

**RAJALAKSHMI ENGINEERING COLLEGE**  
**[AUTONOMOUS]**

**RAJALAKSHMI NAGAR, THANDALAM – 602 105**



**CS23432 – SOFTWARE CONSTRUCTION**

**LABORATORY RECORD NOTEBOOK**

**Name : . . YUVASHREE.K. . . . .**

**Year / Branch / Section : II- AIML-B**

**Register No. : . 2116231501189. . . . .**

**Semester : IV**

**Academic Year : 2024-2025**

**RAJALAKSHMI ENGINEERING COLLEGE**  
**[AUTONOMOUS]**

**RAJALAKSHMI NAGAR, THANDALAM – 602 105**

**BONAFIDE CERTIFICATE**

Name : . . . YUVASHREE.K . . . . .

Academic Year : . . . 2024-2025. . . . .

Semester : 04

Branch : AIML

**Register No.**

**2116231501189**

Certified that this is the bonafide record of work done by the above student in the  
**CS23432 – SOFTWARE CONSTRUCTION** during the year 2024 - 2025.

**Signature of Faculty in-charge**

Submitted for the Practical Examination held on . . . . .

**Internal Examiner**

**External Examiner**


**RAJALAKSHMI ENGINEERING COLLEGE**  
(An Autonomous Institution affiliated to Anna University)  
**DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**  
**Subject: CS23432 – SOFTWARE CONSTRUCTION**

**Reg No: 2116231501189**

**Name: YUVASHREE.K**

**Class & Section : IInd yr AIML & B**

**INDEX Page**

S.NO	Project Title	QR Code	Signature
1	CRIME RATE DETECTOR		



**EXP NO: 1**

## **AZURE DEVOPS ENVIRONMENT SETUP**

### **Aim:**

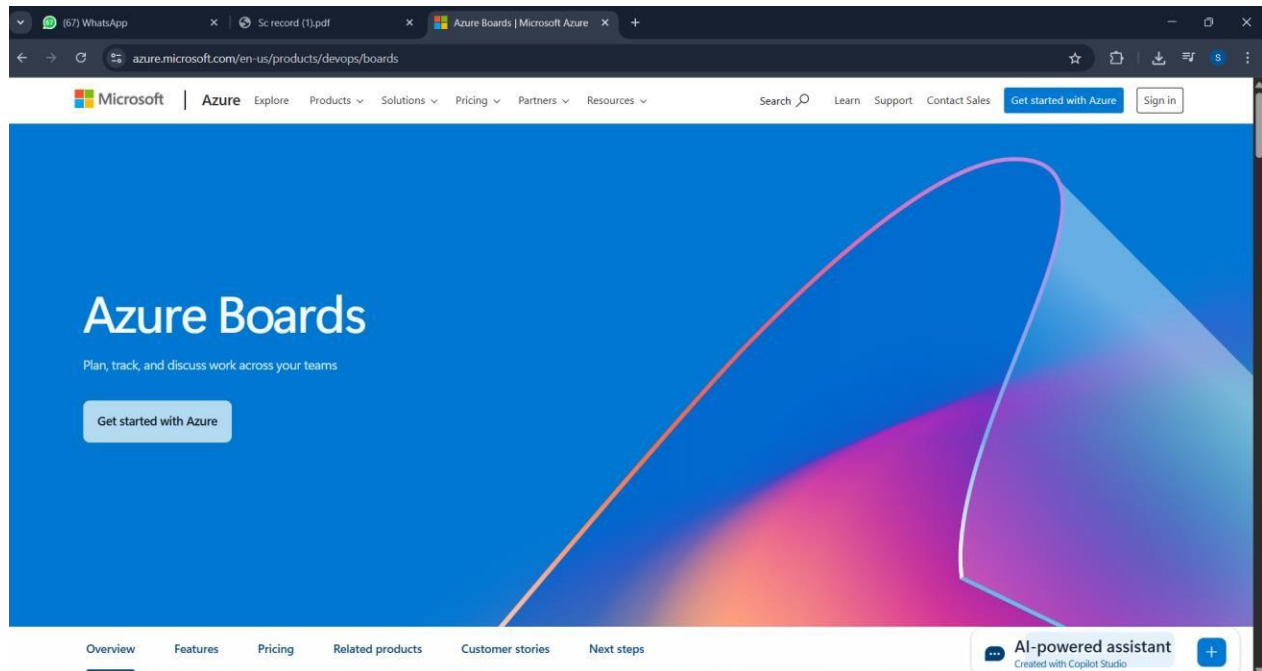
To set up and access the Azure DevOps environment by creating an organization through the Azure portal.

### **INSTALLATION**

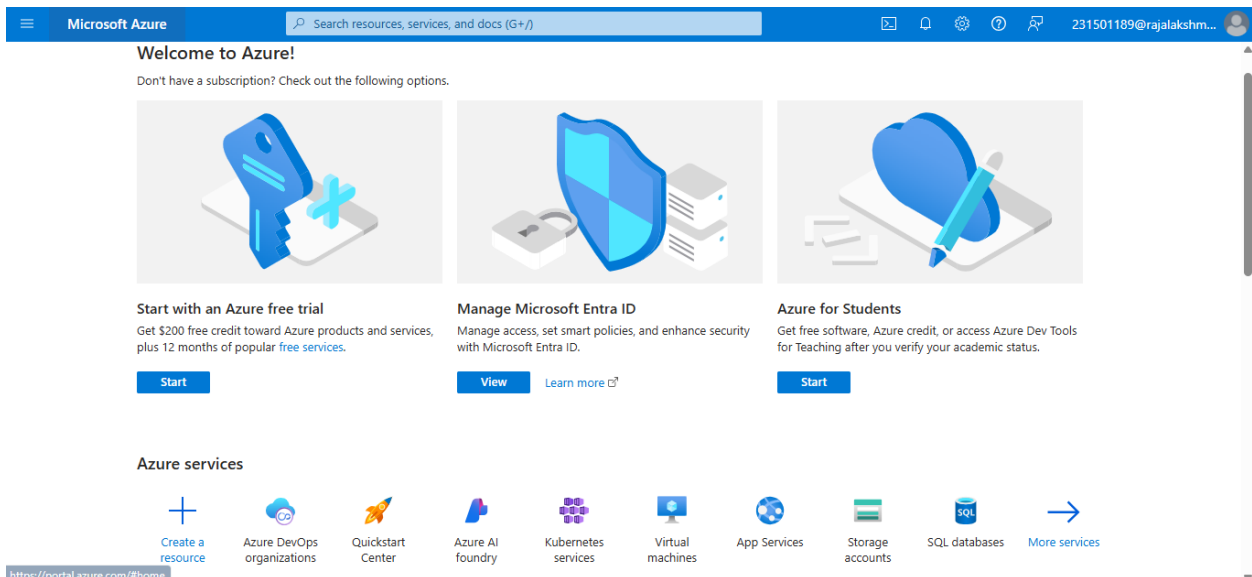
1. Open your web browser and go to the Azure website: <https://azure.microsoft.com/en-us/getstarted/azure-portal>.

Sign in using your Microsoft account credentials.

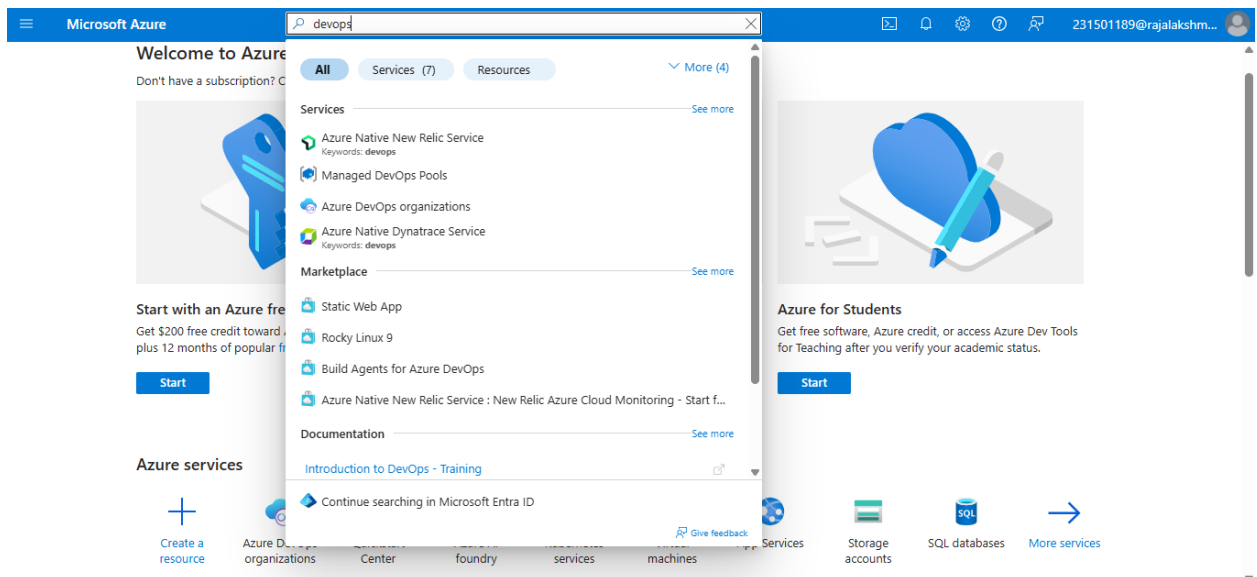
If you don't have a Microsoft account, you can create one here: <https://signup.live.com/?lic=1>



