RAJALAKSHMI ENGINEERING COLLEGE

RAJALAKSHMI NAGAR, THANDALAM - 602 105



RAJALAKSHMI

ENGINEERING COLLEGE

An AUTONOMOUS Institution
Affiliated to ANNA UNIVERSITY,
Chennai

(REGULATION 2023)

CS23432 Software Construction

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LABORATORY RECORD NOTEBOOK

ARULOLI MS Name:
2nd/AIML/FA
Year/ Branch / Section:
2116-231501020 Register
No.:
4 th Semester
Semester:
2024-2025
Academic Year: · · · · · · · · · · · · · · · · · · ·



RAJALAKSHMI ENGINEERING COLLEGE (AUTONOMOUS)

ARULOLI MS 2116-231501020 NAME

RAJALAKSHMI NAGAR, THANDALAM- 602 105

BONAFIDE CERTIFICATE

REGISTER NO.

ACADEMIC YEAR 2024-25 SEMESTER-IV BRANCH: AIML-B.Tech
This Certification is the Bonafide record ofwork done by the above student
n the CS23432- Software Construction Laboratory during he year 2024 2025.
Signature ofFaculty -in Charge
Submitted for the Practical Examination held on

Internal Examiner External Examiner

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ARULOLI MS <u>AIML</u> Sec:Roll no:	FA	
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¹Name: Branch:

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¹ CS23432

AZURE DEVOPS ENVIRONMENT SETUP

EXP NO: 1 DATE:

Aim:

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

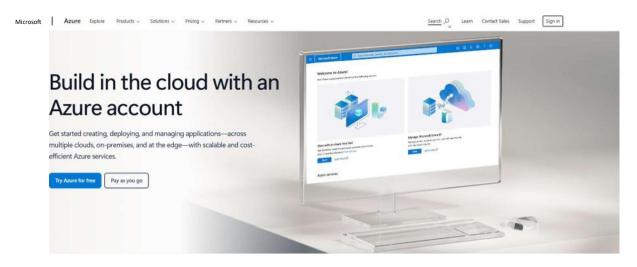
INSTALLATION

I. Open your web browser and go to the Azure website:

https://azure.microsoft.com/enus/get-started/azure-portal.

Sign in using your Microsoft account credentials.

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

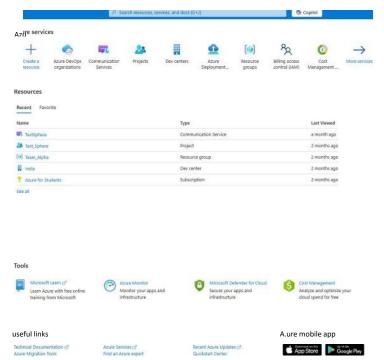


Choose the Azure account that's right for you

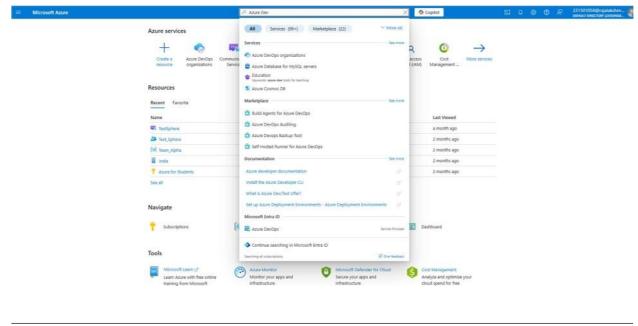
Payas you Azure fee to There upfrontCommitment—cancel

231501020

2. Azure home page

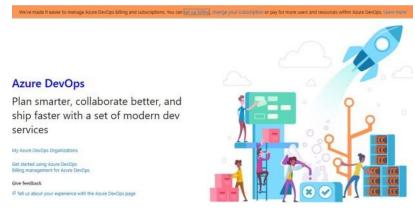


3. Open DevOps environment in the Azure platform by typing Azure DevOps Organizations in the search bar.



4. IIC on the My Azure DevOps Organization link and create an organization and you shoulfi²³⁴³² e taken to the Azure DevOps Organization Home page.

Azure DevOps



Result:

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

231501020

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.

