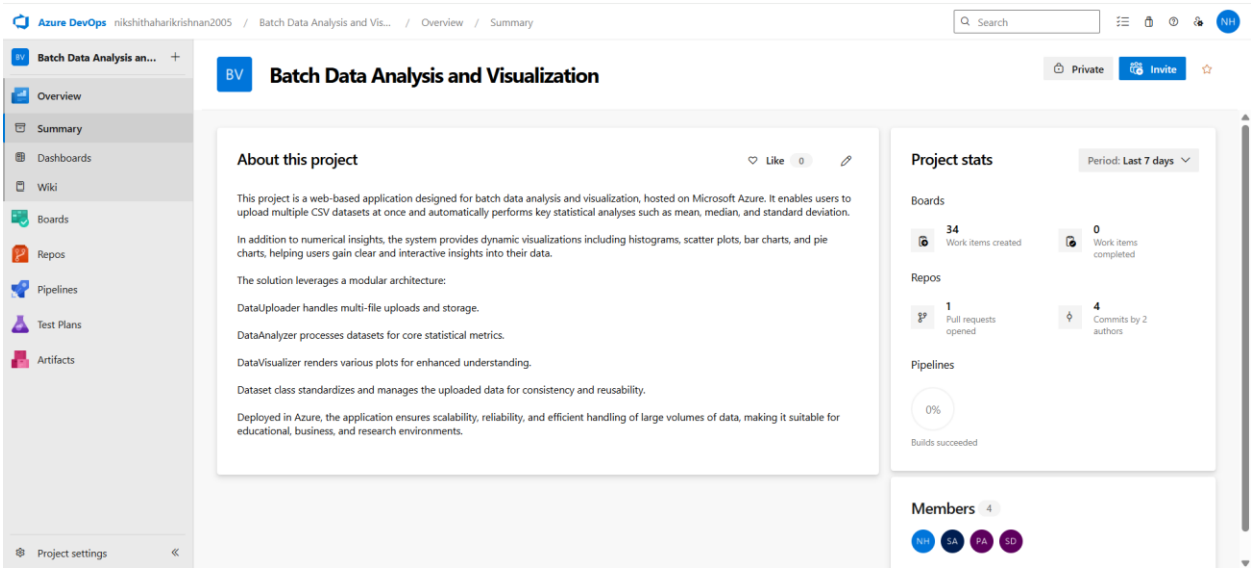
d. Once you've filled out the details, click **Create** to set up your first project.


Create new project
Project name *
Batch Data Analysis and Visualizations
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.



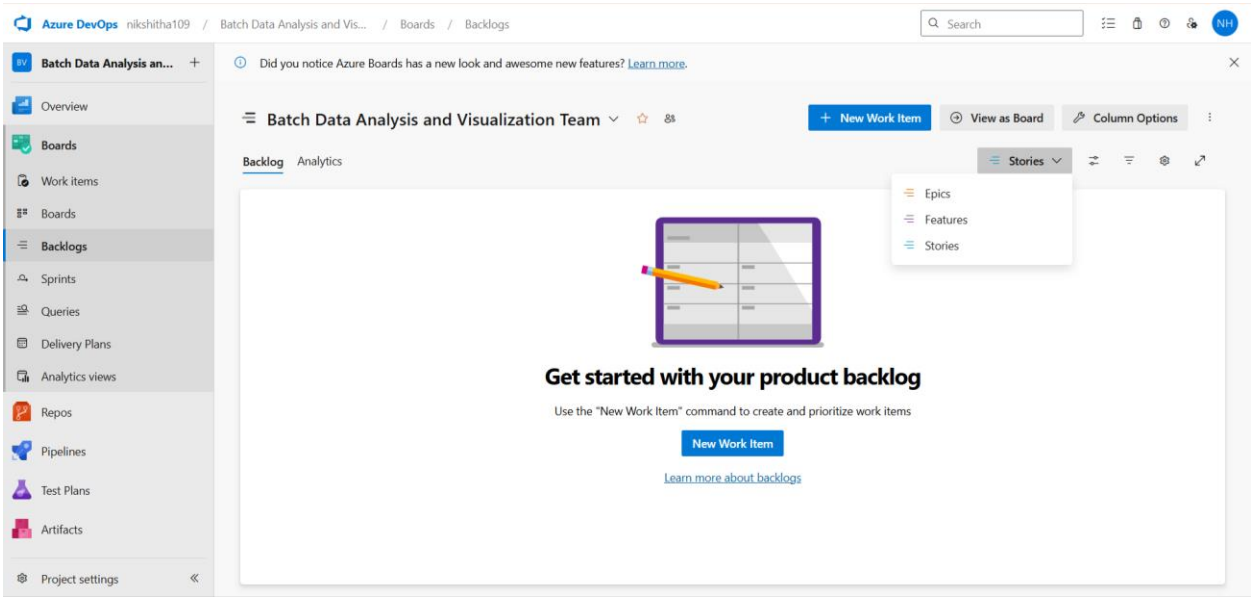
4. Project dashboard

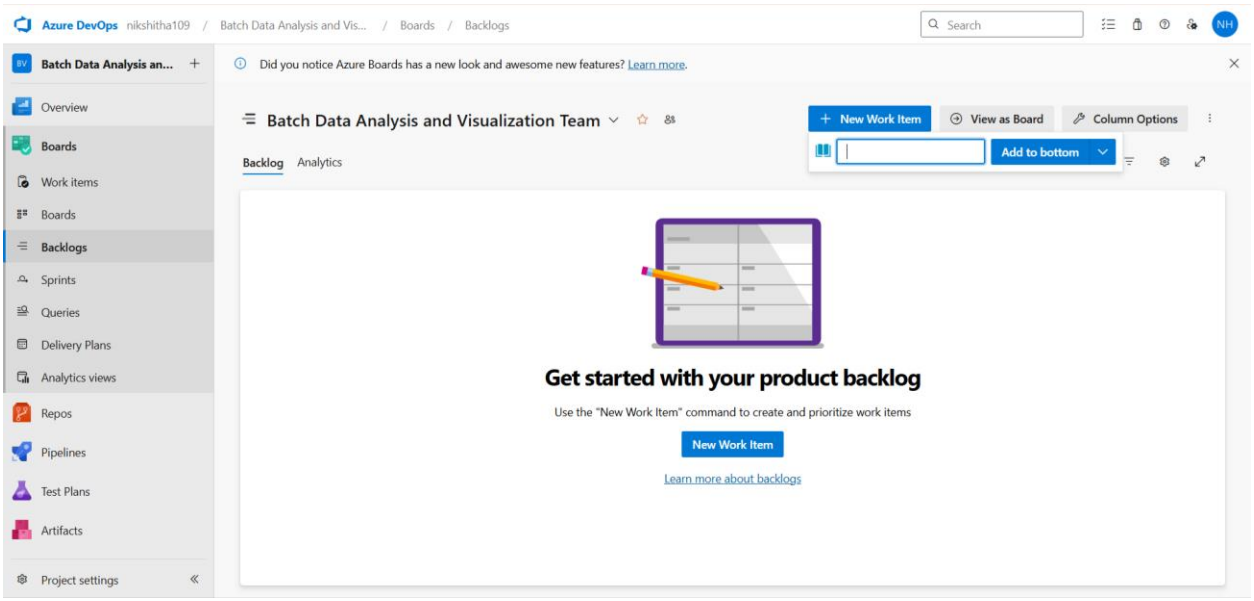


5. To manage user stories:

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:

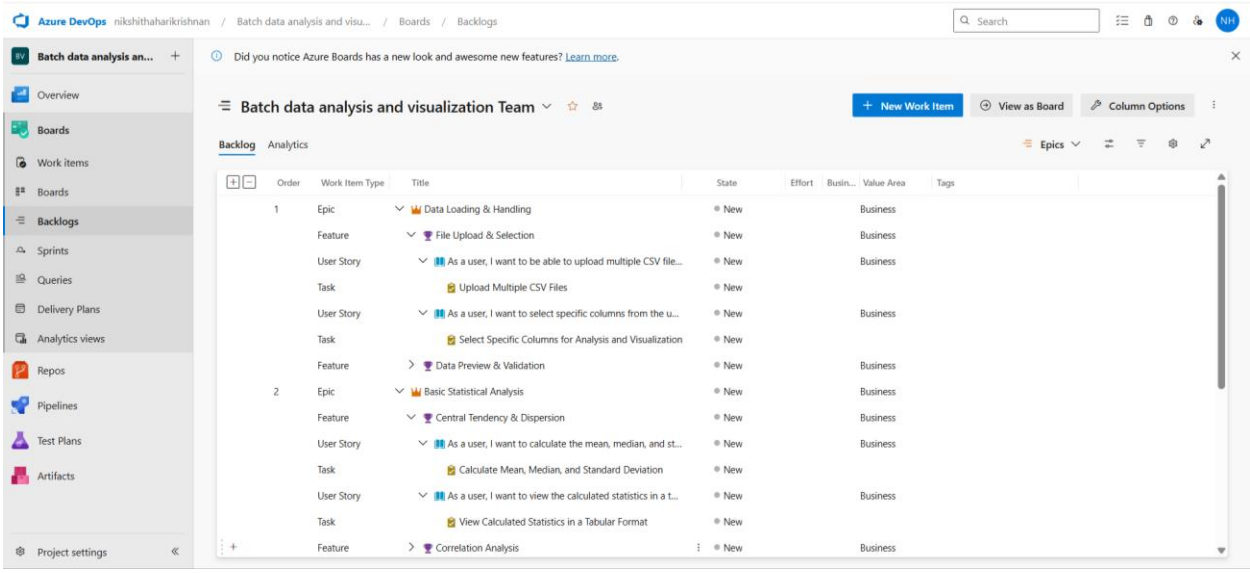
Successfully created an Azure DevOps project with user story management and agile workflow setup.

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

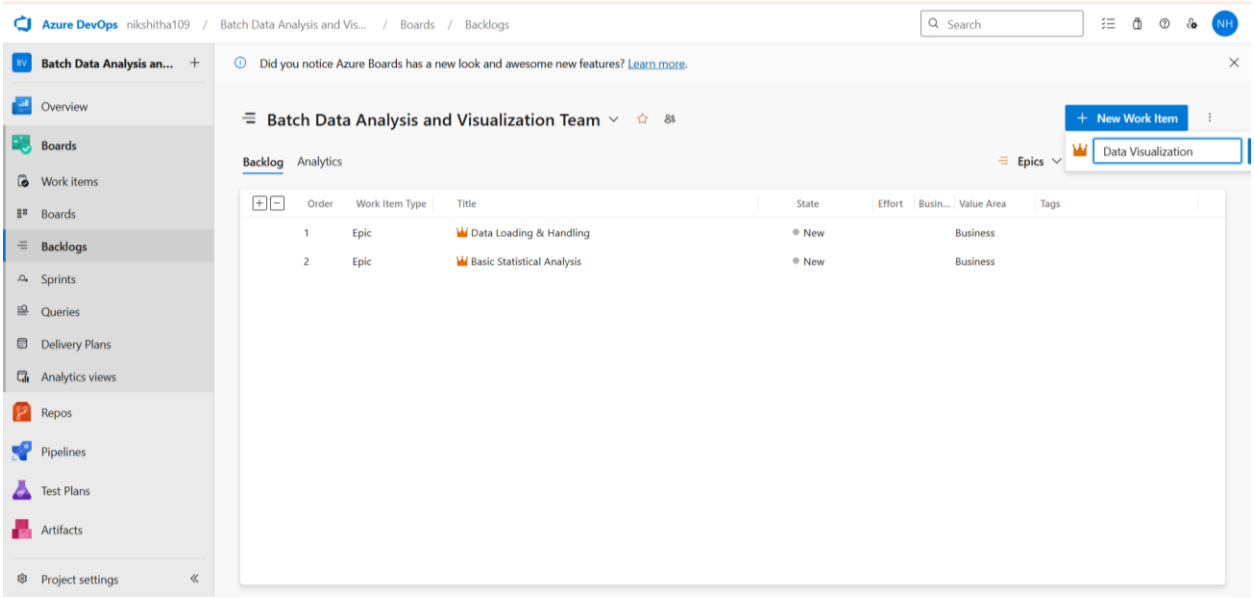
Aim:

To create epics, user stories, features, and tasks for the project, Batch Data Analysis and Visualization.

