

# **Intelligent Fire Detection and Response System with Dynamic Nozzle Control and Evacuation Planning**

R24-098

Status Documents 1

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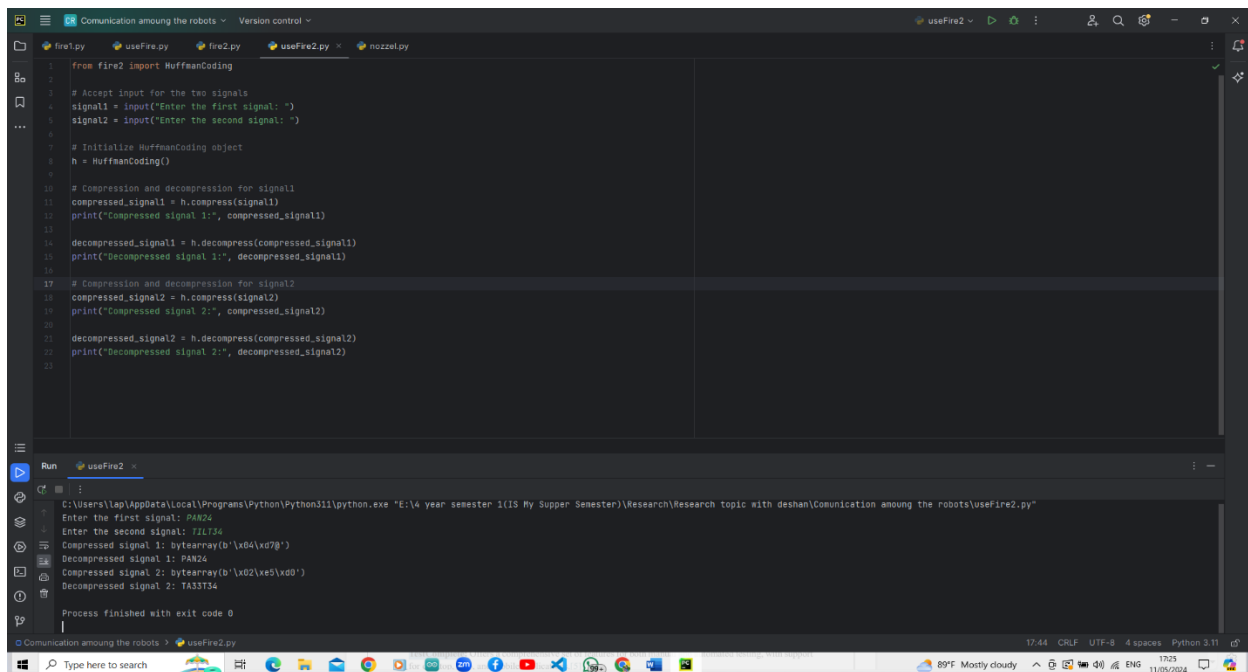
May 2024

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# 01. Test Results of the code

