

INDEX

S.NO	DATE	TITLE
1.	21/1/25	Azure DevOps Environment Setup
2.	21/1/25	Azure DevOps Project Setup and User Story Management
3.	28/1/25	Setting Up Epics, Features and User Stories for Project Planning
4.	11/2/25	Sprint Planning
5.	18/2/25	Poker Estimation
6.	25/2/25	Designing Class and Sequence Diagrams for Project Architecture
7.	04/3/25	Designing Use-Case and Activity Diagrams for Project Architecture
8.	25/3/25	Testing – Test Plans and Test Cases
9.	15/4/25	CI/CD Pipelines in Azure
10.	22/4/25	GitHub: Project Structure & Naming Convention

EXP NO: 1	AZURE DEVOPS ENVIRONMENT SETUP
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Aim:

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

INSTALLATION

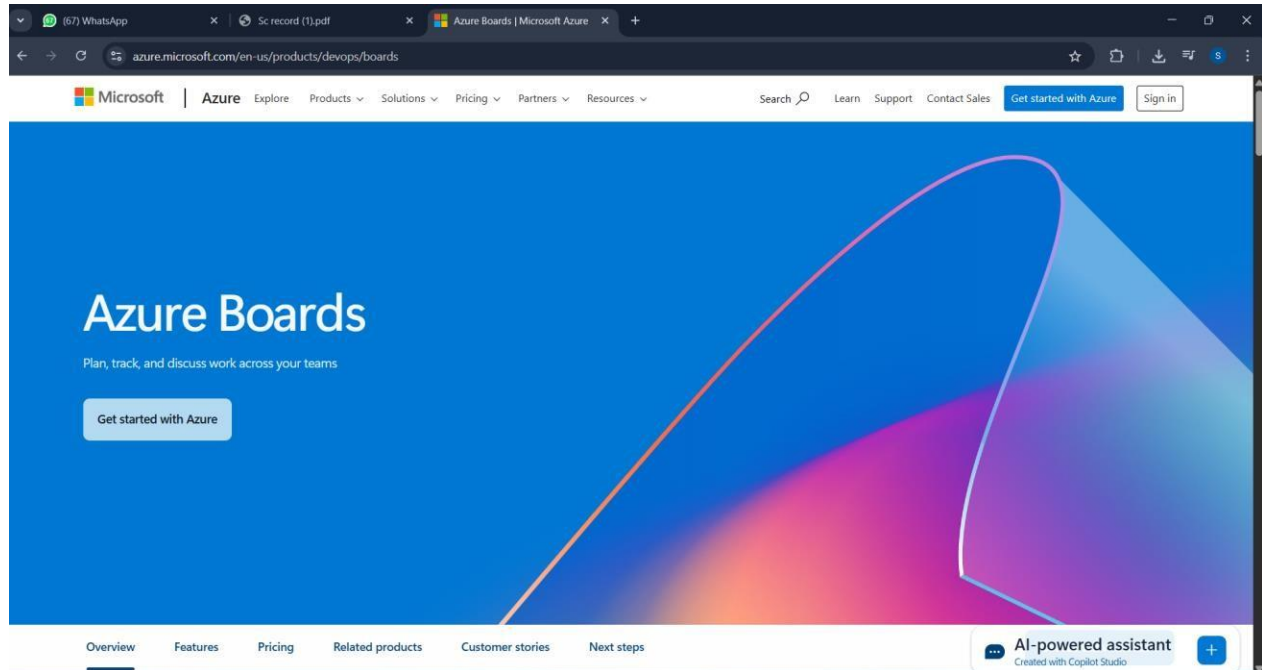
2116231801079

CS23432

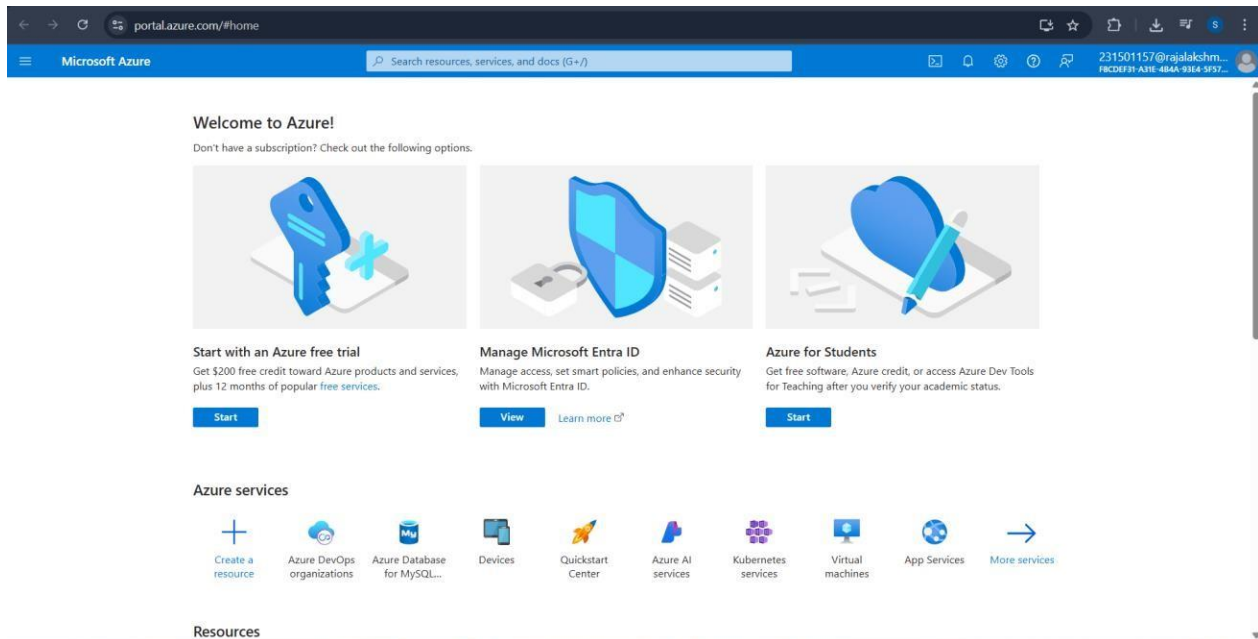
1. Open your web browser and go to the Azure website: <https://azure.microsoft.com/en-us/getstarted/azure-portal>.

Sign in using your Microsoft account credentials.

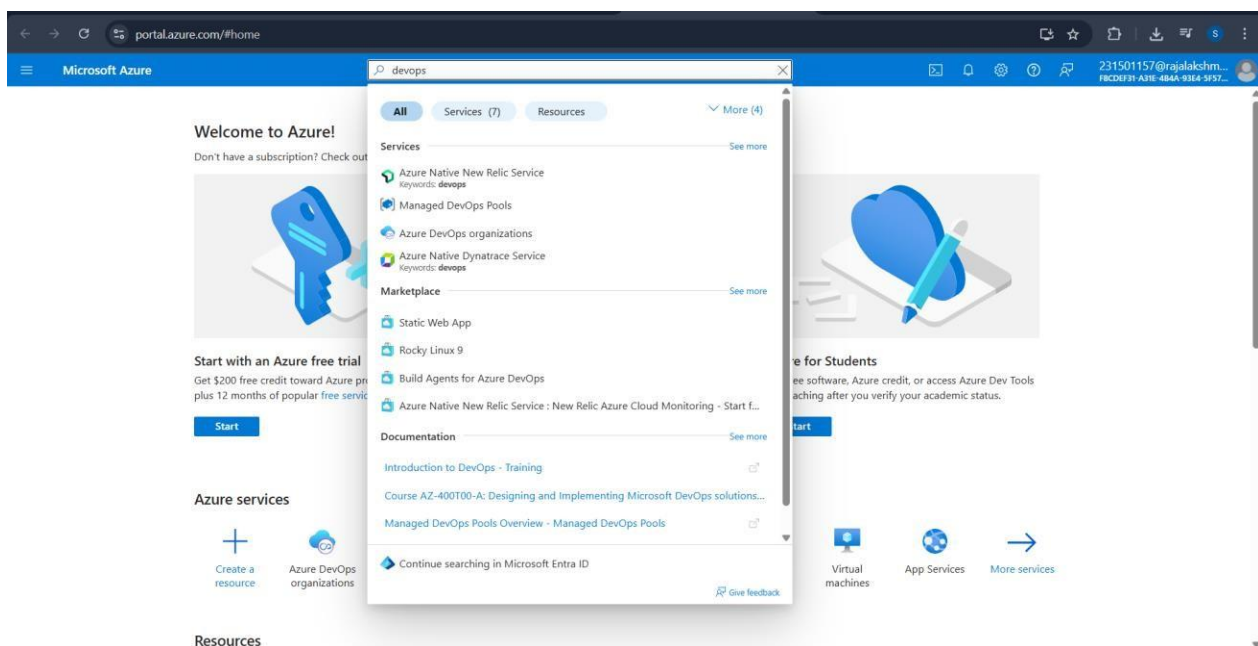
If you don't have a Microsoft account, you can create one here: <https://signup.live.com/?lic=1>