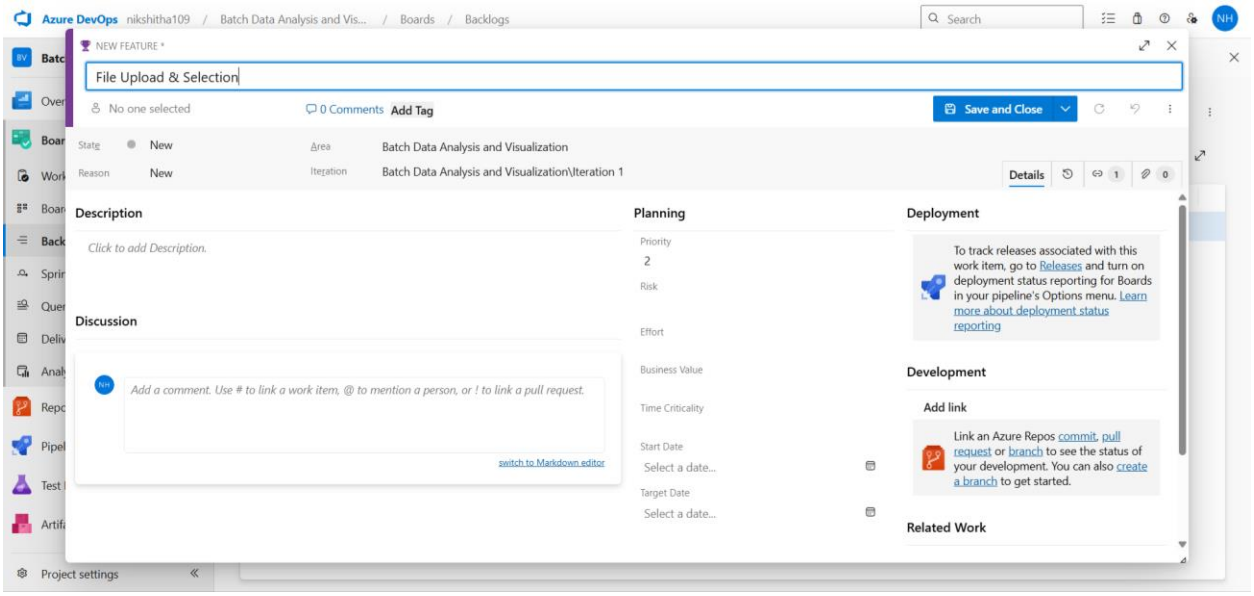
Create Epic, Features, User Stories, Task



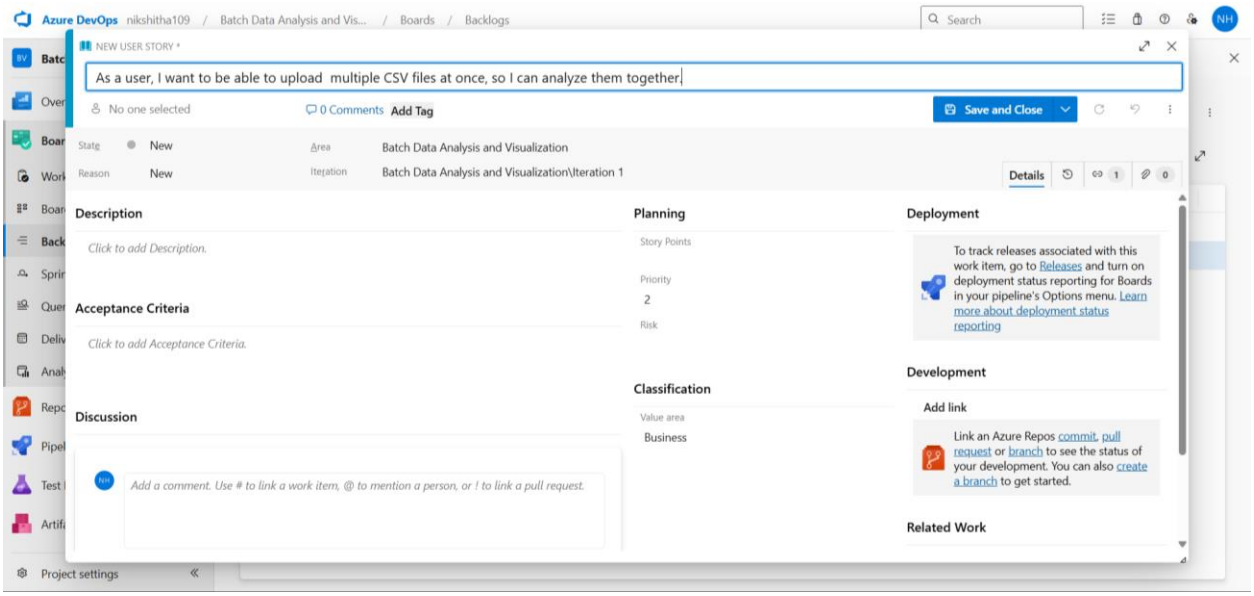
1. Fill in Epics



2. Fill in Features



3. Fill in User Stories



Result:

Thus, epics, features, user stories, and tasks have been created successfully.

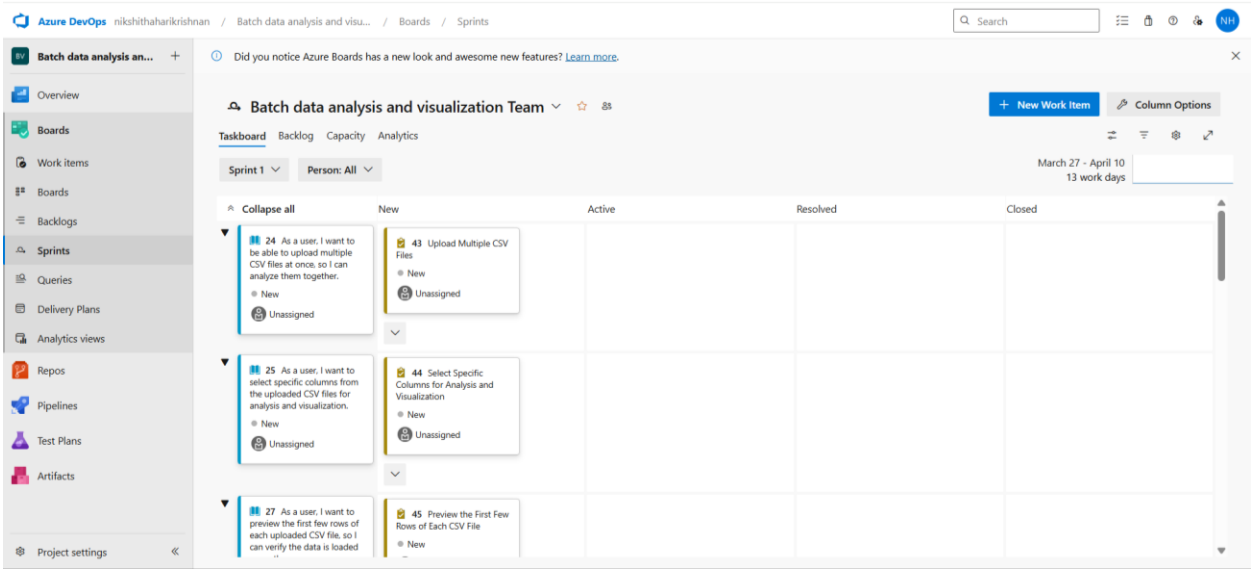
EXP NO: 4	SPRINT PLANNING

Aim:

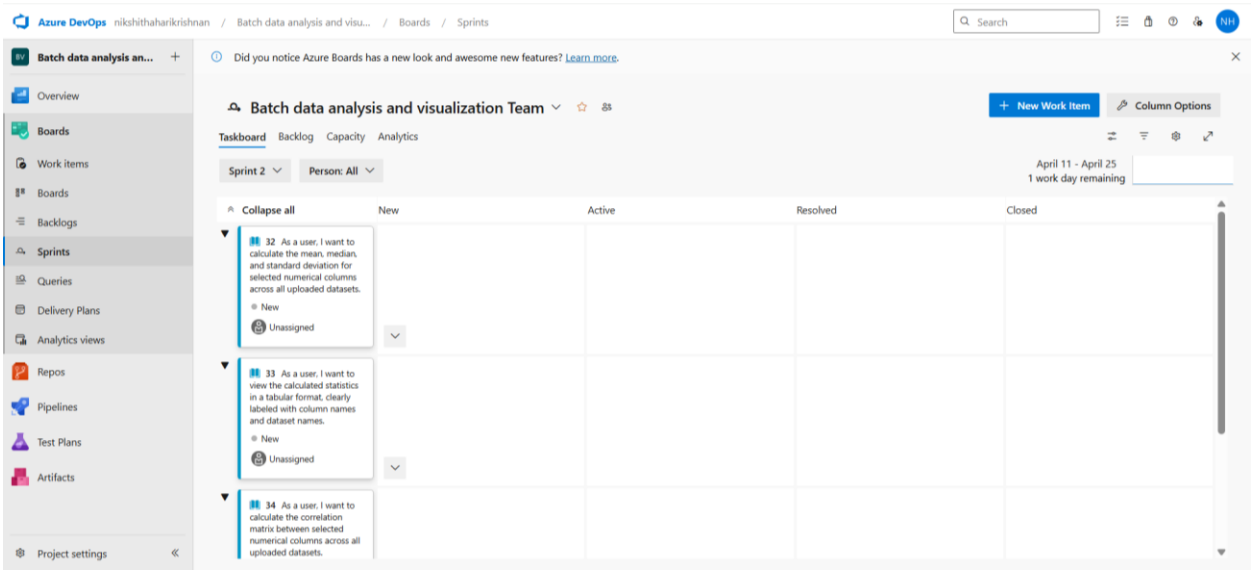
To assign a user story to a specific sprint for the project, Batch Data Analysis and Visualization.

SPRINT PLANNING

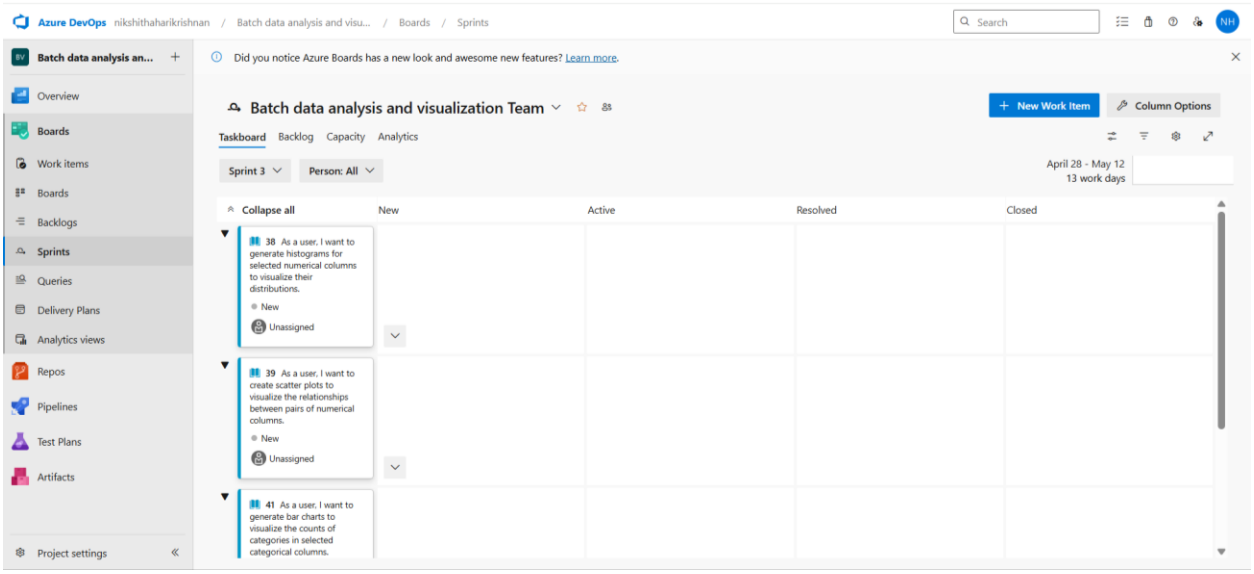
Sprint 1



Sprint 2



Sprint 3



Result:

