Experiment 01:-

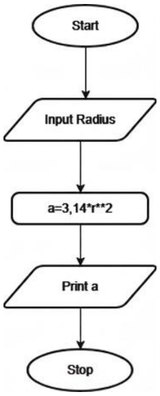
Problem Statement:-

Write a Python program that calculates the area of a circle when the radius is provided by the user. Use pi = 3.14 and display the area.

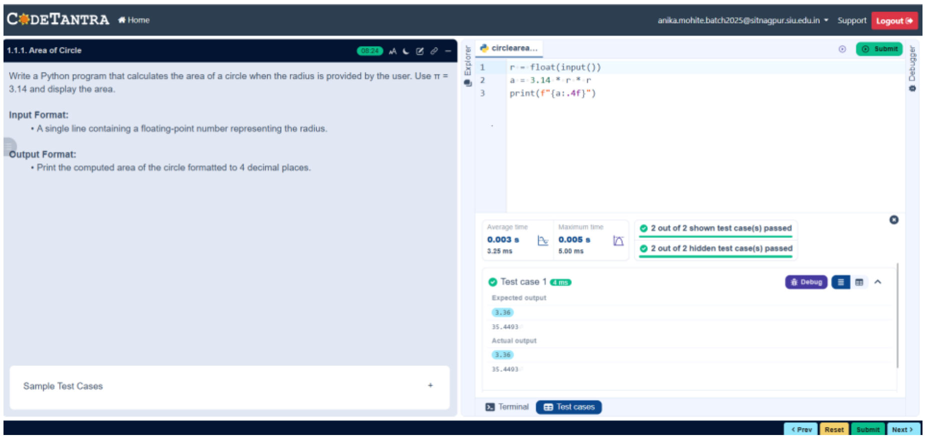
Algorithm:-

1. Start
2. Read the radius `r` from the user
3. Calculate the area using the formula:
   Area = 3.14 × r × r
4. Display the area
5. Stop.

Flowchart:-



Execution:-



Write a Python program that calculates the area of a circle when the radius is provided by the user. Use π = 3.14 and display the area.

Input Format:

- A single line containing a floating-point number representing the radius.

Output Format:

- Print the computed area of the circle formatted to 4 decimal places.

```
r = float(input())
a = 3.14 * r * r
print(f"{a:.4f}")
```

Average time 0.003 s 3.25 ms

Maximum time 0.005 s 5.00 ms

2 out of 2 shown test case(s) passed

2 out of 2 hidden test case(s) passed

Test case 1 4 ms

Expected output

```
3.36
35.4493
```

Actual output

```
3.36
35.4493
```

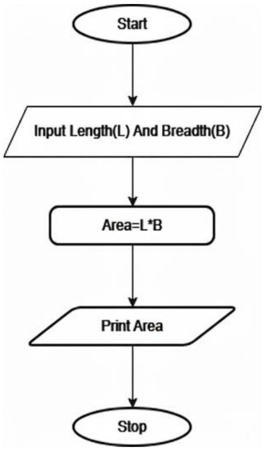
Problem Statement:-

Write a Python program to calculate the area of a rectangle given its length and width.

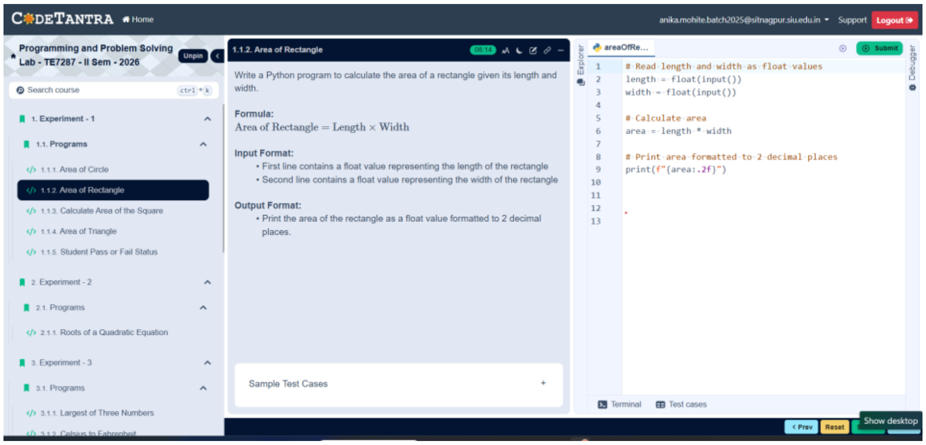
Algorithm:-

1. Start.
2. Read the length l and Width b from the user.
3. Calculate the area using the formula:
   Area = l*b.
4. Display the area.
5. Stop.

