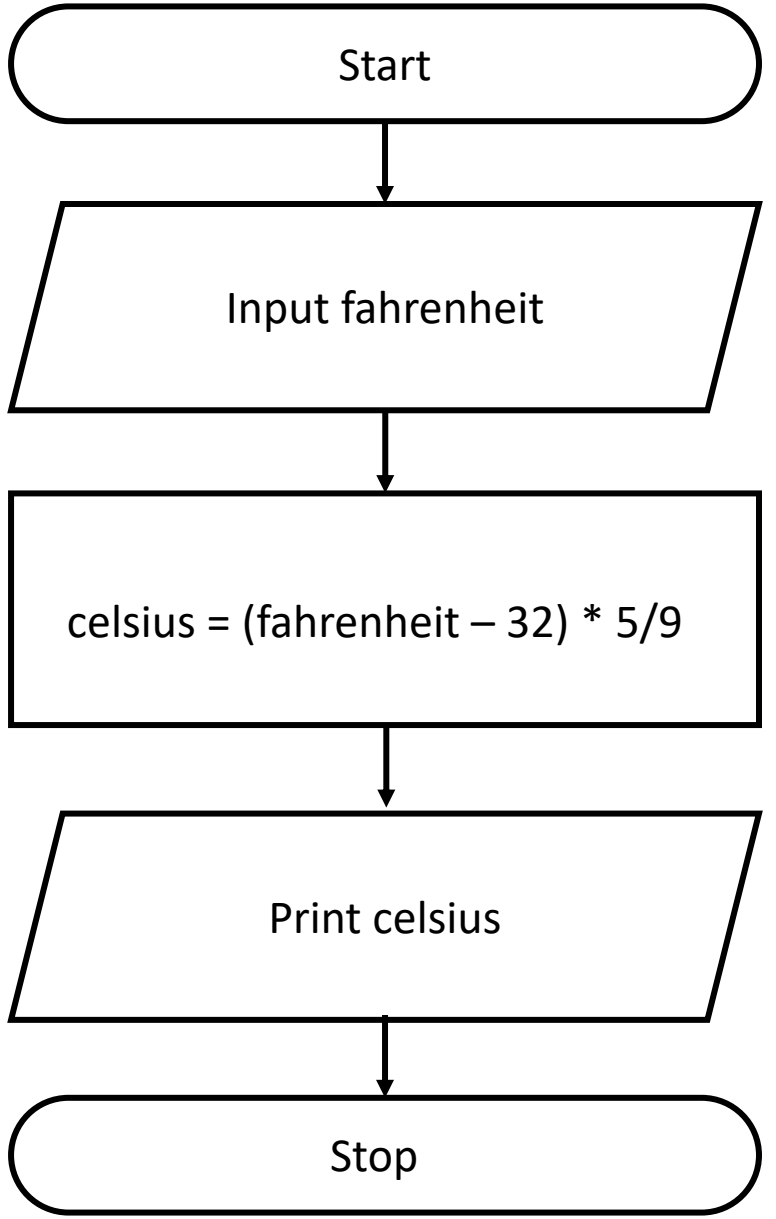
Introduction to Flowcharting

CSE 101: Lab 6

Flowcharts

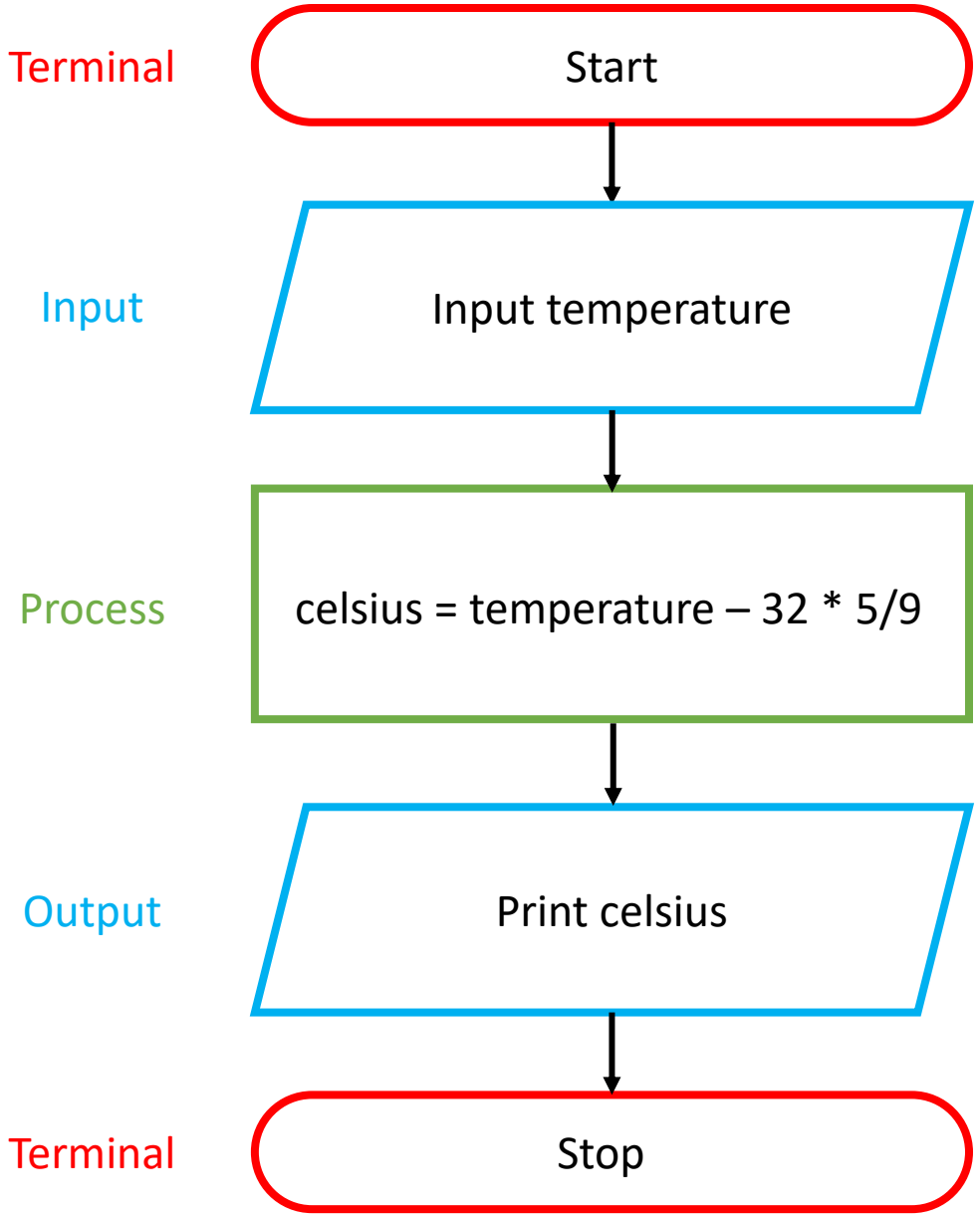
- A flowchart is a diagram that represents an algorithm or the steps of an entire program
- The example here represents a Fahrenheit to Celsius program