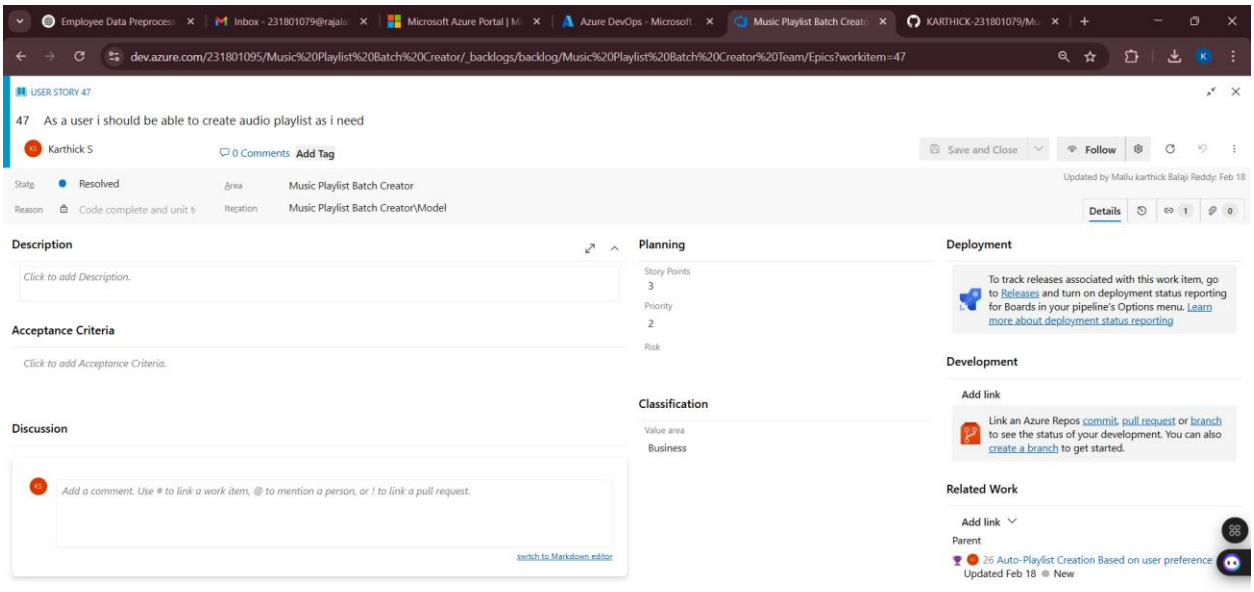
The Sprints are created for the project, Batch Data Analysis and Visualization.

EXP NO: 5	POKER ESTIMATION

Aim:

Create Poker Estimation for the user stories for the project, Batch Data Analysis and Visualization.

Poker Estimation



Result:

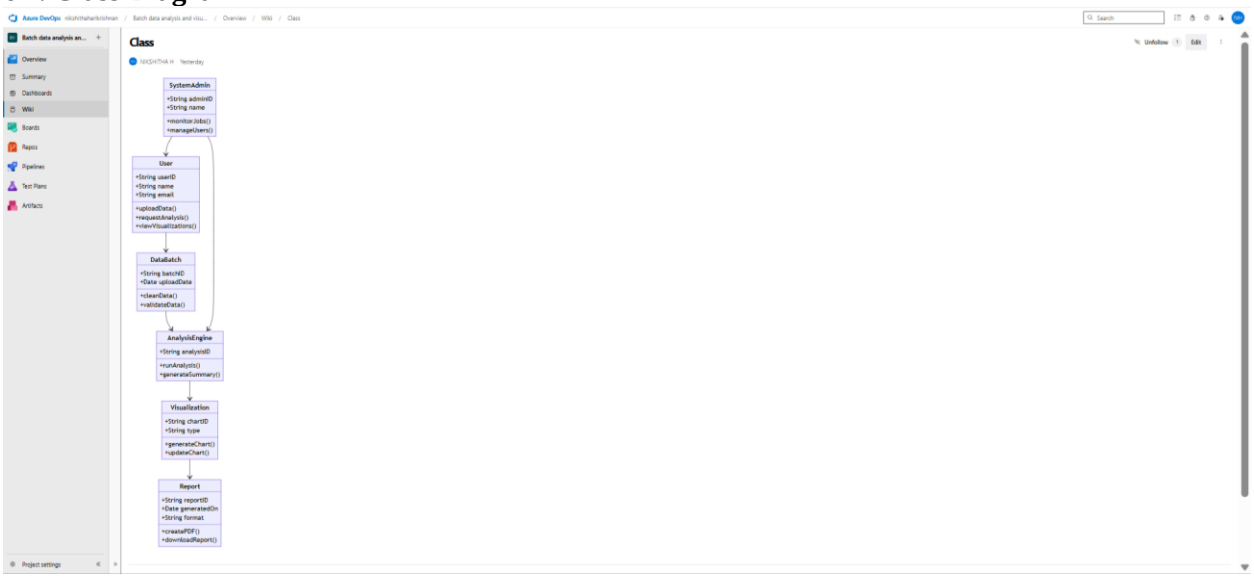
The Estimation/Story Points is created for the project using Poker Estimation.

EXP NO: 6	DESIGNING CLASS DIAGRAM AND SEQUENCE DIAGRAM

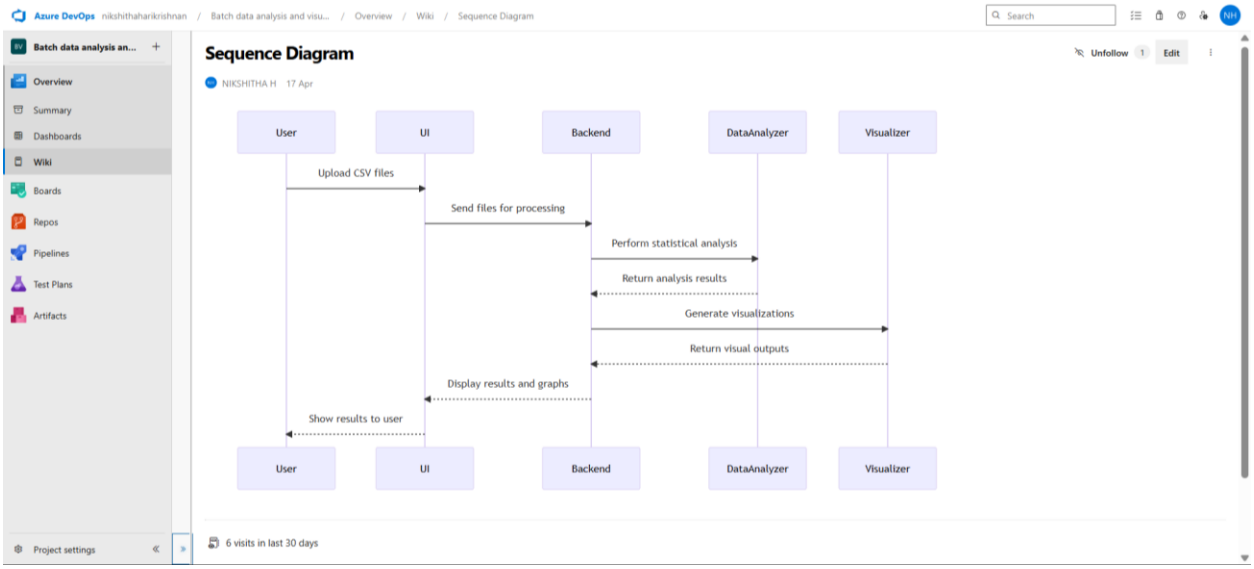
Aim:

To design a Class Diagram and Sequence Diagram for the project, Batch Data Analysis and Visualization.

6A. Class Diagram



6B. Sequence Diagram



Result:

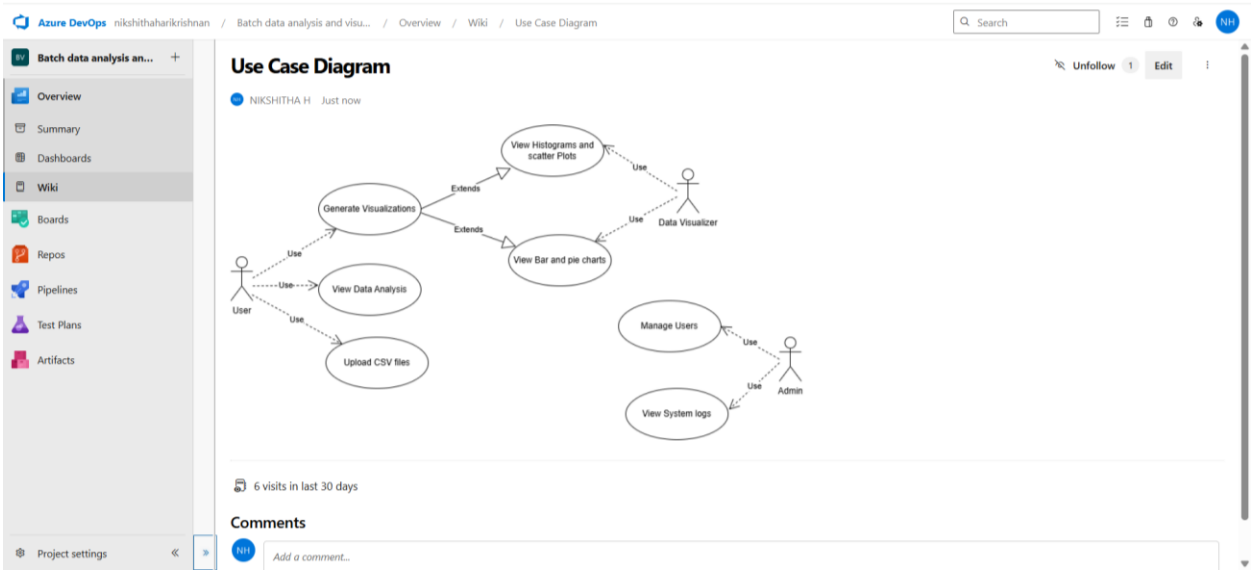
The Class and Sequence Diagrams are designed successfully for the project, Batch Data Analysis and Visualization.

EXP NO: 7	DESIGNING USE CASE DIAGRAM AND ACTIVITY DIAGRAM

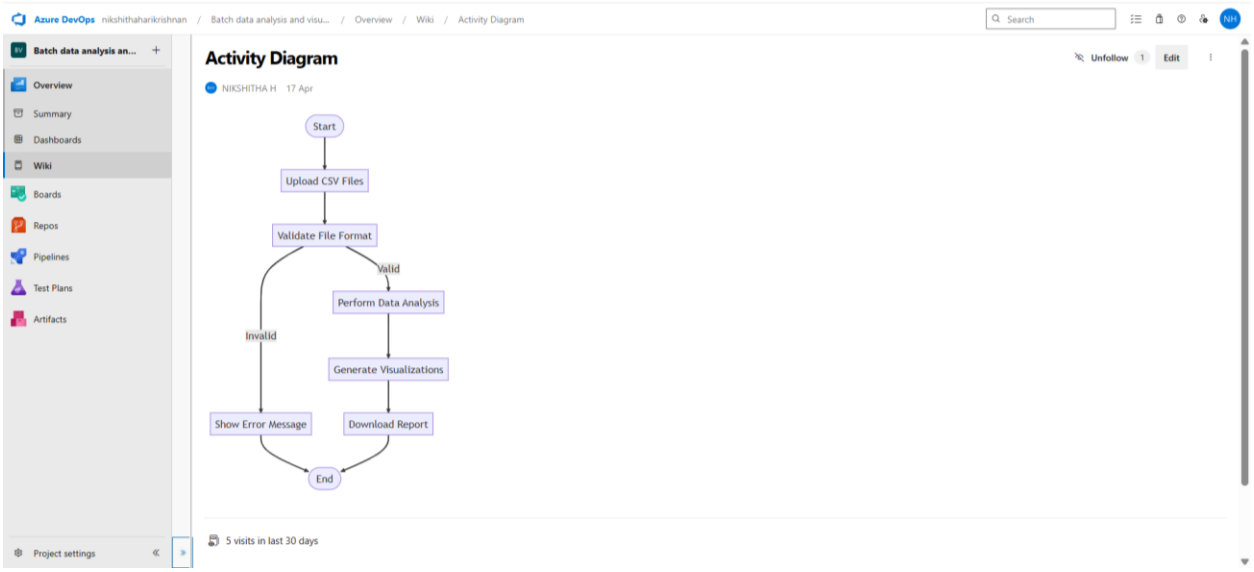
Aim:

To design a Use Case Diagram and an Activity Diagram for the project, Batch Data Analysis and Visualization.

7A. Use Case Diagram



7B. Activity Diagram



Result:

The Use Case and Activity Diagrams are designed successfully for the project, Batch Data Analysis and Visualization.