I. Create An Azure Account

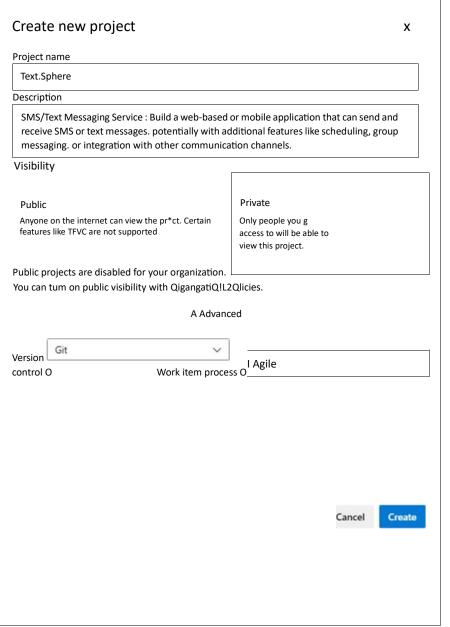


- 2. Create the First Project in Your Organization
 - a. After the organization is set up, you'll need to create your first project. This is where you'll begin to manage code, pipelines, work items, and more.
 - b. On the organization's Home page, click on the New Project button.
 - c. Enter the project name, description, and visibility options:

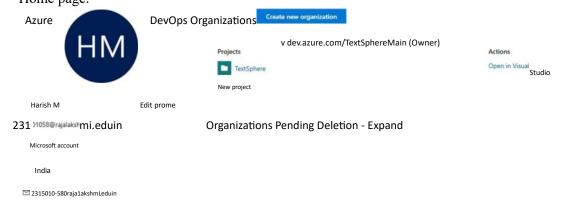
Name: Choose a name for the project (e.g., LMS).

Description: Optionally, add a description to provide more context about the project. Visibility: Choose whether you want the project to be Private (accessible only to those invited) or Public (accessible to anyone).

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



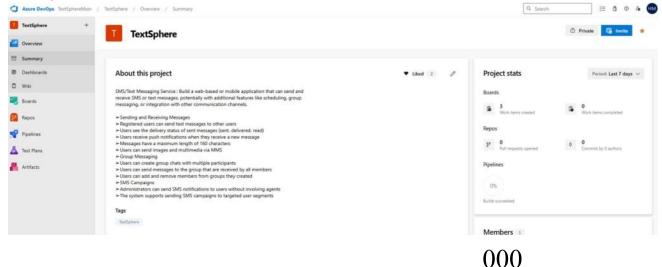
3. Once logged in, ensure you are in the correct organization. If you're part of multiple organizations, you can switch between them from the top left corner (next to your user profile). Click on the Organization name, and you should be taken to the Azure DevOps Organization Home page.



Visual Studio Dev Essentials

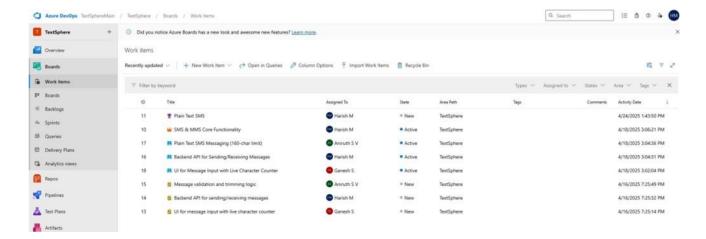
Get verything you "—d to build your app on any platform_usc you benefits

4. Project dashboard



5. To manage user stories:

- a. From the left-hand navigation menu, click on Boards. This will take you to the main Boards page, where you can manage work items, backlogs, and sprints.
- b. On the work items page, you'll see the option to Add a work item at the top. Alternatively, you can find a + button or Add New Work Item depending on the view you're in. From the Add a work item dropdown, select User Story. This will open a form to enter details for the new User Story.



Result:

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

EXP NO: 3

SETTING UP EPICS, FEATURES, AND USER STORIES FOR PROJECT PLANNING

Aim:

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

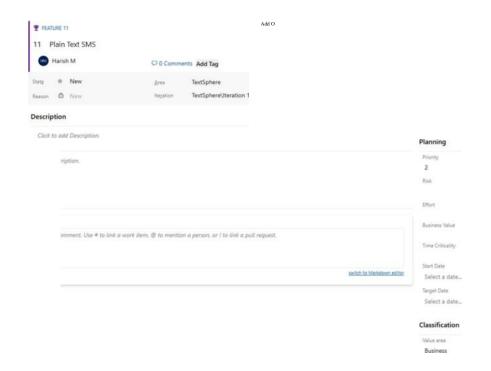
Create Epic, Features, User Stories, Task