Flowchart:-



Execution:-



1.1.2. Area of Rectangle

Write a Python program to calculate the area of a rectangle given its length and width.

Formula:
Area of Rectangle = Length × Width

Input Format:

- First line contains a float value representing the length of the rectangle
- Second line contains a float value representing the width of the rectangle

Output Format:

- Print the area of the rectangle as a float value formatted to 2 decimal places.

Sample Test Cases +

```python
# Read length and width as float values
length = float(input())
width = float(input())

# Calculate area
area = length * width

# Print area formatted to 2 decimal places
print(f"{area:.2f}")
```

Problem Statement:-

Write a Python program that prompts the user to enter the Side Length of a square and computes the area of the square.

Algorithm:-

1. Start.

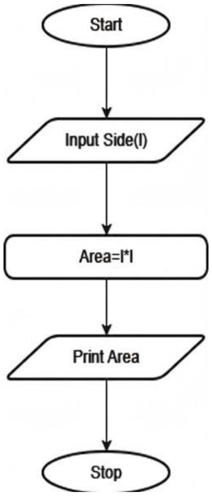
2. Read the side length s of the square.

3. Calculate the area using the formula: Area=$s \times s$.

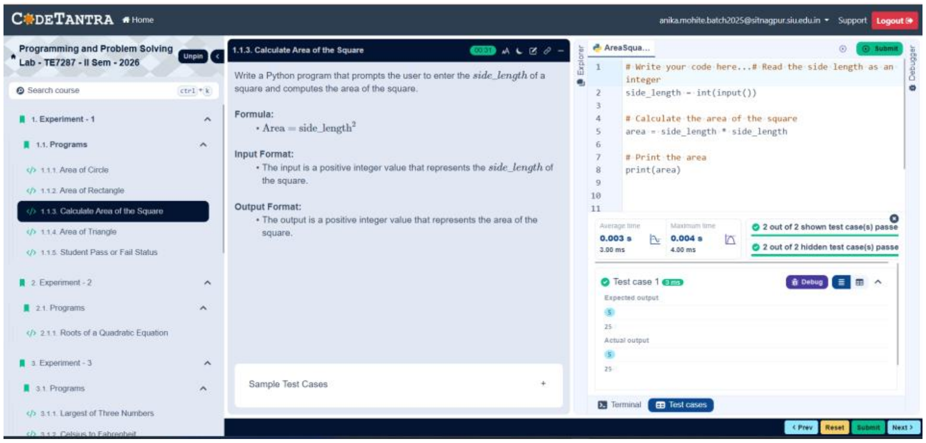
4. Display the area

5. Stop.

Flowchart:-



Execution:-



1.1.3. Calculate Area of the Square

Write a Python program that prompts the user to enter the *side_length* of a square and computes the area of the square.

Formula:

- $\text{Area} = \text{side\_length}^2$

Input Format:

- The input is a positive integer value that represents the *side_length* of the square.

Output Format:

- The output is a positive integer value that represents the area of the square.

Sample Test Cases +

```python
# Write your code here...# Read the side length as an integer
side_length = int(input())

# Calculate the area of the square
area = side_length * side_length

# Print the area
print(area)
```

Average time 0.003 s 3.00 ms

Maximum time 0.004 s 4.00 ms

2 out of 2 shown test case(s) passe

2 out of 2 hidden test case(s) passe

Test case 1 3 ms

Expected output

```
5
25
```

Actual output

```
5
25
```

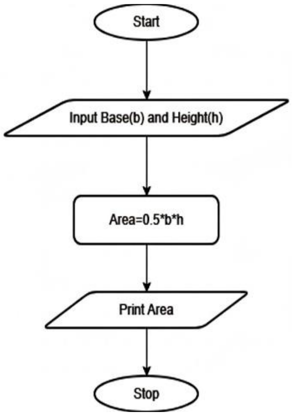
Problem Statement:-

Write a Python program that prompts the user to enter the triangle's base and height and computes the triangle's area.