## 1.1 Test Result of the Encode & Decoding Code



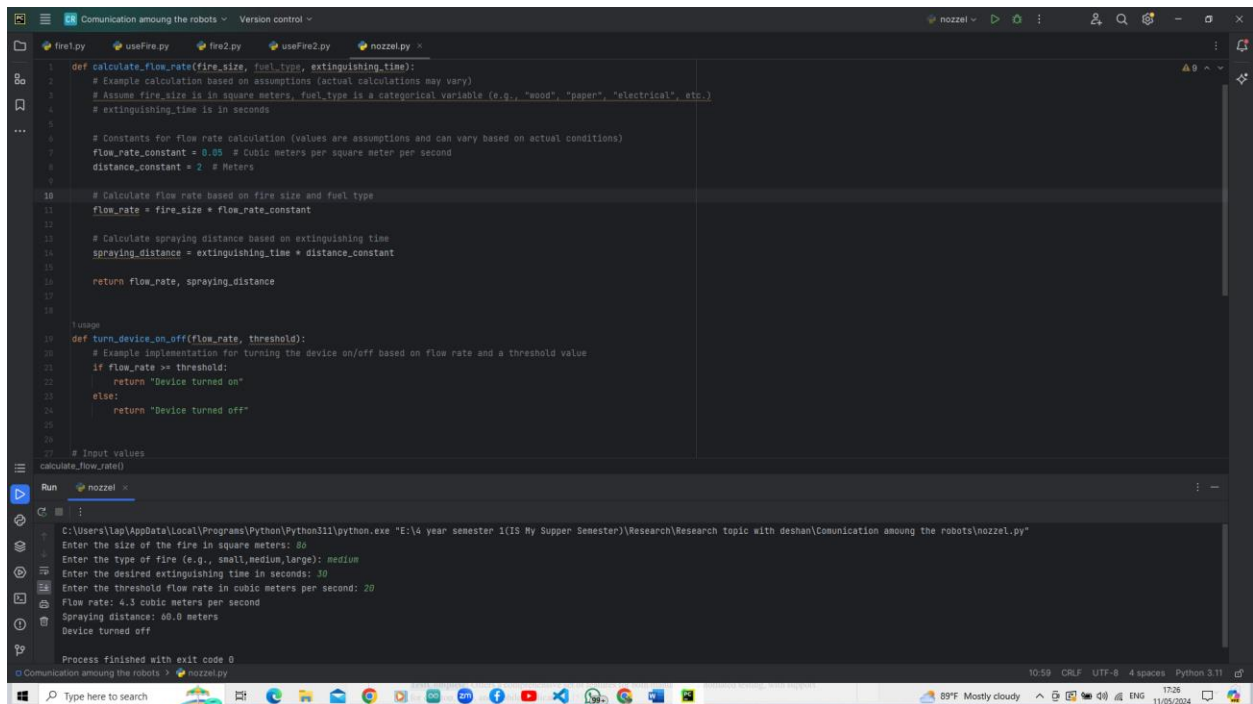
The screenshot displays a Python IDE with a file named `useFire2.py` open. The code implements a Huffman coding algorithm. It prompts the user to enter two signals, compresses them, and then decompresses them to verify the results. The output window shows the execution of the code with the following input and output:

```
1 from fire2 import HuffmanCoding
2
3 # Accept input for the two signals
4 signal1 = input("Enter the first signal: ")
5 signal2 = input("Enter the second signal: ")
6
7 # Initialize HuffmanCoding object
8 h = HuffmanCoding()
9
10 # Compression and decompression for signal1
11 compressed_signal1 = h.compress(signal1)
12 print("Compressed signal 1:", compressed_signal1)
13
14 decompressed_signal1 = h.decompress(compressed_signal1)
15 print("Decompressed signal 1:", decompressed_signal1)
16
17 # Compression and decompression for signal2
18 compressed_signal2 = h.compress(signal2)
19 print("Compressed signal 2:", compressed_signal2)
20
21 decompressed_signal2 = h.decompress(compressed_signal2)
22 print("Decompressed signal 2:", decompressed_signal2)
23
```

The output window shows the following execution results:

```
Enter the first signal: PAN26
Enter the second signal: 71L734
Compressed signal 1: bytearray(b'\x04\x078')
Decompressed signal 1: PAN26
Compressed signal 2: bytearray(b'\x02\xe5\x0b')
Decompressed signal 2: 71L734
Process finished with exit code 0
```