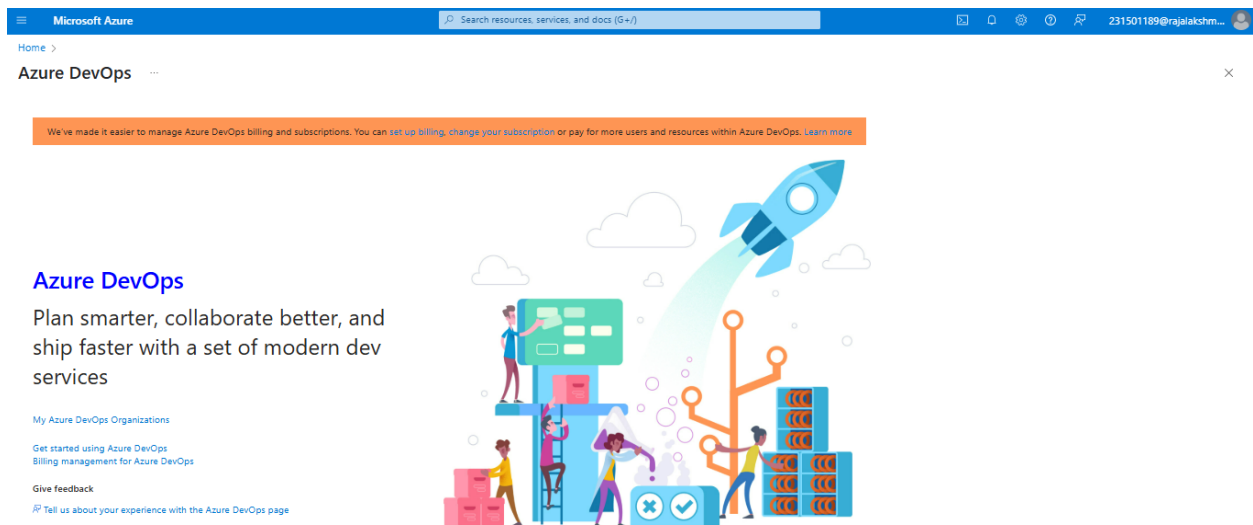
## 2. Azure home page



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.

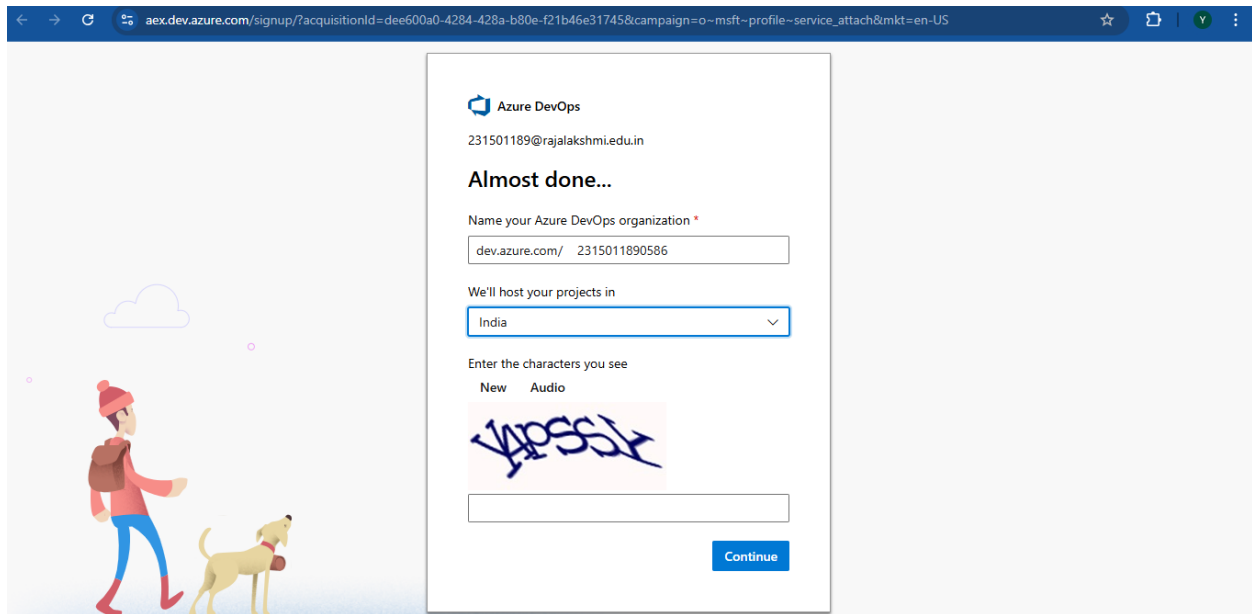
EXP NO: 2

## 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



The screenshot shows the Azure DevOps account creation page. The browser address bar displays the URL: [aex.dev.azure.com/signup/?acquisitionId=dee600a0-4284-428a-b80e-f21b46e31745&campaign=o~msft~profile~service\\_attach&mkt=en-US](https://aex.dev.azure.com/signup/?acquisitionId=dee600a0-4284-428a-b80e-f21b46e31745&campaign=o~msft~profile~service_attach&mkt=en-US). The page title is 'Almost done...'. The user's email address is 231501189@rajalakshmi.edu.in. The form prompts the user to 'Name your Azure DevOps organization \*' with the input 'dev.azure.com/ 2315011890586'. Below this, it asks 'We'll host your projects in' with a dropdown menu set to 'India'. A security code is displayed as '4PSS4' with a 'New Audio' option. A 'Continue' button is at the bottom right of the form.

### 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.



### Create a project to get started

Project name \*

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](#).


+

 Create 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.

Microsoft

Yuvashree k Sign out



Yuvashree k

231501189@rajalakshmi.edu.in

India

231501189@rajalakshmi.edu.in

Visual Studio Dev Essentials

Get everything you need to build and deploy your app on any platform.

Use your benefits

Azure DevOps Organizations

Create new organization

> dev.azure.com/231501189 (Owner)

> dev.azure.com/2315011890172 (Owner)

> dev.azure.com/2315011890306 (Owner)

> dev.azure.com/2315011890331 (Owner)

> dev.azure.com/vishnu24priya2408 (Member)

Projects

Crime Rate Detector

New project

Actions

Open in Visual Studio

## 4. Project dashboard

dev.azure.com/2315011890172/Crime%20Rate%20Detector

Azure DevOps

2315011890172 / Crime Rate Detector / Overview / Summary

Search

YK

CD Crime Rate Detector

Overview

Summary

Dashboards

Wiki

Boards

Repos

Pipelines

Test Plans

Artifacts

Project settings

CD Crime Rate Detector

Private Invite

About this project

Help others to get on board!

Describe your project and make it easier for other people to understand it.

