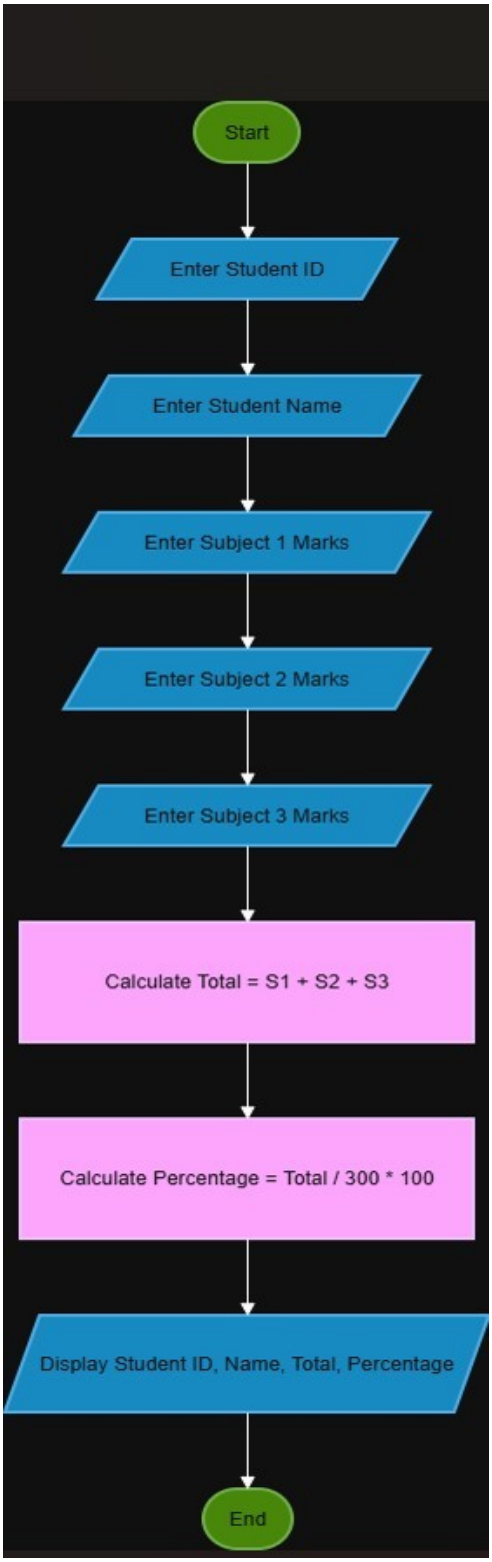
Objective :- The objective of this lab is to understand how to solve basic problems using **algorithm, flowchart, and Scratch programming**. In this lab, we learn how to take input from the user, perform calculations, and display results correctly.

Problem #1:- Student Details Record System

Algorithm:-

1. Start
2. Ask the user to enter Student ID
3. Ask the user to enter Student Name
4. Ask the user to enter marks of Subject 1 , 2 and 3
5. Calculate Obtained Marks = Subject1 + Subject2 + Subject3
6. Calculate Percentage = (Obtained Marks / 300) × 100
7. Display Student ID, Student Name, Obtained Marks, and Percentage
8. End

FLOWCHART:


Start
Enter Student ID
Enter Student Name
Enter Subject 1 Marks
Enter Subject 2 Marks
Enter Subject 3 Marks
Calculate Total = S1 + S2 + S3
Calculate Percentage = Total / 300 * 100
Display Student ID, Name, Total, Percentage
End

Scratch Program (Blocks Description)

Start (when green flag clicked)

