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**EXP NO: 1**

## AZURE DEVOPS ENVIRONMENT SETUP

### **Aim:**

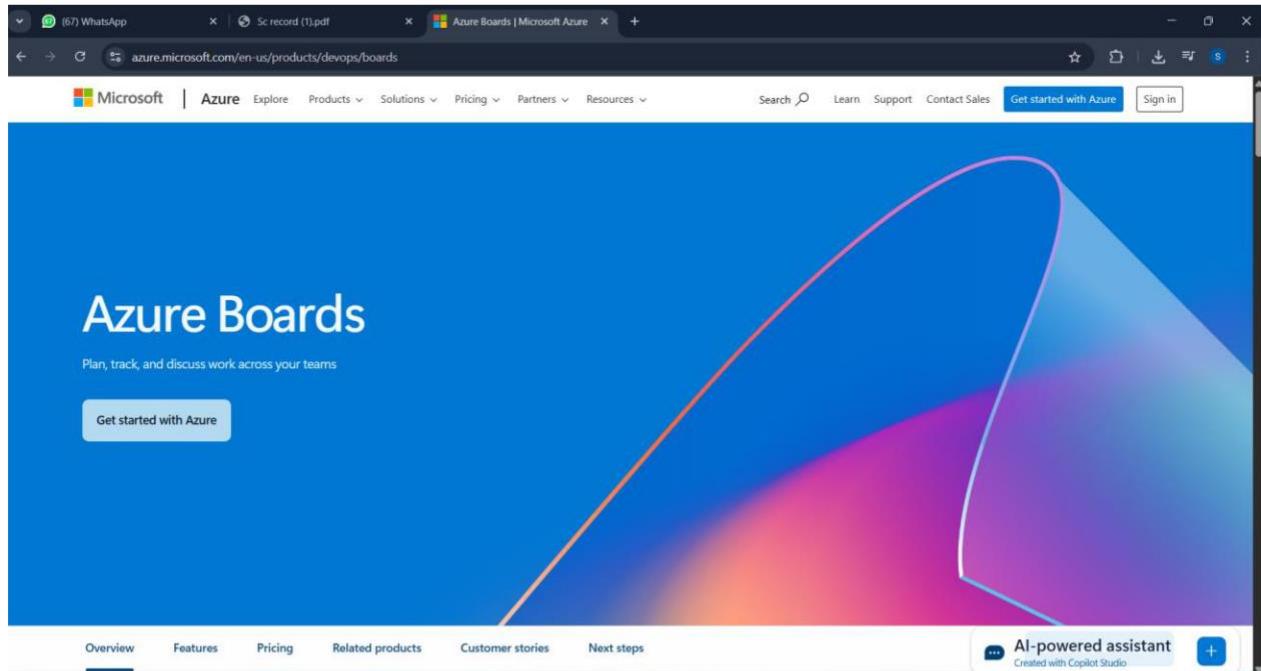
To set up and access the Azure DevOps environment by creating an organization through the Azure portal.

### **INSTALLATION**

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

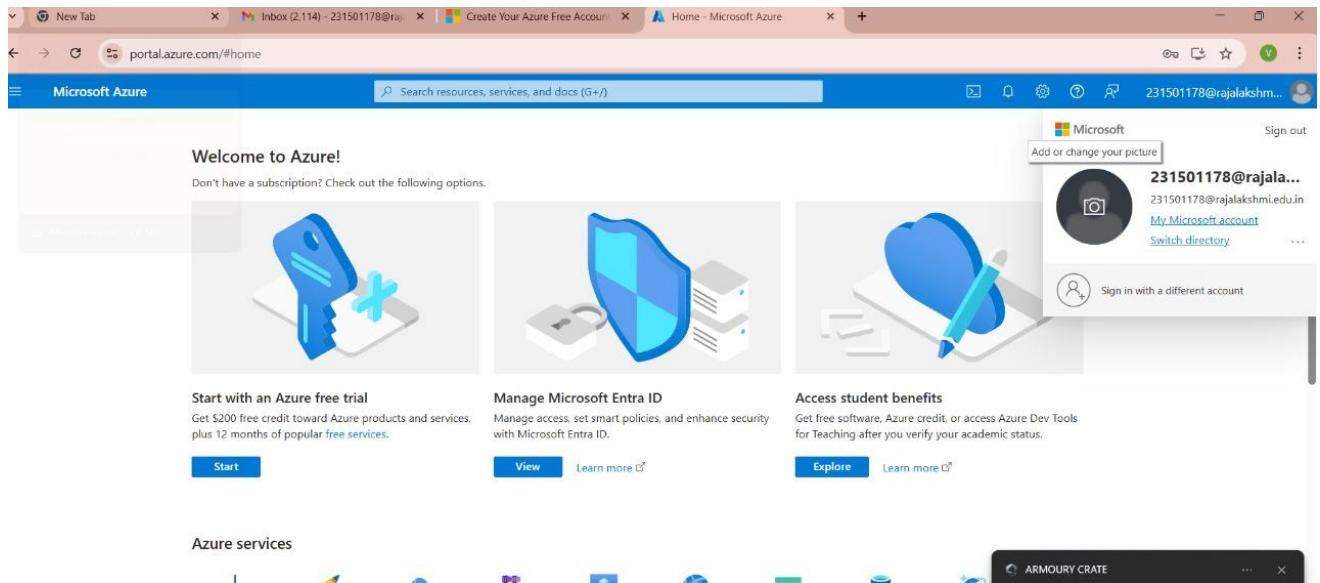


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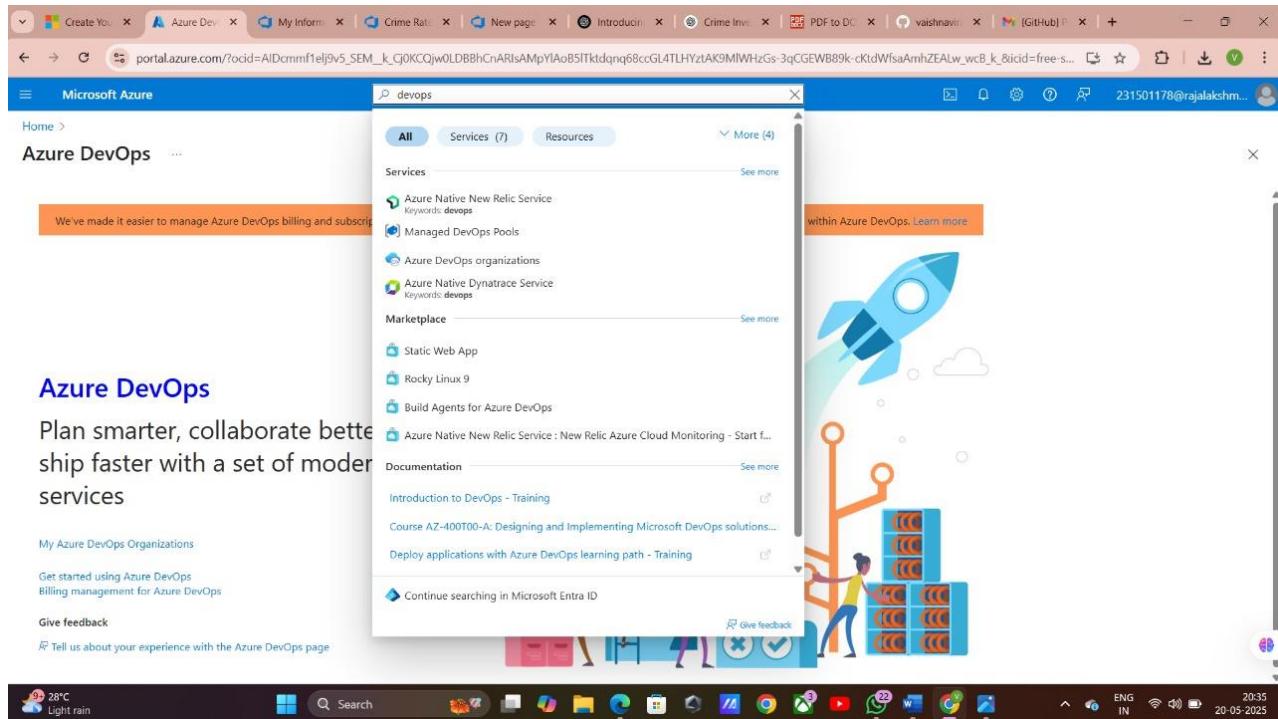
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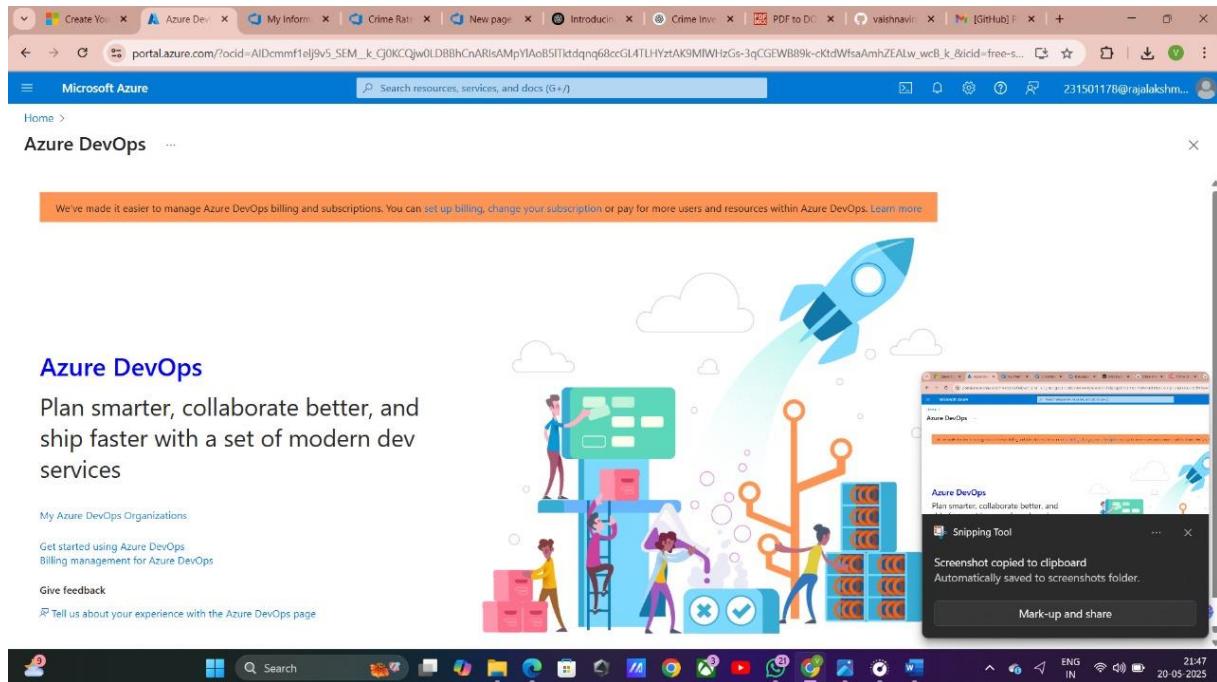
## 2.Azure home page