+ Add Project Description

Project stats

Period: Last 7 days

Boards

18 Work Items

0 Work Items

Members 2

YK

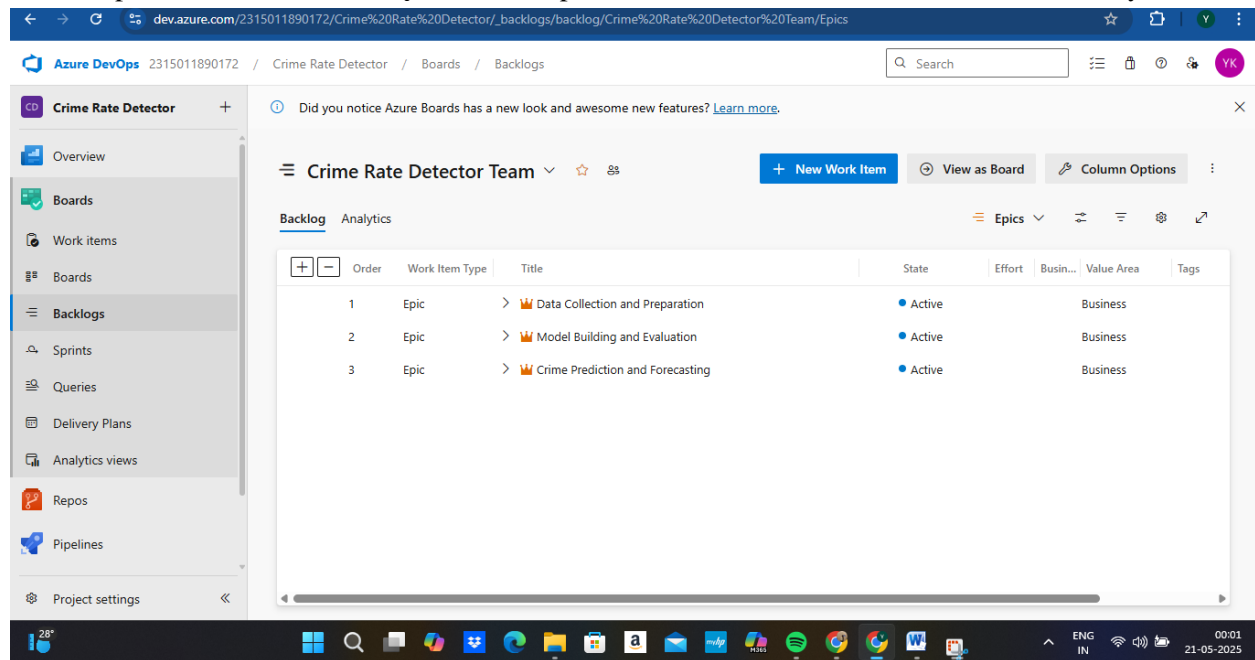
2116231501189

CS23432

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

## Create Epic, Features, User Stories, Task

Order	Work Item Type	Title	State	Effort	Busin...	Value Area	Tags
1	Epic	Data Collection and Preparation	Active			Business	
	Feature	Crime Data Collection	Active			Business	
	User Story	As a data engineer, I want to collect crime data from v...	New			Business	
	Task	Identify reliable data sources (e.g., police records, p...	New				
	Task	Automate data scraping or API integration.	New				
	User Story	As a data analyst, I want to extract time, location, and ...	New			Business	
	Task	Parse and structure the extracted data	New				
	Task	Store data in a clean and consistent format (e.g., CS...	New				
2	Epic	Model Building and Evaluation	Active			Business	
3	Epic	Crime Prediction and Forecasting	Active			Business	

## 1.Fill in Epics

dev.azure.com/2315011890172/Crime%20Rate%20Detector/\_backlogs/backlog/Crime%20Rate%20Detector%20Team/Epics?workitem=1

EPIC 1 • Field 'Title' cannot be empty.

1 Enter title

No one selected 0 Comments Add Tag Save and Close Follow

Updated by Yuavashree k: 7 Apr

State: Active Area: Crime Rate Detector Reason: Implementation started Iteration: Crime Rate Detector/Sprint 1

**Description**  
Click to add Description.

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

**Planning**  
Priority: 2  
Risk  
Effort  
Business Value  
Time Criticality  
Start Date: Select a date...  
Target Date: Select a date...

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

**Development**  
Add link  
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**

## 2.Fill in Features

dev.azure.com/2315011890172/Crime%20Rate%20Detector/\_backlogs/backlog/Crime%20Rate%20Detector%20Team/Epics

NEW FEATURE \* Field 'Title' cannot be empty.

Enter title

No one selected 0 Comments Add Tag

Save and Close

Details 1 0

Statg New

Reason New

Area Crime Rate Detector

Iteration Crime Rate Detector\Sprint 1

Description

Click to add Description.

Discussion

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

switch to Markdown editor

Planning

Priority 2

Risk

Effort

Business Value

Time Criticality

Start Date Select a date...

Target Date Select a date...

Deployment

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

Development

Add link

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

Related Work

## 3.Fill in User Story Details

dev.azure.com/2315011890172/Crime%20Rate%20Detector/\_backlogs/backlog/Crime%20Rate%20Detector%20Team/Epics

NEW USER STORY \* Field 'Title' cannot be empty.

Enter title

No one selected 0 Comments Add Tag

Save and Close

Details 1 0

Statg New

Reason New

Area Crime Rate Detector

Iteration Crime Rate Detector

Description

Click to add Description.

Acceptance Criteria

Click to add Acceptance Criteria.

Discussion

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

Planning

Story Points

Priority 2

Risk

Classification

Value area Business

Deployment

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

Development

Add link

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

Related Work

**Result:**

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

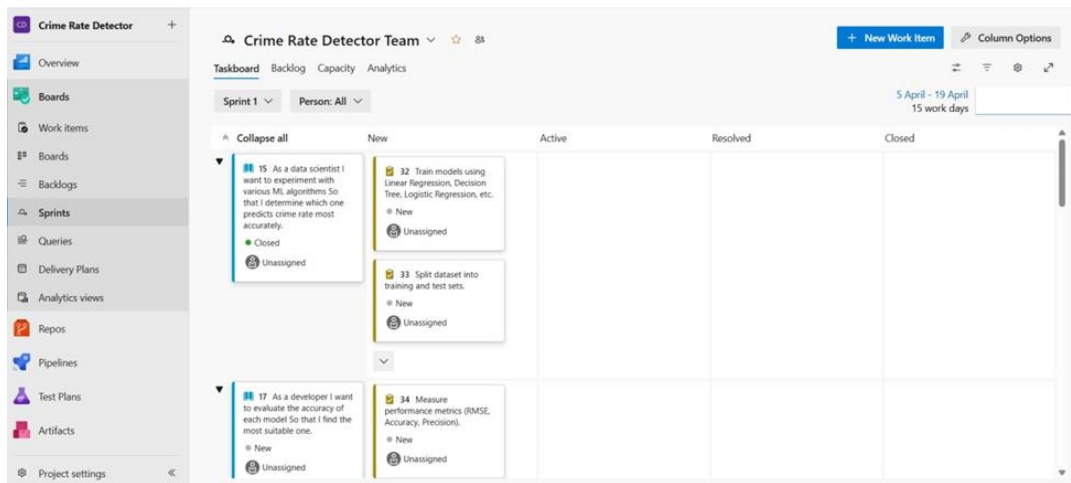
EXP NO: 4

# SPRINT PLANNING

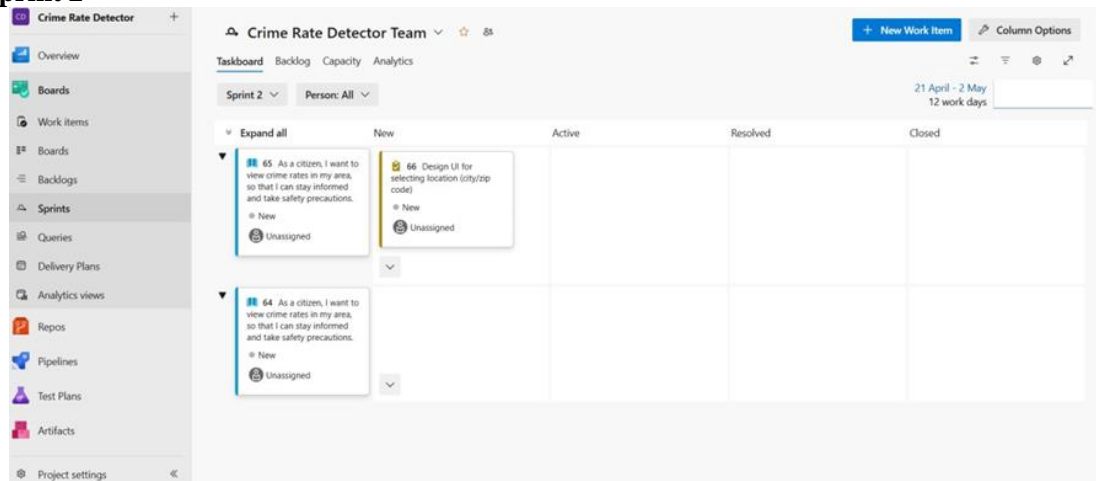
## Aim:

To assign user story to specific sprint for the Crime Rate Detector App Project.

## Sprint Planning Sprint 1

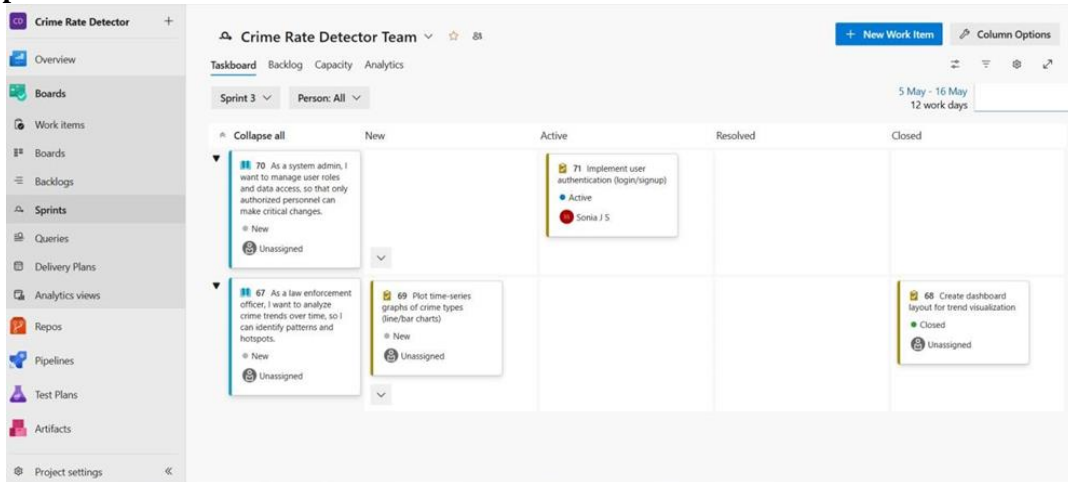


## Sprint 2





## Sprint 3



### Result:

The Sprints are created for the Crime Rate Detector App Project.