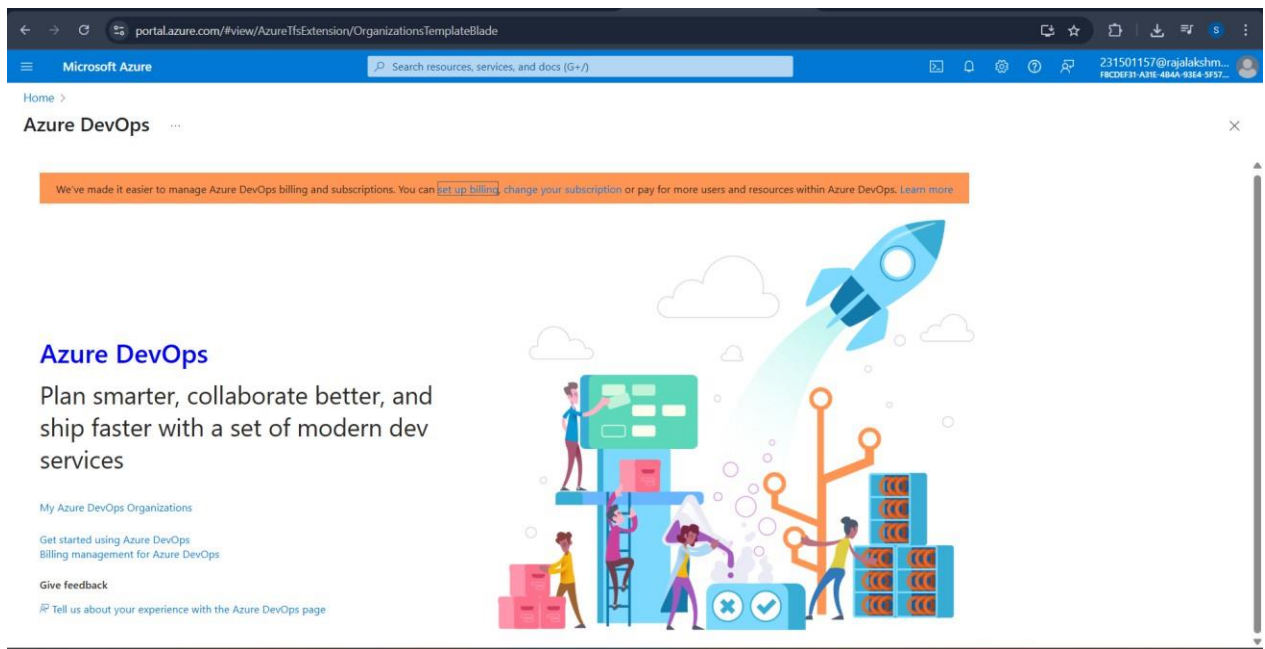
2. Azure home page



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.

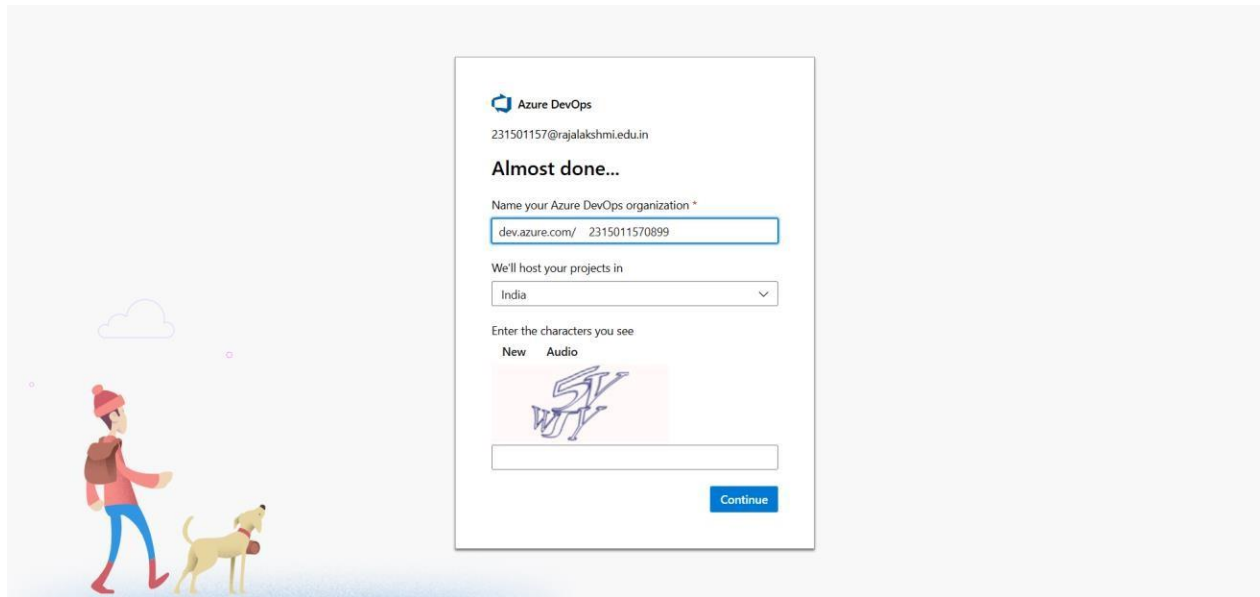
EXP NO: 2

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



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.