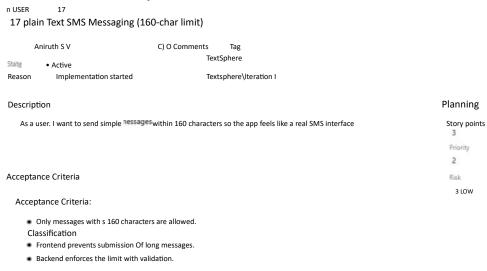
1.Fill in Epics

10 SMS & MMS core	Functionality		
Harish M	□ 0 Comm	ents Add Tag	
atg • Active	Area	TextSphere	
eason 🐧 Implementat	tion started Iteration	TextSphere\Iteration 1	
escription			Planning
		nd MMS functionalities including sending, receiving, storing, and managing plain text essage length validation and backend APIs for both functionalities.	Priority 2
			Risk 2 - Medium
scussion			Effort 13
			Business Value 1
Add a comment.	Use # to link a work item, @ t	o mention a person. or ! to link a pull request.	Time Criticality
			Start Date
			4/16/2025 7:22 PM
		switch to Markdown	Leditor
			4/30/202512m AM
			Classification
			Value area
			Durinass

2.Fill in Features



3.FiII in User Story Details



Discussion

Result:

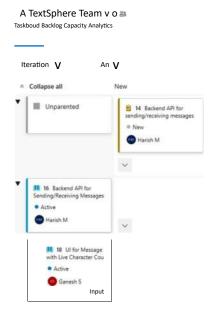
Thus, the creation of epics, features, user story and task has been created successfully.

EXP NO: 4	SPRINT PLANNING

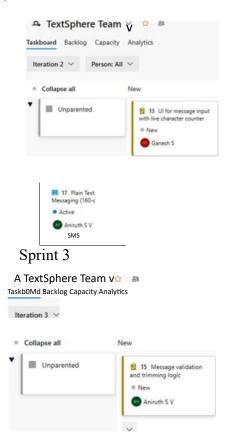
Aim:

To assign user story to specific sprint for the SMS/MMS Sending Project.

Sprint Planning Sprint 1



Sprint 2



Result:

The Sprints are created for SMS/MMS Sending Project.

EXP NO: 5	POKER ESTIMATION

Aim:

Create Poker Estimation for the user stories SMS/MMS Sending Project.

Poker Estin	nation						
16 Backend API for Send	ing/Receiv	ving Messag	ges o				
Harish M State • Active		O Comments Add Tag					
Reason 🛈 Implementation	Started	Area Iteration	TextSphere TextSphere\Iteration	1.1			
Description							Planning
As a registered user, I Want to send and Acceptance Criteria		imedia messag n the platform	ges using the backend in real-time.	receive text and	APIS so that	I Can communicate	Story Point 8 Priority
Acceptance Criteria						Classification	1
Acceptance Criteria:					I • High rnessageS.	Value area Business	Risk
Users can send and re	ceive (ex t an	d					
 Messages are stored 	n Cosmos DI	3.					
 Image messages are to a second or a secon	iploaded	to Azu	re Blob Storage nd link	ed in thedatabase.			
Appropriate MIME to	/pe validatio	on is enforced	l.				

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

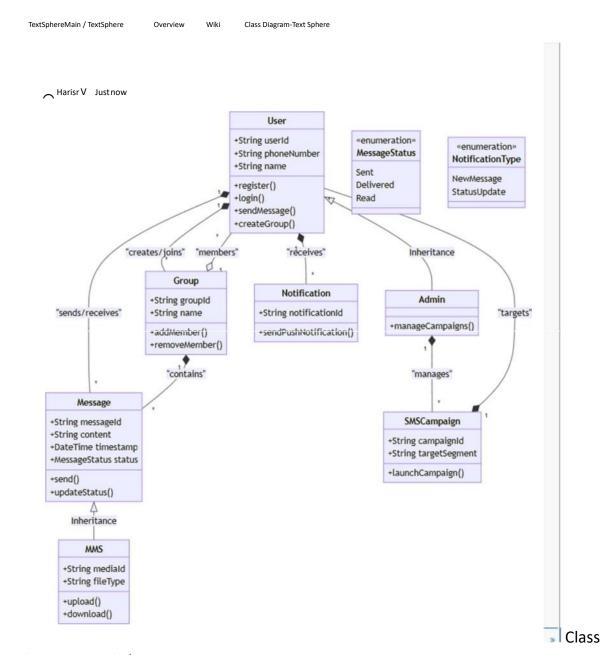
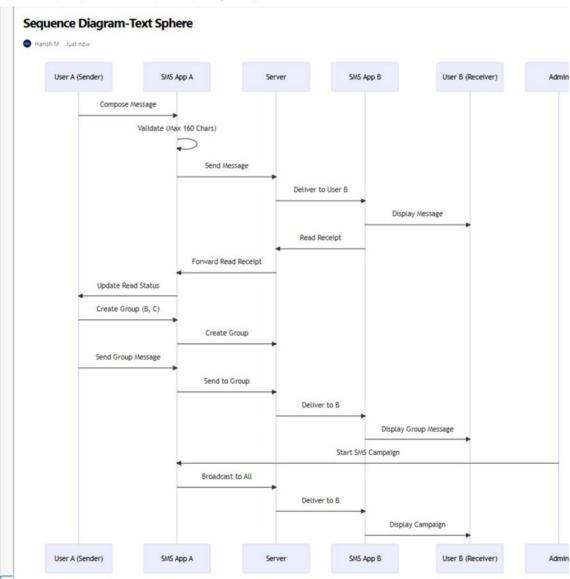