EXP NO: 5

# POKER ESTIMATION

## Aim:

Create Poker Estimation for the user stories - Crime Rate Detector App Project.

## Poker Estimation

The screenshot displays a user story titled "USER STORY 10\*" in the Azure DevOps interface. The story text is "10 As a data engineer, I want to collect crime data from various sources so that I can create a comprehensive dataset." The story is assigned to "Yuvashree k" and has "0 Comments". The status is "Resolved" and the area is "Crime Rate Detector". The reason for resolution is "Code complete and uni...". The iteration is also "Crime Rate Detector". The story was updated by Yuvashree k on 7 Apr. The interface includes sections for Description, Acceptance Criteria, Discussion, Planning, Classification, Deployment, and Development. The Acceptance Criteria section contains the text "Data scraping/API scripts are implemented and tested". The Planning section shows Story Points, Priority (2), and Risk. The Classification section shows Value area (Business). The Deployment section provides instructions on how to track releases associated with this work item. The Development section provides instructions on how to link an Azure Repos commit, pull request, or branch to see the status of your development.

## Result:

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

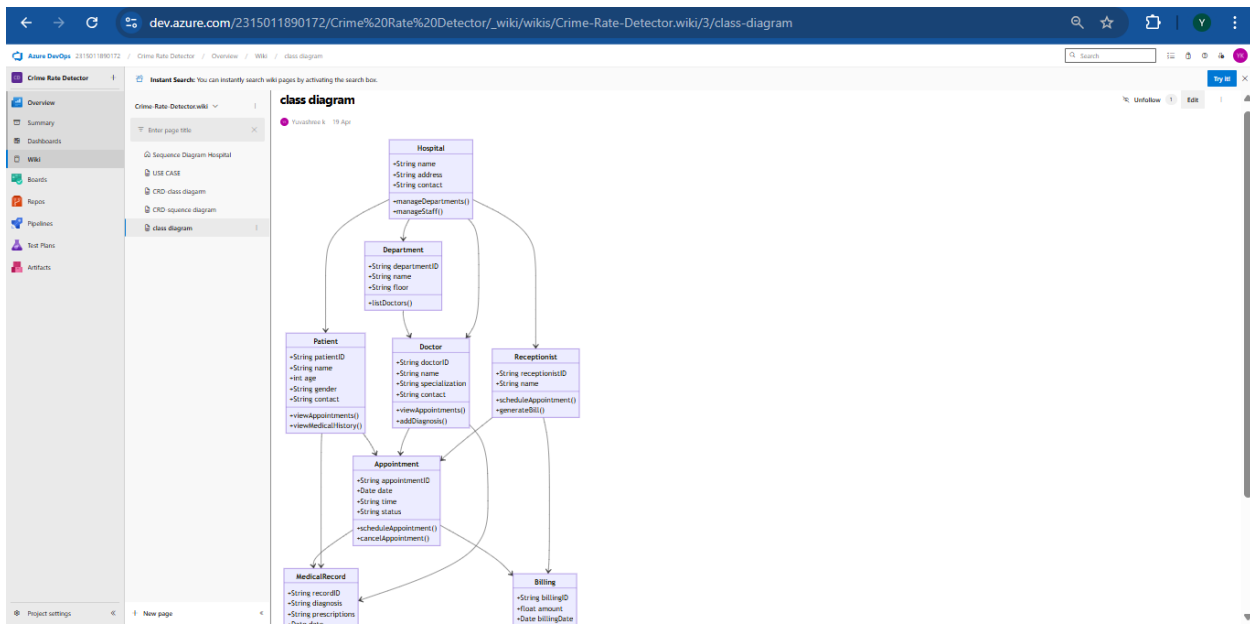
EXP NO: 6

## DESIGNING CLASS AND SEQUENCE DIAGRAMS FOR PROJECT ARCHITECTURE

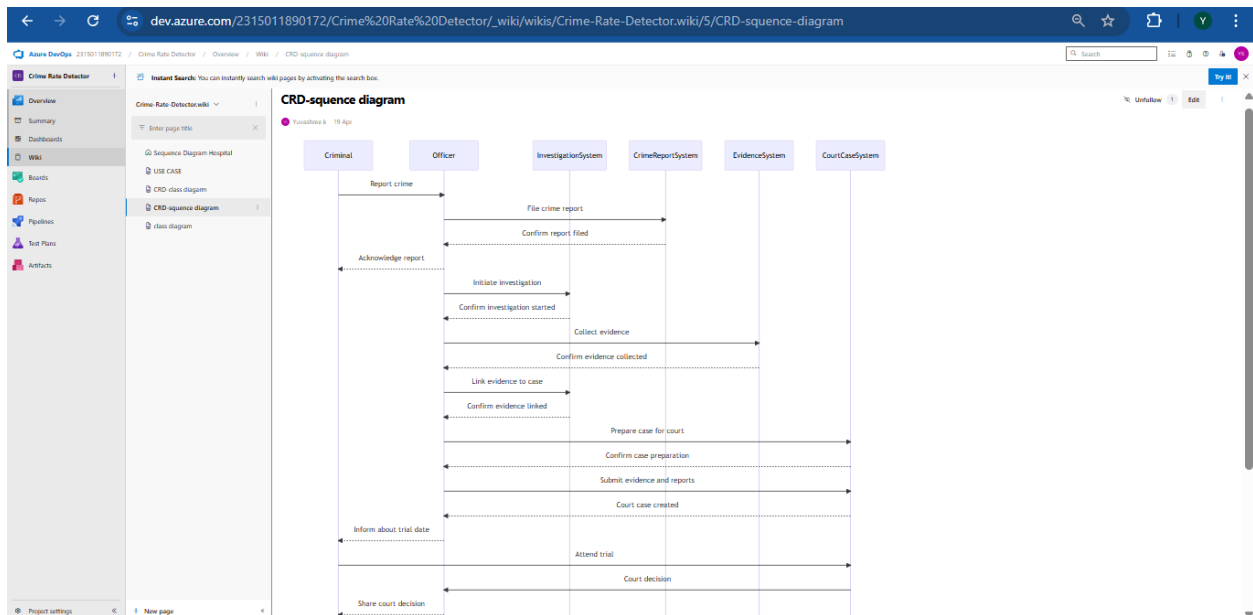
**Aim:**

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 Crime Rate Detector App

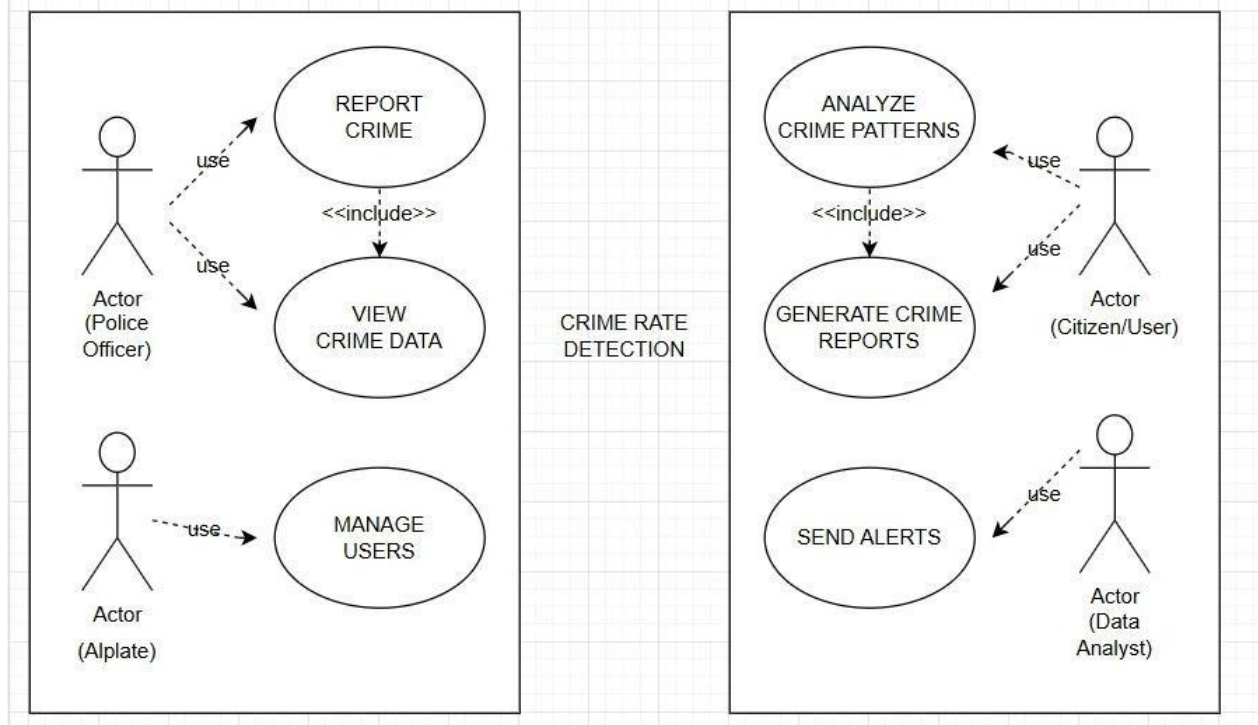
EXP NO: 7

## DESIGNING USE-CASE AND ACTIVITY DIAGRAMS FOR PROJECT STRUCTURE

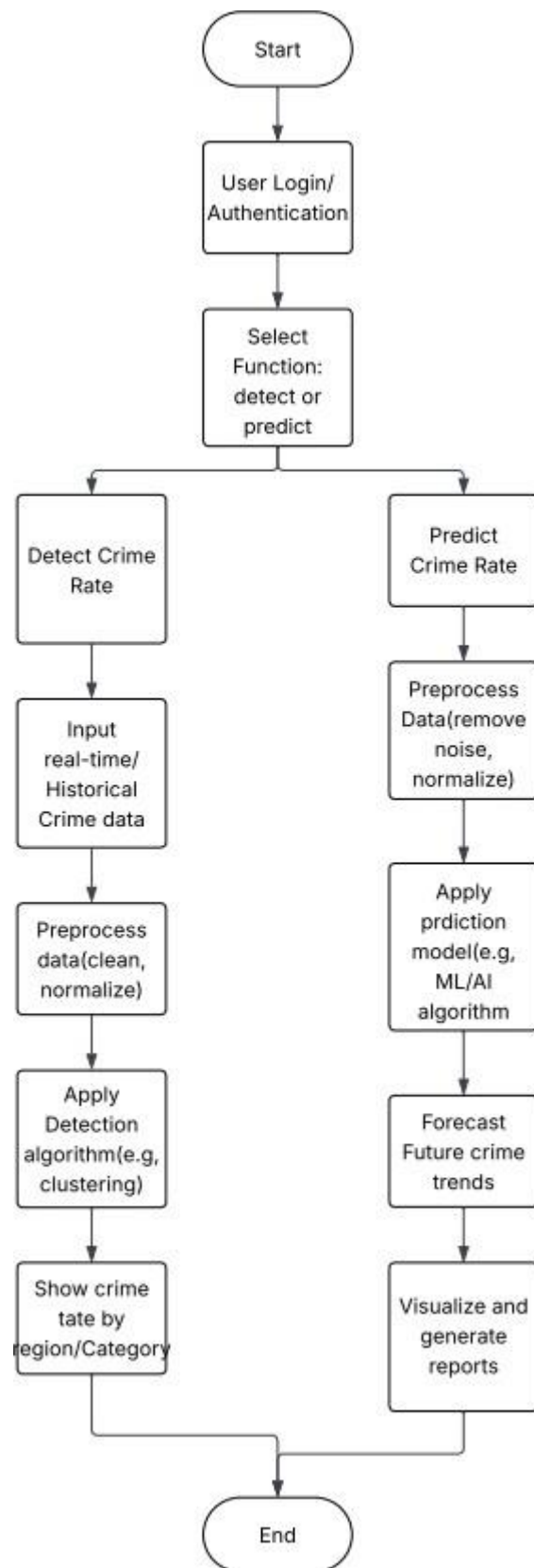
**Aim:**

To Design an Use-Case Diagram and Activity Diagram for the given Project.

**7A. Use-Case Diagram**



## 7B. Activity Diagram



**Result:**

The Use Case and Activity is designed Successfully for the Crime Rate Detector App

**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**

- Data Collection: Collect crime data from APIs, CSVs, public records, and databases.
- Data Preprocessing: Clean, normalize, and structure data (time, location, crime type).
- Machine Learning Prediction: Predict crime probability based on inputs like location and time.
- Risk Zone Identification: Highlight high-crime zones visually using maps or heatmaps.
- Reporting and Logs: Generate reports and logs for crime trends and predictions.

##### **2. Define User Interaction**

- A data engineer collecting data from a new source.
- A user submitting a location and date for crime prediction.
- A security analyst viewing the high-risk zone dashboard.

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

- User enters valid input and receives a correct prediction.
- High-risk zones accurately visualized based on recent data.
- ML model processes cleaned and transformed data correctly.

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

- Missing input fields (e.g., location not provided).
- Invalid or corrupt data fails during preprocessing.
- System tries to predict with outdated or untrained model.

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

- **Step-by-step instructions** (e.g., "Enter location, select date, click 'Predict'").
- **Expected outcome** (e.g., "System displays crime risk level: Low/Medium/High").  
This ensures clarity for manual testers and consistency in automation scripts.



## 6. Use Clear Naming and IDs

- TC01 – Successful Crime Data Collection
  - TC05 – Crime Prediction with Valid Input
  - TC10 – Handle Missing Location Input
- This helps in mapping test cases to user stories or feature requirements.

## 7. Separate Test Suites

- Grouped test cases based on functionality (e.g., Data Collection ML Prediction Engine, Data Preprocessing).
- 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 'New Test Plan' interface in Azure DevOps. On the left is a sidebar with navigation links: Overview, Boards, Repos, Pipelines, Test Plans (selected), Test plans, Progress report, Parameters, Configurations, Runs, Artifacts, and Project settings. The main area is titled 'New Test Plan' and contains the following fields:

- Name \***: A text input field containing 'Crime Rate Detector'.