Ask **Student ID** and store it

Ask **Student Name** and store it

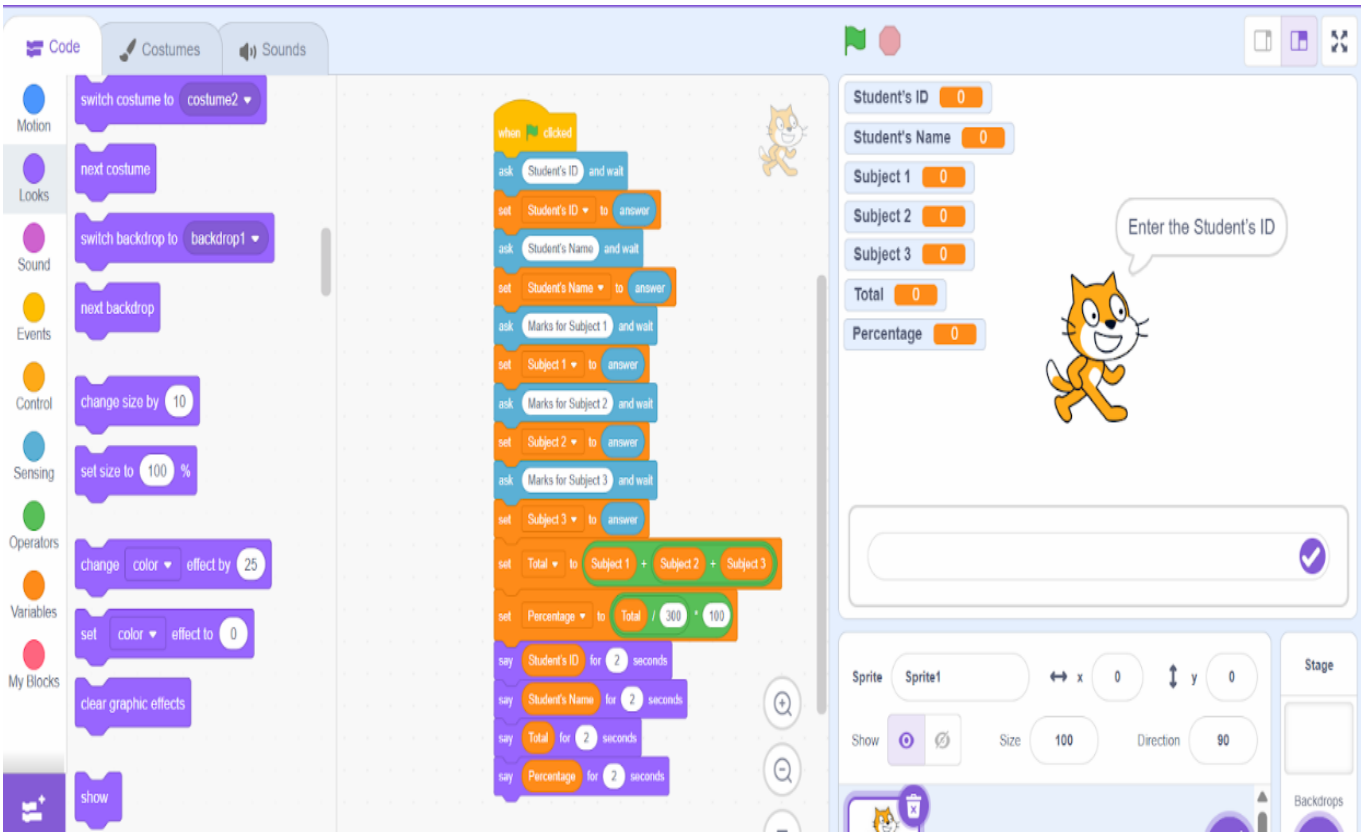
Ask marks of **Subject 1, Subject 2, Subject 3** and store them