Q Search


SS


Create a project to get started

Project name *

Description

Visibility


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


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

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

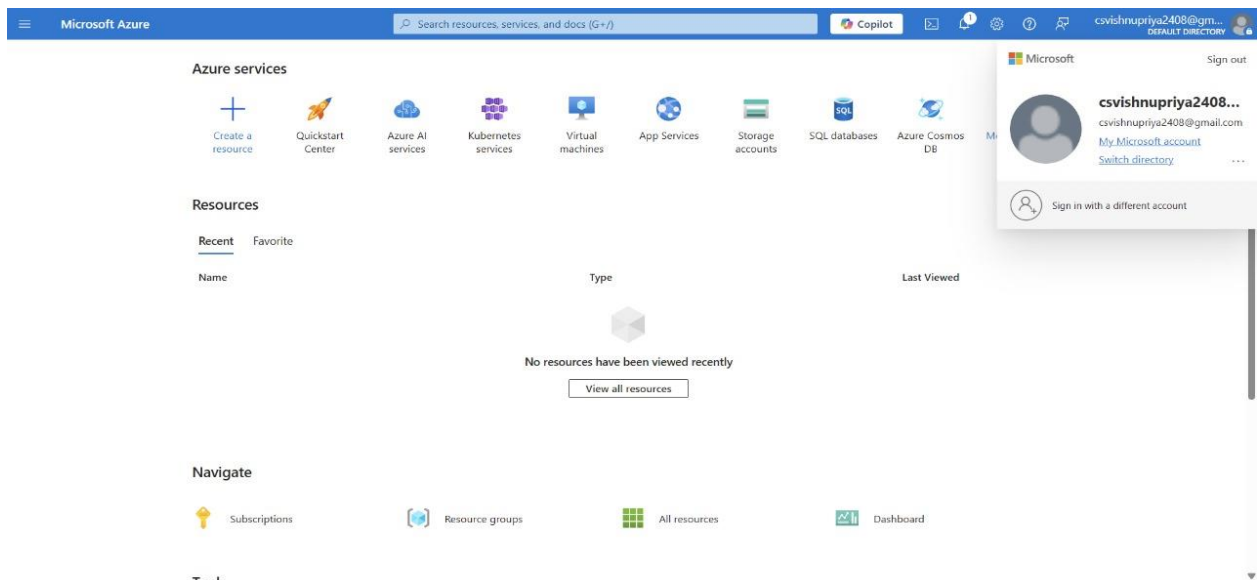
^ Advanced

Version control ?
Git

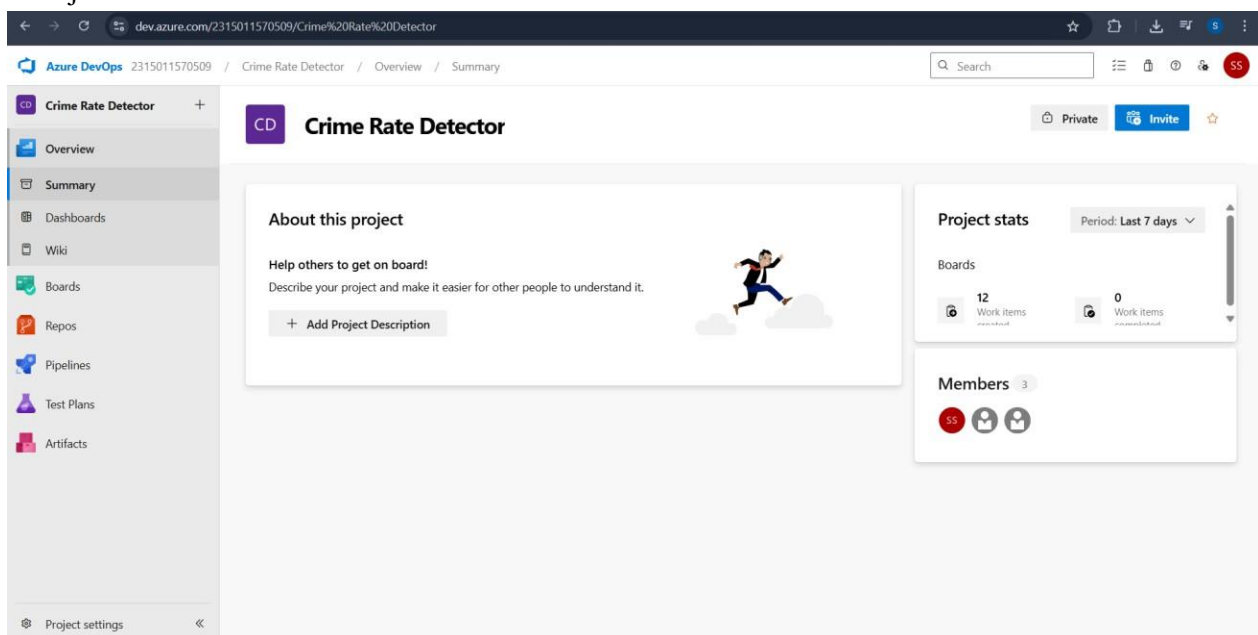
Work item process ?
Agile

+ 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.



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.

The screenshot displays the Azure DevOps interface for the 'Crime Rate Detector' project. The left-hand navigation menu is visible, showing options like Overview, Boards, Work Items, Backlogs, Sprints, Queries, Delivery Plans, Analytics views, Repos, Pipelines, Test Plans, and Artifacts. The main area shows the 'Crime Rate Detector Team' backlog. The backlog is displayed in a table with columns: Order, Work Item Type, Title, State, Effort, Business Area, and Tags. The table contains three work items, all with a state of 'Active' and a business area of 'Business'. The work items are:

Order	Work Item Type	Title	State	Effort	Business Area	Tags
1	Epic	> Data Collection and Preparation	Active		Business	
2	Epic	> Model Building and Evaluation	Active		Business	
3	Epic	> Crime Prediction and Forecasting	Active		Business	

Below the table, there are buttons for 'New Work Item', 'View as Board', and 'Column Options'. The bottom of the screenshot shows the Microsoft Azure portal interface with a search bar, a list of Azure services, and a user profile dropdown menu.

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

The screenshot shows the Azure DevOps interface for the 'Crime Rate Detector Team'. The left sidebar contains navigation links: Overview, Boards, Work Items, Backlogs, Sprints, Queries, Delivery Plans, Analytics views, Repos, Pipelines, Test Plans, Artifacts, and Project settings. The main area displays the 'Backlog' view with a table of work items:

Order	Work Item Type	Title	State	Effort	Busin...	Value Area	Tags
1	Epic	Data Collection and Preparation	Active			Business	
	Feature	Crime Data Collection	New			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	
	Feature	Algorithm Selection and Training	New			Business	
	Feature	Ensemble and Optimization	New			Business	
3	Epic	Crime Prediction and Forecasting	Active			Business	

1.Fill in Epics

The screenshot shows the 'Create Epic' form in Azure DevOps. The form includes a title field, a state dropdown (set to 'New'), an area dropdown (set to 'Crime Rate Detector'), a reason dropdown (set to 'New'), and an iteration dropdown (set to 'Crime Rate Detector/Sprint 1'). The form also has a description field, a discussion section with a comment box, and a planning section with fields for priority, risk, effort, business value, time criticality, start date, and target date. The deployment section includes a link to track releases and a development section with a link to add a link.

2.Fill in Features

dev.azure.com/2315011570509/Crime%20Rate%20Detector/_workitems/create/Feature

Azure DevOps2315011570509 / Crime Rate Detector / Boards / Work Items

Search

Crime Rate Detector

Overview

Boards

Work items

Boards

Backlogs

Sprints

Queries

Delivery Plans

Analytics views

Repos

Pipelines

Test Plans

Artifacts

Project settings

Work Items

Back to Work Items

NEW FEATURE • Field 'Title' cannot be empty.

Enter title

No one selected0 CommentsAdd Tag

Save

StateNewAreaCrime Rate DetectorReasonNewIterationCrime Rate Detector\Sprint 1

Details

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

Priority2RiskEffortBusiness ValueTime CriticalityStart DateSelect a date...Target DateSelect 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/2315011570509/Crime%20Rate%20Detector/_workitems/create/User%20Story

Azure DevOps2315011570509 / Crime Rate Detector / Boards / Work Items

Search

Crime Rate Detector

Overview

Boards

Work items

Boards

Backlogs

Sprints

Queries

Delivery Plans

Analytics views

Repos

Pipelines

Test Plans

Artifacts

Project settings

Work Items

Back to Work Items

NEW USER STORY • Field 'Title' cannot be empty.

Enter title

No one selected0 CommentsAdd Tag

Save

StateNewAreaCrime Rate DetectorReasonNewIterationCrime Rate Detector\Sprint 1

Details

Description

Acceptance Criteria

Discussion

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

Planning

Story PointsPriority2Risk

Classification

Value areaBusiness

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

The screenshot shows the Azure DevOps interface for the 'Crime Rate Detector' project. The 'Sprints' view is selected, showing 'Sprint 1' from April 5 to April 19 (15 work days). The board is divided into columns: New, Active, Resolved, and Closed. Under 'New', there are four user stories:

- 15: As a data scientist I want to experiment with various ML algorithms So that I determine which one predicts crime rate most accurately. (Status: Closed, Assignee: Unassigned)
- 32: Train models using Linear Regression, Decision Tree, Logistic Regression, etc. (Status: New, Assignee: Unassigned)
- 33: Split dataset into training and test sets. (Status: New, Assignee: Unassigned)
- 17: As a developer I want to evaluate the accuracy of each model So that I find the most suitable one. (Status: New, Assignee: Unassigned)

There is also a story 34: Measure performance metrics (RMSE, Accuracy, Precision). (Status: New, Assignee: Unassigned).

Sprint 2

The screenshot shows the Azure DevOps interface for the 'Crime Rate Detector' project. The 'Sprints' view is selected, showing 'Sprint 2' from April 21 to May 2 (12 work days). The board is divided into columns: New, Active, Resolved, and Closed. Under 'New', there are two user stories:

- 65: As a citizen, I want to view crime rates in my area, so that I can stay informed and take safety precautions. (Status: New, Assignee: Unassigned)
- 66: Design UI for selecting location (city/zip code) (Status: New, Assignee: Unassigned)

There is also a story 64: As a citizen, I want to view crime rates in my area, so that I can stay informed and take safety precautions. (Status: New, Assignee: Unassigned).

Sprint 3

The screenshot displays the Azure DevOps Sprints board for the 'Crime Rate Detector Team'. The interface includes a left-hand navigation pane with options like Overview, Boards, Work items, Backlogs, Sprints (selected), Queries, Delivery Plans, Analytics views, Repos, Pipelines, Test Plans, Artifacts, and Project settings. The main area shows the 'Sprints' view for 'Sprint 3', which runs from '5 May - 16 May' (12 work days). The board is organized into columns: New, Active, Resolved, and Closed. Tasks are represented as cards with details such as ID, description, status, and assignee.