## 1.2 Test Result of the Nozzle Presser Controlling Code



```
def calculate_flow_rate(fire_size, fuel_type, extinguishing_time):
    # Example calculation based on assumptions (actual calculations may vary)
    # Assume fire_size is in square meters, fuel_type is a categorical variable (e.g., "wood", "paper", "electrical", etc.)
    # extinguishing_time is in seconds

    # Constants for flow rate calculation (values are assumptions and can vary based on actual conditions)
    flow_rate_constant = 0.05 # Cubic meters per square meter per second
    distance_constant = 2 # Meters

    # Calculate flow rate based on fire size and fuel type
    flow_rate = fire_size * flow_rate_constant

    # Calculate spraying distance based on extinguishing time
    spraying_distance = extinguishing_time * distance_constant

    return flow_rate, spraying_distance

# Usage
def turn_device_on_off(flow_rate, threshold):
    # Example implementation for turning the device on/off based on flow rate and a threshold value
    if flow_rate >= threshold:
        return "Device turned on"
    else:
        return "Device turned off"

# Input values
calculate_flow_rate()

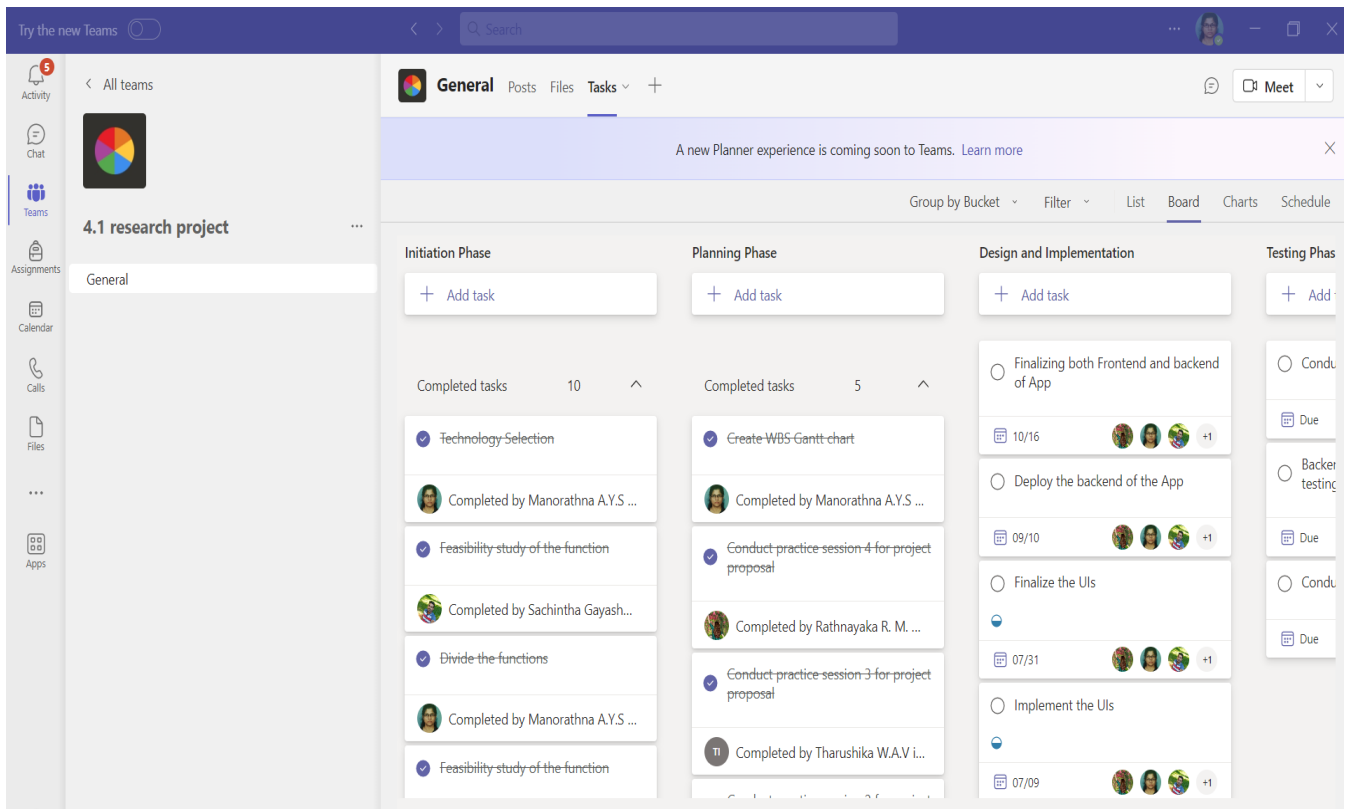
Run nozzle.py

C:\Users\lap\AppData\Local\Programs\Python\Python311\python.exe "E:\4 year semester 1(IIS My Supper Semester)\Research\Research topic with deshan\Communication among the robots\nozzle.py"
Enter the size of the fire in square meters: 80
Enter the type of fire (e.g., small, medium, large): medium
Enter the desired extinguishing time in seconds: 30
Enter the threshold flow rate in cubic meters per second: 20
Flow rate: 4.0 cubic meters per second
Spraying distance: 60.0 meters
Device turned off

Process finished with exit code 0
```