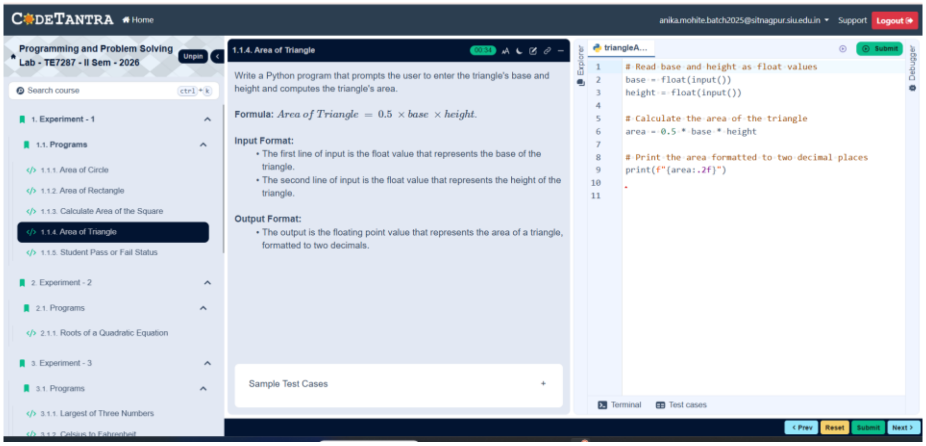
Algorithm:-

1. Start.
2. Read the base b and height h of the triangle.
3. Calculate the area using the formula: Area=0.5×b×h.
4. Display the area.
5. Stop.

Flowchart:-



Execution:-



1.1.4. Area of Triangle

Write a Python program that prompts the user to enter the triangle's base and height and computes the triangle's area.

Formula: $Area\ of\ Triangle\ =\ 0.5\ \times base\ \times height.$

Input Format:

- The first line of input is the float value that represents the base of the triangle.
- The second line of input is the float value that represents the height of the triangle.

Output Format:

- The output is the floating point value that represents the area of a triangle, formatted to two decimals.

Sample Test Cases

```
# Read base and height as float values
base = float(input())
height = float(input())

# Calculate the area of the triangle
area = 0.5 * base * height

# Print the area formatted to two decimal places
print(f"{area:.2f}")
```

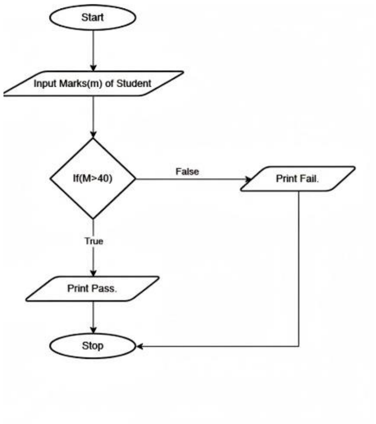
Problem Statement:-

Write a Python program to determine whether a student passed the exam or not based on their marks.

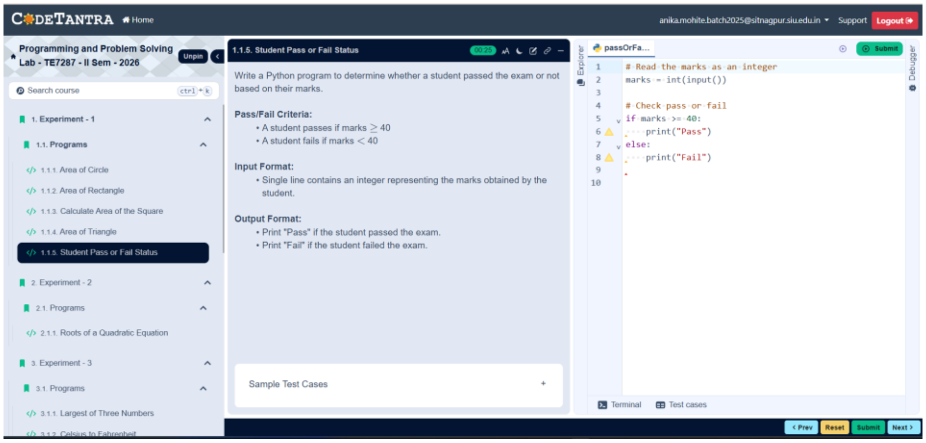
Algorithm:-

1. Start.
2. Read the marks obtained by the student.
3. If marks > 40 → Display “Pass”.
4. Else → Display “Fail”.
5. Stop.