Task ID	Description	Status	Assignee
70	As a system admin, I want to manage user roles and data access, so that only authorized personnel can make critical changes.	New	Unassigned
71	Implement user authentication (login/signup)	Active	Sonia J S
67	As a law enforcement officer, I want to analyze crime trends over time, so I can identify patterns and hotspots.	New	Unassigned
69	Plot time-series graphs of crime types (line/bar charts)	New	Unassigned
68	Create dashboard layout for trend visualization	Closed	Unassigned

Result:

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

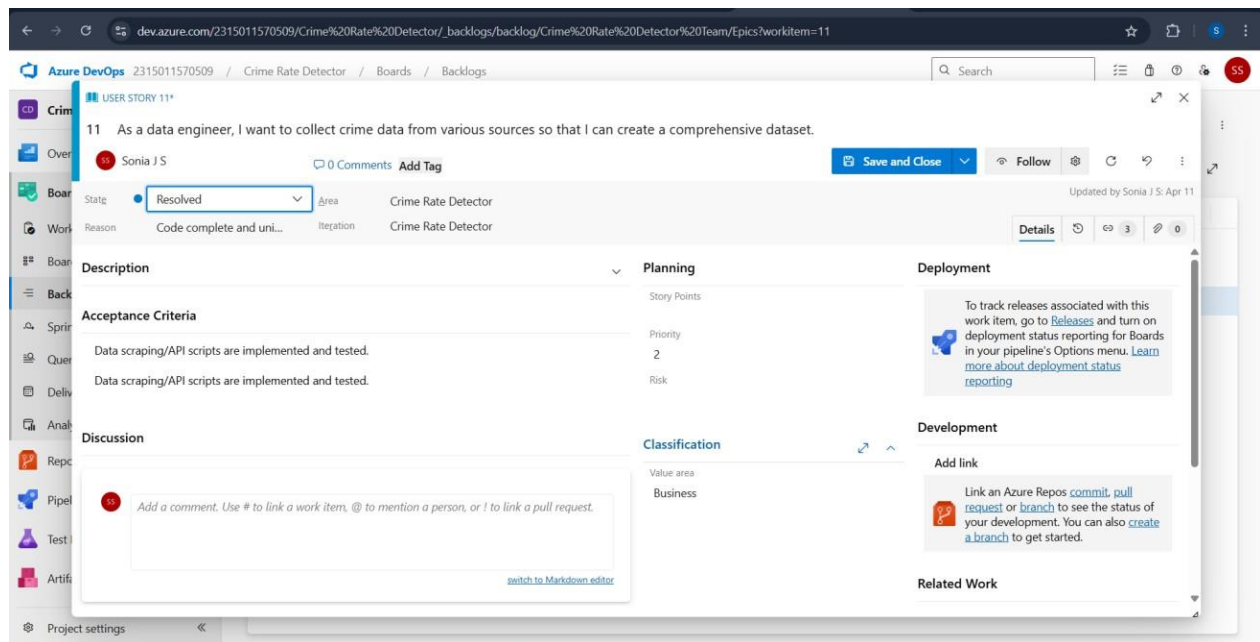
EXP NO: 5

POKER ESTIMATION

Aim:

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

Poker Estimation



Result:

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

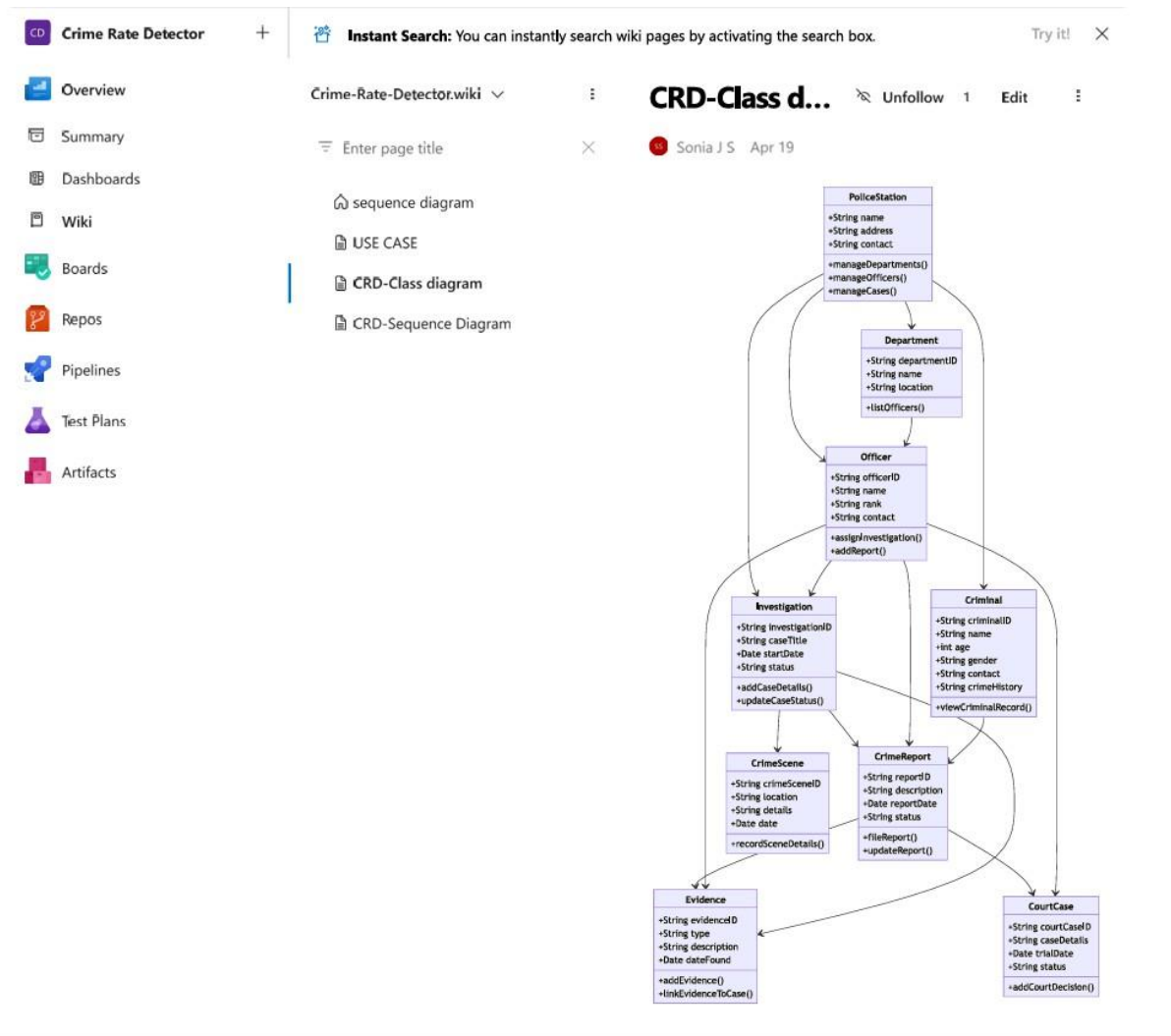
EXP NO: 6

DESIGNING CLASS AND SEQUENCE DIAGRAMS FOR PROJECT ARCHITECTURE

Aim:

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

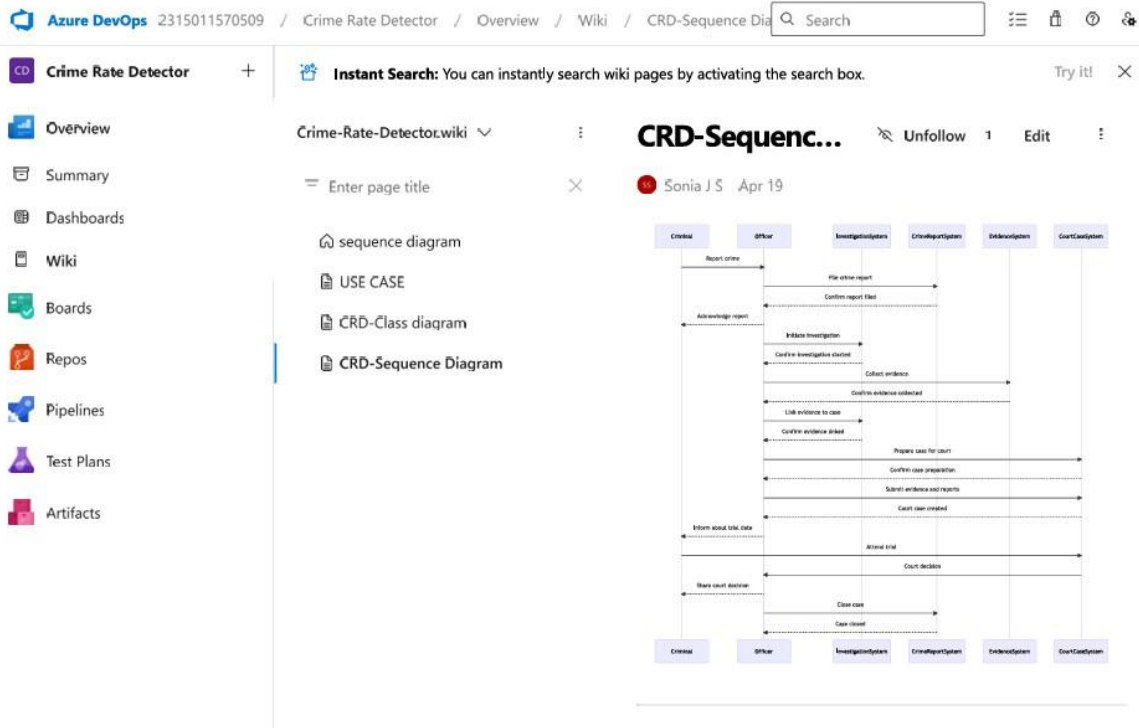
6A. Class Diagram



6B. Sequence Diagram

5/18/25, 7:55 PM

CRD-Sequence Diagram - Overview



Result:

The Class Diagram and Sequence Diagram is designed Successfully for the Crime Rate Detector App

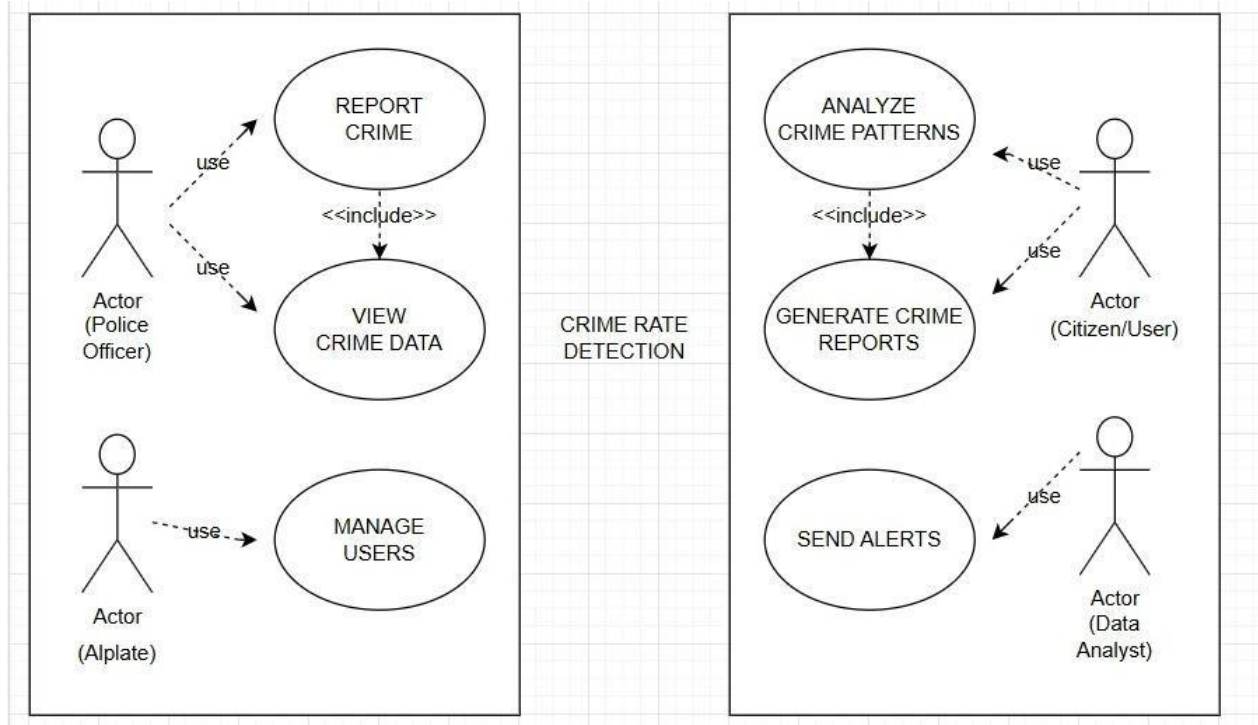
EXP NO: 7

DESIGNING USE-CASE AND ACTIVITY DIAGRAMS FOR PROJECT STRUCTURE

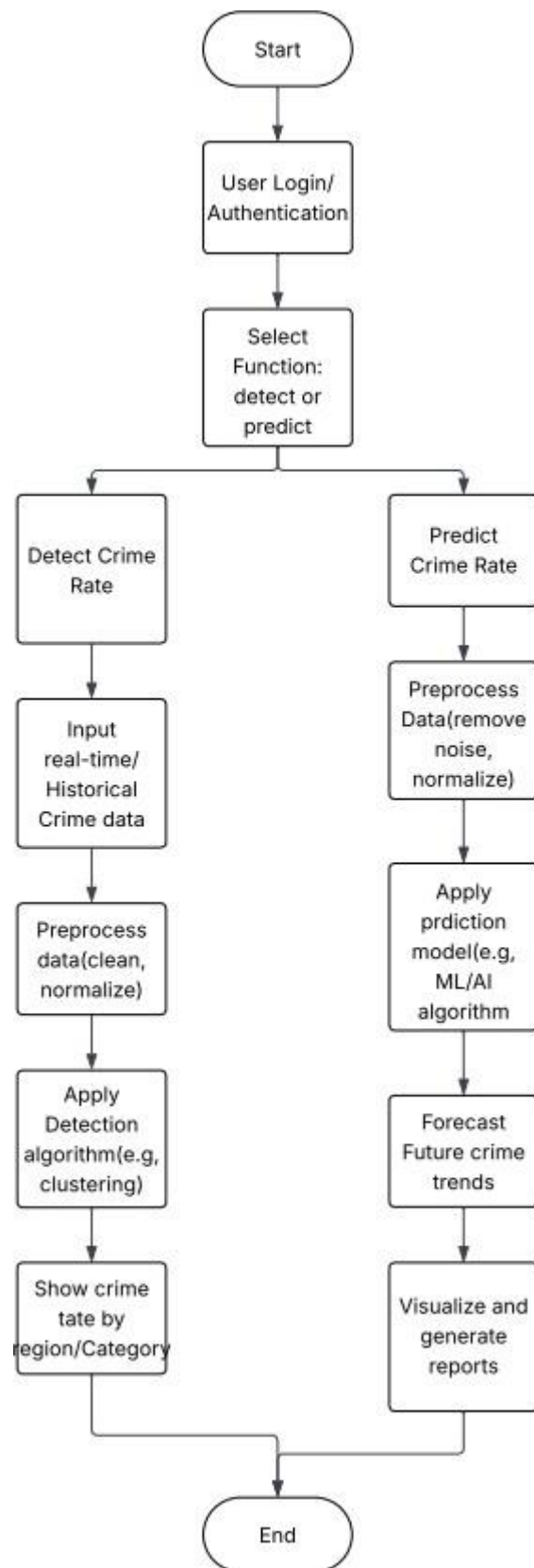
Aim:

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.