Diagram-Text Sphere

6B. Sequence Diagram





Result:

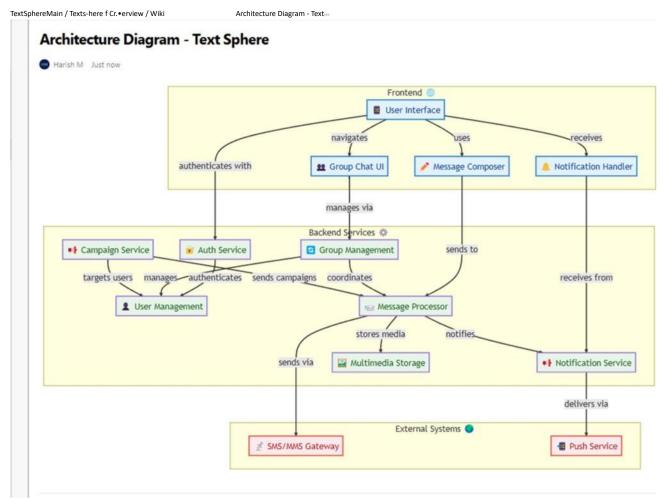
The Class Diagram and Sequence Diagram is designed Successfully for the SMS/MMS Sending Project



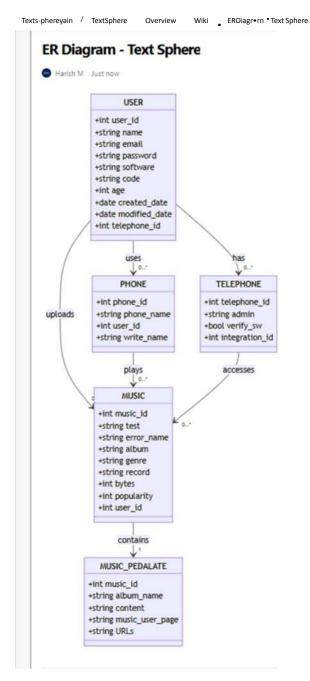
Aim:

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

7A. Architectural Diagram



7B.ER Diagram



Result:

The Architecture Diagram and ER Diagram is designed Successfully for the Music Playlist Batch Creator

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.

SMS/Text Messaging Service - Test Plans

Here's the test plan, incorporating your user stories and providing a structure for testing in Azure DevOps:

USER STORIES

- As a user, I want to send and receive text messages to other users (ID: SMSOI).
- Users see the delivery status of sent messages (sent, delivered, read) (ID: SMS02).
- Users receive push notifications when they receive a new message (ID: SMS03).
- Messages have a maximum length of 160 characters (ID: SMS04).
- Users can send images and multimedia via MMS (ID: SMS05).
- Users can create group chats with multiple participants (ID: SMS06).
- Users can send messages to the group that are received by all members (ID: SMS07).
- Users can add and remove members from groups they created (ID: SMS08).
- Administrators can send SMS notifications to users without involving agents (ID: SMS()9). The system supports sending SMS campaigns to targeted user segments (ID: SMS 10).