## 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.

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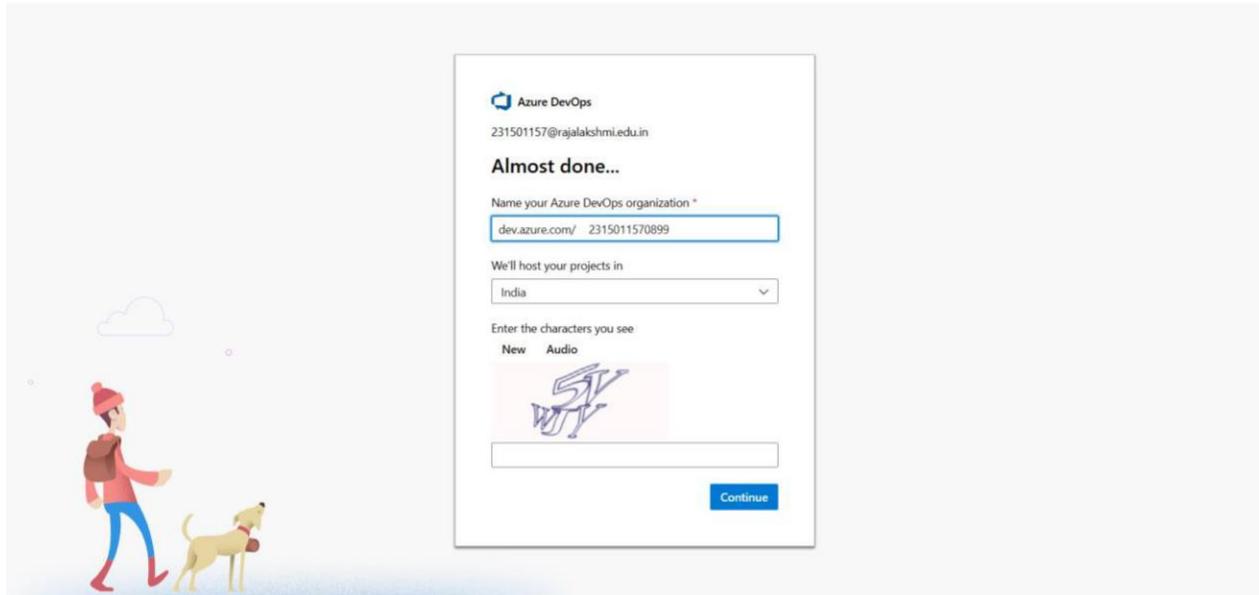
**EXP NO: 2**

## **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.

The screenshot shows the 'Create a project to get started' page. At the top right are search and navigation icons. Below is a large heading 'Create a project to get started'. A 'Project name \*' input field is followed by a 'Description' text area. Under 'Visibility', 'Public' is selected, showing a note about internet visibility and unsupported features like TFVC. 'Private' is also shown with a note about restricted access. A note below states that public projects are disabled for the organization. An 'Advanced' section includes dropdowns for 'Version control' (Git) and 'Work item process' (Agile). A 'Create project' button is at the bottom.

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.

Azure DevOps Organizations

Create new organization

Vaishnavi R S Sign out

Microsoft

VS

Vaishnavi R S

Edit profile

231501178@rajalakshmi.edu.in

India

231501178@rajalakshmi.edu.in

Visual Studio Dev Essentials

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

Use your benefits

Projects

Actions

Crime Rate Detect main

Crime Rate Detect

New project

dev.azure.com/231501178 (Owner)

dev.azure.com/Crimeratedetect (Owner)

https://dev.azure.com/231501178/

28°C Mostly cloudy

Search

21:53

ENG IN 20-05-2025

#### 4. Project dashboard

The screenshot shows the Azure DevOps interface for the 'Crime Rate Detect main' project. The left sidebar contains links for Overview, Summary (which is selected), Dashboards, Wiki, Boards, Repos, Pipelines, Test Plans, and Artifacts. The main content area displays the 'About this project' section with a placeholder for a project description and a 'Add Project Description' button. To the right, there is a 'Project stats' section showing various metrics over the last 7 days. The stats include:

Category	Value	Description
Boards	3	Work items created
Boards	0	Work items completed
Repos	0	Pull requests opened
Repos	2	Commits by 1 authors
Pipelines	50%	Builds succeeded

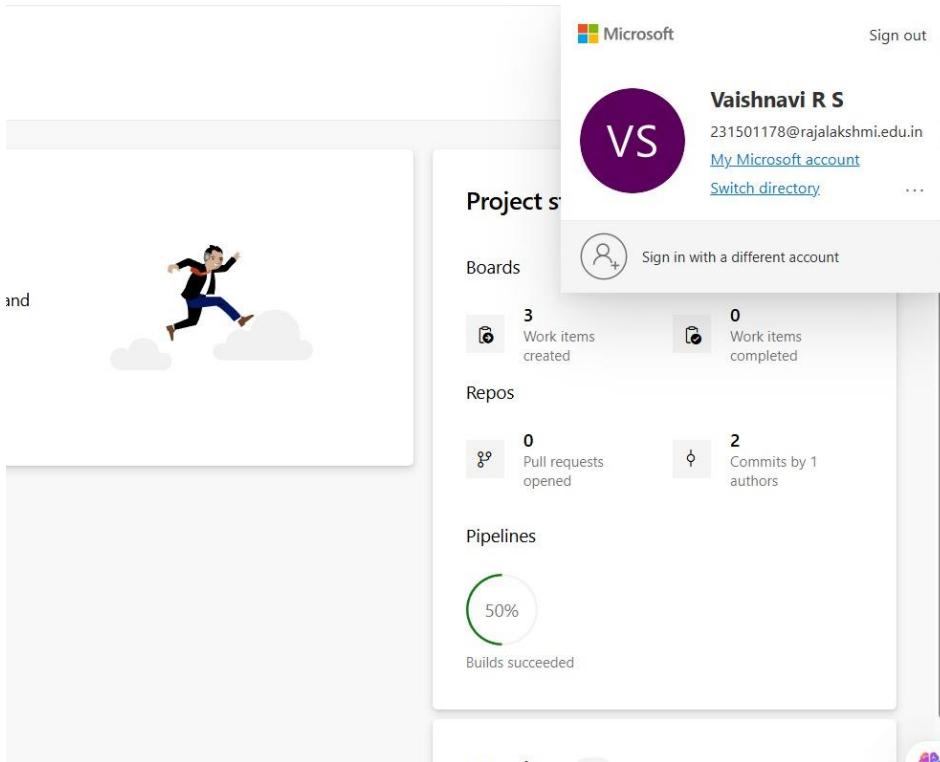
The bottom of the screen shows the Windows taskbar with various pinned icons and the date/time (20-05-2025, 21:56).