EXP NO: 8	TESTING – TEST PLANS AND TEST CASES

Aim:

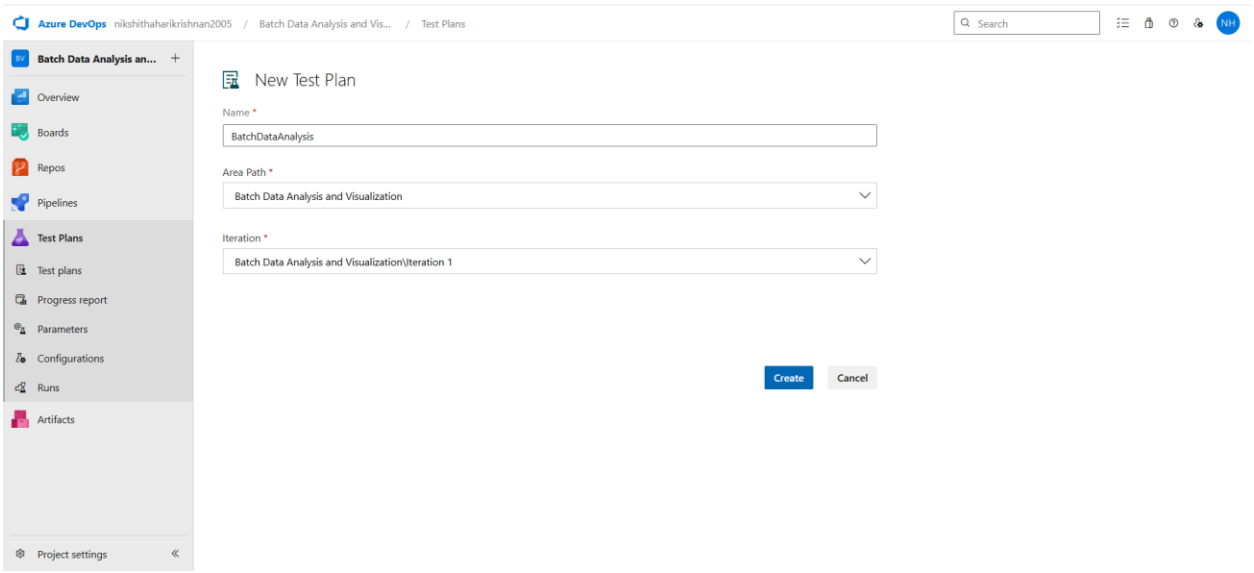
Test Plans and Test Case and write two test cases for at least five user stories showcasing the happy path and error scenarios in azure DevOps platform.

Test Planning and Test Case

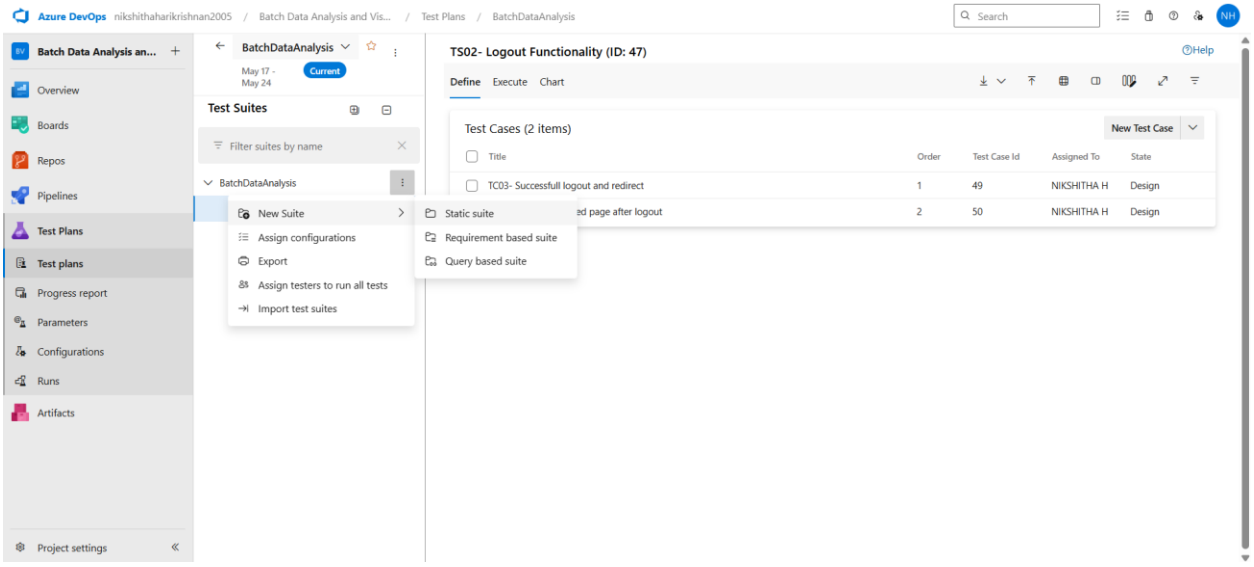
Test Case Design Procedure

1. **Understand Core Features of the Application**
    - User Authentication
    - Uploading and Managing Batch Data Files
    - Running Batch Analysis Jobs
    - Viewing Interactive Visualizations and Charts
    - Exporting Analysis Results
2. **Define User Interactions**
    - Simulate real scenarios (e.g., upload dataset, trigger job, download result).
3. **Design Happy Path Test Cases**
    - Validate all main functions work properly (e.g., successful login, upload, and visualization).
4. **Design Error Path Test Cases**
    - Simulate unexpected or invalid user behavior (e.g., upload fails, unsupported file, job timeout).
5. **Break Down Steps and Expected Results**
    - Each test case includes step-by-step actions and expected outcomes.
6. **Use Clear Naming and IDs**
    - Example: TC01 – Successful File Upload, TC08 – Visualization Fails.
7. **Separate Test Suites**
    - Suites grouped by modules (Login, File Upload, Job Execution, Visualization, Export).
8. **Prioritize and Review**
    - Critical test cases marked as High Priority.
    - Mapped to user stories in Azure DevOps.

1. New test plan



2. Test suite



3. Test case

Give two test cases for at least five user stories showcasing the happy path and error scenarios in azure DevOps platform.
Batch Data Analysis and Visualization – Test Plans

USER STORIES

- As a user, I want to log in using my username and password so that I can access my account.
- As a user, I should not be able to submit the login form with empty fields so that I can provide the required data.
- As a user, I want to log out when I click the logout button so that I can end my session securely.
- As a user, I want to be redirected to the login page after logging out so that I know my session has ended and I can log in again if needed.
- As a user, I want to be able to upload multiple CSV files at once, so I can analyze them together.

Test Suites

Test Suite: TS01 - User Authentication (ID: 54)

1. **TC01 – Successful Login (ID: 57)**
    - **Action:**
        - Navigate to the login page
        - Enter valid credentials
        - Click "Login"
    - **Expected Results:**
        - User redirected to dashboard.
    - **Type**: Happy Path
2. **TC02 – Prevent Login with Empty Fields (ID:58)**
    - **Action:**
        - Navigate to the login page.
        - Leave username and/or password fields empty.
        - Click on "Login".
    - **Expected Results:**
        - Validation error message is shown, prompting the user to fill the required fields.
    - **Type:** Error Path
    -

Test Suite: TS02 - Logout Functionality (ID: 47)

1. **TC03 – Successful Logout and Redirect (ID: 49)**
    - **Action:**
        - Log in successfully.
        - Click the "Logout" button.
    - **Expected Results:**
        - User session ends.
        - User is redirected to the login page.

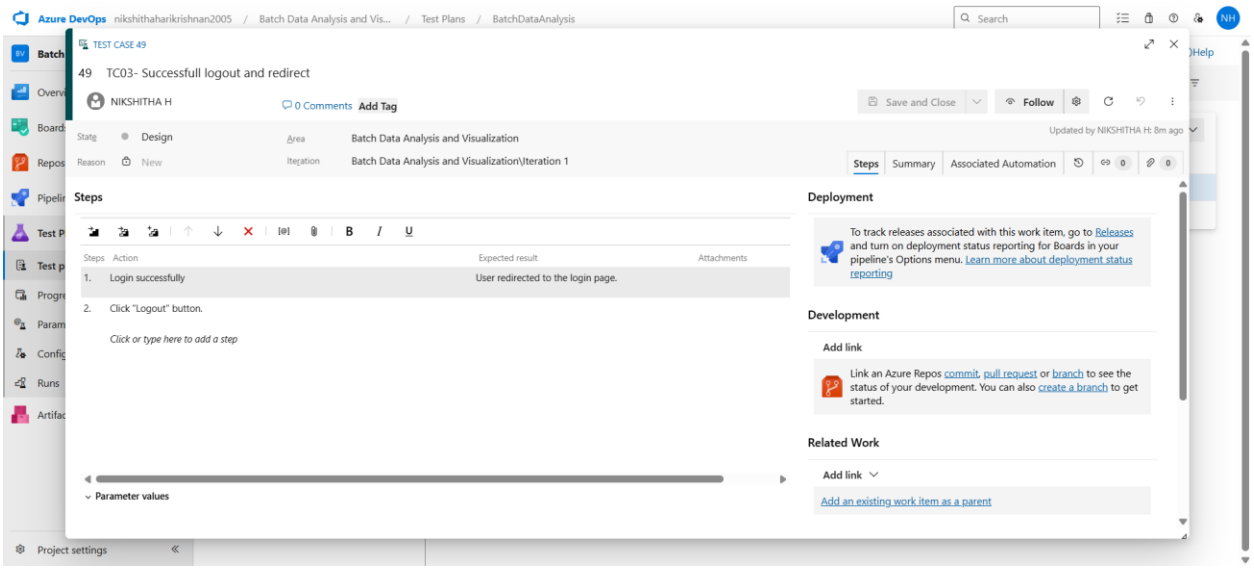
- **Type:** Happy Path

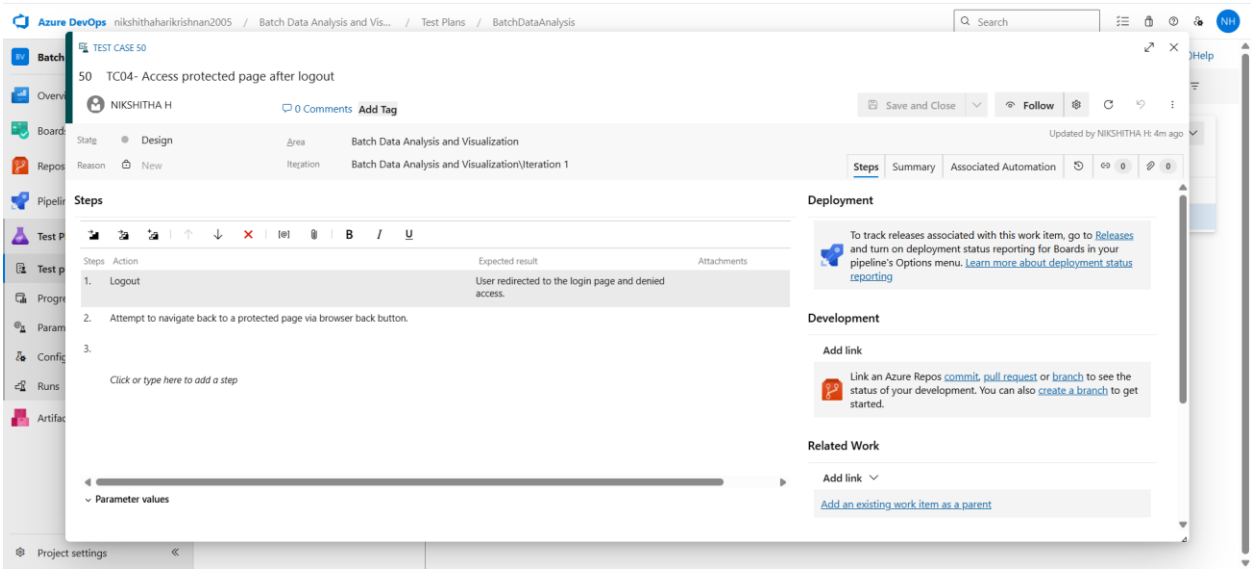
2. **TC04– Access Protected Page After Logout (ID: 50)**
    - **Action:**
        - Logout.
        - Attempt to navigate back to a protected page (e.g., dashboard) via browser back button or URL.
    - **Expected Results:**
        - User is redirected to the login page and denied access.
    - **Type:** Error Path

Test Suite: TS03 - CSV Upload Functionality (ID: 57)

1. **TC05 – Upload Multiple Valid CSV Files**
    - **Action:**
        - Log in successfully
        - Navigate to the CSV upload section
        - Select multiple valid .csv files
        - Click "Upload"
    - **Expected Results:**
        - All files are uploaded successfully.
        - Files are listed and ready for analysis.
    - **Type:** Happy Path
2. **TC06 – Upload Attempt Without Selecting Files**
    - **Action:**
        - Navigate to the CSV upload section
        - Click "Upload" without selecting any files.
    - **Expected Results:**
        - Validation message prompting the user to select at least one file.
    - **Type:** Error Path