Test Suites

Here's how the test suites could be organized in Azure DevOps, based on the user stories:

- Test Suite: TSOI Sending and Receiving Messages (ID: 91)
- Test Suite: TS02 Message Delivery Status (ID: 92)
- Test Suite: TS03 Push Notifications (ID: 93)
- Test Suite: TS04 Message Length Validation (ID: 94)
- Test Suite. TS05 Multimedia Messaging (MMS) (ID: 95)
- Test Suite: TS06 Group Messaging Creation (ID: 96)
- Test Suite. TS07 Group Messaging Sending Messages (ID: 97)
- Test Suite: TS08 Group Messaging Membership Management (ID: 98)
- Test Suite. TS09 SMS Campaigns Sending (ID: 99)
- Test Suite. TSIO SMS Campaigns Targeting (ID: 100)

Test Cases

Test Suite: TSOI - Sending and Receiving Messages (ID: 91)

- 1.TC01 Successful Message Send and Receive (ID: 101) o Action:
- Log in as User A.
- Compose a new message to User B. Enter valid text within the character limit.
- Click "Send."
- Log in as User B.
- Open the message from User A.
 - Expected Results:
- User A: Message is sent successfully.
- User B: Message is received and displayed correctly.

- Type: Happy Path
- 2. TC02 Send Message to Invalid User (ID: 102)

o Action:

- Log in as User A.
- Compose a new message to a non-existent user ID.
- Enter valid text. Click "Send." ⊙ Expected Results:
- Error message is displayed: "Recipient user not found." Message is not sent.
- Type: Error Path

Test Suite: TS02 - Message Delivery Status (ID: 92)

1.TC03 - Verify Message Delivery Status Updates (ID: 103) o

Action:

- Log in as User C.
- Send a message to User D.
- Observe the message status on User C ^ts interface.
- Log in as User D and open the message.
- Observe the message status on User C t s interface again.
- o Expected Results:
 - User C: Message status changes from "Sent" to "Delivered" when User D receives it, and to "Read" when User D opens it. Type: Happy Path
- 2. TC04 Delivery Status When Recipient is Offline (ID: 104)

o Action:

- Log in as User E.
- Send a message to User F, who is currently offline.
- Observe the message status on User E's interface. Log in as User F and check for the message Expected Results:
- User E: Message status remains "Sent" until User F comes online. User F: User F receives the message.
- Type: Error Path

Test Suite: TS03 - Push Notifications (ID: 93)

1.TC05 - Receive Push Notification for New Message (ID: 105) o

Action:

- Log in as User G on a mobile device with push notifications enabled.
- Log in as User H on a separate device.
- User H sends a message to User G.
- Observe User G's mobile device (with the app in the background or closed). Expected Results:
- User G's device displays a push notification for the new message. Type: Happy Path
- 2. TC06 Push Notification Failure Due to Disabled Settings (ID: 106)

o Action:

- Log in as User I on a mobile device with push notifications disabled for the messaging app.
- Log in as User J on a separate device.
- User J sends a message to User I. Observe User I's mobile device. Expected Results:
- User I's device does not display a push notification. User I can still see the message when opening the app. Type: Error Path

Test Suite: TS04 - Message Length Validation (ID: 94)

1.TC07 - Send Message Within Character Limit (ID: 107) o

Action:

- Log in as User K.
- Compose a message with exactly 160 characters. Click "Send. " Expected Results:
- Message is sent successfully.
- Type: Happy Path
- 2. TC08 Send Message Exceeding Character Limit (ID: 108)

o Action:

- Log in as User L.
- Compose a message with 161 characters. Click "Send. " Expected

Results:

• Error message is displayed: "Message exceeds the maximum character

limit

(160)."

- Message is not sent.
- Type: Error Path

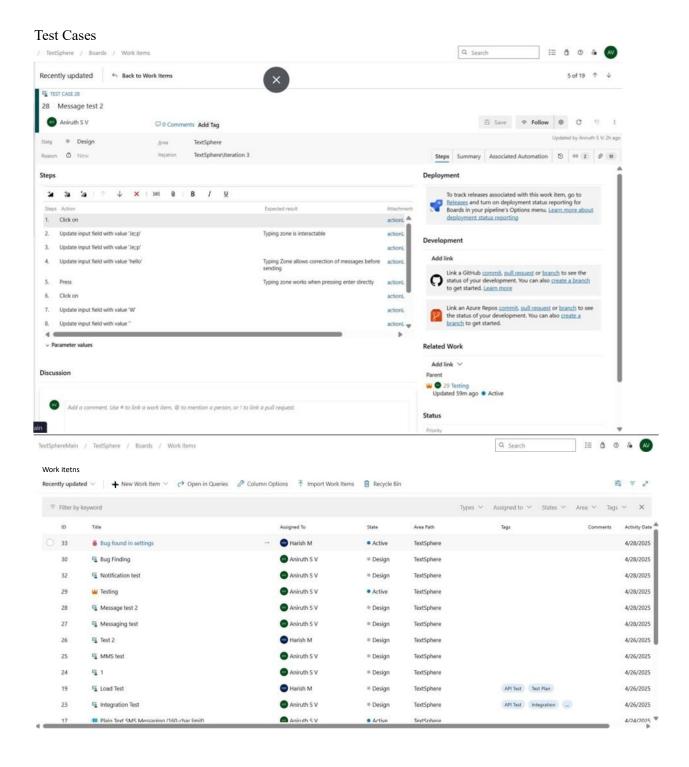
Test Suite: TS05 - Multimedia Messaging (MMS) (ID: 95)