- Area Path \***: A dropdown menu showing 'Crime Rate Detector'.
- Iteration \***: A dropdown menu showing 'Crime Rate Detector/Sprint 3' with a date range of '05/05/2025 - 16/05/2025'.

At the bottom right, there are two buttons: 'Create' (in blue) and 'Cancel' (in grey).

## 2. Test suite

The screenshot shows the Azure DevOps interface for a project named 'Crime Rate Detector'. The left sidebar contains a navigation menu with options like Overview, Boards, Repos, Pipelines, Test Plans, Test plans, Progress report, Parameters, Configurations, Runs, and Artifacts. The main area is titled 'CRIME RATE DETECTOR' and shows a list of test suites. The selected test suite is 'TS01-Data Upload And Validation (ID: 16)'. The right pane displays the details for this test suite, including a table of test cases.

Title	Order	Test Case Id	Assigned To
TC01-Upload Valid Crime Data	1	17	Yuvashree k
TC02-Upload With Missing Fields	2	18	Yuvashree k

## 3. Test case

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

Crime Rate Detector App – Test Plans

### USER STORIES

1. As a data engineer, I want to collect crime data from various sources so that I can create a comprehensive dataset.
2. As a data analyst, I want to extract time, location, and crime type from raw crime data so that I can structure it properly for accurate and efficient analysis.
3. As a data scientist, I want to encode categorical data and scale numerical features to make the data ML-ready.
4. As a developer, I want to clean inconsistent or missing values in the dataset so that I can ensure high-quality inputs for the machine learning model.
5. As a security analyst I want to identify high-risk zones So that I can allocate resources effectively.

### Test Suites

**Test Suite: TS01 – Crime Data Collection (ID: 77)**

**TC01 – Source Connection Test**

- **Action:**
  - Attempt connection to data source
  - Check for timeout or error

- **Expected Results:**
    - Connection established successfully
    - No timeout or error observed
  - **Type:** Happy Path
- 

#### **TC02 – Fetch Data from All Sources**

- **Action:**
    - Trigger data retrieval
    - Log number of records retrieved
  - **Expected Results:**
    - Data retrieval process initiates
    - Record count is logged correctly
  - **Type:** Happy Path
- 

#### **TC03 – Handle Duplicate Records**

- **Action:**
    - Load data from multiple sources
    - Check for duplicate crime IDs or timestamps
  - **Expected Results:**
    - All sources are successfully loaded
    - Duplicates flagged or removed
  - **Type:** Happy Path
- 

#### **Test Suite: TS02 – Data Structuring (ID: 81)**

##### **TC04 – Extract Timestamps**

- **Action:**
    - Upload raw data
    - Extract timestamp field
  - **Expected Results:**
    - Data loads without errors
    - Dates standardized to YYYY-MM-DD format
  - **Type:** Error Path
- 

##### **TC05 – Parse Location Data**

- **Action:**
    - Process raw data
    - Extract location fields
  - **Expected Results:**
    - Data processed successfully
    - City, ZIP, and coordinates extracted correctly
  - **Type:** Happy Path
- 

#### **TC06 – Classify Crime Types**

- **Action:**
    - Analyze crime descriptions
    - Match against predefined categories
  - **Expected Results:**
    - Descriptions are readable and processed
    - Each record is assigned a crime type
  - **Type:** Happy Path
- 

#### **Test Suite: TS03 – Feature Engineering (ID: 85)**

##### **TC07 – Encode Categorical Features**

- **Action:**
    - Identify categorical fields
    - Apply Label/One-Hot encoding
  - **Expected Results:**
    - All categorical fields are found
    - Encoding completes without errors
  - **Type:** Happy Path
- 

##### **TC08 – Scale Numerical Features**

- **Action:**
  - Load dataset
  - Apply MinMax or StandardScaler
- **Expected Results:**
  - Dataset loads correctly
  - Values fall within expected scaled range
- **Type:** Happy Path

---

#### **TC09 – Validate ML Input Schema**

- **Action:**
    - Run schema validator
    - Verify dataset
  - **Expected Results:**
    - Schema is read and applied
    - Dataset contains required fields with no nulls or incorrect formats
  - **Type:** Happy Path
- 