## 02. MS Teams Planner

### 2.1 Project view of the individual work distribution



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General

**General** Posts Files Tasks +

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Group by Bucket Filter List **Board** Charts Schedule

**Initiation Phase**

+ Add task

- Feasibility study of the function
- Completed by Sachintha Gayash...
- Study about the own function
- Completed by Rathnayaka R. M. ...
- Study about the own function
- Completed by Tharushika W.A.V i...
- Study about the own function
- Completed by Manorathna A.Y.S ...
- Study about the own function

**Planning Phase**

+ Add task

Completed tasks 5

- Create WBS Gantt chart
- Completed by Manorathna A.Y.S ...
- Conduct practice session 4 for project proposal
- Completed by Rathnayaka R. M. ...
- Conduct practice session 3 for project proposal
- Completed by Tharushika W.A.V i...

**Design and Implementation**

+ Add task

- Finalizing both Frontend and backend of App
- 10/16
- Deploy the backend of the App
- 09/10
- Finalize the UIs
- 07/31
- Implement the UIs
- 07/09

**Testing Phase**

+ Add task

- Conduct
- Due
- Backer testing
- Due
- Condu
- Due

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General

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Group by Bucket Filter List **Board** Charts Schedule

**4.1 research project**

4

Private team

4.1 research project

+ Add task

- Completed by Manorathna A.Y.S ...
- Study about the own function
- Completed by Sachintha Gayash...
- Yellow
- Technology Selection
- Completed by Sachintha Gayash...
- Discussion - ideas for research topic selection
- Completed by Sachintha Gayash...

**Planning Phase**

+ Add task

Completed tasks 5

- Create WBS Gantt chart
- Completed by Manorathna A.Y.S ...
- Conduct practice session 4 for project proposal
- Completed by Rathnayaka R. M. ...
- Conduct practice session 3 for project proposal
- Completed by Tharushika W.A.V i...

**Design and Implementation**

+ Add task

- Finalizing both Frontend and backend of App
- 10/16
- Deploy the backend of the App
- 09/10
- Finalize the UIs
- 07/31
- Implement the UIs
- 07/09

**Testing Phase**

+ Add task

- Condu
- Due
- Backer testing
- Due
- Condu
- Due

Activity Chat Teams

4.1 research project

General

General Posts Files Tasks +

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Group by Bucket Filter List Board Charts Schedule

Design and Implementation

- + Add task
- Finalizing both Frontend and backend of App
  - 10/16
- Deploy the backend of the App
  - 09/10
- Finalize the UIs
  - 07/31
- Implement the UIs
  - 07/09

Testing Phase

- + Add task
- Conduct the UAT testing
  - Due
- Backend - Conduct the integration testing
  - Due
- Conduct system testing
  - Due

Project Finalize Phase

- + Add task
- Finalize the both front end and backend
  - Due
- Finalize enhancement and UI tweaking
  - Due
- Finalize the project
  - Due

Docum

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Activity Chat Teams

4.1 research project

General

General Posts Files Tasks +

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Group by Bucket Filter List Board Charts Schedule

4.1 research project

4

Private team

4.1 research project

+ Add task

Completed tasks 10

- Technology-Selection
- Completed by Manorathna A.Y.S ...
- Feasibility study of the function
- Completed by Sachintha Gayash...
- Divide the functions
- Completed by Manorathna A.Y.S ...
- Feasibility study of the function

Planning Phase

- + Add task
- Completed by Rathnayaka R. M. ...
- Conduct practice session 3 for project proposal
- Completed by Tharushika W.A.V i...
- Conduct practice session 2 for project proposal
- Completed by Sachintha Gayash...
- Yellow
- Conduct Practice session 1 for the viva presentation
- Completed by Manorathna A.Y.S ...