Test Cases


Azure DevOps
TEST CASE 49
49 TC03- Successfull logout and redirect
NIKSHITHA H
0 Comments Add Tag
Save and Close
Follow
State Design
Reason New
Area Batch Data Analysis and Visualization
Iteration Batch Data Analysis and Visualization\Iteration 1
Steps Summary Associated Automation
Steps
Steps Action Expected result Attachments
1. Login successfully User redirected to the login page.
2. Click "Logout" button.
Click or type here to add a step
Parameter values
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
Project settings


Azure DevOps
TEST CASE 50
50 TC04- Access protected page after logout
NIKSHITHA H
0 Comments Add Tag
Save and Close
Follow
State Design
Reason New
Area Batch Data Analysis and Visualization
Iteration Batch Data Analysis and Visualization\Iteration 1
Steps Summary Associated Automation
Steps
Steps Action Expected result Attachments
1. Logout User redirected to the login page and denied access.
2. Attempt to navigate back to a protected page via browser back button.
3.
Click or type here to add a step
Parameter values
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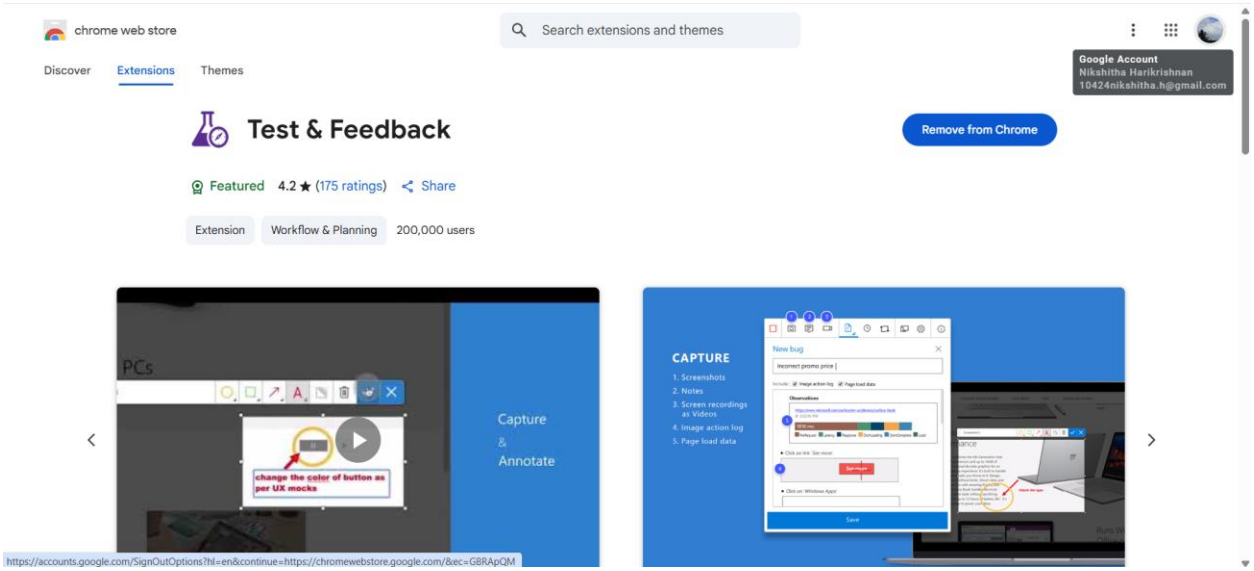
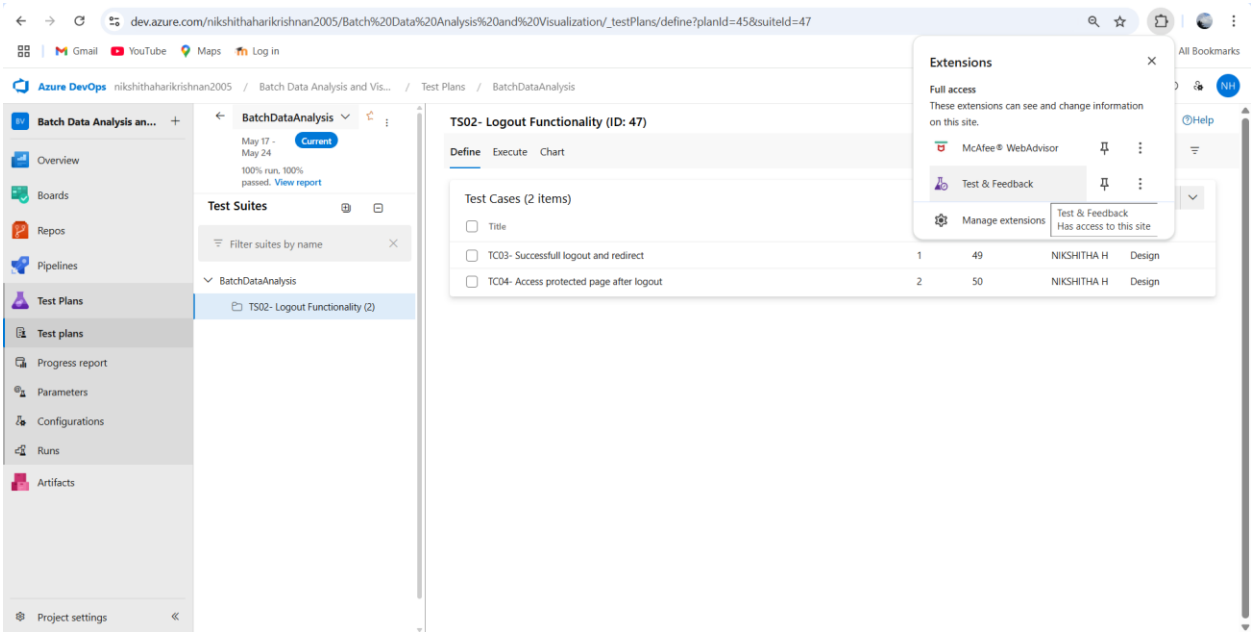
Add link
Link an Azure Repos commit, pull request or branch to see the status of your development. You can also create a branch to get started.
Related Work
Add link
Add an existing work item as a parent
Project settings