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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.



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**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 Boards interface for the 'Crime Rate Detector' project. The left sidebar navigation includes 'Overview', 'Boards', 'Work items', 'Backlogs', 'Sprints', 'Queries', 'Delivery Plans', 'Analytics views', 'Repos', 'Pipelines', 'Test Plans', and 'Artifacts'. The 'Backlogs' option is selected. The main area displays the 'Crime Rate Detector Team' backlog under the 'Backlog' tab. The backlog table lists work items categorized by type (Epic, Feature, User Story, Task) and state (Active, New). The first epic is 'Data Collection and Preparation', which contains a feature 'Crime Data Collection' and a user story 'As a data engineer, I want to collect crime data from various sources...'. Below these are several tasks. The second epic is 'Model Building and Evaluation', containing features 'Algorithm Selection and Training' and 'Ensemble and Optimization'. The third epic is 'Crime Prediction and Forecasting'. The interface includes a search bar, column options, and a 'New Work Item' button.

## **1. Fill in Epics**

The screenshot shows the 'Create Work Item' page for an 'Epic' in the 'Crime Rate Detector' project. The left sidebar navigation is identical to the previous screenshot. The main area has a 'Work items' tab selected. A red error message 'NEW EPIC \* Field 'Title' cannot be empty.' is displayed above the title input field. The 'Title' field is empty. Below it, there are fields for 'State' (set to 'New'), 'Reason' (set to 'New'), 'Area' ('Crime Rate Detector'), and 'Iteration' ('Crime Rate Detector\Sprint 1'). The 'Description' section contains a placeholder 'Click to add Description.' The 'Planning' section includes 'Priority' (set to '2'), 'Risk', 'Effort', 'Business Value', 'Time Criticality', 'Start Date', 'Select a date...', and 'Target Date'. The 'Deployment' section provides instructions on tracking releases. The 'Development' section includes a 'Add link' button and a note about linking to a branch in Azure Repos. There is also a note about creating a branch to get started.

## 2.Fill in Features

The screenshot shows the Azure DevOps interface for creating a new work item. The URL is [https://dev.azure.com/2315011570509/Crime%20Rate%20Detector/\\_workitems/create/Feature](https://dev.azure.com/2315011570509/Crime%20Rate%20Detector/_workitems/create/Feature). The left sidebar is titled "Crime Rate Detector" and includes options like Overview, Boards, Work items, and Project settings. The main area is titled "Work items" and "Back to Work Items". A red error message "NEW FEATURE \* Field 'Title' cannot be empty." is displayed above the title input field. The work item form has sections for Description, Planning, and Deployment. The "Description" section contains a placeholder "Enter title". The "Planning" section shows State: New, Reason: New, Area: Crime Rate Detector, Iteration: Crime Rate Detector\Sprint 1, Priority: 2, Risk: 2, and Business Value: 1. The "Deployment" section provides instructions on tracking releases. The "Development" section includes an "Add link" button and a note about linking to Azure Repos. The "Classification" section shows Value area: Business.

## 3.Fill in User Story Details

The screenshot shows the Azure DevOps interface for creating a new work item. The URL is [https://dev.azure.com/2315011570509/Crime%20Rate%20Detector/\\_workitems/create/User%20Story](https://dev.azure.com/2315011570509/Crime%20Rate%20Detector/_workitems/create/User%20Story). The left sidebar is titled "Crime Rate Detector" and includes options like Overview, Boards, Work items, and Project settings. The main area is titled "Work items" and "Back to Work Items". A red error message "NEW USER STORY \* Field 'Title' cannot be empty." is displayed above the title input field. The work item form has sections for Description, Acceptance Criteria, Planning, and Deployment. The "Description" section contains a placeholder "Enter title" and "Click to add Description.". The "Acceptance Criteria" section contains a placeholder "Click to add Acceptance Criteria.". The "Planning" section shows State: New, Reason: New, Area: Crime Rate Detector, Iteration: Crime Rate Detector\Sprint 1, Story Points: 2, Priority: 2, Risk: 2, and Classification: Value area: Business. The "Deployment" section provides instructions on tracking releases. The "Development" section includes an "Add link" button and a note about linking to Azure Repos. The "Classification" section shows Value area: Business.

**Result:**

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

**EXP NO: 4**

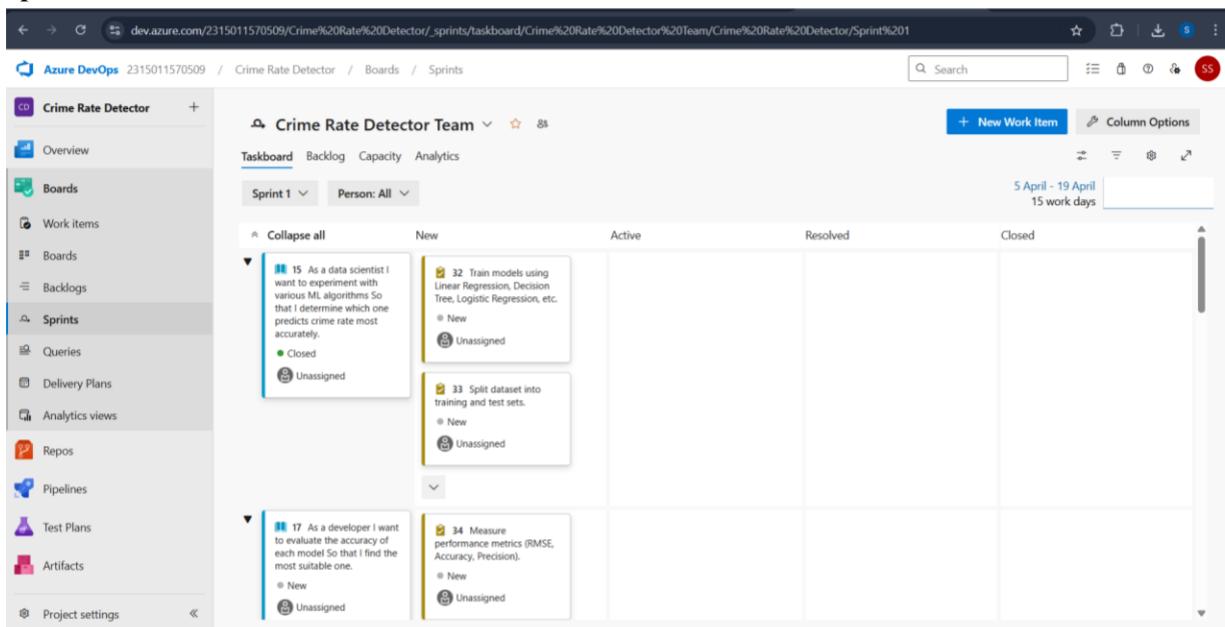
# SPRINT PLANNING

## Aim:

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

## Sprint Planning

### Sprint 1

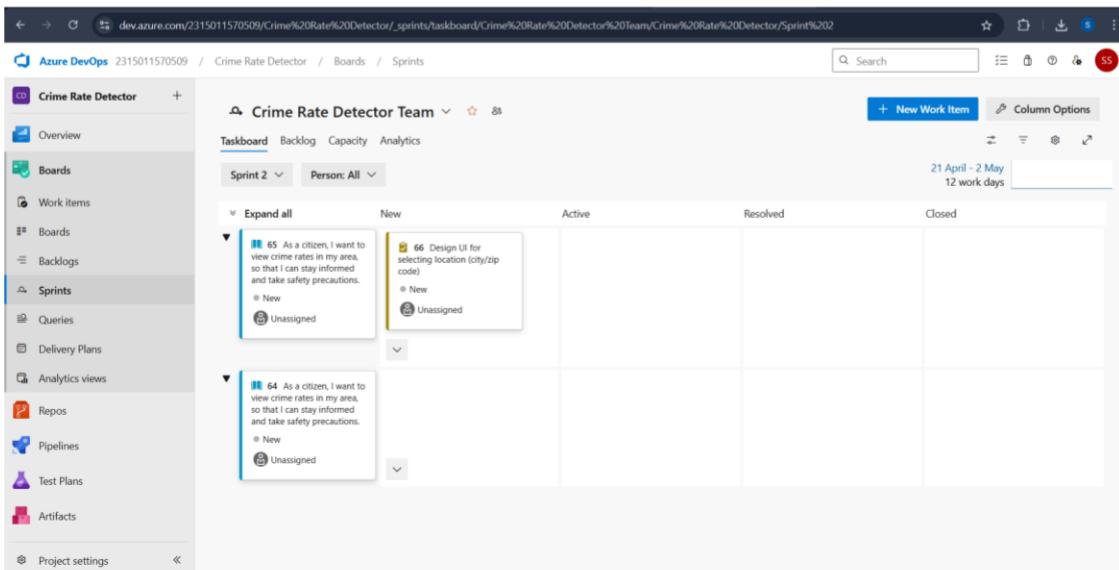


The screenshot shows the Azure DevOps Taskboard for the 'Crime Rate Detector' project. The sidebar on the left lists various project management sections like Overview, Boards, Work items, Sprints, and Analytics views. The main area displays the 'Crime Rate Detector Team' taskboard for 'Sprint 1'. The backlog section contains several user stories:

- User Story 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: New, Unassigned.
- User Story 32: Train models using Linear Regression, Decision Tree, Logistic Regression, etc. Status: New, Unassigned.
- User Story 33: Split dataset into training and test sets. Status: New, Unassigned.
- User Story 17: As a developer I want to evaluate the accuracy of each model So that I find the most suitable one. Status: New, Unassigned.
- User Story 34: Measure performance metrics (RMSE, Accuracy, Precision). Status: New, Unassigned.