#### **Test Suite: TS04 – Data Cleaning (ID: 89)**

#### **TC10 – Check for Missing Values**

- **Action:**
    - Scan dataset
    - Identify null/empty fields
  - **Expected Results:**
    - Scan completes
    - Missing values highlighted or flagged
  - **Type:** Happy Path
- 

#### **TC11 – Format Consistency Check**

- **Action:**
    - Load data
    - Validate formats (date, address, type)
  - **Expected Results:**
    - File loads successfully
    - All fields meet format specifications
  - **Type:** Happy Path
- 

#### **TC12 – Remove Outliers**

- **Action:**
  - Apply outlier detection
  - Remove or normalize

- **Expected Results:**
    - Outliers detected correctly
    - Dataset updated with outliers handled
  - **Type:** Error Path
- 

## **Test Suite: TS05 – High-Risk Zone Detection (ID: 93)**

### **TC13 – Calculate Zone Risk Score**

- **Action:**
    - Aggregate crimes by location
    - Compute risk using frequency/severity
  - **Expected Results:**
    - Crime counts grouped correctly
    - Risk score reflects accurate level
  - **Type:** Error Path
- 

### **TC14 – Generate Risk Heatmap**

- **Action:**
    - Input data into visualization tool
    - Display heatmap
  - **Expected Results:**
    - Data loads to map tool
    - High-risk areas colored with appropriate intensity
  - **Type:** Happy Path
- 

### **TC15 – List Top High-Risk Areas**

- **Action:**
    - Sort areas by crime score
    - Display top 5 zones
  - **Expected Results:**
    - Areas ranked correctly
    - List includes top 5 zones with scores shown
  - **Type:** Happy Path
-

# Test Cases

TEST CASE 17

17 TC01-Upload Valid Crime Data

Yuvashree k

0 Comments Add Tag

Save and Close

Follow

0

0

0

State Design

Area

Crime Rate Detector

Updated by Yuvashree k: Yesterday

Reason New

Iteration

Crime Rate Detector/Sprint 1

Steps

Summary

Associated Automation

0

0

0

0

## Steps

Steps	Action	Expected result	Attachments
1.	1. Navigate to upload page2. Select valid CSV3. Click upload	Data is uploaded and saved successfully	
2.			

Click or type here to add a step

Parameter values

## Deployment

### Development

Add link

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

### Related Work

Add link

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

### Status

Priority

2

TEST CASE 25

25 TC06-Login Security Check

Yuvashree k

0 Comments Add Tag

Save and Close

Follow

0

0

0

State Design

Area

Crime Rate Detector

Updated by Yuvashree k: Yesterday

Reason New

Iteration

Crime Rate Detector/Sprint 1

Steps

Summary

Associated Automation

0

0

0

0

## Steps

Steps	Action	Expected result	Attachments
1.	1. Enter incorrect credentials2. Click login	"Access Denied" message appears	

Click or type here to add a step

Parameter values

## Deployment

### Development

Add link

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

### Related Work

Add link

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

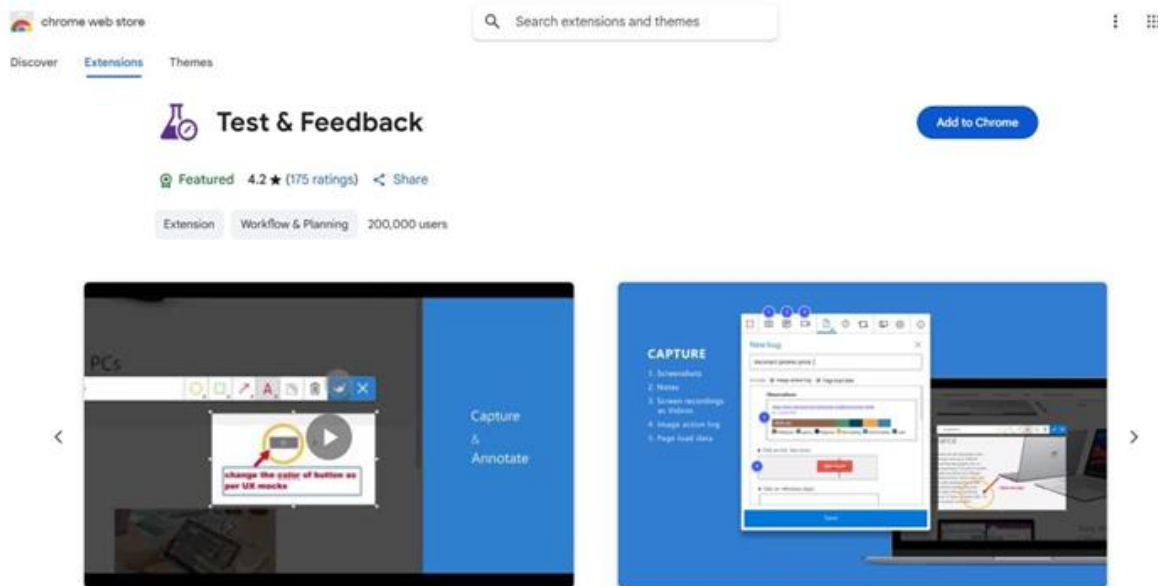
### Status

Priority

2

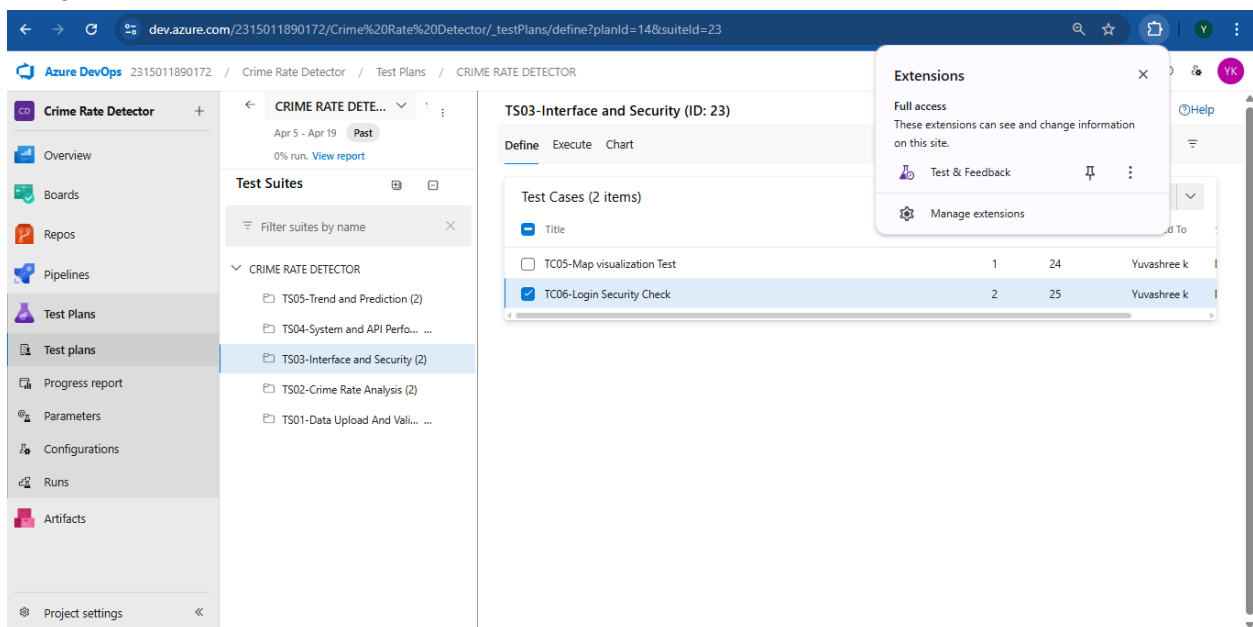
Automation status

## 4. Installation of test



Test and feedback

Showing it as an extension





## 5. Running the test cases

Azure DevOps 2315011890172 / Crime Rate Detector / Test Plans / CRIME RATE DETECTOR

CRIME RATE DETECTOR  
Apr 5 - Apr 19  
0% run. [View report](#)

Test Suites

Filter suites by name

CRIME RATE DETECTOR

- TS05-Trend and Prediction (2)
- TS04-System and API Perfo...
- TS03-Interface and Security (2)
- TS02-Crime Rate Analysis (2)
- TS01-Data Upload And Vali...

TS01-Data Upload And Validation (ID: 16)

Define Execute Chart

Test Points (2 items)

Title	Outcome	Order	Test Case Id
TC01-Upload Valid Crime Data	Passed	1	17
TC02-Upload With Missing Fields	Passed	2	18

Run for web application

6.