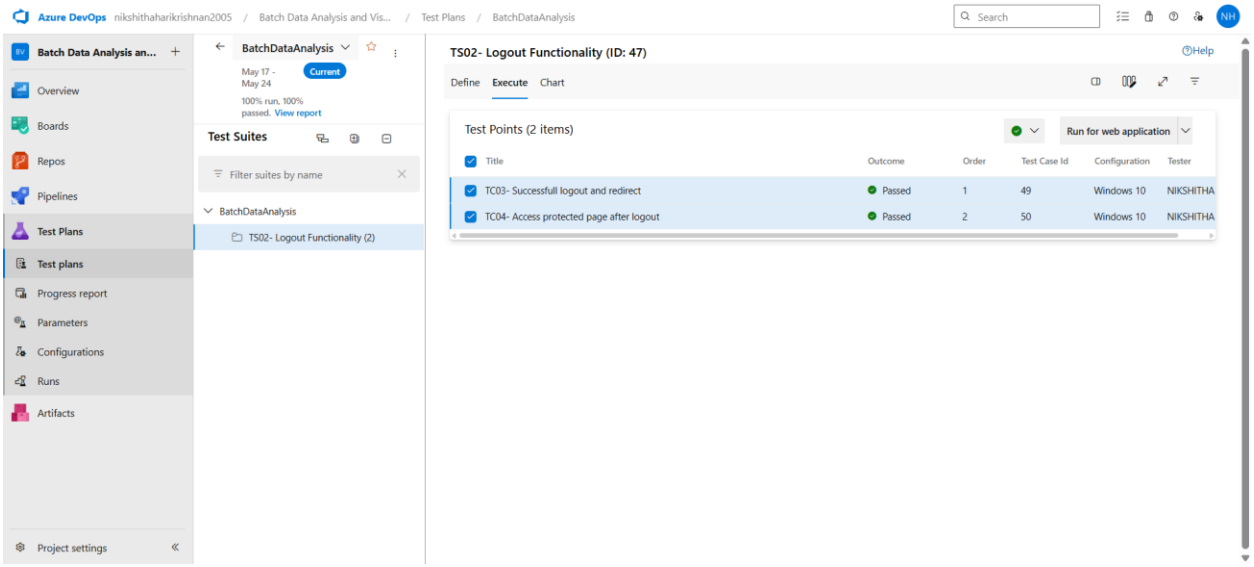
4. Installation of test

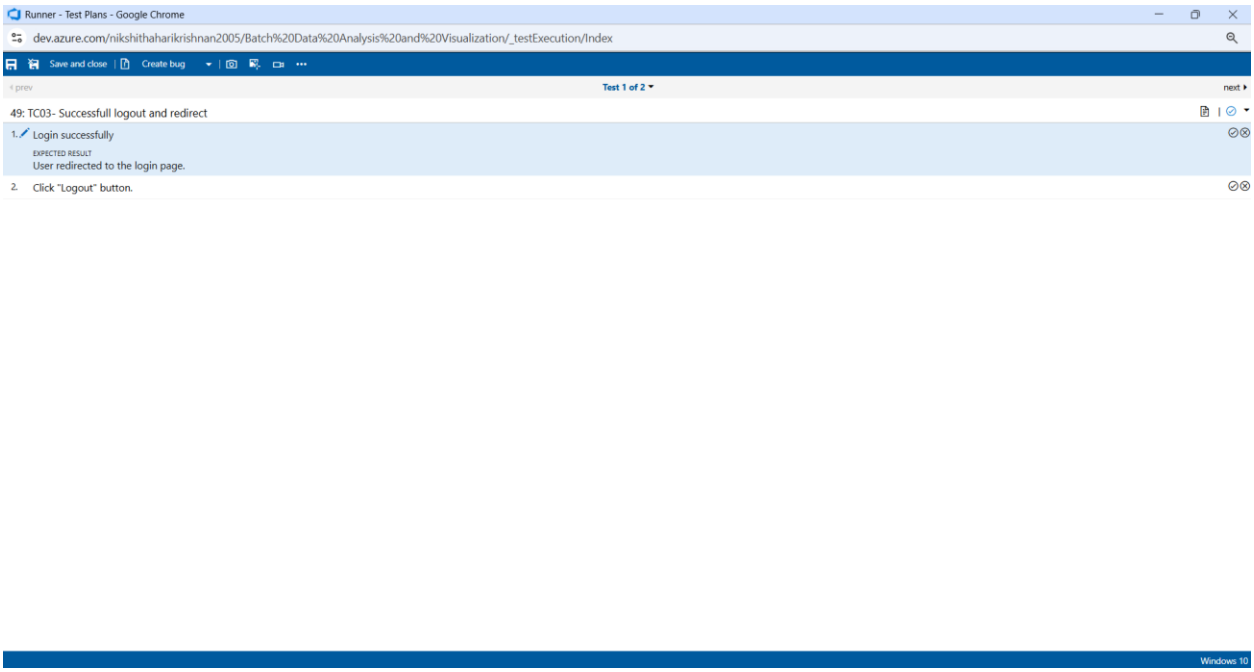


Test and feedback
Showing it as an extension

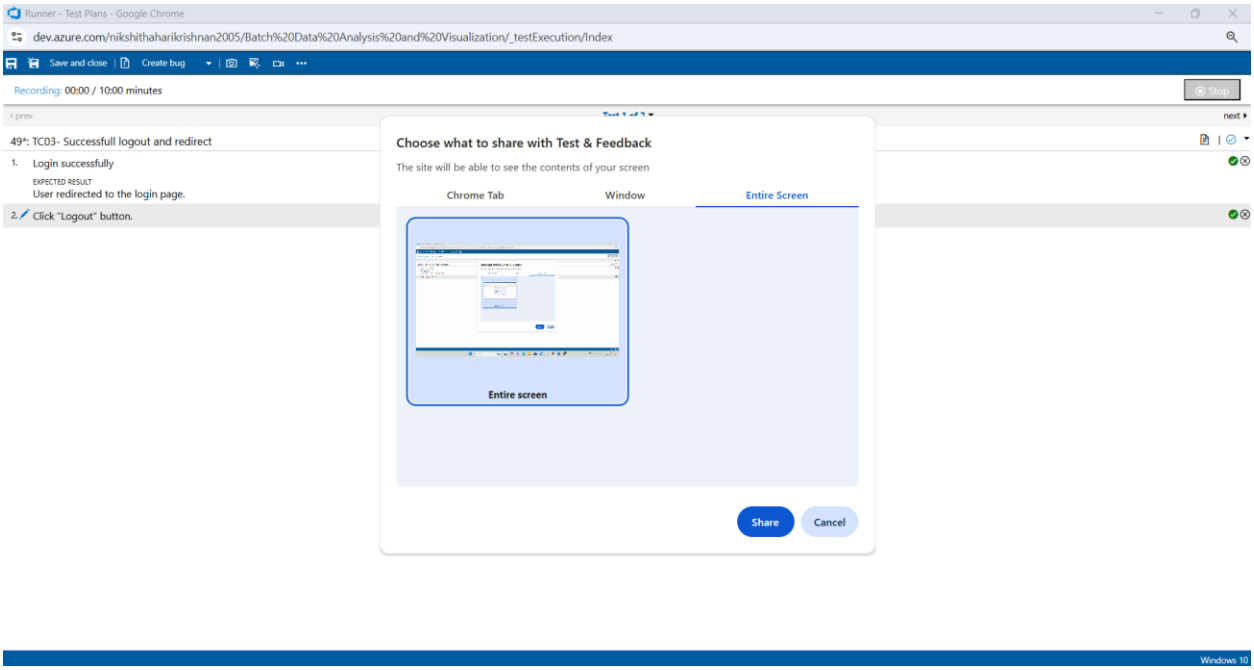


5. Running the test cases

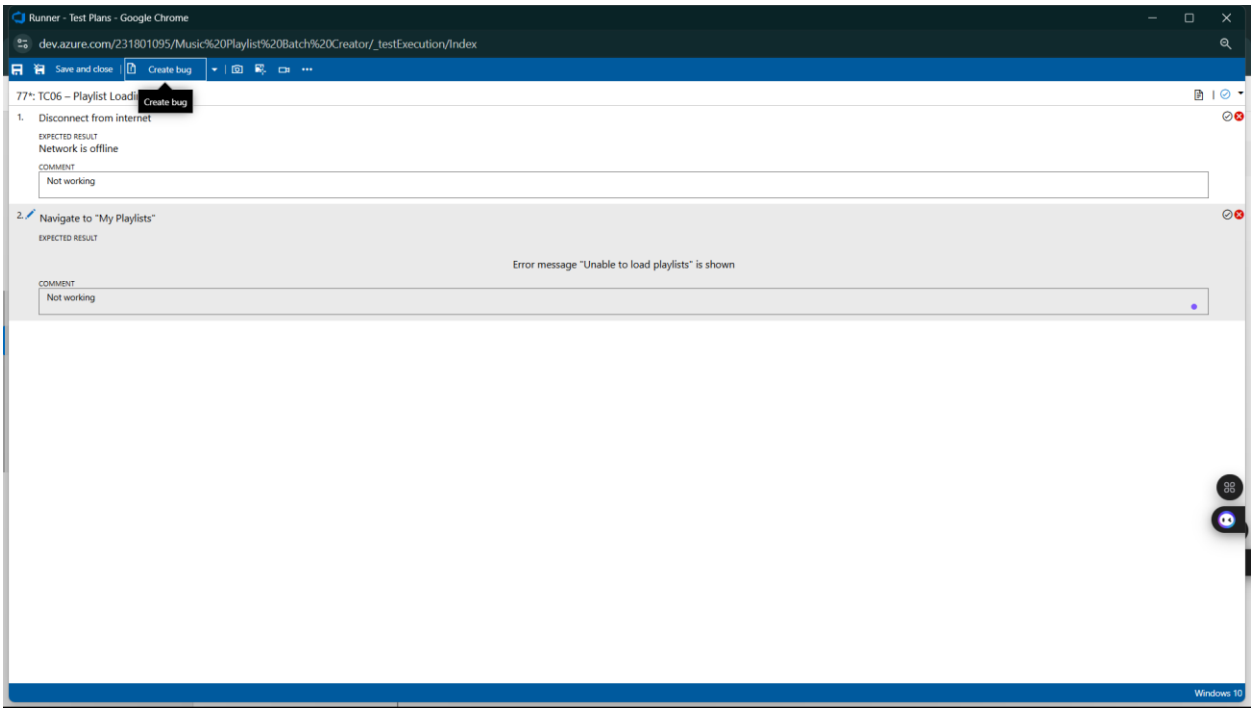


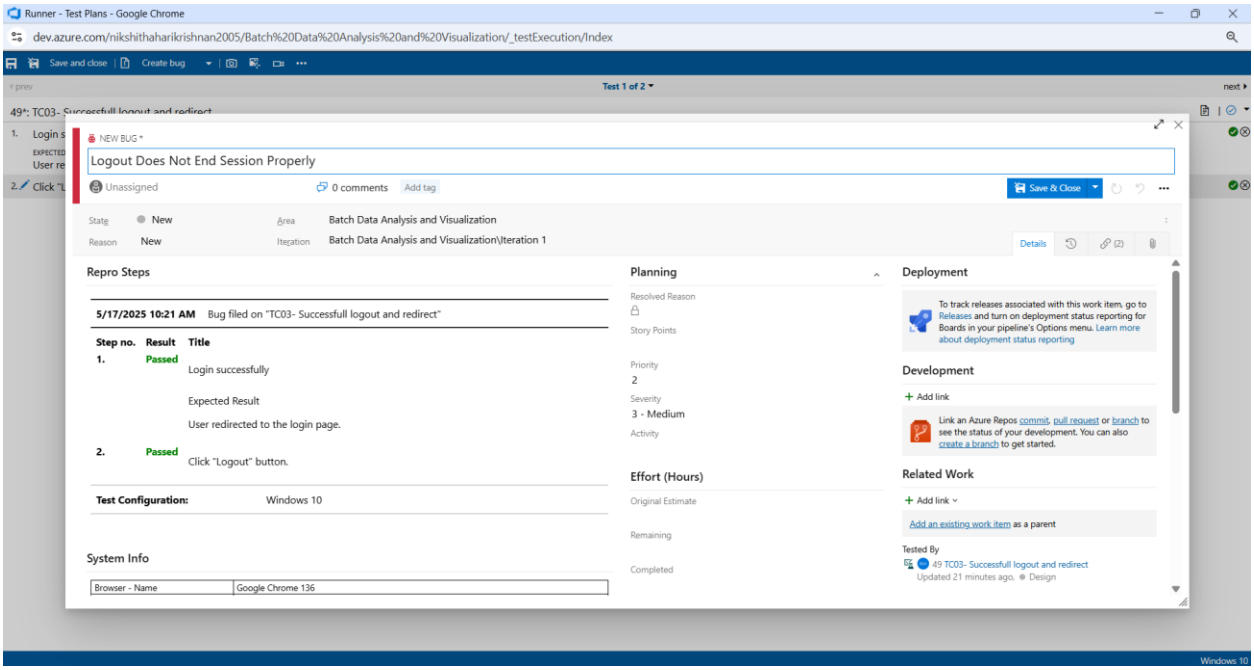


6. Recording the test case



7. Creating the bug




Runner - Test Plans - Google Chrome
dev.azure.com/nikshithaharikrishnan2005/Batch%20Data%20Analysis%20and%20Visualization/_testExecution/Index
Save and close
Create bug
Test 1 of 2
NEW BUG
Logout Does Not End Session Properly
Unassigned
0 comments
Add tag
Save & Close
State
New
Area
Batch Data Analysis and Visualization
Reason
New
Iteration
Batch Data Analysis and Visualization\Iteration 1
Details
Repro Steps
5/17/2025 10:21 AM Bug filed on "TC03- Successfull logout and redirect"
Step no. Result Title
1. Passed
Login successfully
Expected Result
User redirected to the login page.
2. Passed
Click "Logout" button.
Test Configuration: Windows 10
System Info
Browser - Name
Google Chrome 136
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
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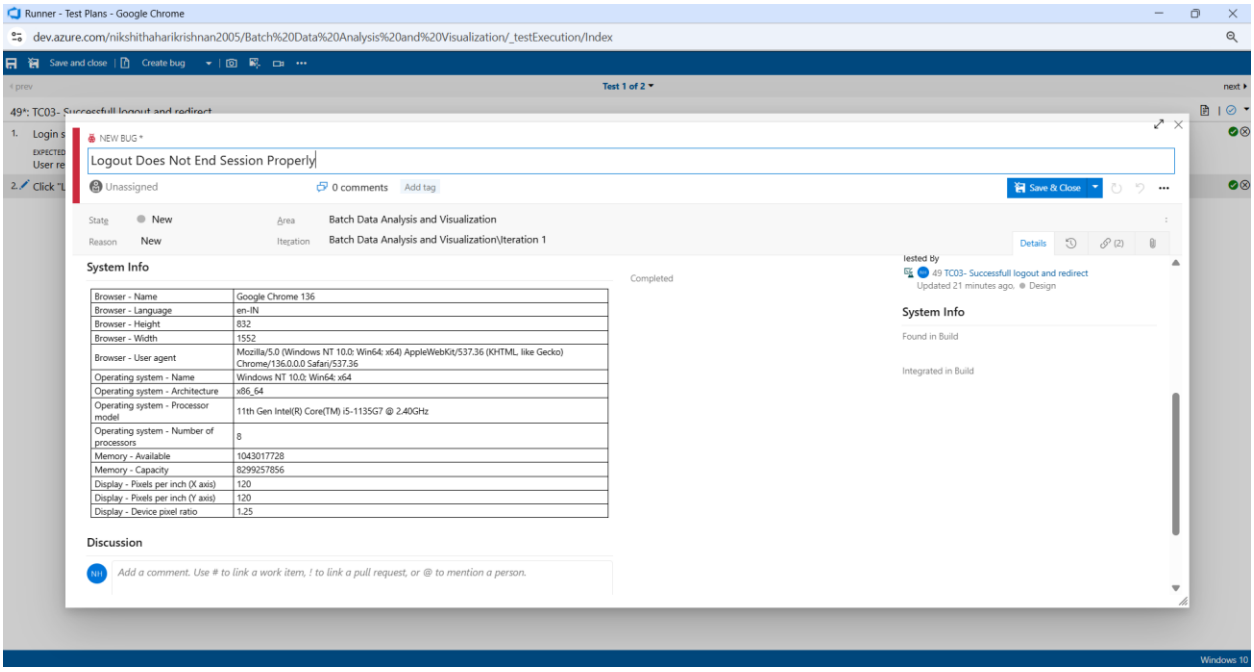
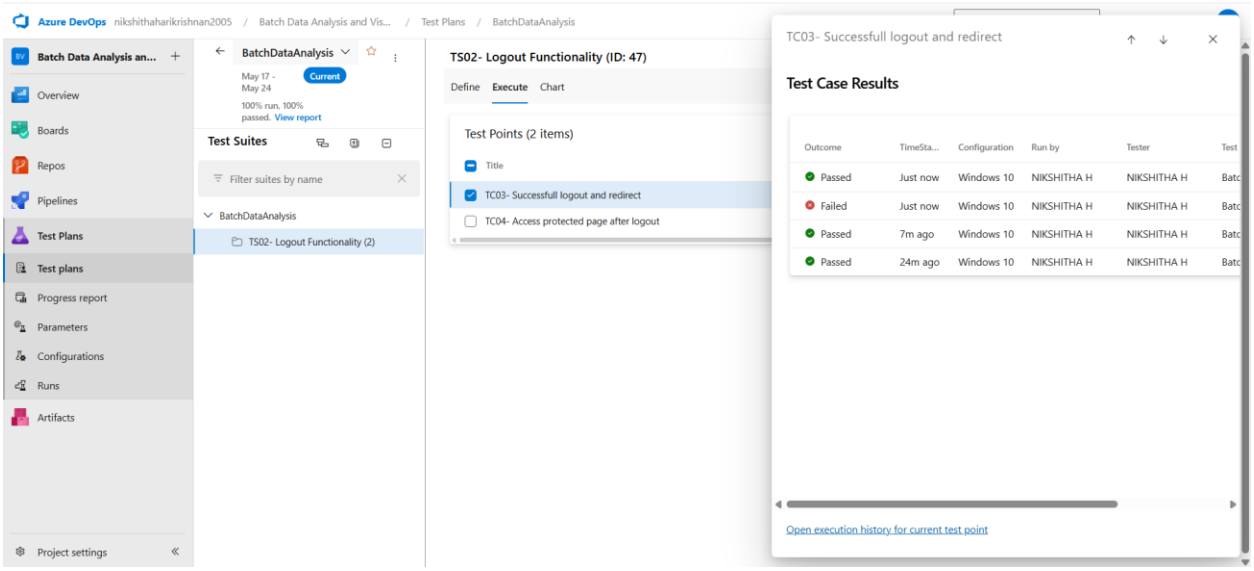
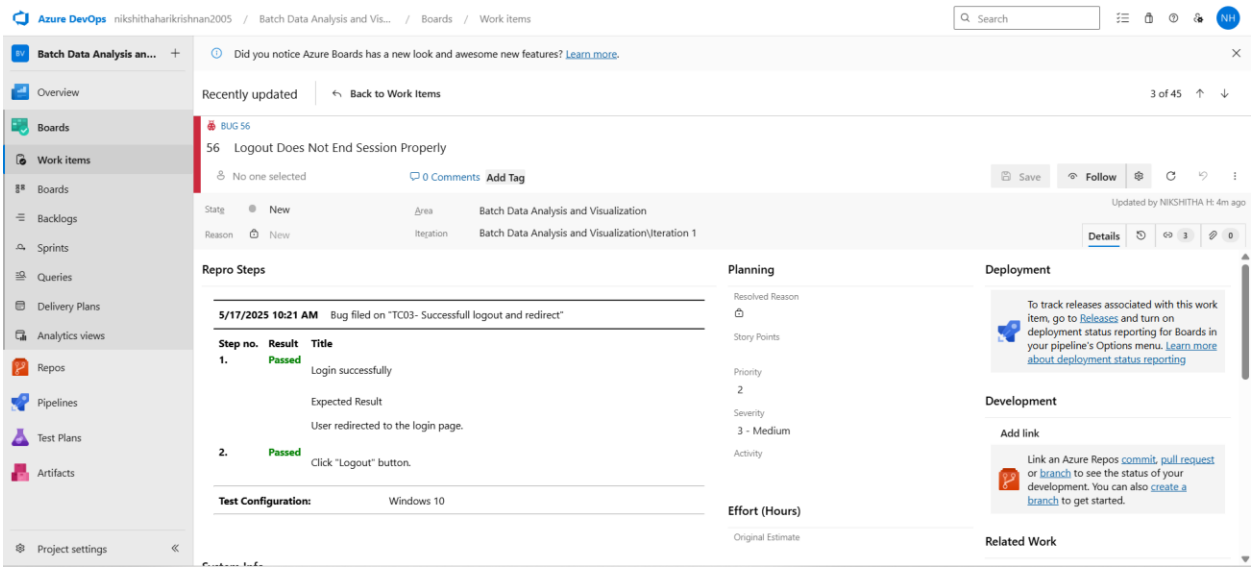
Add link
Add an existing work item as a parent
Tested By
49 TC03- Successfull logout and redirect
Updated 21 minutes ago. Design
Windows 10