Design and Implementation

- + Add task
- Finalizing both Frontend and backend of App
  - 10/16
- Deploy the backend of the App
  - 09/10
- Finalize the UIs
  - 07/31
- Implement the UIs
  - 07/09

Testing Phase

- + Add
- Condu
- Due
- Backer testing
- Due
- Condu
- Due

5

Activity

< All teams

General

4.1 research project

General

Chat

Teams

Assignments

Calendar

Calls

Files

...

Apps

General

Posts

Files

Tasks

+

Meet

×

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×

Group by Bucket

Filter

List

Board

Charts

Schedule

Project Finalize Phase

+ Add task

○ Finalize the both front end and backend

Due

+1

○ Finalize enhancement and UI tweaking

Due

+1

○ Finalize the project

Due

+1

Documents

+ Add task

○ Final Report

Due

+1

○ Create Progress Presentation - 2

Due

+1

○ Create Progress presentation - 1

Due

+1

○ Start to write Final Individual Report - IT21086670

Due

○ Start to write final group report

Add new bucket

5

Activity

< All teams

General

4.1 research project

General

Chat

Teams

Assignments

Calendar

Calls

Files

...

Apps

General

Posts

Files

Tasks

+

Meet

×

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×

Group by Bucket

Filter

List

Board

Charts

Schedule

Project Finalize Phase

+ Add task

○ Finalize the both front end and backend

Due

+1

○ Finalize enhancement and UI tweaking

Due

+1

○ Finalize the project

Due

+1

Documents

+ Add task

○ Maintain the Log Book - IT21086670

Due

○ Maintain the Log Book - IT21101342

Due

○ Maintain the Log Book - IT21100116

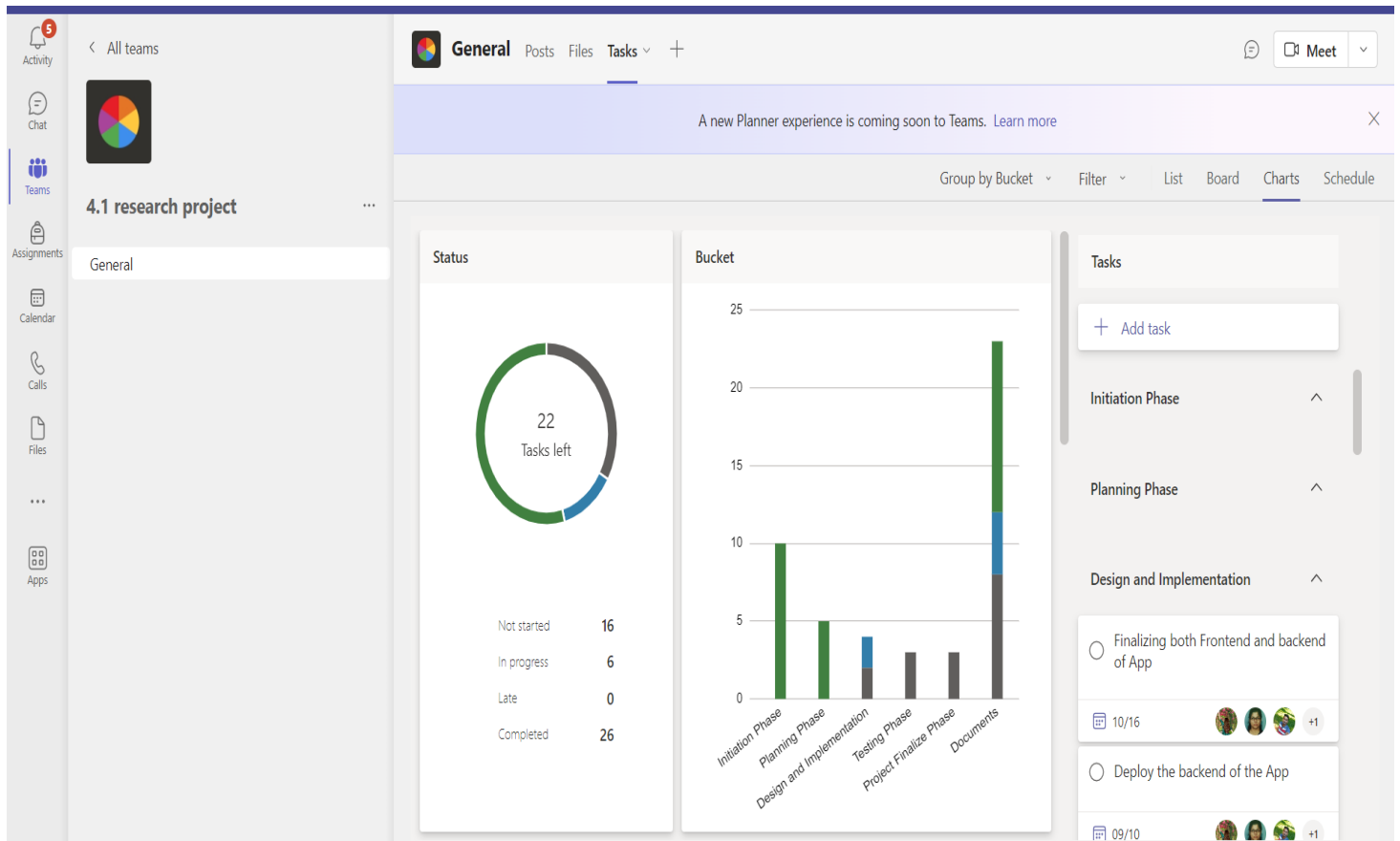
Due

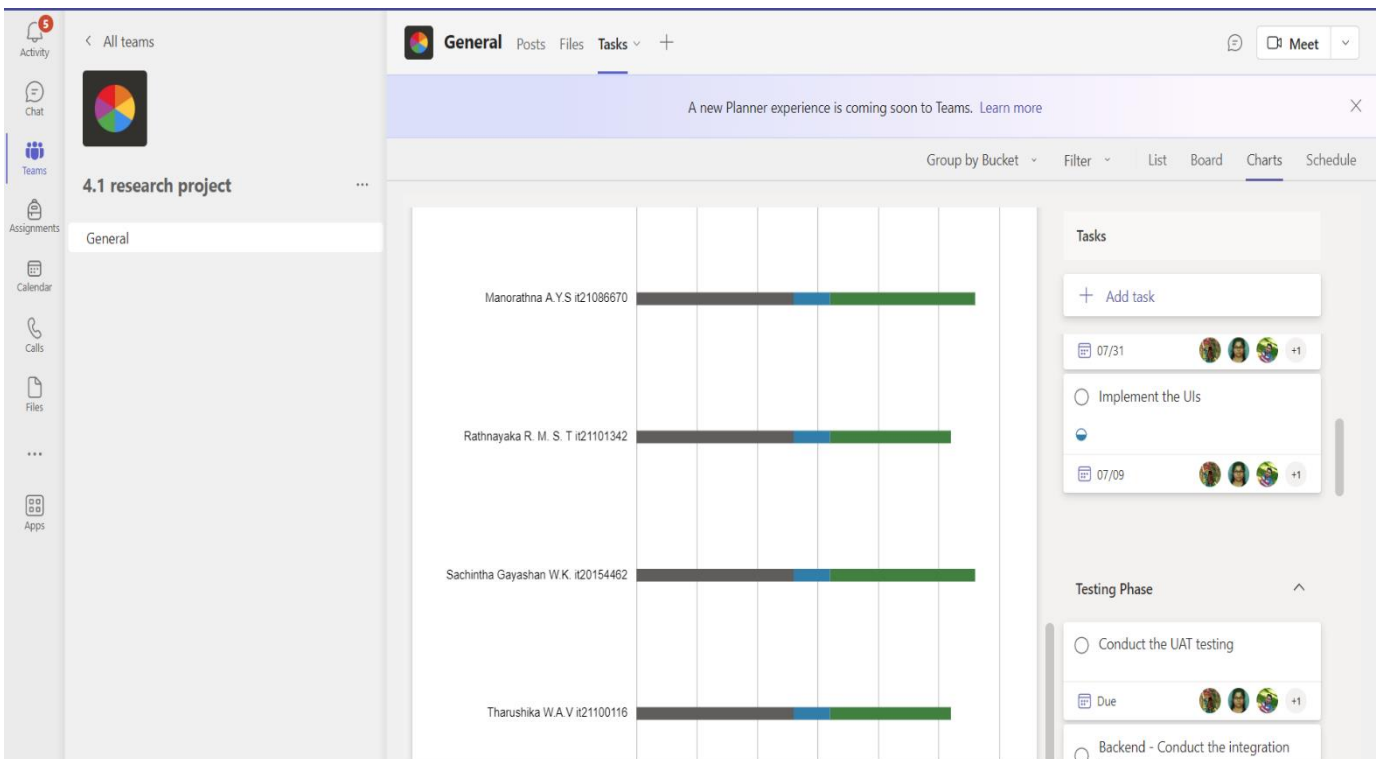
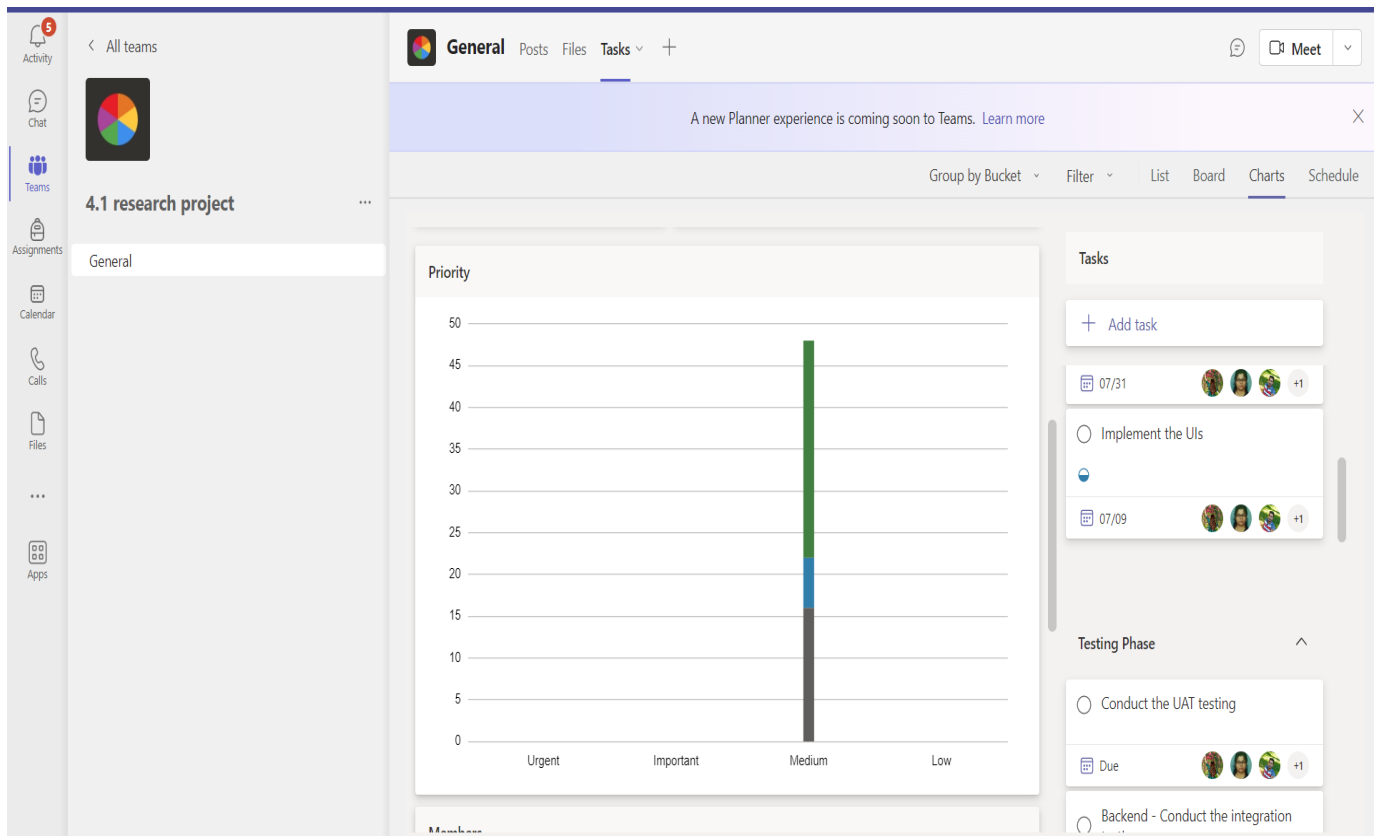
○ Start to write Final Individual Report - IT21101342