The taskboard has columns for New, Active, Resolved, and Closed tasks. The sprint duration is listed as 5 April - 19 April, 15 work days.

### Sprint 2



The screenshot shows the Azure DevOps Taskboard for the 'Crime Rate Detector' project, specifically for 'Sprint 2'. The sidebar and taskboard structure are identical to Sprint 1. The backlog section contains two user stories:

- User Story 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, Unassigned.
- User Story 66: Design UI for selecting location (city/zip code). Status: New, Unassigned.

The taskboard has columns for New, Active, Resolved, and Closed tasks. The sprint duration is listed as 21 April - 2 May, 12 work days.

## Sprint 3

The screenshot shows the Azure DevOps Taskboard for the 'Crime Rate Detector' project under the 'Crime Rate Detector Team'. The board is set to 'Sprint 3' and 'Person: All'. The tasks are organized into columns: New, Active, Resolved, and Closed. The 'Active' column contains task 70, which is currently selected. Task 70 is described as: 'As a system admin, I want to manage user roles and data access, so that only authorized personnel can make critical changes.' It has two sub-tasks: '71 Implement user authentication (login/signup)' (Active, assigned to Soria J S) and '69 Plot time-series graphs of crime types (line/bar charts)' (New, Unassigned). The 'Closed' column contains task 68, described as: '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**

The screenshot shows the Azure DevOps interface for a User Story. The URL is dev.azure.com/2315011570509/Crime%20Rate%20Detector/\_backlogs/backlog/Crime%20Rate%20Detector%20Team/Epics?workitem=11. The story is titled "USER STORY 11". Key details include:

- Description:** As a data engineer, I want to collect crime data from various sources so that I can create a comprehensive dataset.
- Assignee:** Sonia J S
- Status:** Resolved
- Reason:** Code complete and un...
- Area:** Crime Rate Detector
- Iteration:** Crime Rate Detector
- Priority:** 2
- Risk:** Not specified
- Story Points:** 2
- Acceptance Criteria:** Data scraping/API scripts are implemented and tested. (Appears twice)
- Discussion:** Add a comment. Use # to link a work item, @ to mention a person, or ! to link a pull request.
- Classification:** Value area: Business
- Development:** 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.
- Related Work:** 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.