Runner - Test Plans - Google Chrome
dev.azure.com/nikshithaharikrishnan2005/Batch%20Data%20Analysis%20and%20Visualization/_testExecution/Index
Save and close
Create bug
Test 1 of 2
NEW BUG
Logout Does Not End Session Properly
Unassigned
0 comments
Add tag
Save & Close
State
New
Area
Batch Data Analysis and Visualization
Reason
New
Iteration
Batch Data Analysis and Visualization\Iteration 1
Details
System Info
Browser - Name Google Chrome 136
Browser - Language en-IN
Browser - Height 832
Browser - Width 1552
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
Operating system - Name Windows NT 10.0; Win64; x64
Operating system - Architecture x86_64
Operating system - Processor model 11th Gen Intel(R) Core(TM) i5-1135G7 @ 2.40GHz
Operating system - Number of processors 8
Memory - Available 1043017728
Memory - Capacity 8299257856
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.
Completed
Tested By
49 TC03- Successfull logout and redirect
Updated 21 minutes ago. Design
System Info
Found in Build
Integrated in Build
Windows 10

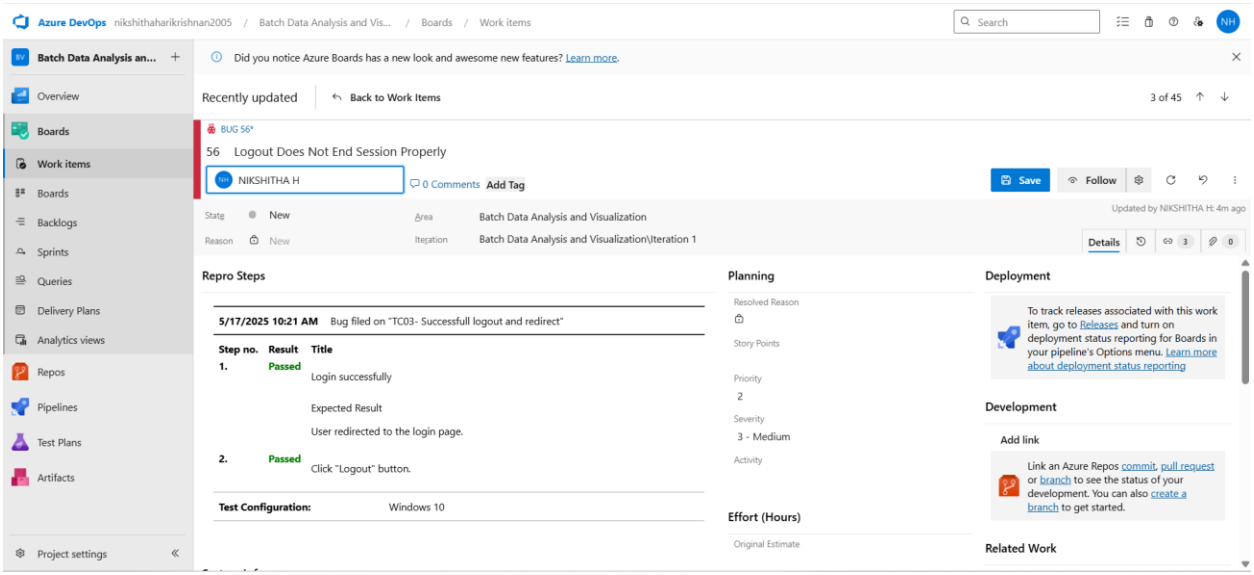
8. Test case results



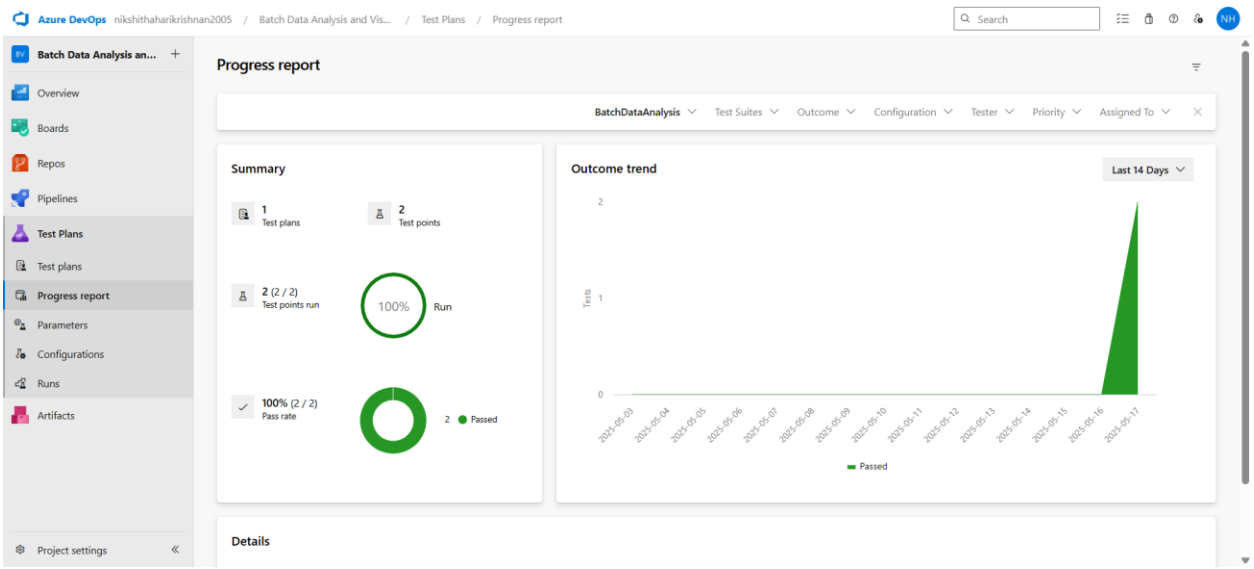
9.Test report summary



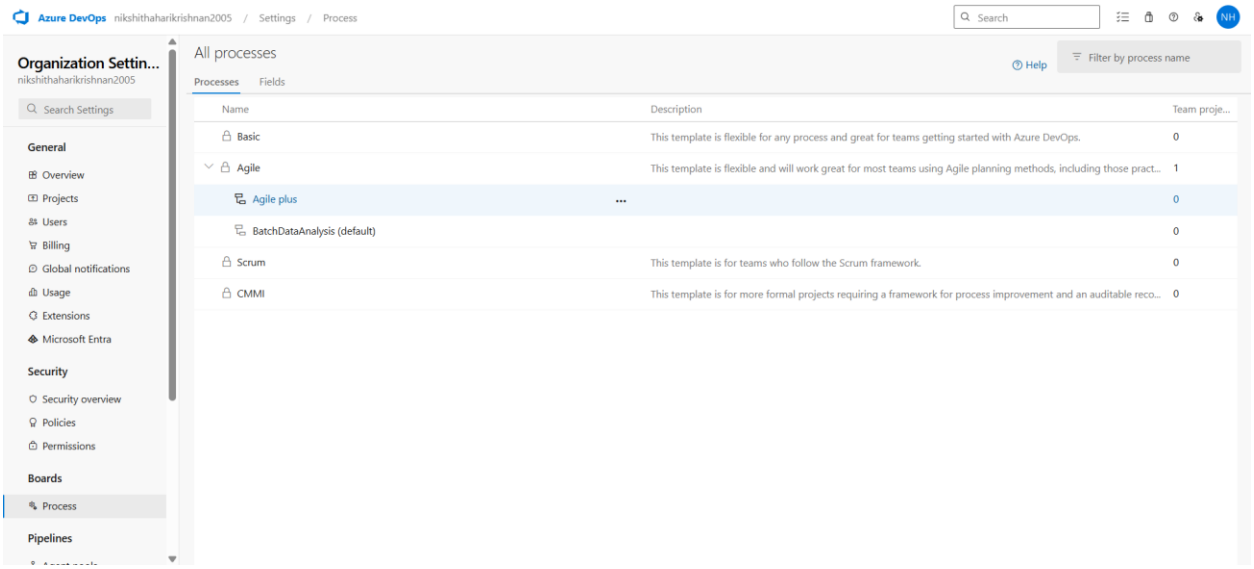
- Assigning bug to the developer and changing state