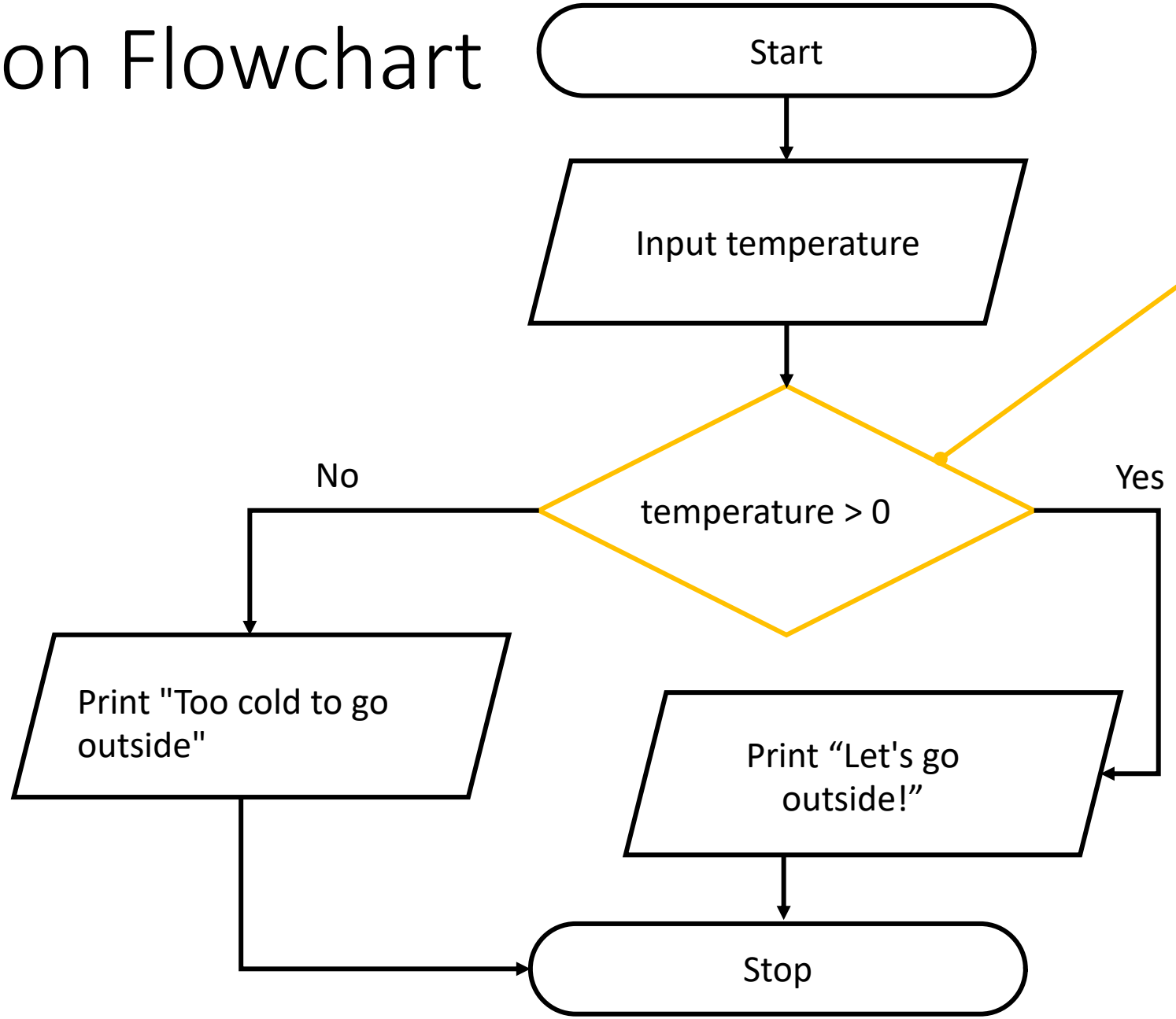
Parts of a Flowchart

- Terminal: start or end of a flowchart
- Input/Output: input or output operations
- Process: indicates computations or data manipulations (e.g. assigning a variable)