Add new bucket

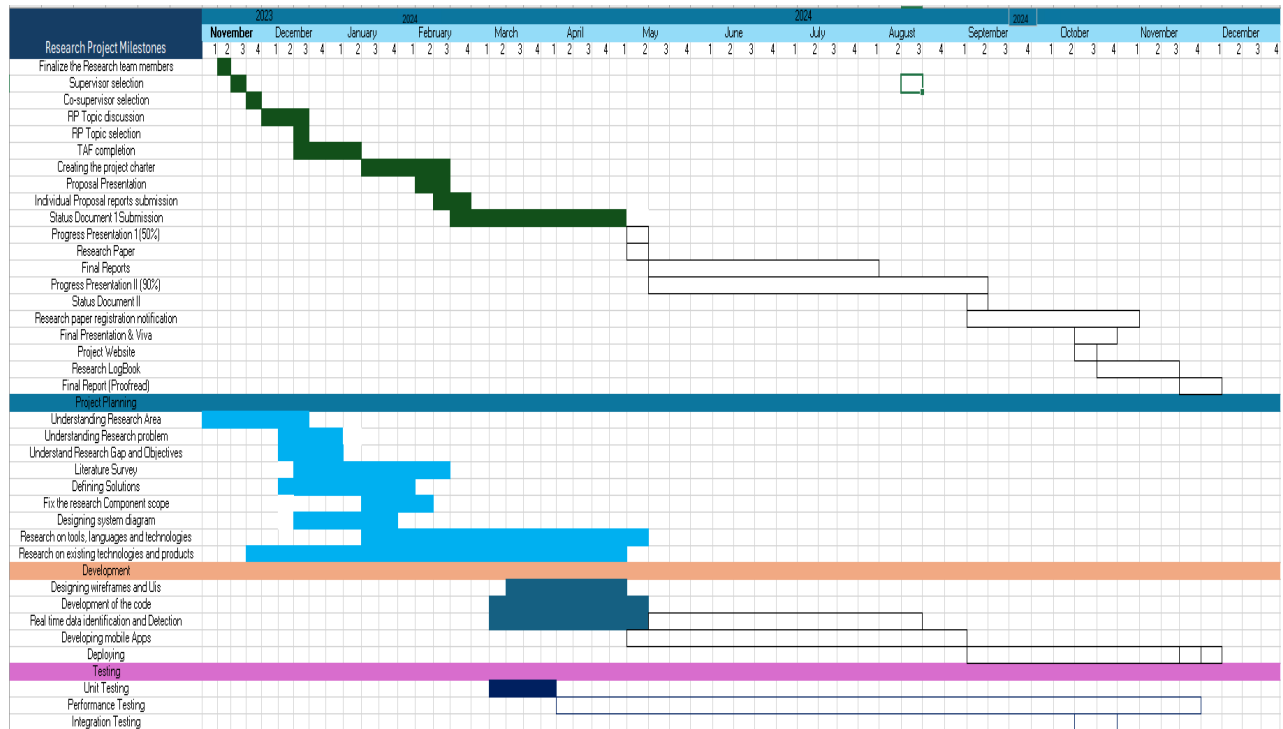


## 2.2 Graph visualization of the individual task distribution





### 03.Gantt Chart



## 04.Work Breakdown Structure