Runner - Test Plans - Google Chrome

dev.azure.com/2315011890172/Crime%20Rate%20Detector/\_testExecution/Index

Save and close... Create bug

prev Test 1 of 2 next

17: TC01-Upload Valid Crime Data

1. 1. Navigate to upload page2. Select valid CSV3. Click upload

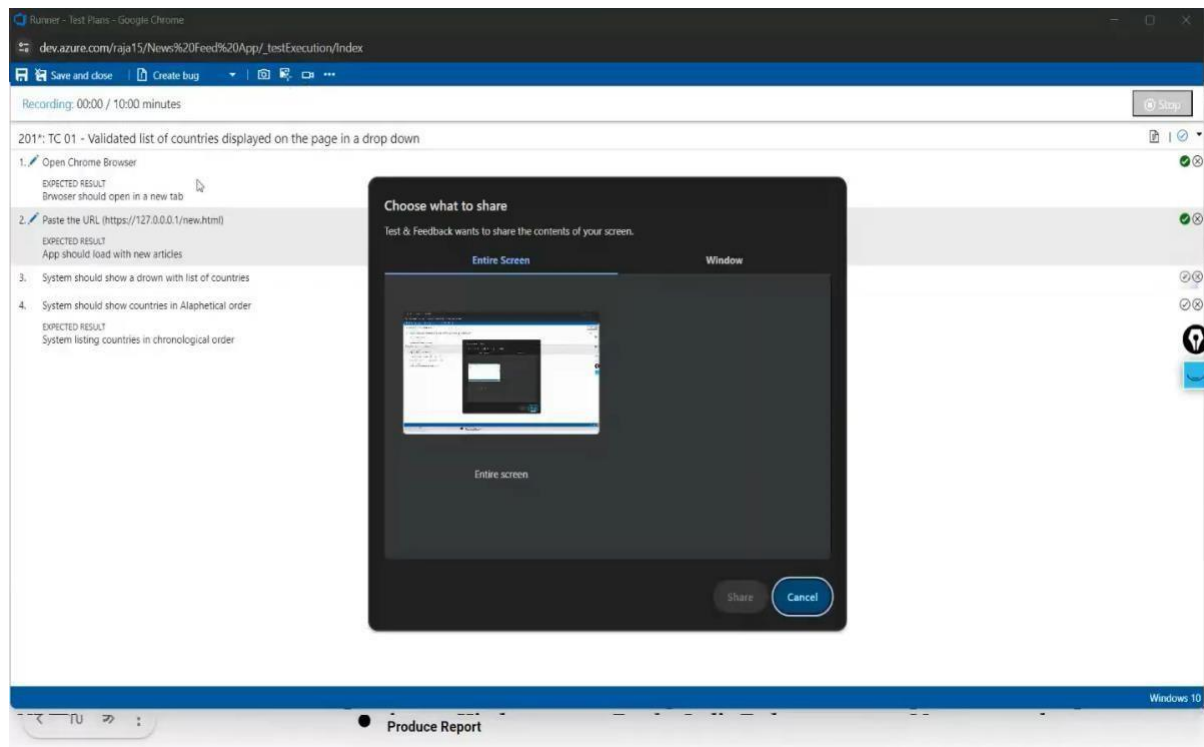
EXPECTED RESULT  
Data is uploaded and saved successfully

2.

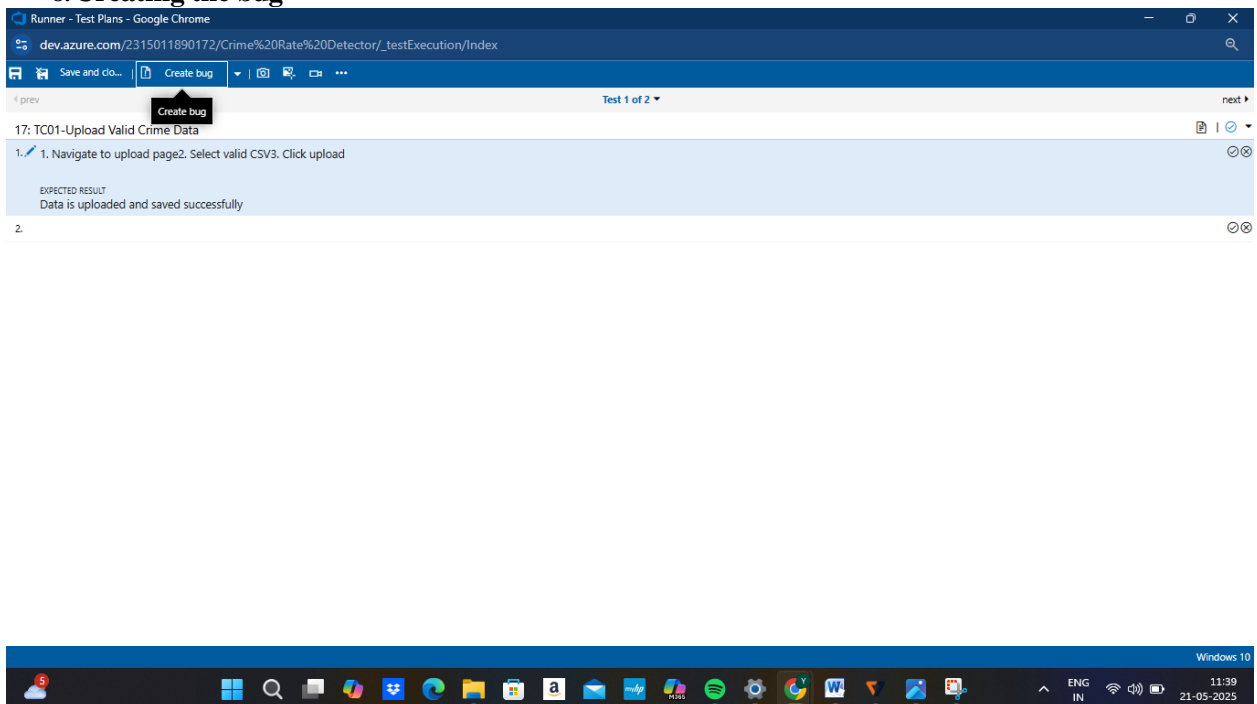
Windows 10

11:39 21-05-2025

## 7. Recording the test case



## 8. Creating the bug



Runner - Test Plans - Google Chrome

dev.azure.com/2315011890172/Crime%20Rate%20Detector/\_testExecution/Index

Save and close... Create bug

Test 1 of 2

17: TC01-1 NEW BUG \*

1. 1. Name TB01-Crime data not loading for certain valid locations

Unassigned 0 comments Add tag Save & Close

Statg: New Area: Crime Rate Detector Reason: New Iteration: Crime Rate Detector\Sprint 1 Details

**Repro Steps**

5/21/2025 6:10 AM Bug filed on "TC01-Upload Valid Crime Data"

Step no.	Result	Title
1.	None	1. Navigate to upload page2. Select valid CSV3. Click upload
	Expected Result	Data is uploaded and saved successfully
2.	None	

Test Configuration: Windows 10

System Info

**Planning**

Resolved Reason

Story Points

Priority

Severity

3 - Medium

Activity

Effort (Hours)

Original Estimate

Remaining

**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

Windows 10

11:40 21-05-2025

Runner - Test Plans - Google Chrome

dev.azure.com/2315011890172/Crime%20Rate%20Detector/\_testExecution/Index

Save and close... Create bug

Test 1 of 2

17: TC01-1 NEW BUG \* Field Title cannot be empty.

1. 1. Name Enter title

Unassigned 0 comments Add tag Save & Close

Statg: New Area: Crime Rate Detector Reason: New Iteration: Crime Rate Detector\Sprint 1 Details

**System Info**

Browser - Name	Google Chrome 136
Browser - Language	en-GS
Browser - Height	736
Browser - Width	1382
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) i3-1115G4 @ 3.00GHz
Operating system - Number of processors	4
Memory - Available	848093184
Memory - Capacity	8212066304
Display - Pixels per inch (X axis)	96
Display - Pixels per inch (Y axis)	96
Display - Device pixel ratio	1

Remaining

Completed

Add an existing work item as a parent

Tested By

17 TC01-Upload Valid Crime Data Updated 14 hours ago, Design

**System Info**

Found in Build

Integrated in Build

Windows 10

11:41 21-05-2025

## 9. Test case results

The screenshot shows the Azure DevOps interface for a test plan named 'CRIME RATE DETECTOR'. The left sidebar contains navigation links: Overview, Boards, Repos, Pipelines, Test Plans, Test plans, Progress report, Parameters, Configurations, Runs, and Artifacts. The main area displays the 'Test Suites' for 'CRIME RATE DETECTOR', including 'TS05-Trend and Prediction (2)', 'TS04-System and API Perfo...', 'TS03-Interface and Security (2)', 'TS02-Crime Rate Analysis (2)', and 'TS01-Data Upload And Vali...'. The 'Test Points (2 items)' list includes 'TC01-Upload Valid Crime Data' (checked) and 'TC02-Upload With Missing Fields'. A modal window titled 'TC01-Upload Valid Crime Data' shows the 'Test Case Results' table.