Obtained Marks = Subject1 + Subject2 + Subject3

Percentage = (Obtained Marks / 300) × 100

Display **Student ID, Student Name, Obtained Marks, Percentage**

End

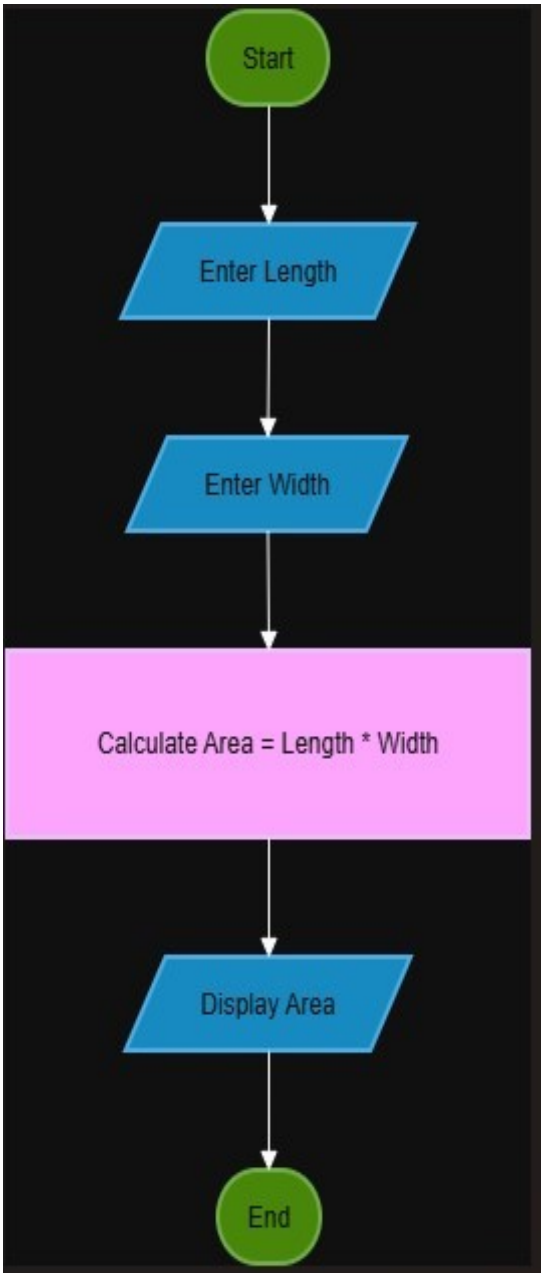

Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
switch costume to costume2
next costume
switch backdrop to backdrop1
next backdrop
change size by 10
set size to 100 %
change color effect by 25
set color effect to 0
clear graphic effects
show
when clicked
ask Student's ID and wait
set Student's ID to answer
ask Student's Name and wait
set Student's Name to answer
ask Marks for Subject 1 and wait
set Subject 1 to answer
ask Marks for Subject 2 and wait
set Subject 2 to answer
ask Marks for Subject 3 and wait
set Subject 3 to answer
set Total to Subject 1 + Subject 2 + Subject 3
set Percentage to Total / 300 * 100
say Student's ID for 2 seconds
say Student's Name for 2 seconds
say Total for 2 seconds
say Percentage for 2 seconds
Student's ID 0
Student's Name 0
Subject 1 0
Subject 2 0
Subject 3 0
Total 0
Percentage 0
Enter the Student's ID
Sprite
Sprite1
x 0
y 0
Show
Size 100
Direction 90
Stage
Backdrops