Note that each part has a defined shape



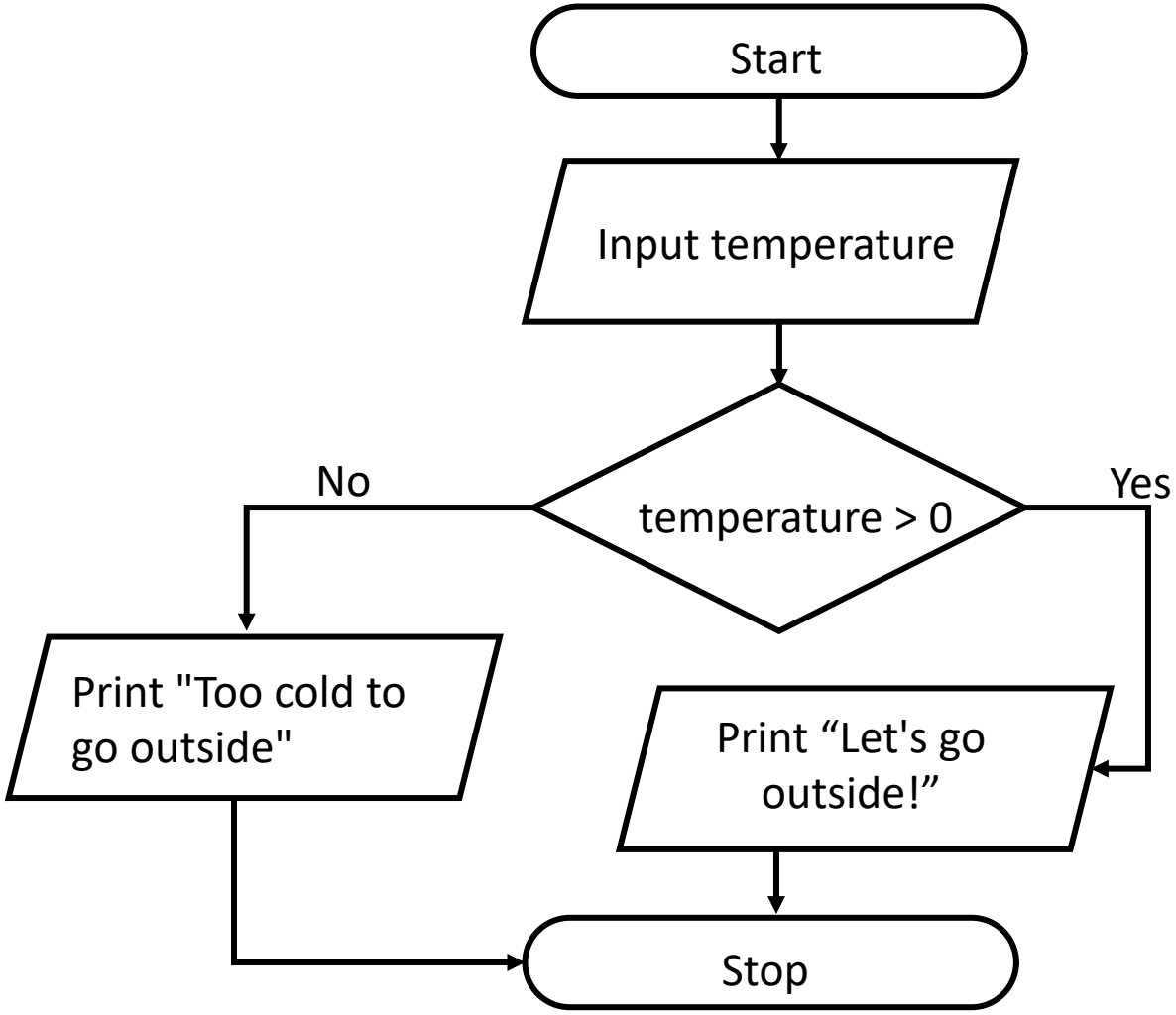
Decision Flowchart



The diamond shape is a **decision** point.