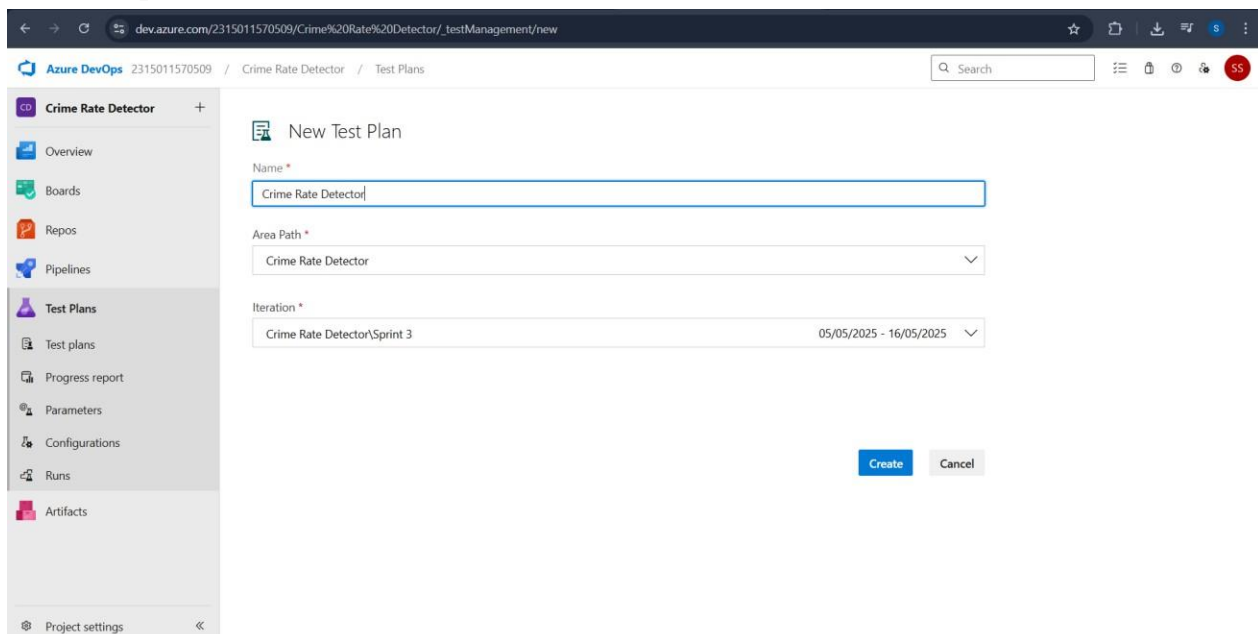
7. Separate Test Suites

- 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

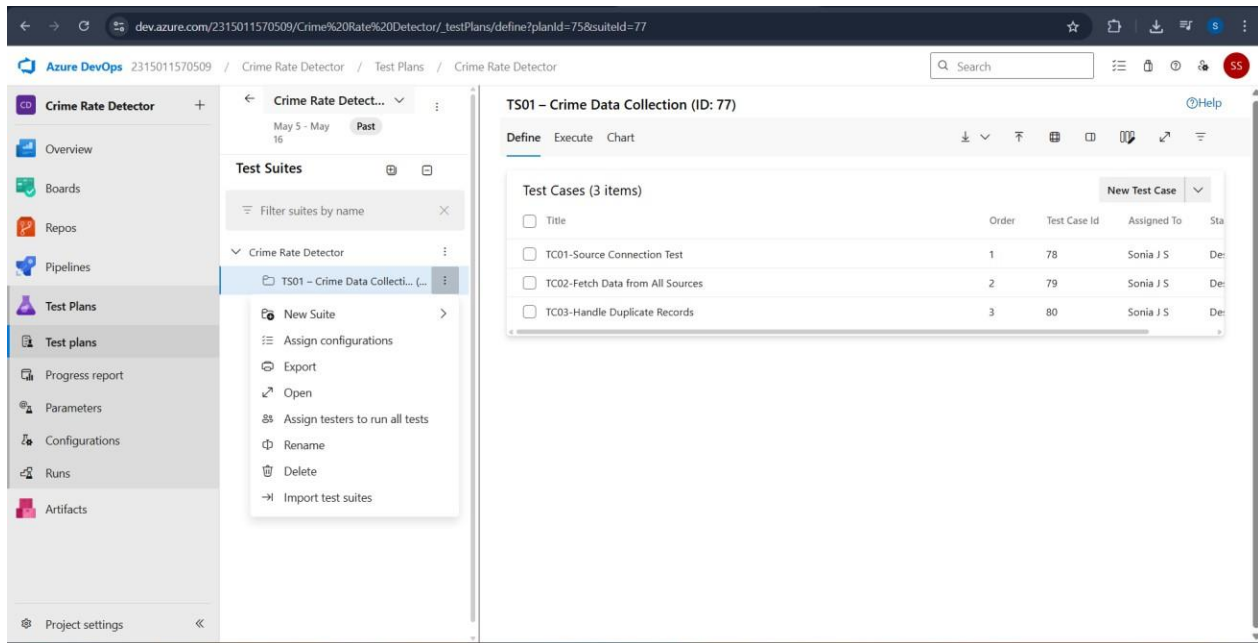
- Critical user actions are marked high-priority.
- Reviewed for completeness and traceability against feature requirements.

1. New test plan



The screenshot shows the 'New Test Plan' form in the Azure DevOps web interface. The browser address bar shows the URL: `dev.azure.com/2315011570509/Crime%20Rate%20Detector/_testManagement/new`. The left sidebar contains a navigation menu with the following items: Overview, Boards, Repos, Pipelines, Test Plans (selected), Test plans, Progress report, Parameters, Configurations, Runs, Artifacts, and Project settings. The main content area is titled 'New Test Plan' and contains three input fields: 'Name *' with the value 'Crime Rate Detector', 'Area Path *' with the value 'Crime Rate Detector', and 'Iteration *' with the value 'Crime Rate Detector\Sprint 3'. At the bottom right of the form are two buttons: 'Create' and 'Cancel'.

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.

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

The image displays two screenshots of the Azure DevOps web interface, specifically the 'Test Plans' section for a project named 'Crime Rate Detector'.

Top Screenshot: TEST CASE 86

- Test Case ID:** 86
- Test Case Name:** TC07-Encode Categorical Features
- Author:** Sonia J S
- State:** Design
- Reason:** New
- Area:** Crime Rate Detector
- Iteration:** Crime Rate Detector\Sprint 3
- Steps:**

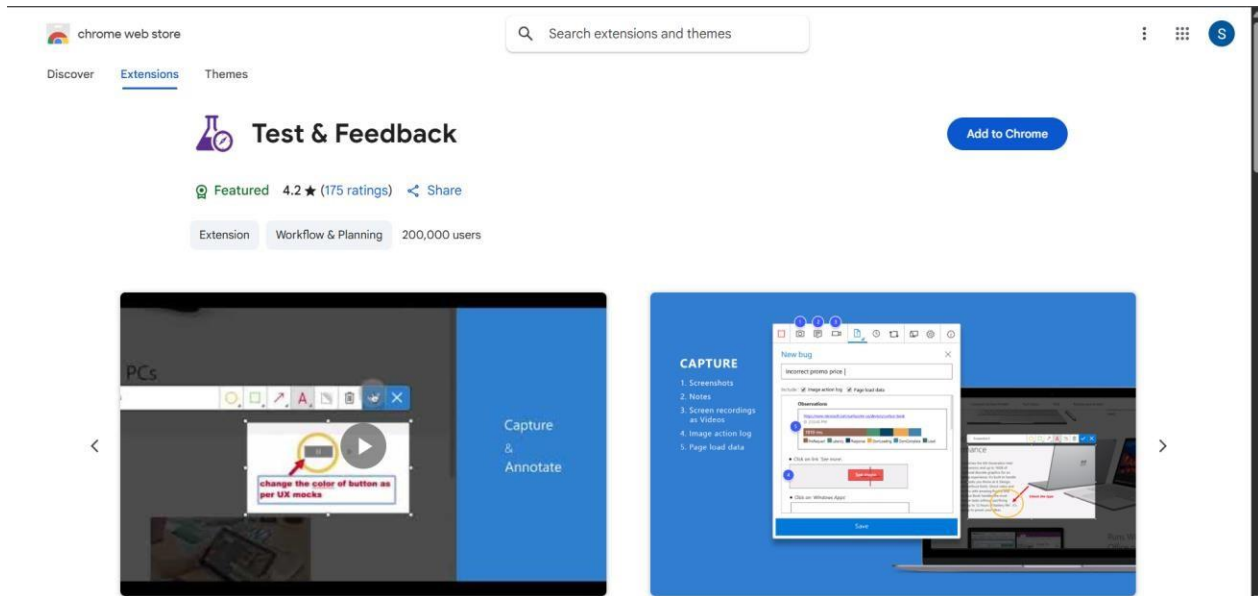
Steps	Action	Expected result
1.	Identify categorical fields	All categorical fields are found
2.	Apply Label/One-Hot encoding	Encoding completes without errors
- Deployment:** To track releases associated with this work item, go to [Releases](#) and turn on deployment status reporting for Boards in your 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.

Bottom Screenshot: TEST CASE 92

- Test Case ID:** 92
- Test Case Name:** TC12-Remove Outliers
- Author:** Sonia J S
- State:** Design
- Reason:** New
- Area:** Crime Rate Detector
- Iteration:** Crime Rate Detector\Sprint 3
- Steps:**

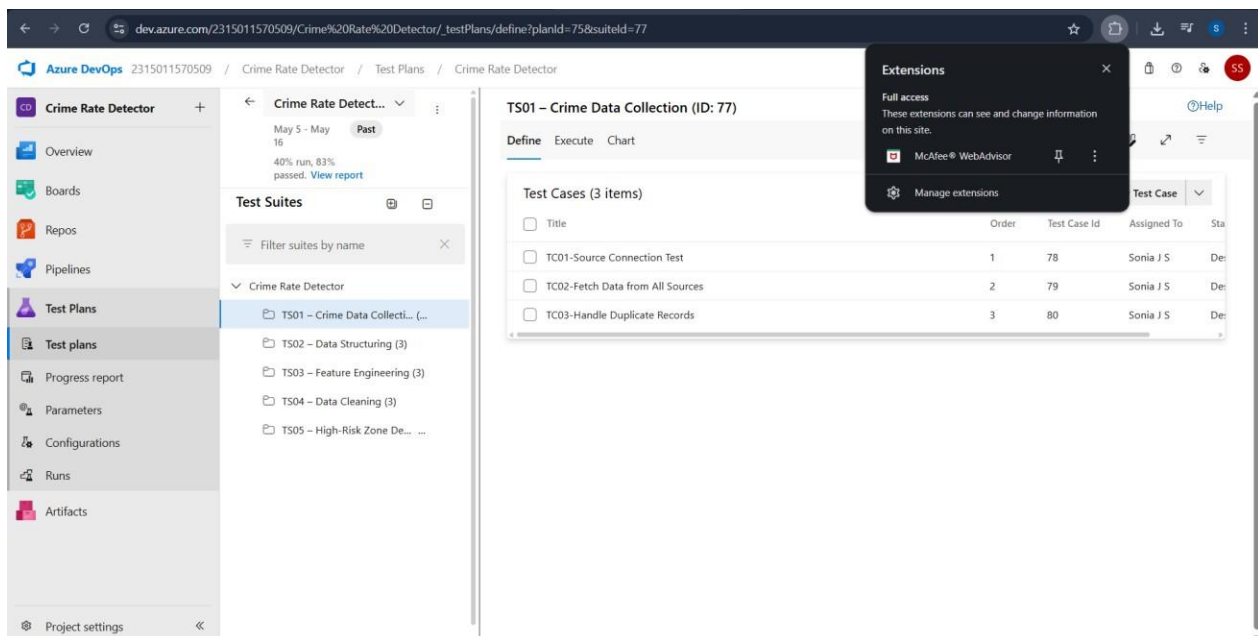
Steps	Action	Expected result
1.	Apply outlier detection	Outliers detected correctly
2.	Remove or normalize	Dataset updated with outliers handled
- Deployment:** To track releases associated with this work item, go to [Releases](#) and turn on deployment status reporting for Boards in your pipeline's 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.