Flowchart:-



Execution:-



1.1.5. Student Pass or Fail Status

Write a Python program to determine whether a student passed the exam or not based on their marks.

Pass/Fail Criteria:

- A student passes if marks ≥ 40
- A student fails if marks < 40

Input Format:

- Single line contains an integer representing the marks obtained by the student.

Output Format:

- Print "Pass" if the student passed the exam.
- Print "Fail" if the student failed the exam.

Sample Test Cases

```
# Read the marks as an integer
marks = int(input())

# Check pass or fail
if marks >= 40:
    print("Pass")
else:
    print("Fail")

```

Experiment 02:-

Problem Statement:-

Write a program to find the roots of a quadratic equation, given its coefficients a, b, and c. Use the quadratic formula: (-b+-root(b**2-4ac))/2a.

Algorithm:-

1. Start.
2. Read the coefficients a, b, and c.
3. Calculate the discriminant using:- $D=b$^2−4ac.

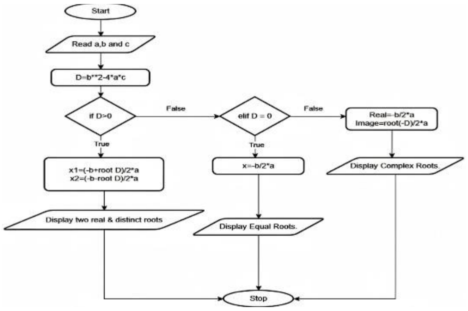
4. If D > 0 Compute:- $x1=(-b+\text{root}D)/2\text{a}$ and $x2=(-b-\text{root}D)/2a$ Display two real and distinct roots.

5. Else if D = 0 Compute:- $x=-b/2a$ Display equal real roots.

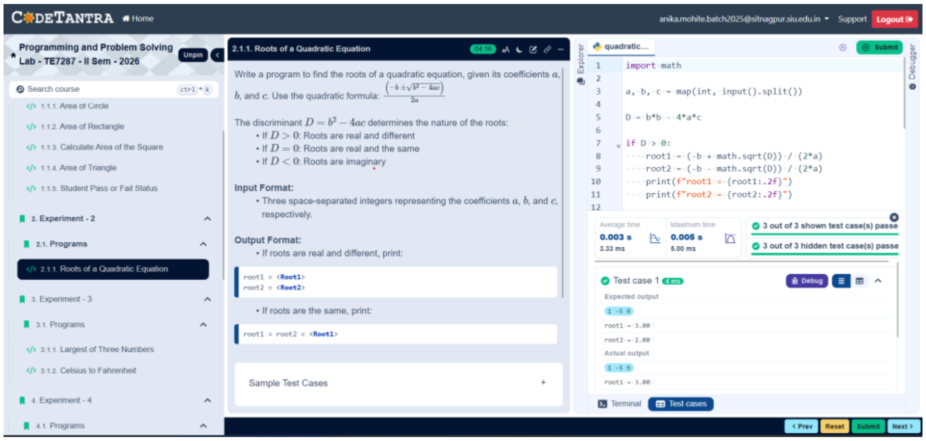
6. Else (D < 0) Compute:- Real part = $-b/2a$ Imaginary part = root(-D)/2a Display complex roots.

7. Stop.

Flowchart:-



Execution:-



2.1.1. Roots of a Quadratic Equation

Write a program to find the roots of a quadratic equation, given its coefficients a, b, and c. Use the quadratic formula: $\frac{\left(-b \pm\sqrt{b^2-4ac}\right)}{2a}$

The discriminant $D = b^2 - 4ac$ determines the nature of the roots:

- If $D > 0$: Roots are real and different
- If $D = 0$: Roots are real and the same
- If $D < 0$: Roots are imaginary

Input Format:

- Three space-separated integers representing the coefficients a, b, and c, respectively.