### **Result:**

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

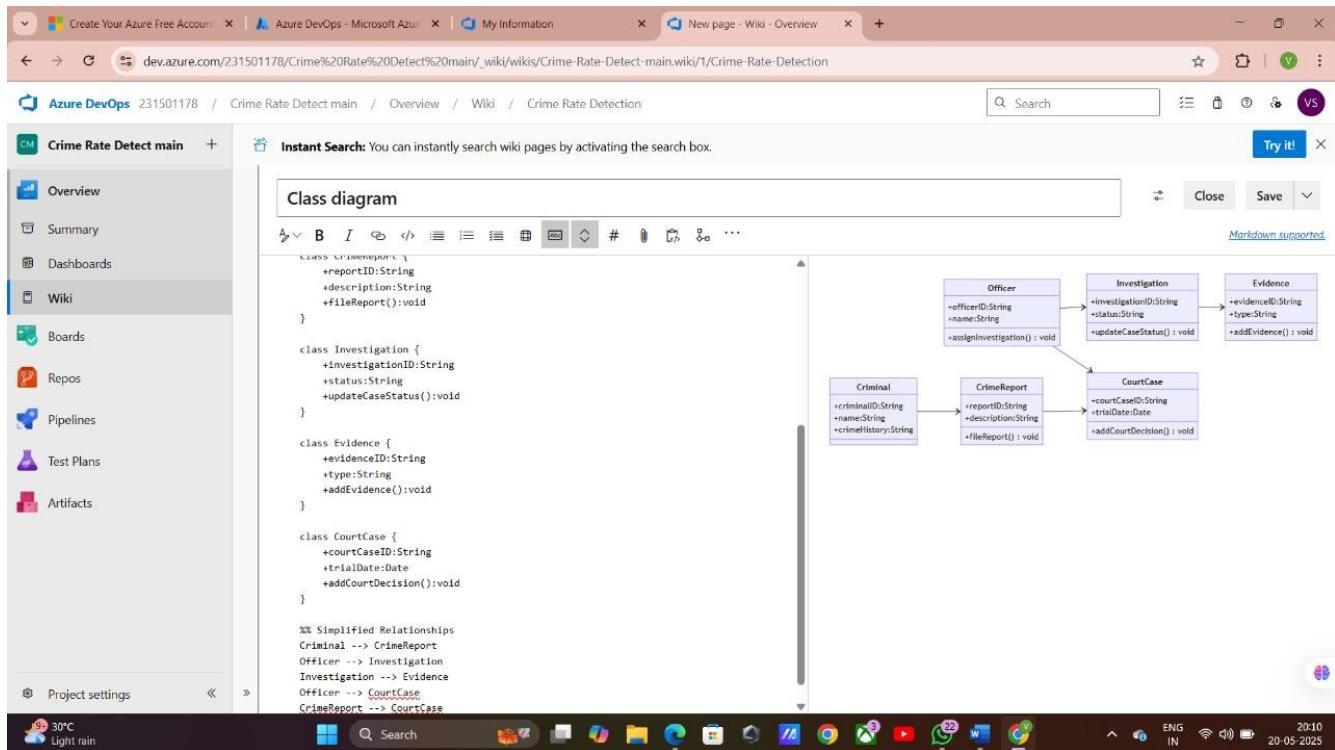
EXP NO: 6

# DESIGNING CLASS AND SEQUENCE DIAGRAMS FOR PROJECT ARCHITECTURE

## Aim:

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

## 6A. Class Diagram

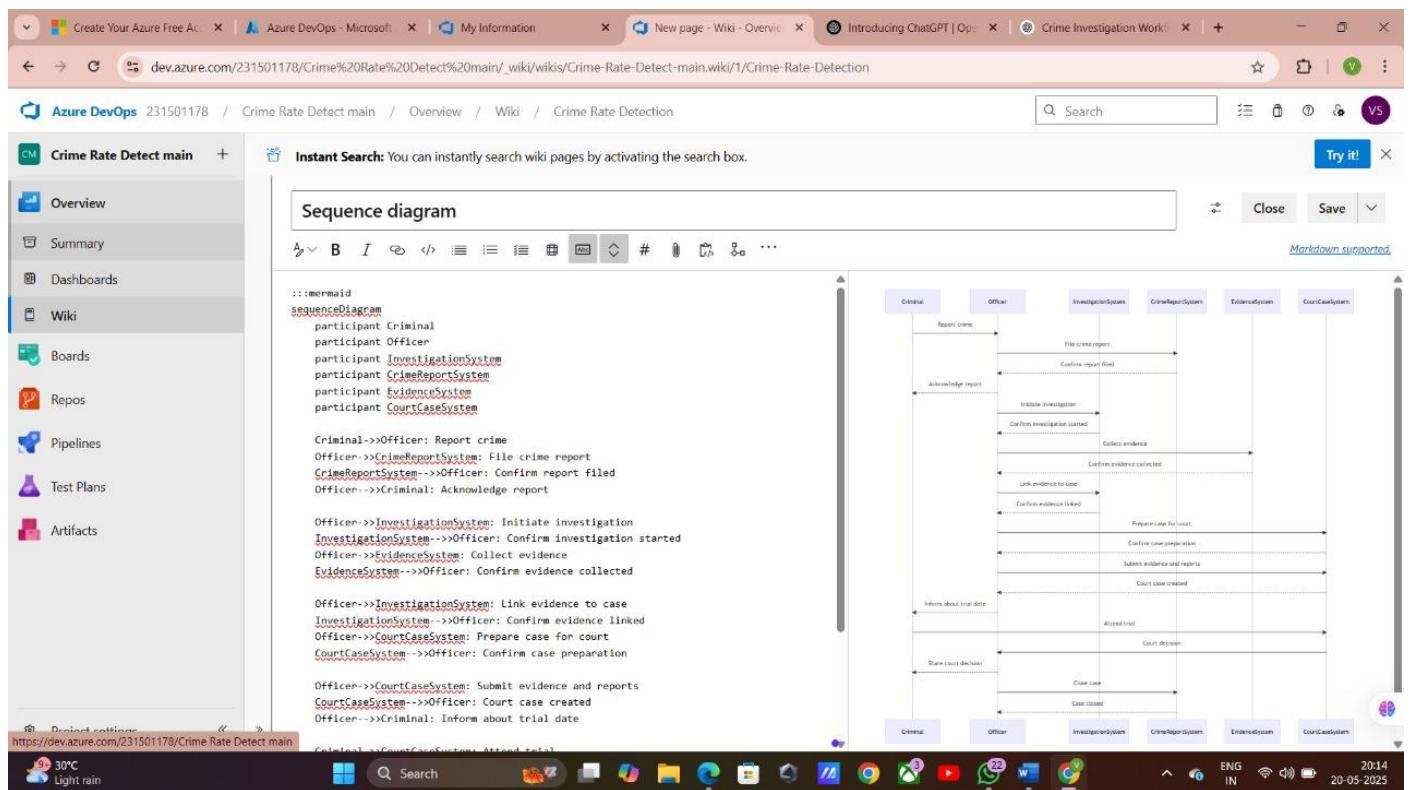


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## 6B. Sequence Diagram



**Result:**

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

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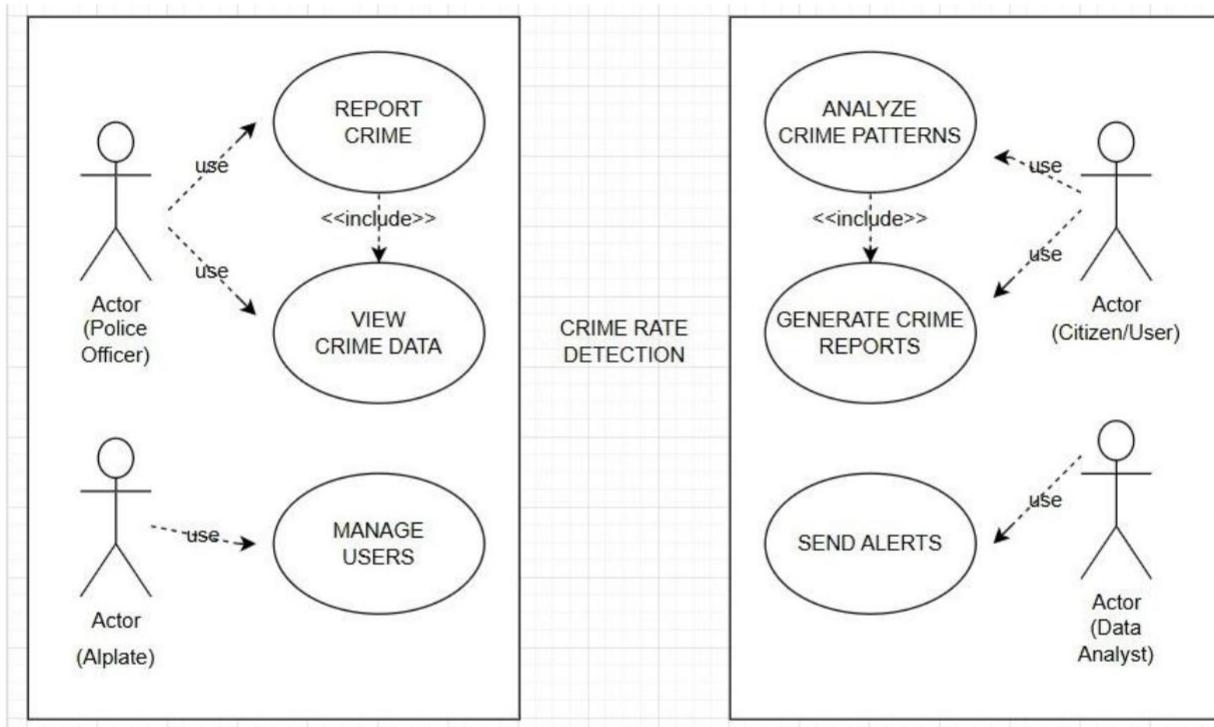
**EXP NO: 7**

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

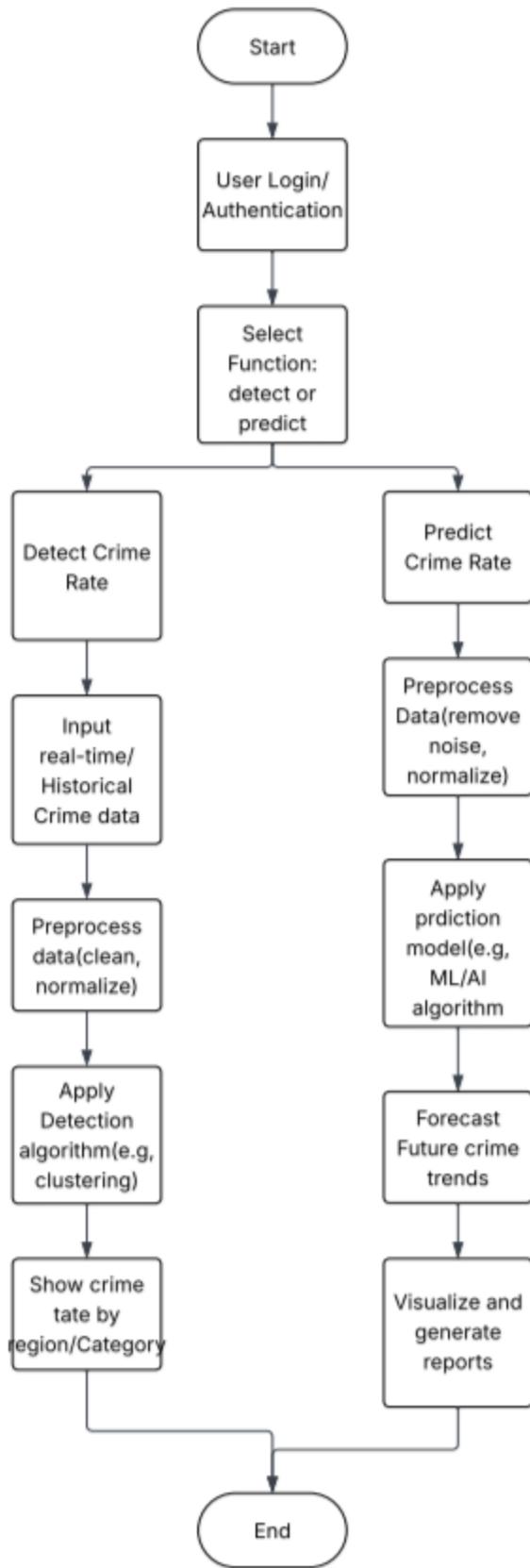
### **Aim:**

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' dialog box in the Azure DevOps interface. The left sidebar shows the project navigation with 'Crime Rate Detector' selected. The main area displays the 'New Test Plan' form with the following fields filled:

- Name: Crime Rate Detector
- Area Path: Crime Rate Detector
- Iteration: Crime Rate Detector\Sprint 3

At the bottom right of the dialog are 'Create' and 'Cancel' buttons.

## **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

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The screenshot shows the Azure DevOps interface for a project named "Crime Rate Detect main". The left sidebar is open, showing options like Overview, Boards, Repos, Pipelines, Test Plans, Test plans, Progress report, Parameters, Configurations, Runs, and Artifacts. The "Test plans" option is selected. The main area displays the "Login Authentication" test suite, which was defined on May 20 and executed on May 27, resulting in 100% run and 100% passed. A link to "View report" is provided. The "Test Cases" section lists one item, "LOGIN", with an Order of 1, Test Case Id of 25, and assigned to Vaishnavi R S. The status is marked as "Done". The browser address bar shows the URL: dev.azure.com/231501178/Crime%20Rate%20Detect%20main/\_testPlans/define?planId=23&suiteId=24.