4. Installation of test



Test and feedback

Showing it as an extension



5. Running the test cases

The screenshot displays the Azure DevOps Test Plans interface. The top navigation bar shows the project 'Crime Rate Detector' and the test plan 'TS01 - Crime Data Collection (ID: 77)'. The left sidebar contains a navigation menu with options like Overview, Boards, Repos, Pipelines, Test Plans, Test plans, Progress report, Parameters, Configurations, Runs, Artifacts, and Project settings. The main content area shows the test suite 'TS01 - Crime Data Collection (ID: 77)' with a summary of 40% run and 83% passed. Below this, a table lists the test points:

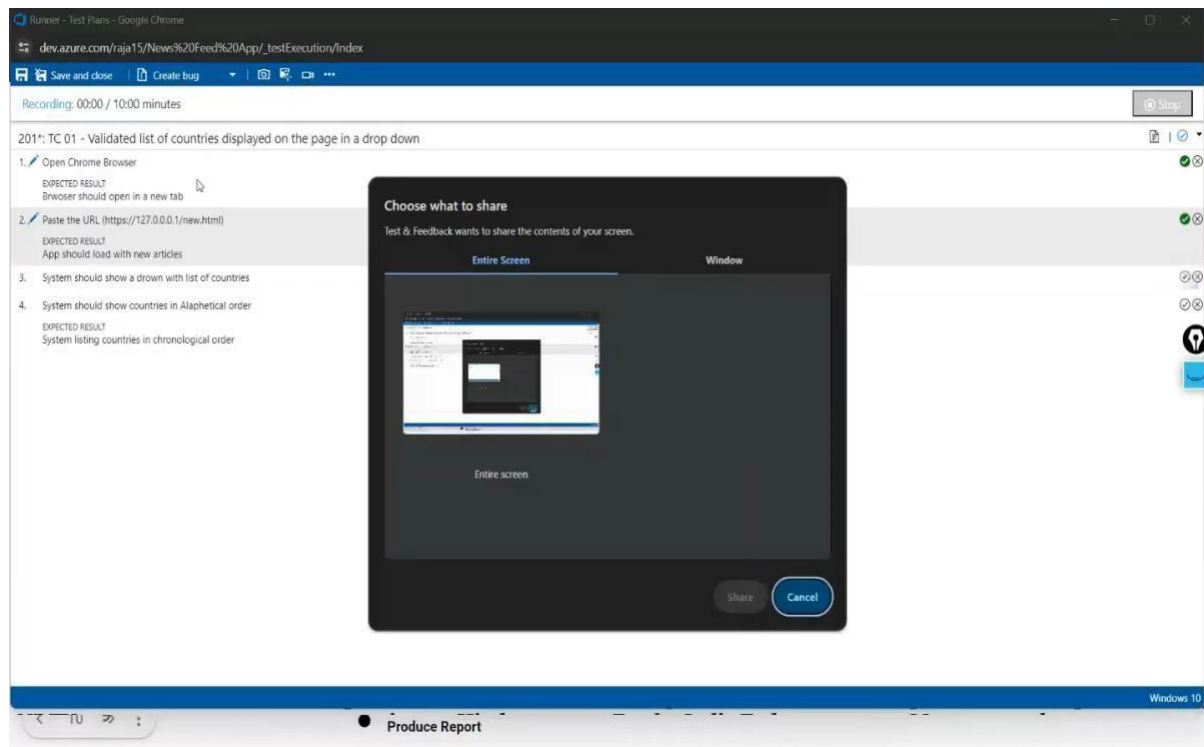
Title	Outcome	Order	Test Case Id
TC01-Source Connection Test	Failed	1	78
TC02-Fetch Data from All Sources	Passed	2	79
TC03-Handle Duplicate Records	Passed	3	80

The bottom section shows a detailed view of the test step '78: TC01-Source Connection Test'. It includes a list of steps with their expected results:

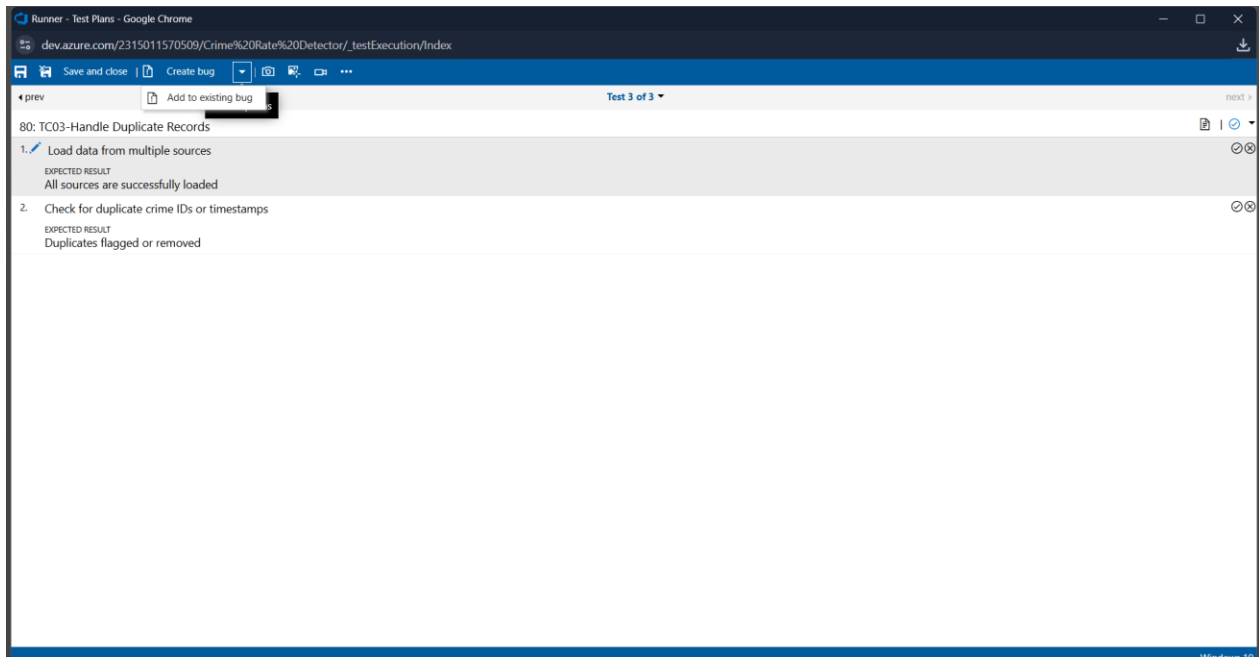
- Attempt connection to data source
EXPECTED RESULT: Connection established
- Check for timeout or error
EXPECTED RESULT: No timeout or error observed

The interface also includes a 'Runner - Test Plans - Google Chrome' window at the bottom, showing the test execution progress and a 'Windows 10' status bar.

6. Recording the test case



7. Creating the bug



Runner - Test Plans - Google Chrome

dev.azure.com/2315011570509/Crime%20Rate%20Detector/_testExecution/index

Save and close Create bug

Test 3 of 3

NEW BUG *

TB01-Duplicate crime records not flagged or removed after loading multiple sources

Unassigned 0 comments Add tag Save & Close

State: New Area: Crime Rate Detector Reason: New Iteration: Crime Rate Detector\Sprint 3

Details

Repro Steps

20/05/2025 11:44 Bug filed on "TC03-Handle Duplicate Records"

Step no. Result Title

1. None Load data from multiple sources

Expected Result

All sources are successfully loaded

2. None Check for duplicate crime IDs or timestamps

Expected Result

Duplicates flagged or removed

Planning

Resolved Reason

Story Points

Priority

2

Severity

3 - Medium

Activity

Effort (Hours)

Original Estimate

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

Runner - Test Plans - Google Chrome

dev.azure.com/2315011570509/Crime%20Rate%20Detector/_testExecution/index

NEW BUG *

TB01-Duplicate crime records not flagged or removed after loading multiple sources

Unassigned 0 comments Add tag Save & Close

State: New Area: Crime Rate Detector Reason: New Iteration: Crime Rate Detector\Sprint 3

Details

System info

Browser - Name	Google Chrome 136
Browser - Language	en-US
Browser - Height	816
Browser - Width	1536
Browser - User agent	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/136.0.0.0 Safari/537.36
Operating system - Name	Windows NT 10.0; Win64; x64
Operating system - Architecture	x86_64
Operating system - Processor model	13th Gen Intel(R) Core(TM) i7-13650HX
Operating system - Number of processors	20
Memory - Available	8027467776
Memory - Capacity	16873545728
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.