Output Format:

- If roots are real and different, print:

```
root1 = <Root1>
root2 = <Root2>
```

- If roots are the same, print:

```
root1 = root2 = <Root1>
```

Sample Test Cases +

```python
import math

a, b, c = map(int, input().split())

D = b*b - 4*a*c

if D > 0:
    root1 = (-b + math.sqrt(D)) / (2*a)
    root2 = (-b - math.sqrt(D)) / (2*a)
    print(f"root1 = {root1:.2f}")
    print(f"root2 = {root2:.2f}")
```

Average time 0.003 s 3.33 ms

Maximum time 0.005 s 5.00 ms

3 out of 3 shown test case(s) passe

3 out of 3 hidden test case(s) passe

Test case 1 4 ms

Expected output

```
1 -5 6
root1 = 3.00
root2 = 2.00
```

Actual output

```
1 -5 6
root1 = 3.00
```

Experiment 03:-

Problem Statement:-

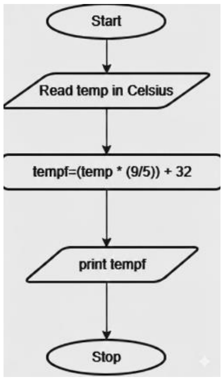
Write a Python program to convert temperature from Celsius to Fahrenheit.

Algorithm:-

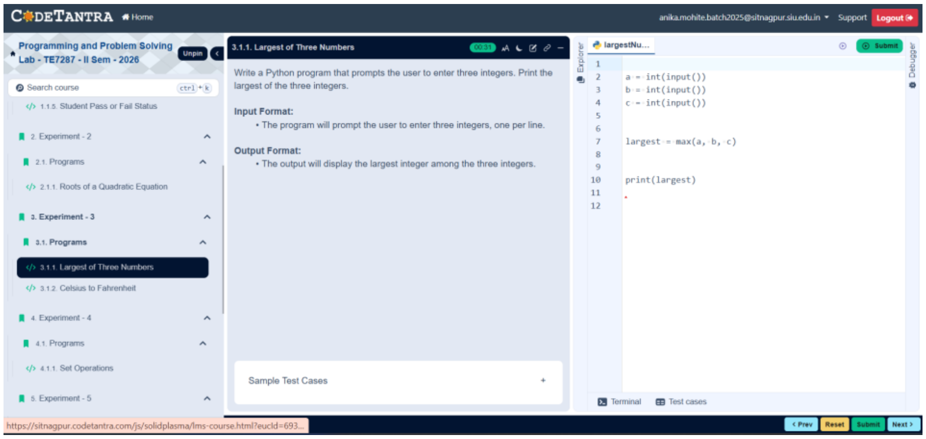
1. Start.
2. Input temperature in Celsius C.
3. Calculate Fahrenheit using the formula F = (C × 9/5) + 32.
4. Display the temperature in Fahrenheit.

5. Stop.

Flowchart:-



Execution:-


CODETANTRA
Home
anika.mohite.batch2025@sitnagpur.siu.edu.in
Support
Logout
Programming and Problem Solving Lab - TE7287 - II Sem - 2026
Unpin
Search course
ctrl + k
1.1.5. Student Pass or Fail Status
2. Experiment - 2
2.1. Programs
2.1.1. Roots of a Quadratic Equation
3. Experiment - 3
3.1. Programs
3.1.1. Largest of Three Numbers
3.1.2. Celsius to Fahrenheit
4. Experiment - 4
4.1. Programs
4.1.1. Set Operations
5. Experiment - 5
00:31
Explorer
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Submit
Debugger
Sample Test Cases
Terminal
Test cases
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Submit
Next ›
https://sitnagpur.codetantra.com/js/solidplasma/lms-course.html?eucld=693...

3.1.1. Largest of Three Numbers

Write a Python program that prompts the user to enter three integers. Print the largest of the three integers.

Input Format:

- The program will prompt the user to enter three integers, one per line.