- **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 screenshot shows the Azure DevOps interface for a project titled "Crime Rate Detect main". The left sidebar is open, showing options like Overview, Boards, Repos, Pipelines, Test Plans, Test plans, Progress report, Parameters, Configurations, Runs, and Artifacts. The "Test plans" option is selected. In the center, under "Test Suites", there is one suite named "Login Authentication (1)". This suite is currently selected. On the right, the "Login Authentication (ID: 24)" page is displayed. It has tabs for Define, Execute, and Chart. Under "Test Cases (1 item)", there is a table with one row:

	Title	Order	Test Case Id	Assigned To	Status
<input type="checkbox"/>	LOGIN	1	25	Vaishnavi R S	Not Started

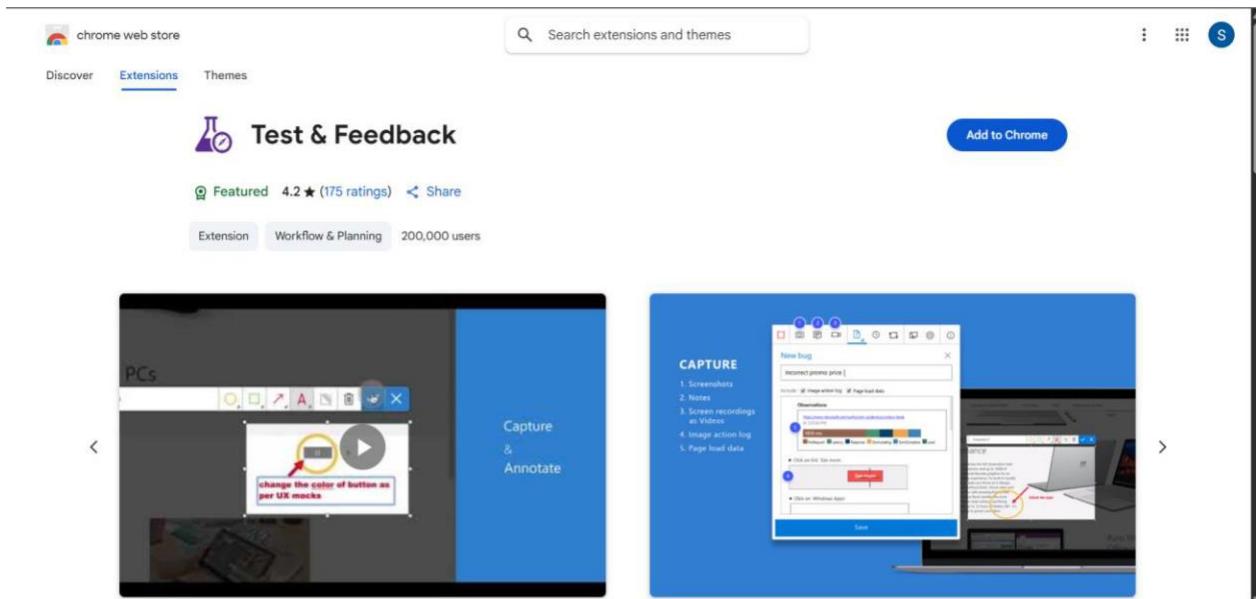
The status "Not Started" is also visible above the table. The browser address bar shows the URL: [https://dev.azure.com/231501178/Crime%20Rate%20Detect%20main/\\_testPlans/define?planId=23&suiteId=24](https://dev.azure.com/231501178/Crime%20Rate%20Detect%20main/_testPlans/define?planId=23&suiteId=24).

The screenshot shows the Azure DevOps Test Plan interface for the project "Crime Rate Detect main". The left sidebar is open, showing the "Test Plans" section with "Test plans" selected. The main area displays the "Login Authentication" test suite, which has one item named "LOGIN" that has passed. The status bar at the bottom indicates "30°C Light rain" and the date "20-05-2025".

Test Points (1 item)

Title	Outcome	Order	Test Case Id
LOGIN	Passed	1	25

#### 4. Installation of test



#### Test and feedback

Showing it as an extension

A screenshot of the Azure DevOps interface, specifically the "Test Plans" section for a project named "Crime Rate Detector". The sidebar shows "Overview", "Boards", "Repos", "Pipelines", "Test Plans", "Test plans", "Progress report", "Parameters", "Configurations", "Runs", and "Artifacts". The "Test plans" section is currently selected. A modal window titled "Extensions" is open, showing the "McAfee® WebAdvisor" extension with "Full access" granted. The "Test Cases" section lists three items: TCO1-Source Connection Test, TCO2-Fetch Data from All Sources, and TCO3-Handle Duplicate Records, each with an "Order", "Test Case Id", "Assigned To", and "Status" column.

## 5. Running the test cases

The screenshot shows the Azure DevOps Test Plans interface for the project "Crime Rate Detect main". The current view is the "Execute" tab of the "Login Authentication" test suite (ID: 24). The suite has one test point named "LOGIN" which has passed.

Title	Outcome	Order	Test Case Id
LOGIN	Passed	1	25

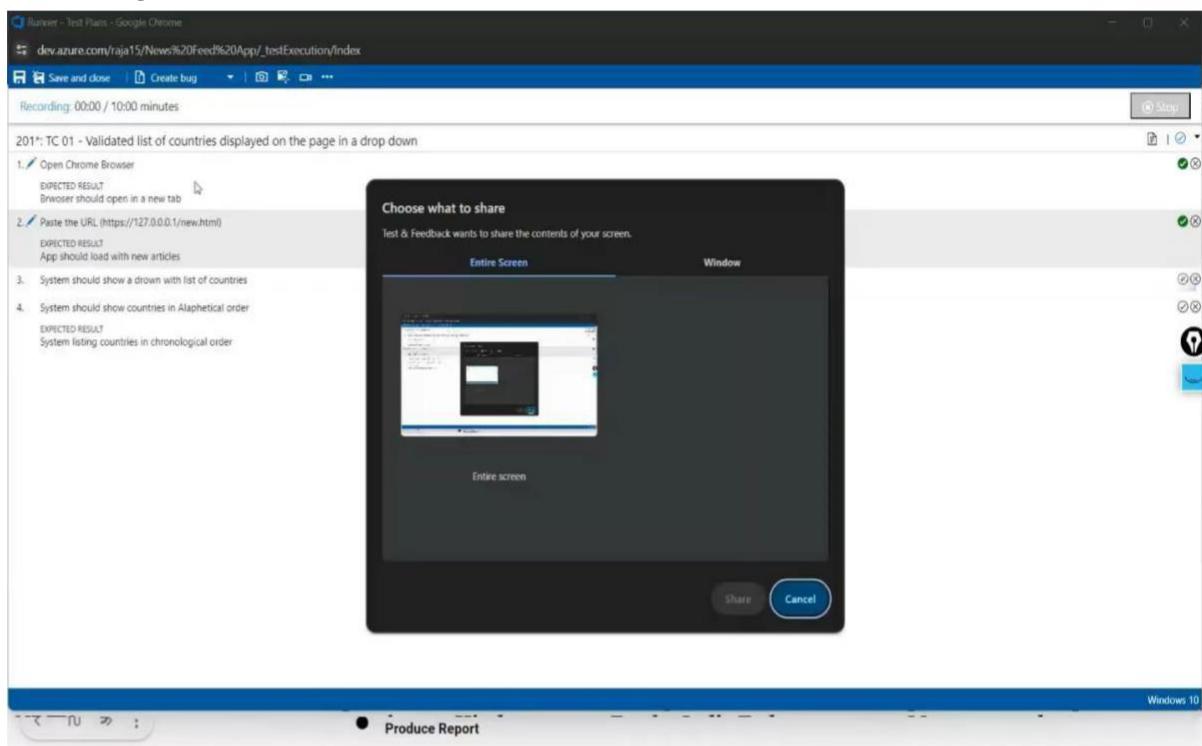
The left sidebar shows the project navigation with "Test Plans" selected. The top header includes the URL "dev.azure.com/231501178/Crime%20Rate%20Detect%20main/\_testPlans/execute?planId=23&suitId=24", the Azure DevOps logo, and a search bar.

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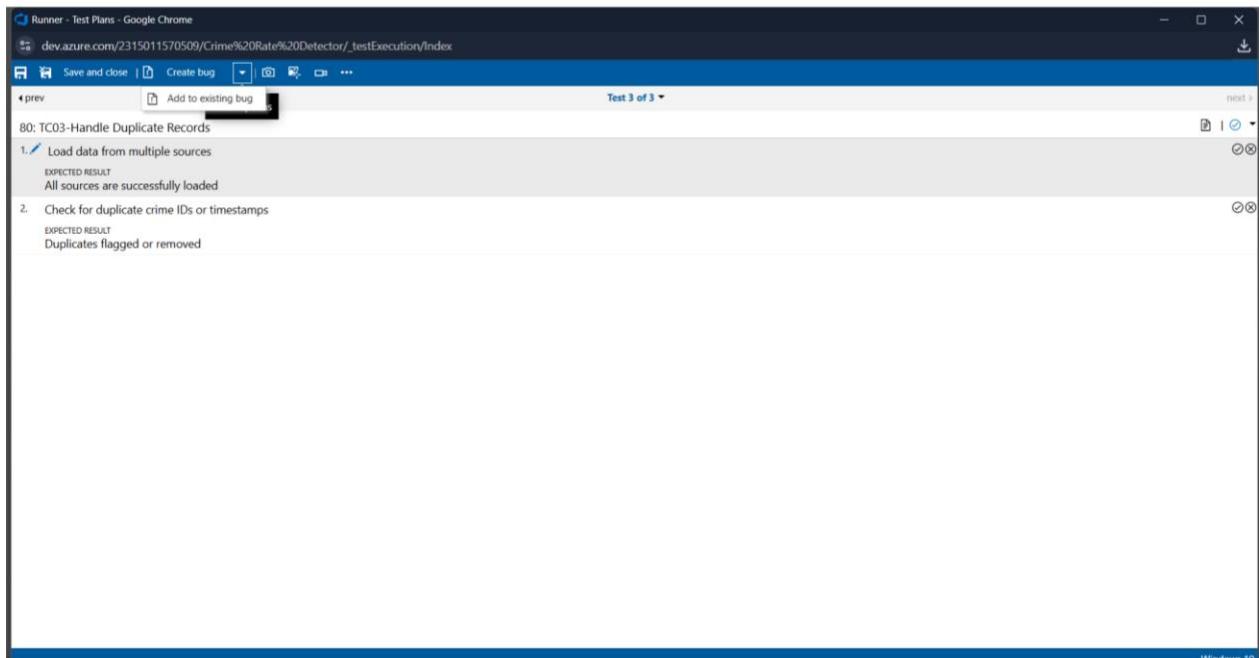
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## 6.Recording the test case