Can express with **if/else statement** in Python

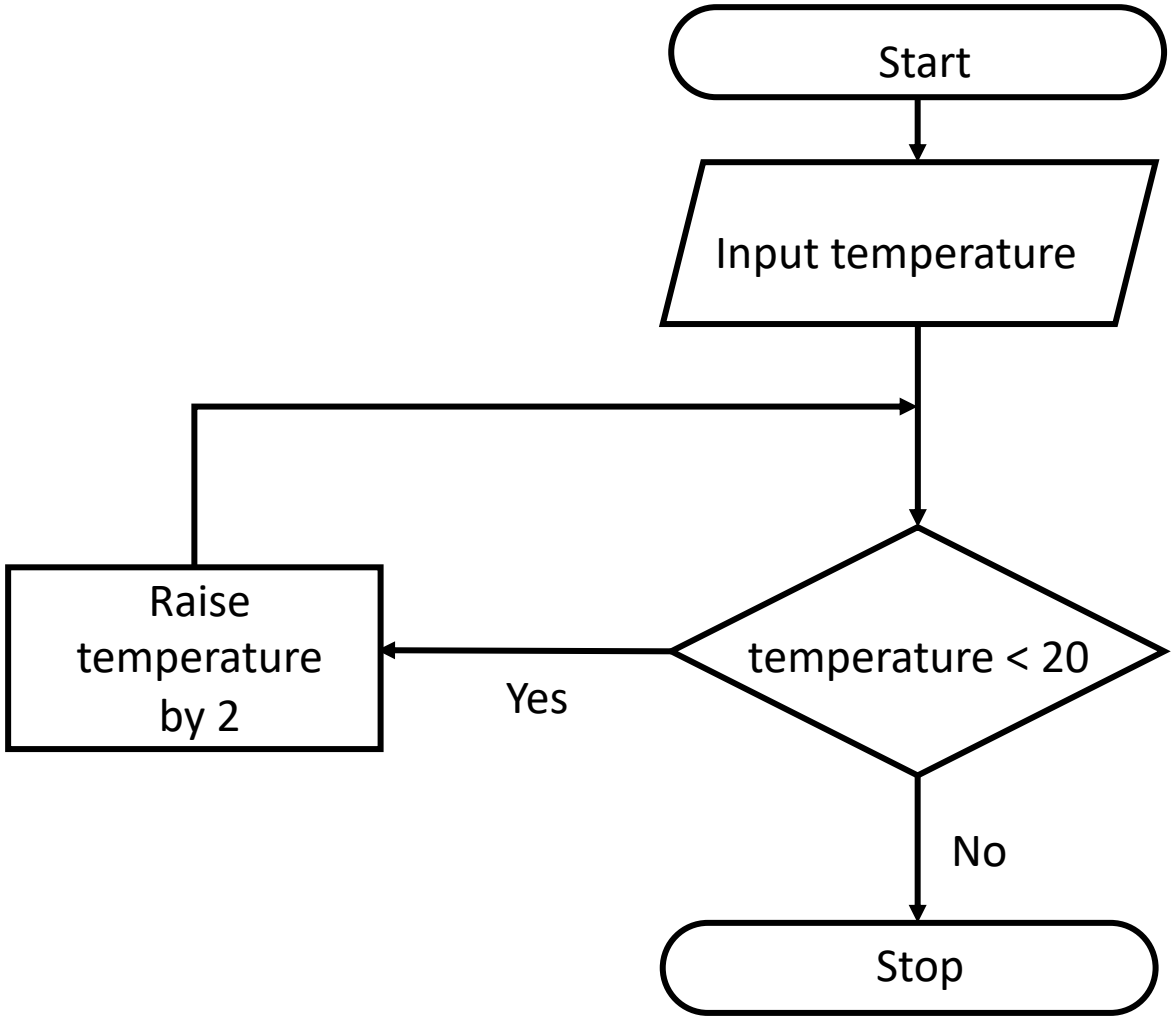
Decision Flowchart



Python Code

```
temperature = float(input("Temperature: "))
if temperature > 0:
    print("Let's go outside!")
else:
    print("Too cold to go outside")
```