Output Format:

- The output will display the largest integer among the three integers.

```

a = int(input())
b = int(input())
c = int(input())


largest = max(a, b, c)


print(largest)
```

Problem Statement:-

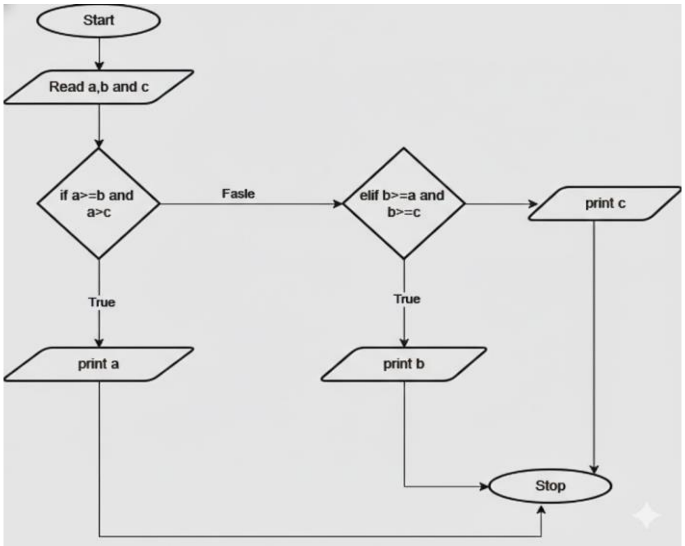
Write a Python program that prompts the user to enter three integers. Print the largest of the three integers.

Algorithm:-

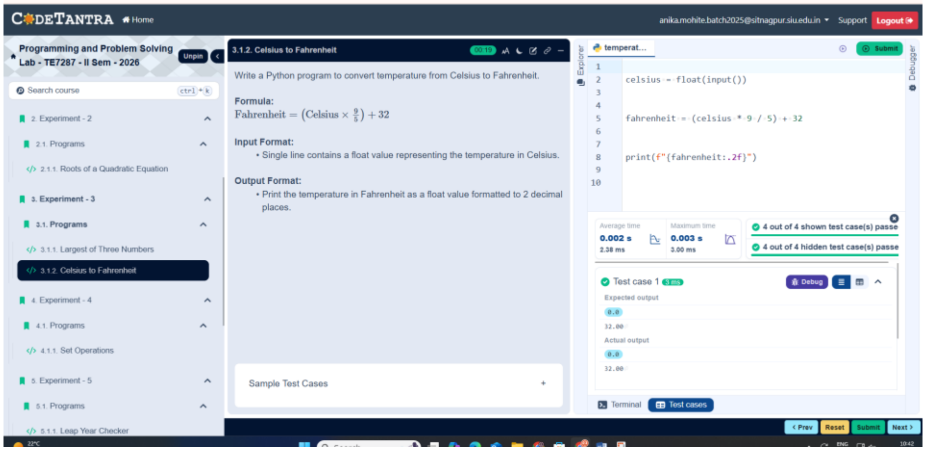
1. Start.
2. Input three integers a, b, and c.

3. If a ≥ b and a ≥ c → Print a as the largest number.
4. Else if b ≥ a and b ≥ c → Print b as the largest number.
5. Else → Print c as the largest number.
6. Stop

Flowchart:-



Execution:-



Write a Python program to convert temperature from Celsius to Fahrenheit.

Formula:
$\text{Fahrenheit} = \left(\text{Celsius} \times \frac{9}{5}\right) + 32$

Input Format:
- Single line contains a float value representing the temperature in Celsius.

Output Format:
- Print the temperature in Fahrenheit as a float value formatted to 2 decimal places.

```

celsius = float(input())


fahrenheit = (celsius * 9 / 5) + 32


print(f"{fahrenheit:.2f}")


```

Average time 0.002 s 2.38 ms
Maximum time 0.003 s 3.00 ms
4 out of 4 shown test case(s) passe
4 out of 4 hidden test case(s) passe

Test case 1 3 ms

```
Expected output
0.0
32.00
Actual output
0.0
32.00
```

Experiment 04:-

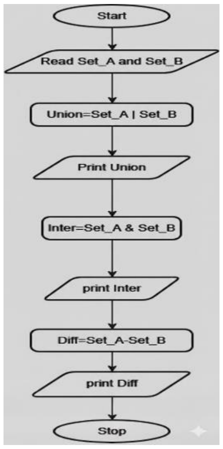
Problem Statement:-

Write a Python program to perform union, intersection and difference operations on Set A and Set B.