## 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

80: TC03-Duplicate crime records not flagged or removed after loading multiple sources

1. Load EXPECT All sources are successfully loaded

2. Check EXPECT Duplicate crime records are flagged or removed

**NEW BUG \*** TB01-Duplicate crime records not flagged or removed after loading multiple sources

Unassigned 0 comments Add tag

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

**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: Baseline

**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**

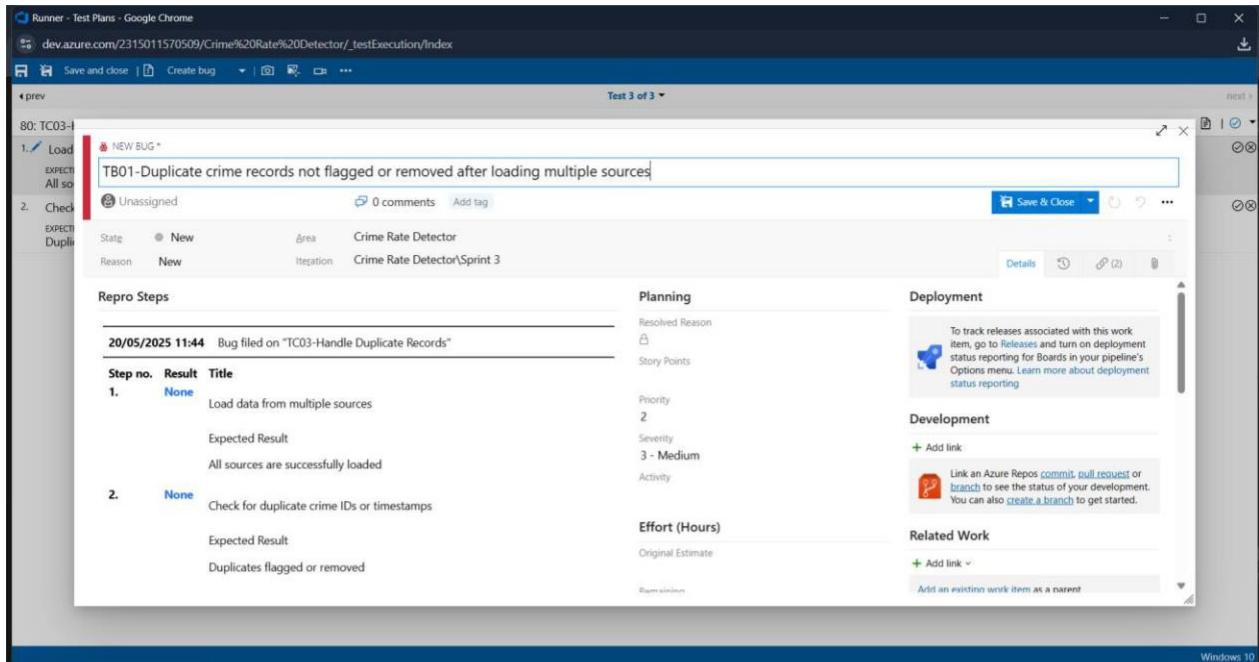
+ Add link  
Link an Azure Repos commit, pull request or branch to see the status of your development. You can also [create a branch](#) to get started.

**Related Work**

+ Add link  
Add an existing work item as a parent

Save & Close Details ⌂ ⌓ ⌒ ⌔ ⌕ ⌖

Windows 10



Runner - Test Plans - Google Chrome  
dev.azure.com/2315011570509/Crime%20Rate%20Detector/\_testExecution/Index

Save and close Create bug ⌂ ⌓ ... Test 3 of 3

80: TC03-Duplicate crime records not flagged or removed after loading multiple sources

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Unassigned 0 comments Add tag

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

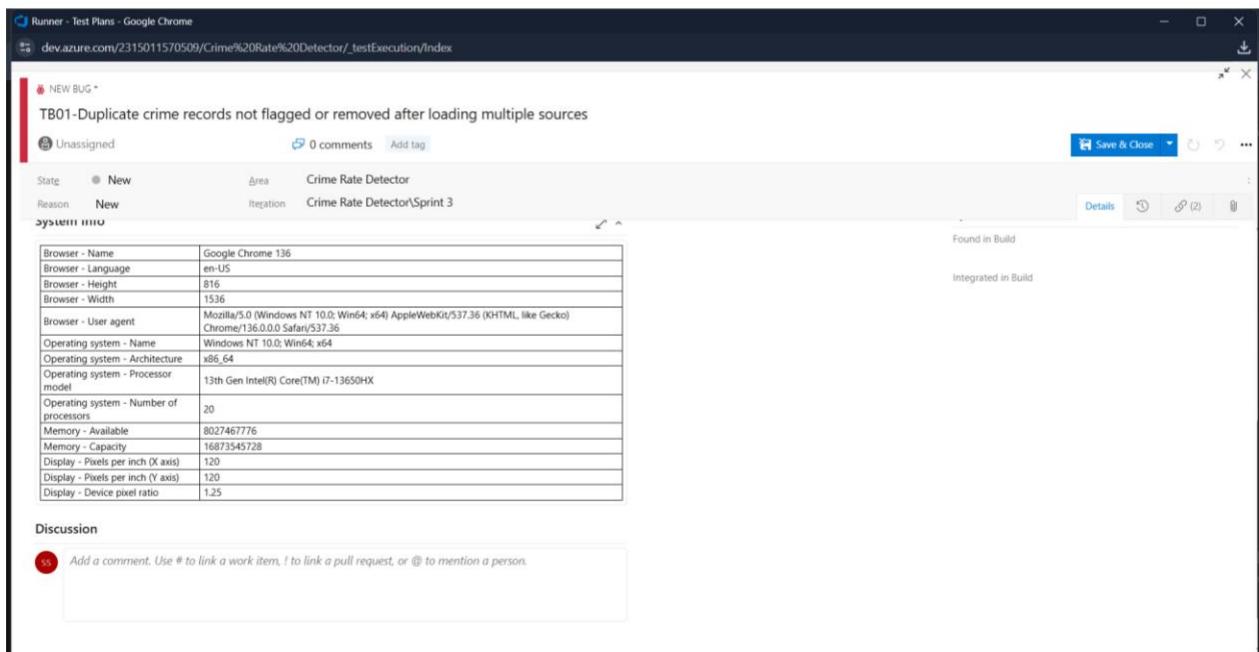
**System Info**

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.

Save & Close Details ⌂ ⌓ ⌒ ⌔ ⌕ ⌖



## 8. Test case results

The screenshot shows the Azure DevOps interface for a project named 'Crime Rate Detector'. On the left, the 'Test Plans' section is selected, showing a list of test plans: 'Test plans' (selected), 'Progress report', 'Parameters', 'Configurations', 'Runs', and 'Artifacts'. Below this is a 'Project settings' link.

In the center, a 'Crime Rate Detect...' card is displayed, showing a summary: 'May 5 - May 16', '40% run, 83% passed', and a 'View report' button. Under 'Test Suites', there is a tree view with 'Crime Rate Detector' expanded, showing 'TS01 – Crime Data Collection (ID: 7)' (selected) and other suites like 'TS02 – Data Structuring (3)', 'TS03 – Feature Engineering (3)', 'TS04 – Data Cleaning (3)', and 'TS05 – High-Risk Zone De...'. A 'Test Points (3 items)' section lists three entries: 'TCD1-Source Connection Test' (Passed, 11m ago, Windows 10, Sonia J S, Crime F), 'TCD2-Fetch Data from All Sources' (Paused, 30m ago, Windows 10, Sonia J S, Sonia J S, Crime F), and 'TCD3-Handle Duplicate Records' (Failed, 4h ago, Windows 10, Sonia J S, Sonia J S, Crime F).

A modal window titled 'TC01-Source Connection Test' is open, showing 'Test Case Results' with the same three entries. It includes a 'View report' button and a link 'Open execution history for current test point'.