Outcome	TimeSta...	Configuration	Run by	Tester	Test Plan
Failed	10h ago	Windows 10	Yuvashree k	Yuvashree k	CRIME R
Passed	11h ago	Windows 10	Yuvashree k	Yuvashree k	CRIME R

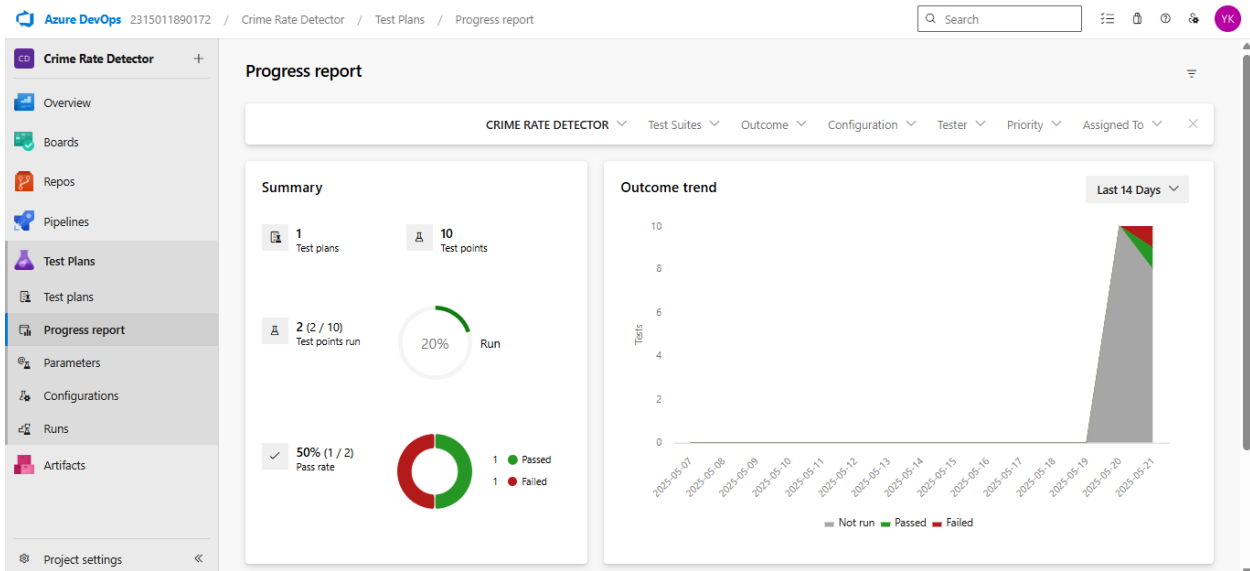
Below the table is a link: [Open execution history for current test point](#).

## 10. Test report summary

The screenshot shows the Azure DevOps 'Work items' page for a project named 'Crime Rate Detector'. The left sidebar contains navigation links: Overview, Boards, Work items, Boards, Backlogs, Sprints, Queries, Delivery Plans, Analytics views, Repos, Pipelines, Test Plans, Artifacts, and Project settings. The main area displays a list of work items, with the first item being a bug report: '48 TB01-Duplicated crime records not flagged or removed after multiple sources'. The bug report details include: 'No one selected', '0 Comments', 'Add Tag', 'State: New', 'Area: Crime Rate Detector', 'Reason: New', 'Iteration: Crime Rate Detector\Sprint 1', and 'Updated by Yuvashree k: Just now'. The 'Repro Steps' section lists: '5/21/2025 4:42 PM Bug filed on "TC01-Upload Valid Crime Data"', 'Step no. 1. Result None. Title: 1. Navigate to upload page2. Select valid CSV3. Click upload', 'Expected Result: Data is uploaded and saved successfully', and 'Test Configuration: Windows 10'. The 'Planning' section includes 'Resolved Reason', 'Story Points', 'Priority', 'Severity', and '3 - Medium'. The 'Deployment' section includes a link to 'Releases' and a link to 'Add link'. The 'Development' section includes a link to 'Link an Azure Repos commit, pull request or branch to see the'.

- Assigning bug to the developer and changing state

## 11. Progress report



## 12. Changing the test template

Azure DevOps 2315011890172 / Settings / Process

Search

Organization Settings 2315011890172

Search Settings

General

- Overview
- Projects
- Users
- Billing
- Global notifications
- Usage
- Extensions
- Microsoft Entra

Security

- Security overview
- Policies
- Permissions

Boards

- Process

### All processes

Processes Fields

Help Filter by process name

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

Azure DevOps 2315011890172 / Settings / Process

Search

Organization Settings  
2315011890172

Search Settings

General

- Overview
- Projects
- Users
- Billing
- Global notifications
- Usage
- Extensions
- Microsoft Entra

Security

- Security overview
- Policies
- Permissions

Boards

- Process

System processes cannot be customized. To add customization create an inherited process.

All processes > Agile

Work item types Backlog levels Projects

Help Filter by work item type n...

Name	Description
Bug	Describes a divergence between required and actual behavior, and tracks the work done to correct the defect and verify the corr...
Epic	Epics help teams effectively manage and groom their product backlog
Feature	Tracks a feature that will be released with the product
Issue	Tracks an obstacle to progress.
Task	Tracks work that needs to be done.
Test Case	Server-side data for a set of steps to be tested.
Test Plan	Tracks test activities for a specific milestone or release.
Test Suite	Tracks test activities for a specific feature, requirement, or user story.
User Story	Tracks an activity the user will be able to perform with the product

## 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 Student Management System 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 - ContinuousIntegration) from 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 task linked to your subscription and app details.

13. Set Triggers and Approvals Enable 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

The screenshot shows the Azure DevOps web interface. The left sidebar contains navigation links: Overview, Boards, Repos, Pipelines, Environments, Library, Test Plans, and Artifacts. The main area displays the 'Runs' section for a pipeline named 'Vishnupriya-CS.SoftwareConstruction (5)'. The 'Runs' tab is selected, showing a table of pipeline runs. The table has columns for 'Description', 'Stages', and a timestamp. Two runs are listed:

Description	Stages	Timestamp
#20250520.1 • Set up CI with Azure Pipelines Manually triggered for main 5f5d82cf	✓	42m ago 11s
#20250519.1 • Set up CI with Azure Pipelines Individual CI for main 5f5d82cf	✓	Yesterday 14s



Azure DevOps vishnu24priya2408 / Crime Rate Detection / Pipelines / Vishnupriya-CS.SoftwareCo... / 20250520.1

Search

Crime Rate Detection +

- Overview
- Boards
- Repos
- Pipelines
- Pipelines
- Environments
- Library
- Test Plans
- Artifacts

Project settings

### #20250520.1 • Set up CI with Azure Pipelines

Vishnupriya-CS.SoftwareConstruction (5)

Run new

This run is being retained as one of 3 recent runs by pipeline. [View retention leases](#)

Summary Code Coverage

Manually run by Sonia J S

Repository and version  
Vishnupriya-CS/SoftwareConstruction  
main 5f5d82cf

Time started and elapsed  
Today at 5:58 PM  
11s

Related  
0 work items  
1 published

Tests and coverage  
[Get started](#)

#### Jobs

Name	Status	Duration
Job	Success	5s

### Result:

Thus the pipelines for the given project “Crime Rate Detector” has been executed successfully

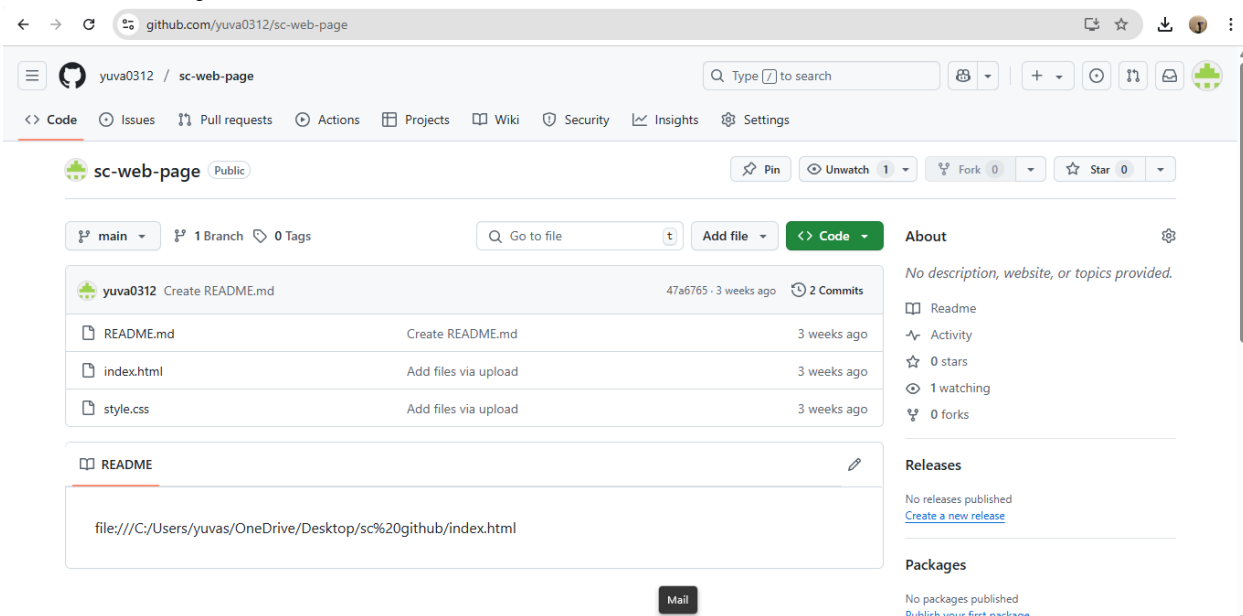
EXP NO: 10

# 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 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.