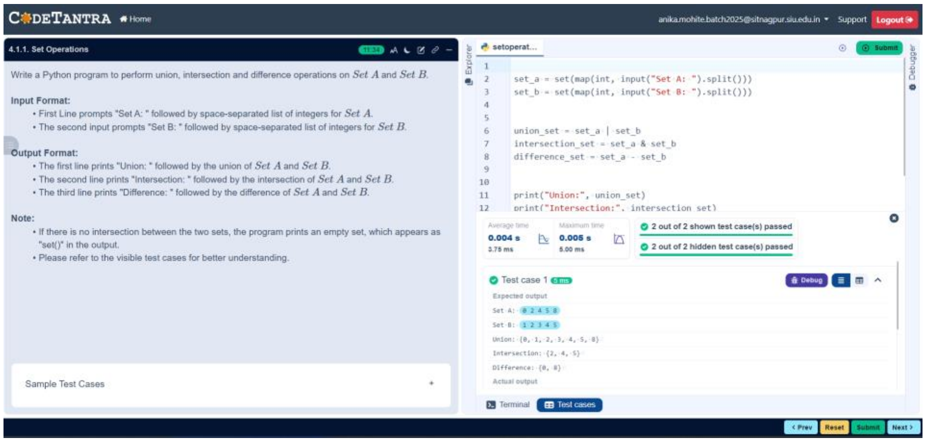
Algorithm:-

1. Start.
2. Declare two sets A and B
3. Read elements of Set A from the user
4. Read elements of Set B from the user
5. Perform Union operation Union = A ∪ B.
6. Perform Intersection operation Intersection = A ∩ B.
7. Perform Difference operations
8. Difference1 = A − B.
9. Display Set A and Set B
10. Display Union, Intersection, and Difference results
11. Stop.

Flowchart:-



Execution:-



Write a Python program to perform union, intersection and difference operations on *Set A* and *Set B*.

Input Format:

- First Line prompts "Set A: " followed by space-separated list of integers for *Set A*.
- The second input prompts "Set B: " followed by space-separated list of integers for *Set B*.

Output Format:

- The first line prints "Union: " followed by the union of *Set A* and *Set B*.
- The second line prints "Intersection: " followed by the intersection of *Set A* and *Set B*.
- The third line prints "Difference: " followed by the difference of *Set A* and *Set B*.

Note:

- If there is no intersection between the two sets, the program prints an empty set, which appears as "set()" in the output.
- Please refer to the visible test cases for better understanding.

Sample Test Cases

```

set_a = set(map(int, input("Set A: ").split()))
set_b = set(map(int, input("Set B: ").split()))


union_set = set_a | set_b
intersection_set = set_a & set_b
difference_set = set_a - set_b


print("Union:", union_set)
print("Intersection:", intersection_set)
```