- 1. TC09 Send message with an image. (ID: 109) o Action:
 - Log in as User M.
 - Compose a new message to User N.
 - Attach a valid image file. Click "Send." Expected Results:
 - The image is sent and received successfully.
 - The image is displayed correctly on User N's device.
 - Type: Happy Path
- 2. TCIO Send message with an unsupported file type.

(ID: 110) o Action:

- Log in as User O.
- Compose a new message to User P
- Attach a file of an unsupported type (e.g., .exe). Click "Send." Expected Results:
- Error message is displayed: "Unsupported file type." The file is not sent.

Type: Error Path

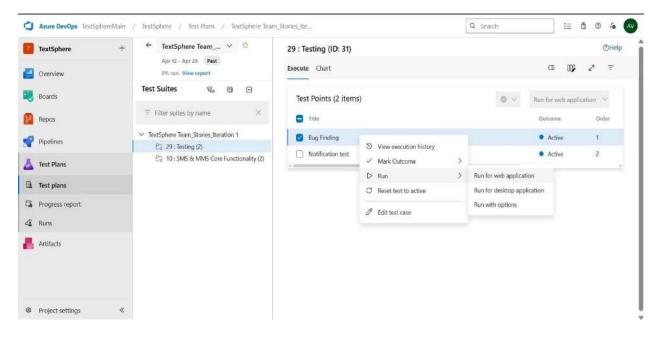


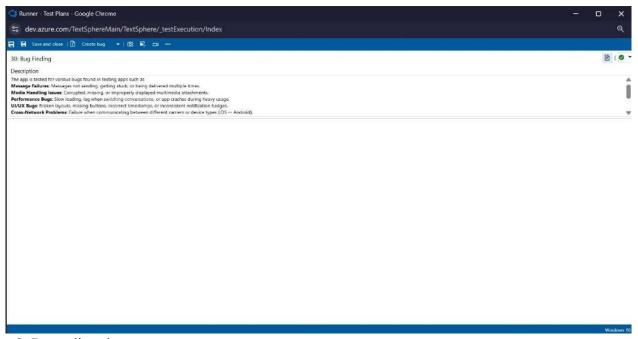
1. Installation of test



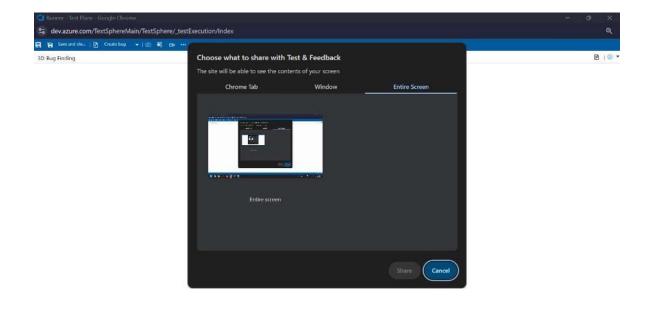


2. Running the test cases

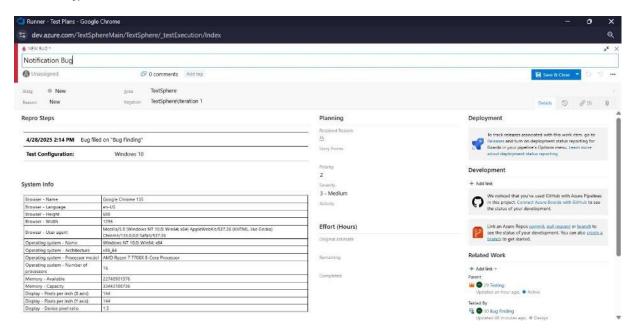