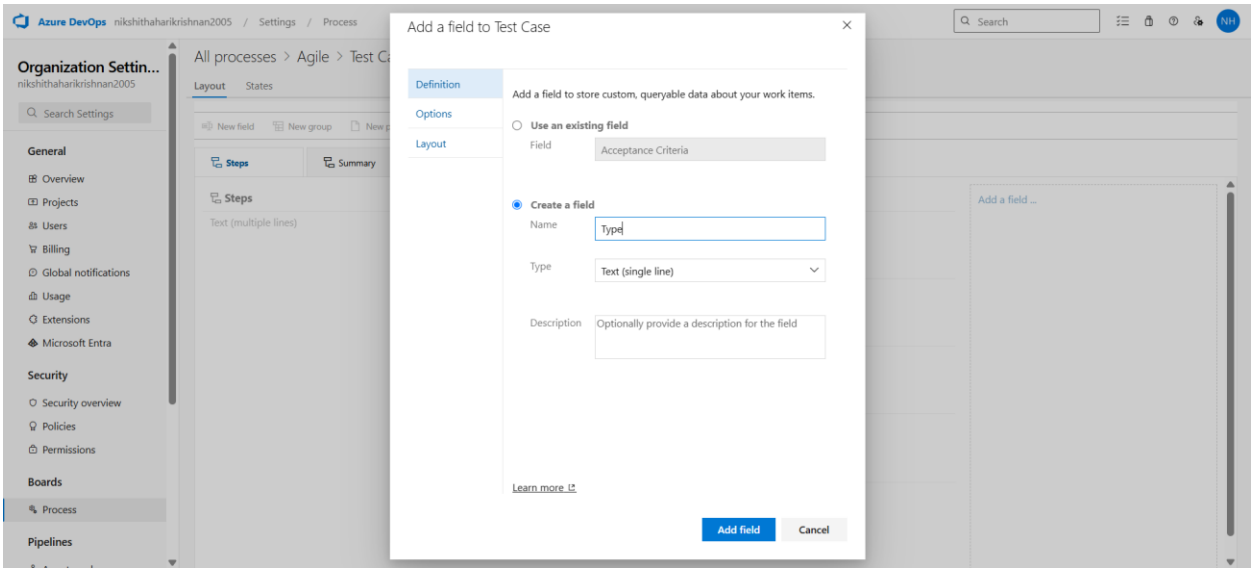
10. Progress report

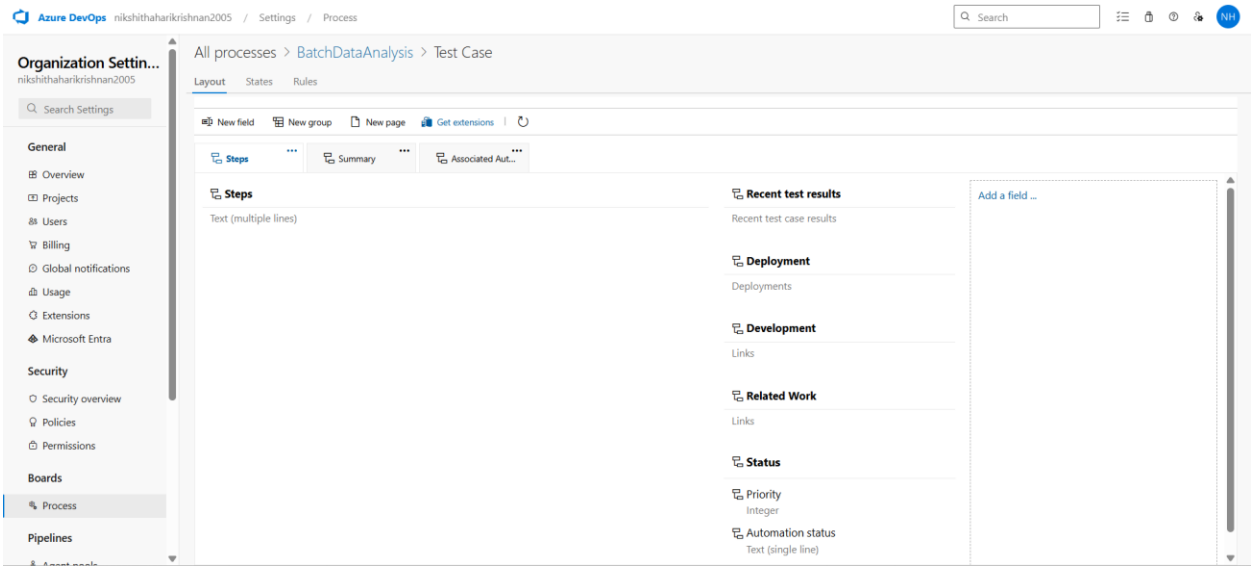


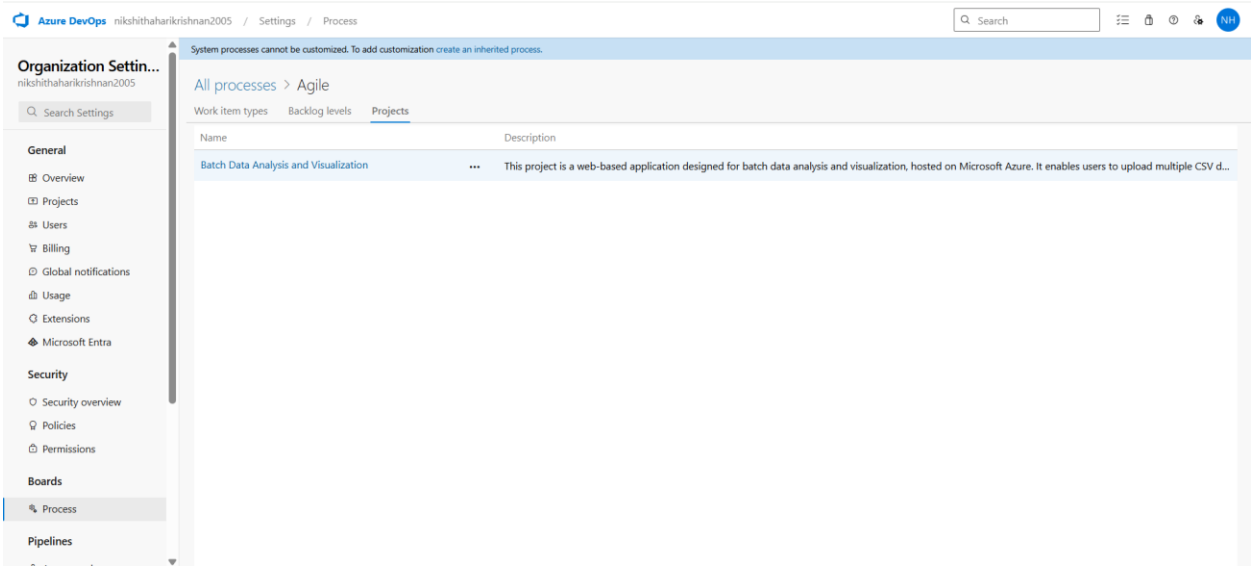
11. Changing the test template



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	CI/CD PIPELINES IN AZURE

Aim:

To implement a Continuous Integration and Continuous Deployment (CI/CD) pipeline in Azure DevOps for automating the build, testing, and deployment process of the Student Management System, ensuring faster delivery and improved software quality.

Procedure:

Steps to Create and implement pipelines in Azure:

1. Sign in to Azure DevOps and Navigate to Your Project

   Log in to dev.azure.com, select your organization, and open the project where your Batch Data Analysis code resides.

2. Connect a Code Repository (Azure Repos or GitHub)

   Ensure your application code is stored in a Git-based repository such as Azure Repos or GitHub. This will be the source for triggering builds and deployments in your pipeline.

3. Create a New Pipeline

   Go to the Pipelines section on the left panel and click “Create Pipeline”.
   Choose your source (e.g., Azure Repos Git or GitHub), and then select the repository containing your project code.

4. Choose the Pipeline Configuration

   You can select either the YAML-based pipeline (recommended for version control and automation) or the Classic Editor for a GUI-based setup.
   If using YAML, Azure DevOps will suggest a template or allow you to define your own.

5. Define Build Stage (CI - Continuous Integration) from the YAML file

6. Install dependencies (e.g., npm install, dotnet restore)

7. Build the application (dotnet build, npm run build)

8. Run unit tests (dotnet test, npm test)

9. Publish build artifacts to be used in the release stage

10. Save and Run the Pipeline for the First Time

Save the YAML or build definition and click “Run”.

Azure will fetch the latest code and execute the defined build and test stages.

11. Configure Continuous Deployment (CD)

Navigate to the Releases tab under Pipelines and click “New Release Pipeline”.

Add an Artifact (from the build stage) and create a new Stage (e.g., Development, Production).

12. Configure the CD stage with deployment tasks such as deploying to Azure App Service, running database migrations or scripts, and restarting services using the Azure App Service Deploy the task linked to your subscription and app details.

13. Set Triggers and Approvals

Enable a continuous deployment trigger so the release pipeline runs automatically after a successful build.

For production environments, configure pre-deployment approvals to ensure manual verification before release.

14. Monitor Pipelines and Manage Logs

View all pipeline runs under the Runs section.

Check logs for build/test/deploy stages to debug any errors.

You can also integrate email alerts or Microsoft Teams notifications for build failures.

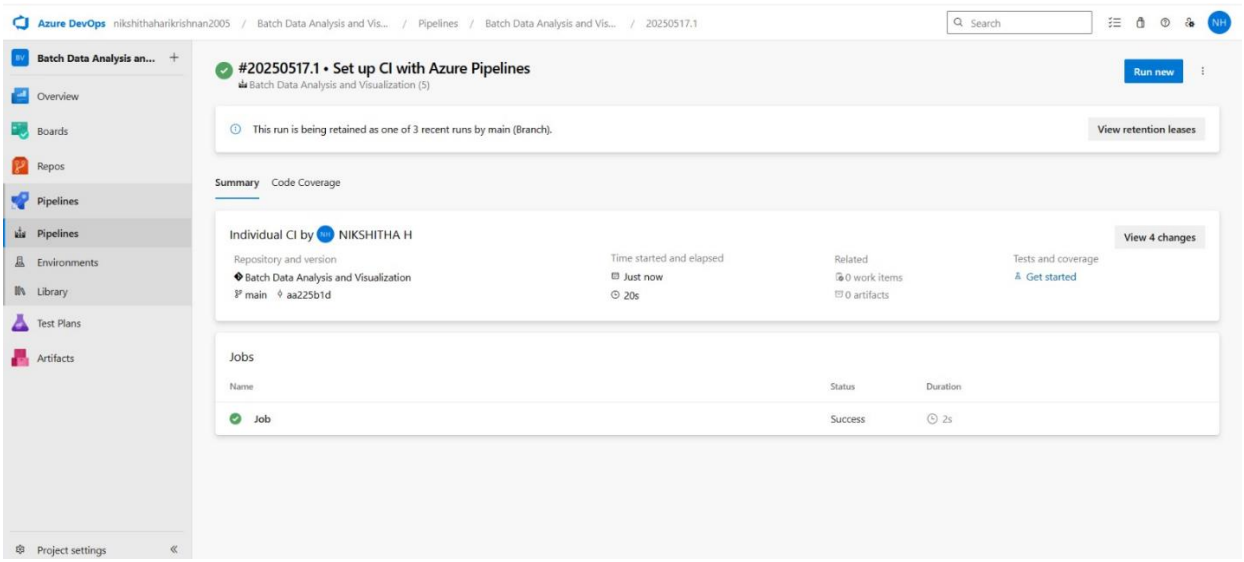
15. Review and Maintain Pipelines

Regularly update your pipeline tasks or YAML configurations as your application grows.

Ensure pipeline runs are clean and artifacts are stored securely.

Integrate quality gates and code coverage policies to maintain code quality.

Pipeline



Result:

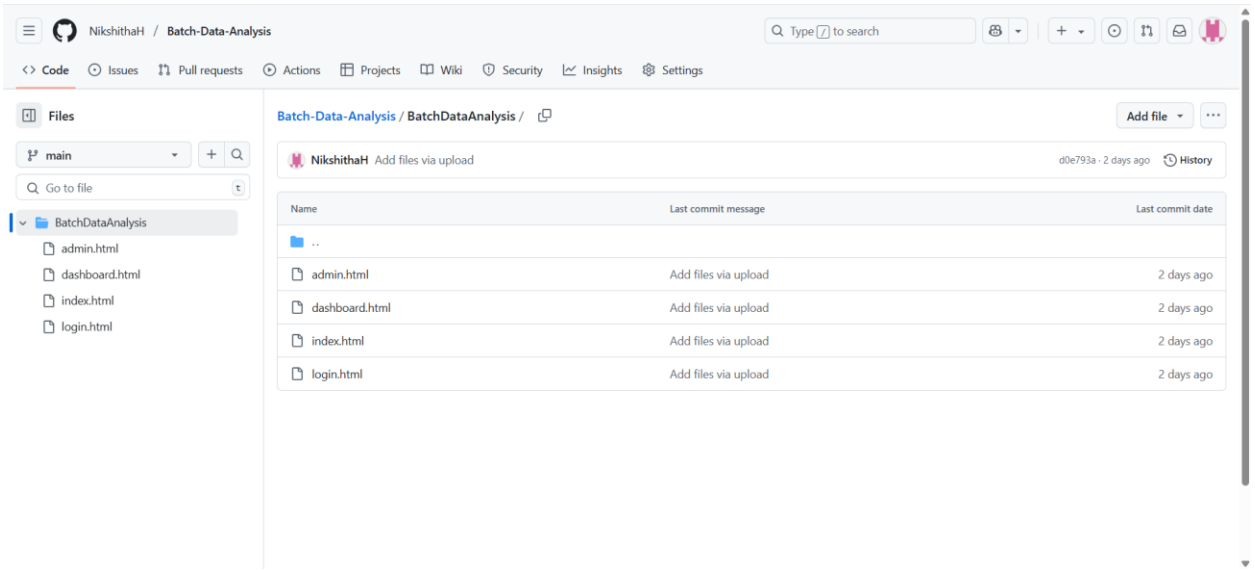
Thus, the pipelines for the given project, “Batch Data Analysis and Visualization” has been executed successfully

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 project- Batch Data Analysis and Visualization.

GitHub Project Structure



Result:

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