Average time 0.004 s 3.75 ms

Maximum time 0.005 s 5.00 ms

2 out of 2 shown test case(s) passed

2 out of 2 hidden test case(s) passed

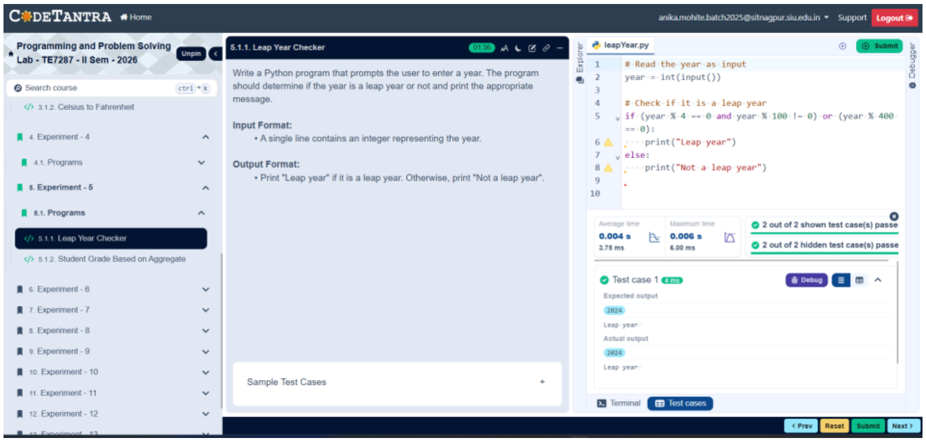
Test case 1 5 ms

Expected output

```
Set A: 0 2 4 5 8
Set B: 1 2 3 4 5
Union: {0, 1, 2, 3, 4, 5, 8}
Intersection: {2, 4, 5}
Difference: {0, 8}
```

Actual output

Experiment 5



5.1.1. Leap Year Checker

Write a Python program that prompts the user to enter a year. The program should determine if the year is a leap year or not and print the appropriate message.

Input Format:

- A single line contains an integer representing the year.

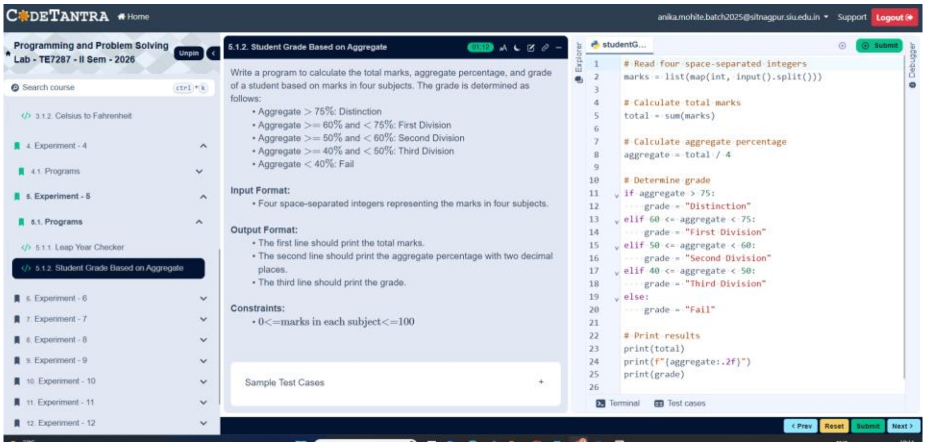
Output Format:

- Print "Leap year" if it is a leap year. Otherwise, print "Not a leap year".

Sample Test Cases +

```python
# Read the year as input
year = int(input())

# Check if it is a leap year
if (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0):
    print("Leap year")
else:
    print("Not a leap year")

```

```
Average time   Maximum time
0.004 s        0.006 s
3.75 ms        6.00 ms

✓ 2 out of 2 shown test case(s) passe
✓ 2 out of 2 hidden test case(s) passe

✓ Test case 1  4 ms
Expected output
2024
Leap year
Actual output
2024
Leap year
```



5.1.2. Student Grade Based on Aggregate

Write a program to calculate the total marks, aggregate percentage, and grade of a student based on marks in four subjects. The grade is determined as follows:

- Aggregate > 75%: Distinction
- Aggregate >= 60% and < 75%: First Division
- Aggregate >= 50% and < 60%: Second Division
- Aggregate >= 40% and < 50%: Third Division
- Aggregate < 40%: Fail

Input Format:

- Four space-separated integers representing the marks in four subjects.

Output Format:

- The first line should print the total marks.
- The second line should print the aggregate percentage with two decimal places.
- The third line should print the grade.

Constraints:

- $0 <= \text{marks in each subject} <= 100$

Sample Test Cases +

```python
# Read four space-separated integers
marks = list(map(int, input().split()))

# Calculate total marks
total = sum(marks)

# Calculate aggregate percentage
aggregate = total / 4

# Determine grade
if aggregate > 75:
    grade = "Distinction"
elif 60 <= aggregate < 75:
    grade = "First Division"
elif 50 <= aggregate < 60:
    grade = "Second Division"
elif 40 <= aggregate < 50:
    grade = "Third Division"
else:
    grade = "Fail"

# Print results
print(total)
print(f"{aggregate:.2f}")
print(grade)

```