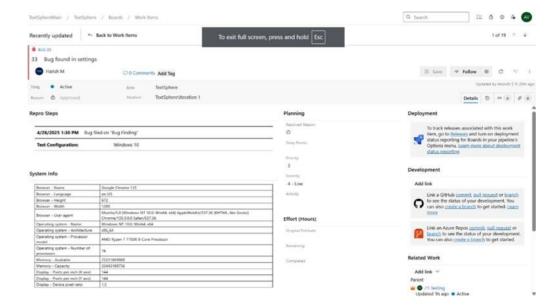


3. Recording the test case

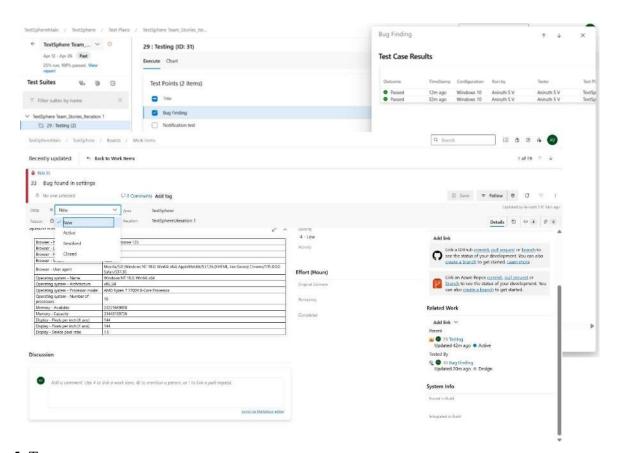


4. Creating the bug



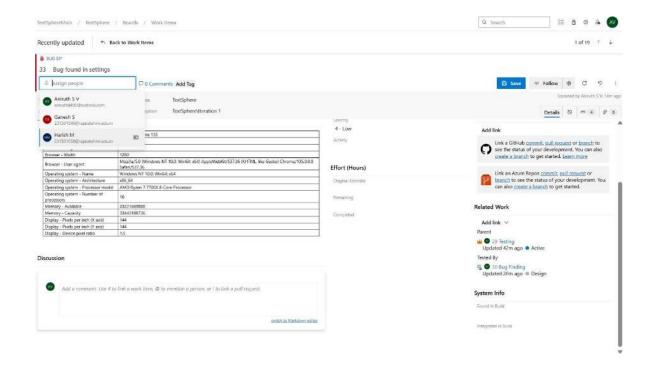


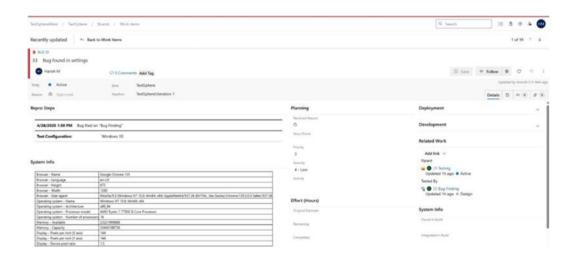
Test case results



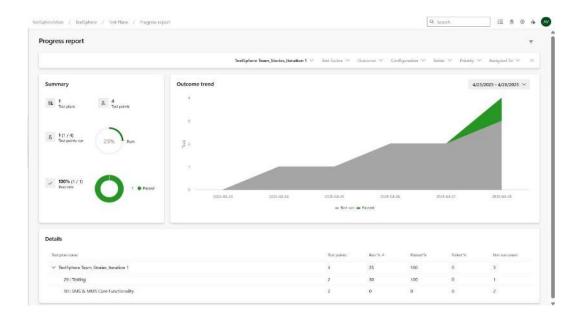
5. Test report summary

• Assigning bug to the developer and changing state

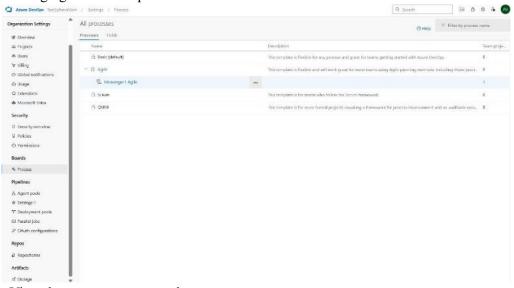




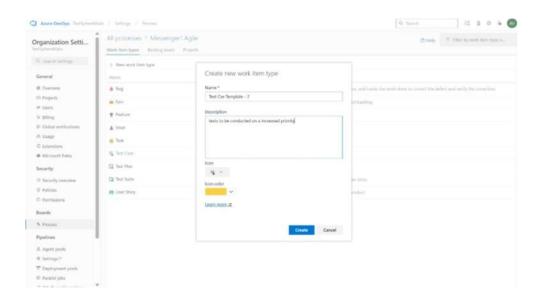
Progress report



6. Changing the test template



7. View the new test case template



Result:

The test plans and test cases for the user stories is created in Azure DevOps with Happy Path and Error Path

EXP NO: 9 LOAD TESTING AND PERFORMANCE TESTING

Aim:

To create an Azure Load Testing resource and run a load test to evaluate the performance of a target endpoint.