## 9. Test report summary

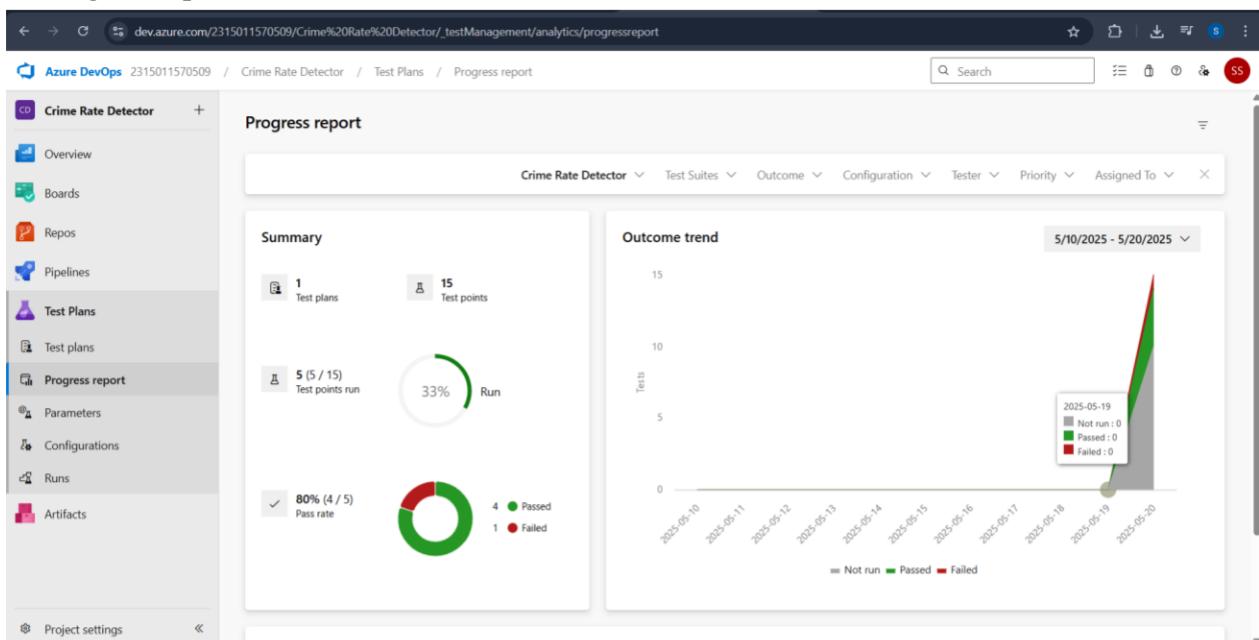
The screenshot shows the 'Work items' section of the Azure DevOps interface. The sidebar includes 'Boards', 'Backlogs', 'Sprints', 'Queries', 'Delivery Plans', and 'Analytics views'. The main area displays a work item for 'BUG 97' titled 'TB01-Duplicate crime records not flagged or removed after loading multiple sources'. The work item details include:

- State:** New
- Reason:** New
- Repro Step:** Active, Resolved, Closed (20/05/2024)
- Step no.:** 1. Result: None, Title: Load data from multiple sources, Expected Result: All sources are successfully loaded.
- Step no.:** 2. Result: None, Title: Check for duplicate crime IDs or timestamps, Expected Result: Duplicates flagged or removed.
- Test Configuration:** Windows 10

The right side of the screen shows sections for 'Planning' (Resolved Reason, Story Points, Priority, Severity, 3 - Medium, Activity), 'Deployment' (Instructions to track releases), and 'Development' (Add link, instructions to link to Azure Repos). There are also 'Effort (Hours)' and 'Original Estimate' fields.

- 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. The left sidebar includes 'General' (Overview, Projects, Users, Billing, Global notifications, Usage, Extensions, Microsoft Entra), 'Security' (Security overview, Policies, Permissions), and 'Boards' (Process). The main content area is titled 'All processes' and lists four process templates: 'Basic (default)', 'Agile', 'Scrum', and 'CMMI'. The 'Agile' template is currently selected. A search bar at the top right allows filtering by process name.

The screenshot shows the Azure DevOps 'Process' settings page. On the left, there's a sidebar with 'Organization Settings' and sections for General, Security, and Boards. The 'Process' section is currently selected. The main area displays the 'Agile' work item types. A message at the top states: 'System processes cannot be customized. To add customization create an inherited process.' Below this, a table lists the work item types with their descriptions:

Name	Description
Bug	Describes a divergence between required and actual behavior, and tracks the work done to correct the defect and verify the correctness.
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 Pipelines interface for the project "Crime Rate Detect main". The left sidebar is visible with various project navigation options like Overview, Boards, Repos, Pipelines, Pipelines (selected), Environments, Library, Test Plans, and Artifacts. The main content area displays a list of "Recently run pipelines". One pipeline is listed: "Crime Rate Detect main" (Pipeline ID #20250519.1). The details show it was set up with Azure Pipelines and triggered by an individual CI for the "main" branch. The run was completed yesterday and took 8 seconds. A "New pipeline" button is located at the top right of the pipeline list.

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The screenshot shows the Azure DevOps interface for the 'Crime Rate Detect main' repository. The left sidebar is collapsed, and the main area displays the 'Files' section for the 'main' branch. The 'Contents' tab is selected, showing three files: 'azure-pipelines.yml', 'index.html', and 'style.css'. A 'History' tab is also present. At the top right, there are 'succeeded' and 'Clone' buttons. Below the files, a table lists the commits:

Name	Last change	Commits
azure-pipelines.yml	Yesterday	867eb574 Set up CI with Azure Pipelines Vaishnavi R.S.
index.html	May 3	10fc84bb Add files via upload vaishnavirajesh24
style.css	May 3	10fc84bb Add files via upload vaishnavirajesh24

The bottom of the screen shows the Windows taskbar with various pinned icons and the system tray indicating the date and time as 20-05-2025 at 22:24.

**Result:**

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

**EXP NO: 10**

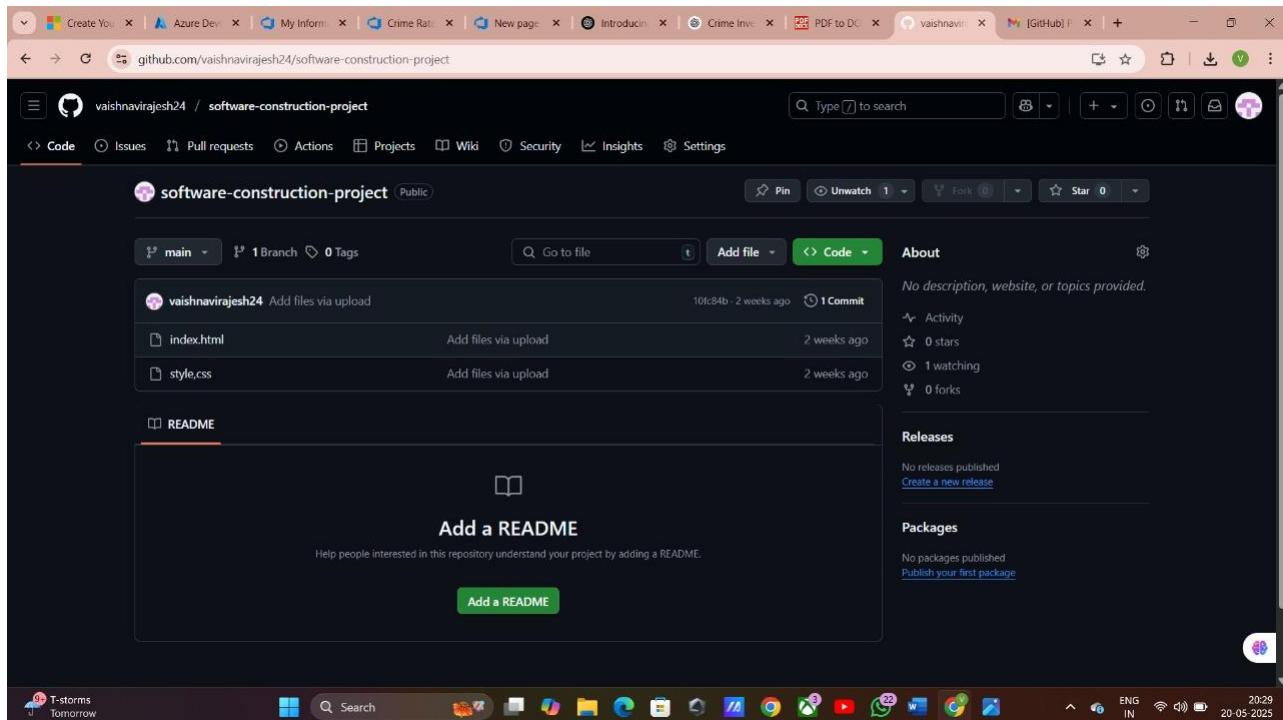
# GITHUB: PROJECT STRUCTURE & NAMING

## 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.

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