Problem #2: Area of a Rectangle

Algorithm:-

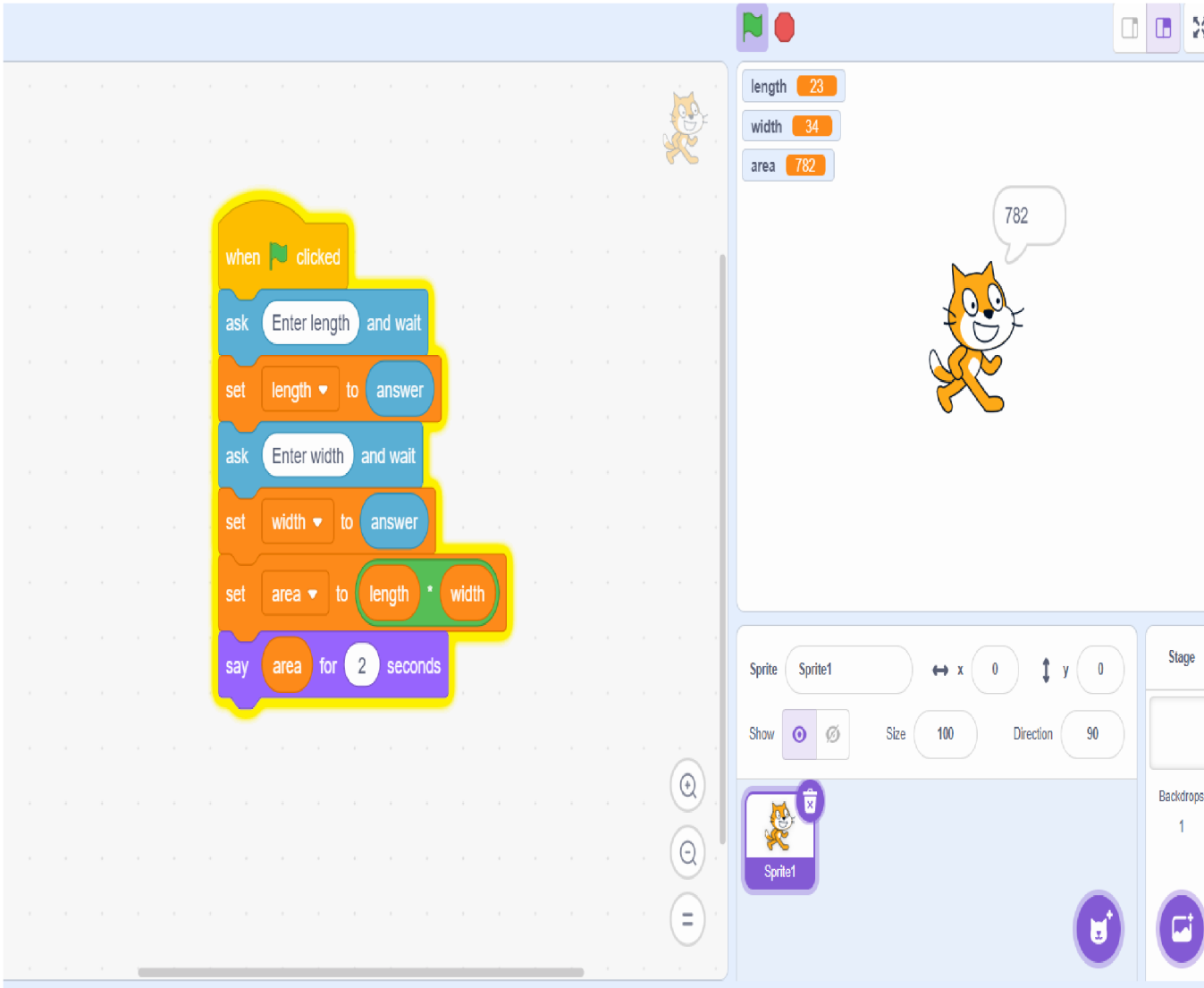
1. Start
2. Ask the user to enter Length
3. Ask the user to enter Width
4. Calculate Area = Length × Width
5. Display the Area
6. End

FLOWCHART:-


Start
Enter Length
Enter Width
Calculate Area = Length * Width
Display Area
End

SCRATCH:Scratch Program (Blocks Description)

- When **green flag clicked**
- Ask “Enter length” → store in **Length**
- Ask “Enter width” → store in **Width**
- Set **Area** = Length × Width
- Say “Area of rectangle is” and Area



Problem #3: Celsius to Fahrenheit Conversion

ALGORITHM:

Start

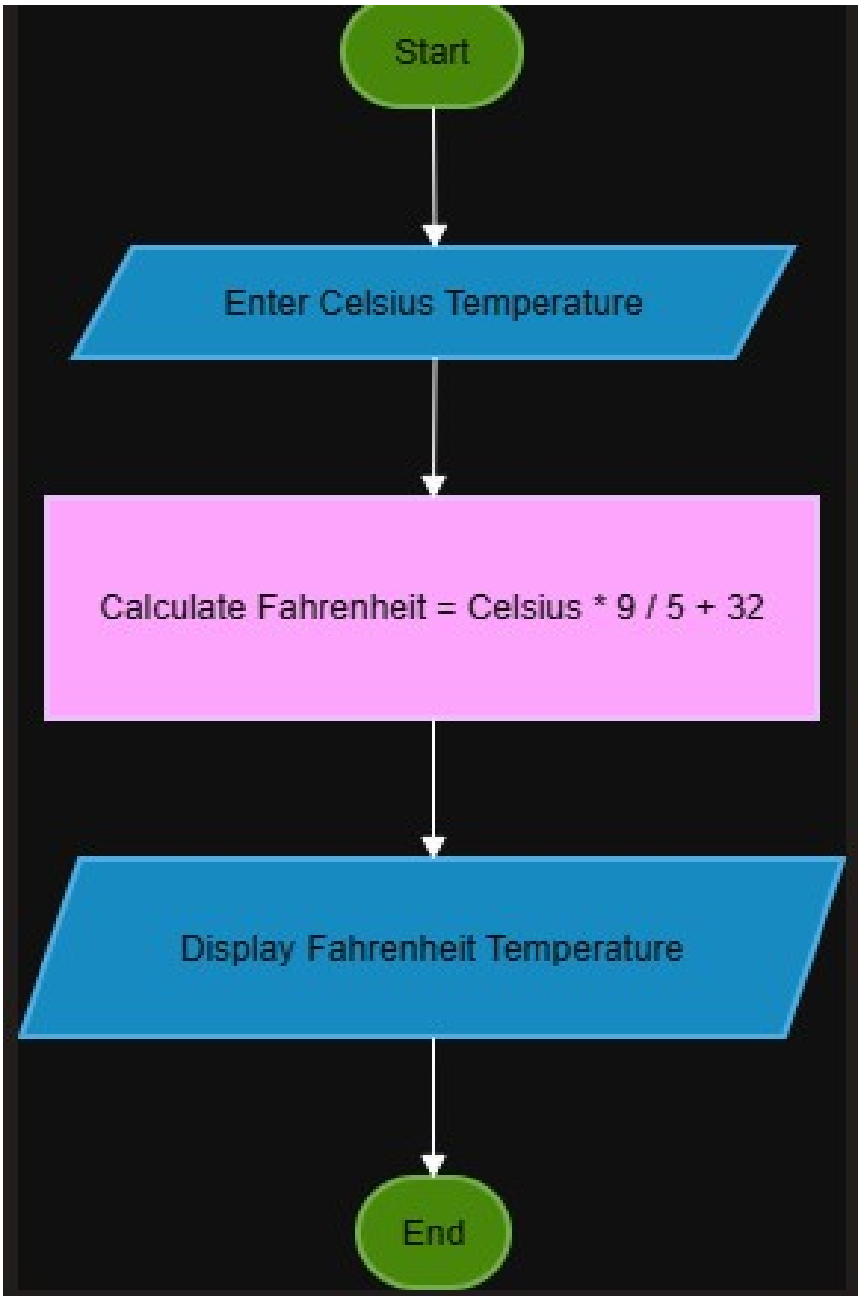
Input **Celsius** temperature

Calculate **Fahrenheit = (Celsius × 9/5) + 32**

Display **Fahrenheit**

End

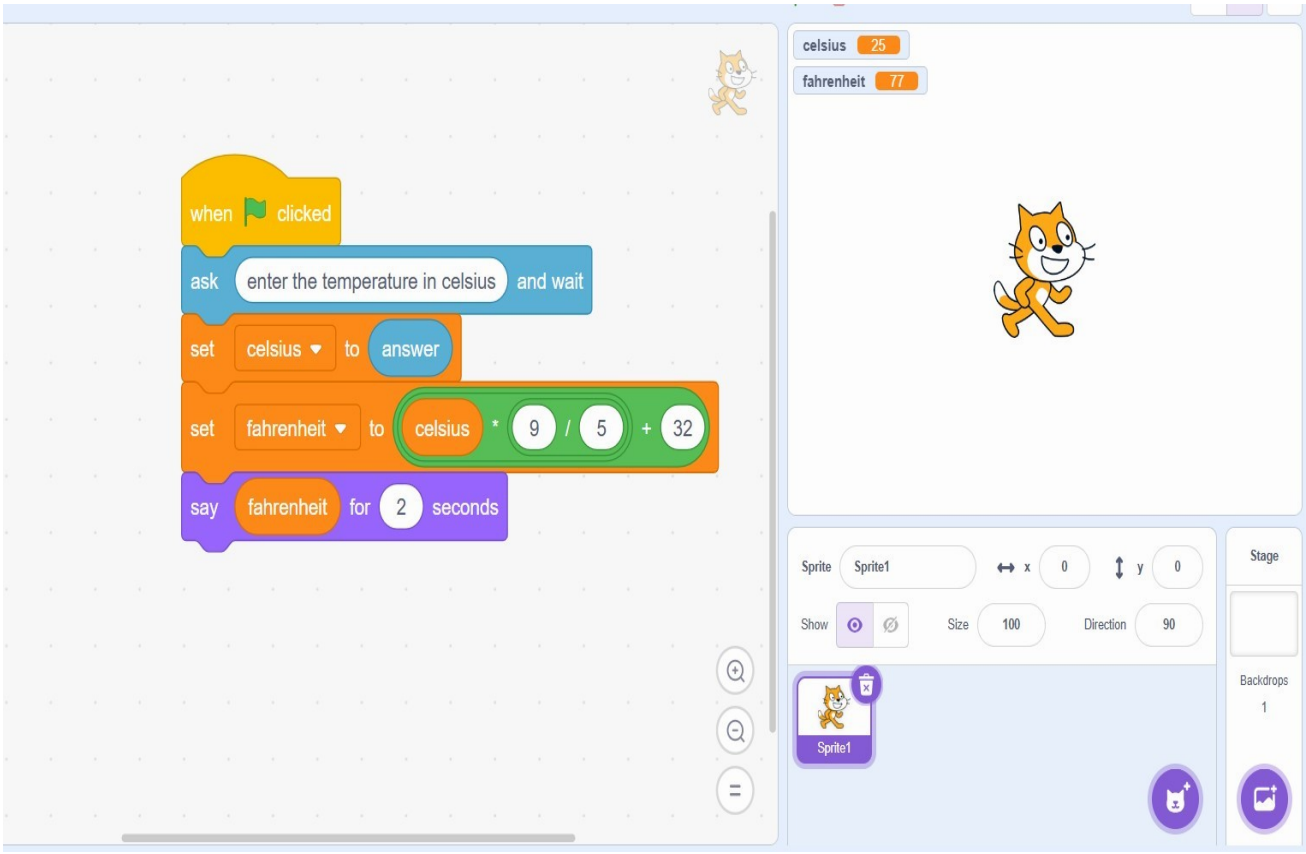
FLOWCHART:


Start
Enter Celsius Temperature
Calculate Fahrenheit = Celsius * 9 / 5 + 32
Display Fahrenheit Temperature
End

Scratch:

Scratch Program (Blocks Description)

- When **green flag clicked**
- Ask “Enter temperature in Celsius” → store in **Celsius**
- Set **Fahrenheit** = (Celsius × 9 / 5) + 32
- Say “Temperature in Fahrenheit is” and Fahrenheit


when clicked
ask enter the temperature in celsius and wait
set celsius to answer
set fahrenheit to celsius * 9 / 5 + 32
say fahrenheit for 2 seconds
celsius 25
fahrenheit 77
Sprite Sprite1
x 0
y 0
Show
Size 100
Direction 90
Stage
Backdrops 1
Sprite1