Load Testing

Steps to Create an Azure Load Testing Resource:

Before you run your first test, you need to create the Azure Load Testing resource:

1.Sign in to Azure Portal

Go to https://portal.azure.com and log in.

- 2. Create the Resource o Go to Create a resource -+ Search for "Azure Load Testing".
 - o Select Azure Load Testing and click Create.
- 3. Fill in the Configuration Details o Subscription: Choose your Azure subscription.
 - o Resource Group: Create new or select an existing one.
 - o Name: Provide a unique name (no special characters).
 - o Location: Choose the region for hosting the resource.
- 4. (Optional) Configure tags for categorization and billing.

- 5. Click Review + Create, then Create.
- 6. Once deployment is complete, click Go to resource.

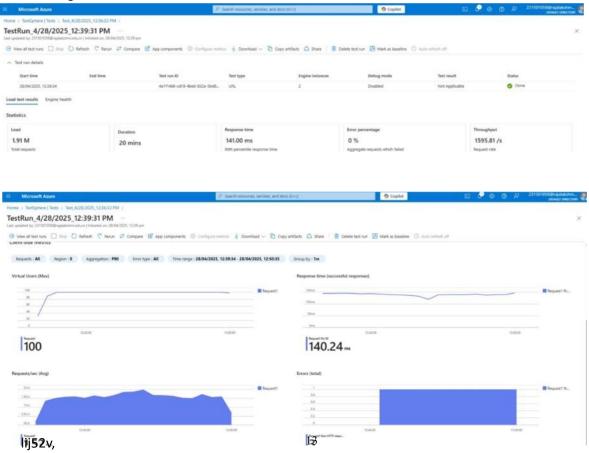
Steps to Create and Run a Load Test:

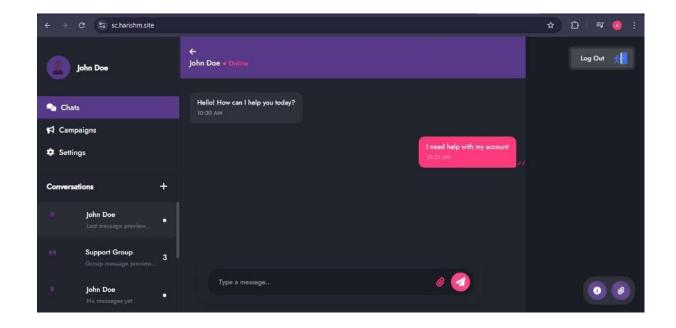
Once your resource is ready:

1.Go to your Azure Load Testing resource and click Add HTTP requests > Create.

- 2. Basics Tab
 - o Test Name: Provide a unique name.
 - o Description: (Optional) Add test purpose.
 - o Run After Creation: Keep checked.
- 3. Load Settings o Test URL: Enter the target endpoint (e.g., https://yourapi.com/products).
- 4. Click Review + Create —4 Create to start the test.

Load Testing





Result:

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

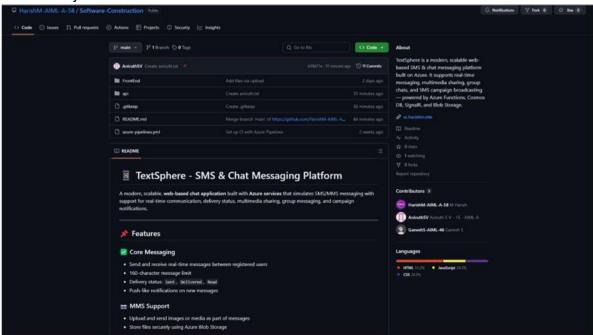
EXP NO: 10

GITHUB: PROJECT STRUCTURE & NAMING CONVENTIONS

Aim:

To provide a clear and organized view of the project's folder structure and file naming conventions, helping contributors and users easily understand, navigate, and extend the SMS/MMS Sending 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.