8. Test case results

The screenshot displays the Azure DevOps interface for the 'Crime Rate Detector' project. The left sidebar shows the 'Test Plans' section. The main area shows the 'Test Suites' for 'Crime Rate Detector', with 'TS01 - Crime Data Collection (ID: 7)' selected. The 'Test Points (3 items)' list includes 'TC01-Source Connection Test', 'TC02-Fetch Data from All Sources', and 'TC03-Handle Duplicate Records'. The 'Test Case Results' table shows the following data:

Outcome	TimeSta...	Configuration	Run by	Tester	Test Plan
Passed	11m ago	Windows 10	Sonia J S	Sonia J S	Crime F
Paused	30m ago	Windows 10	Sonia J S	Sonia J S	Crime F
Failed	4h ago	Windows 10	Sonia J S	Sonia J S	Crime F

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

9. Test report summary

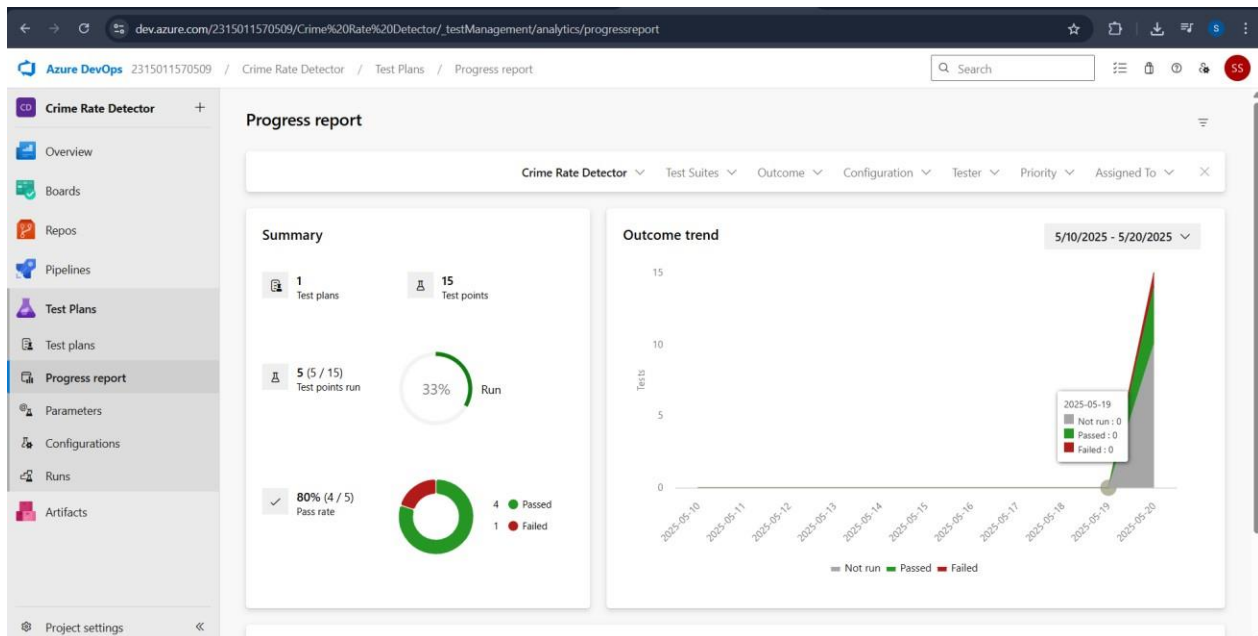
The screenshot displays the Azure DevOps interface for the 'Crime Rate Detector' project, showing a bug report summary. The left sidebar shows the 'Work items' section. The main area shows the 'Recently updated' list with the bug report 'TB01-Duplicate crime records not flagged or removed after loading multiple sources' (ID: 97). The bug report details include:

- State:** New
- Area:** Crime Rate Detector
- Reason:** New
- Iteration:** Crime Rate Detector\Sprint 3
- Repro Step:** 20/05/2020, Closed, handle Duplicate Records"
- Step no. Result Title:**
 - 1. None Load data from multiple sources
 - Expected Result: All sources are successfully loaded
 - 2. None Check for duplicate crime IDs or timestamps
 - Expected Result: Duplicates flagged or removed
- Test Configuration:** Windows 10

The right sidebar shows the 'Planning' and 'Deployment' sections. The 'Planning' section includes 'Resolved Reason', 'Story Points', 'Priority' (2), 'Severity' (3 - Medium), and 'Activity'. The 'Deployment' section includes a link to 'Add link' and a description: '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.'

- Assigning bug to the developer and changing state

10. Progress report



11. Changing the test template

The screenshot shows the 'Organization Settings' page in Azure DevOps for the '2315011570509' organization. The left sidebar contains navigation links: Search Settings, General, Overview, Projects, Users, Billing, Global notifications, Usage, Extensions, Microsoft Entra, Security, Security overview, Policies, Permissions, Boards, and Process (selected).

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 Az...	0
Agile	... This template is flexible and will work great for most teams using Agile planning me...	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 improv...	0

Azure DevOps 2315011570509 / Settings / Process

Organization Settings
2315011570509

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 correcti...
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 content area is titled 'Vishnupriya-CS.SoftwareConstruction (5)' and shows the 'Runs' tab. A table lists pipeline runs:

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

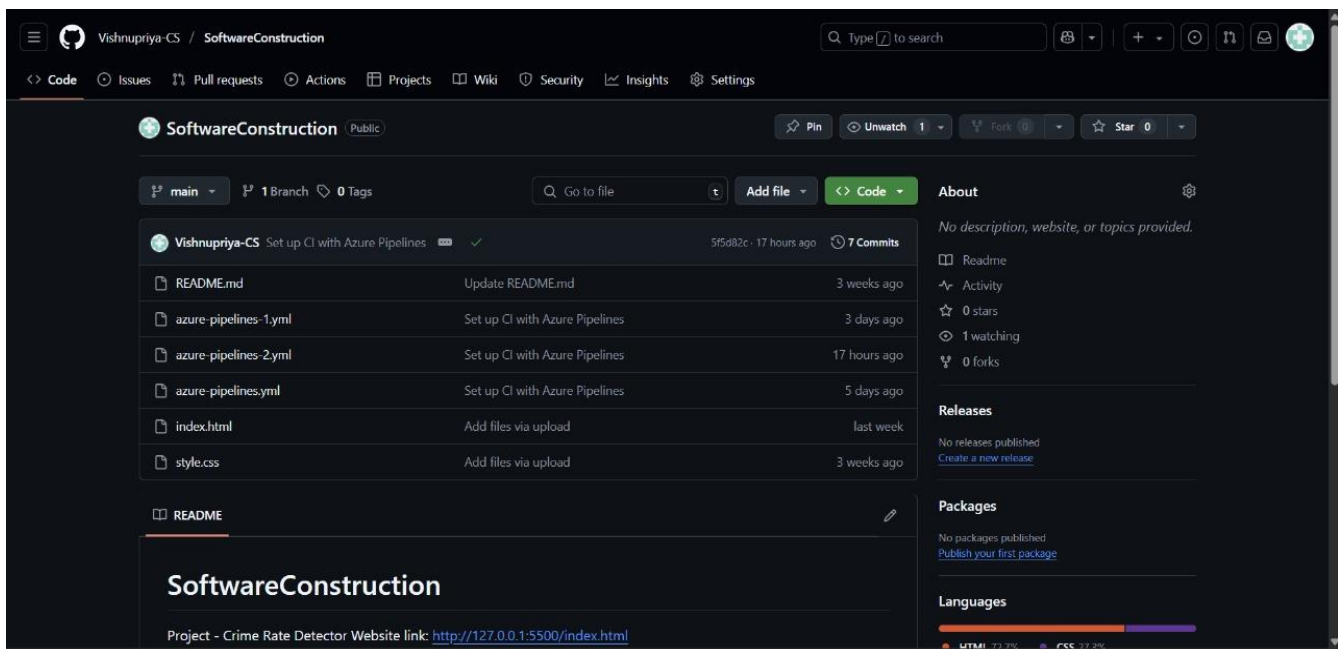
EXP NO: 10

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.