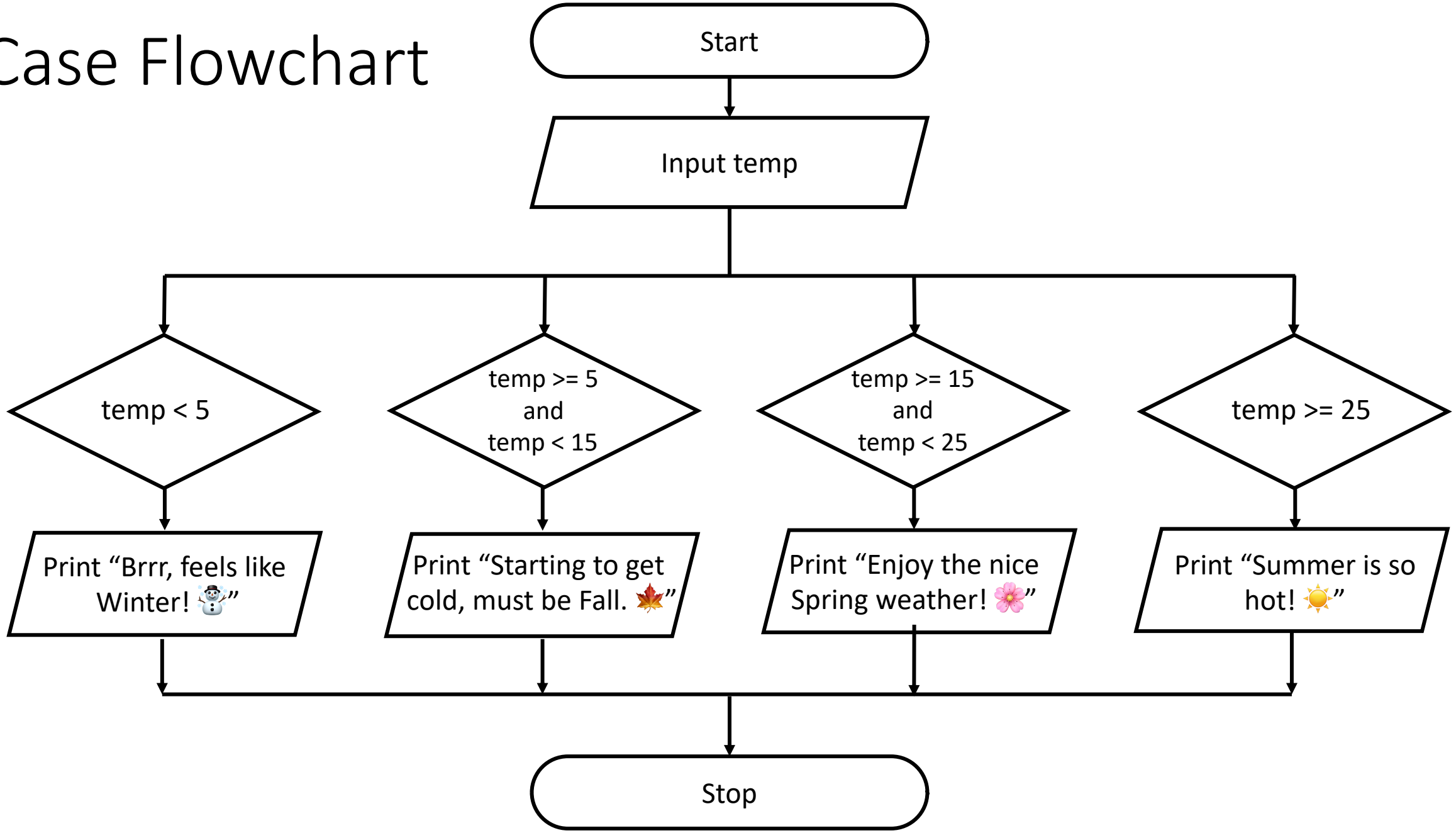
Repetition Flowchart



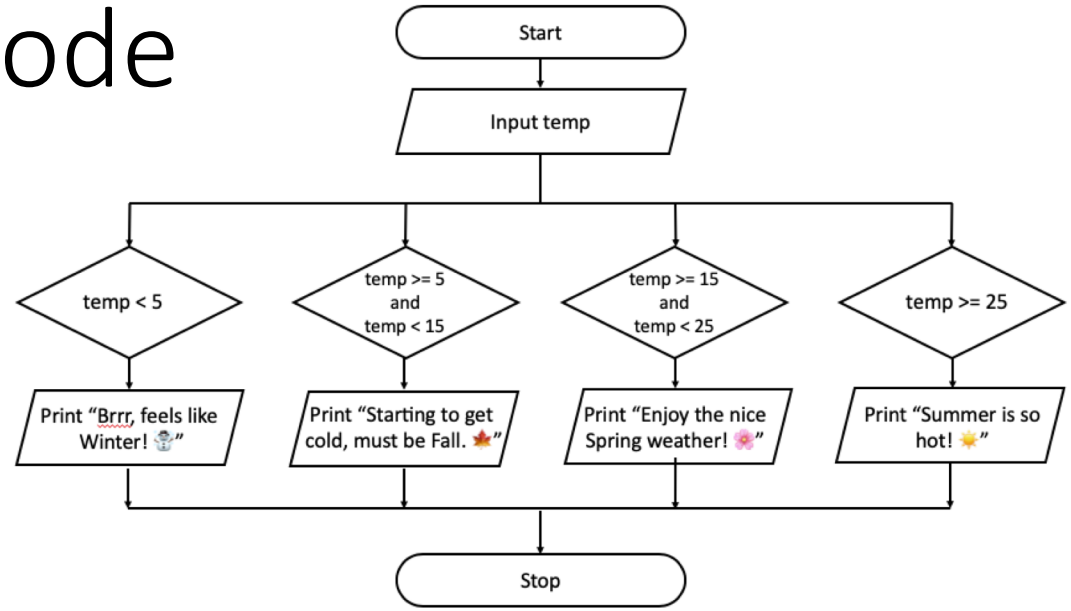
Python Code

```
temperature = float(input("Temperature: "))
while temperature < 20:
    temperature += 2
```

Case Flowchart

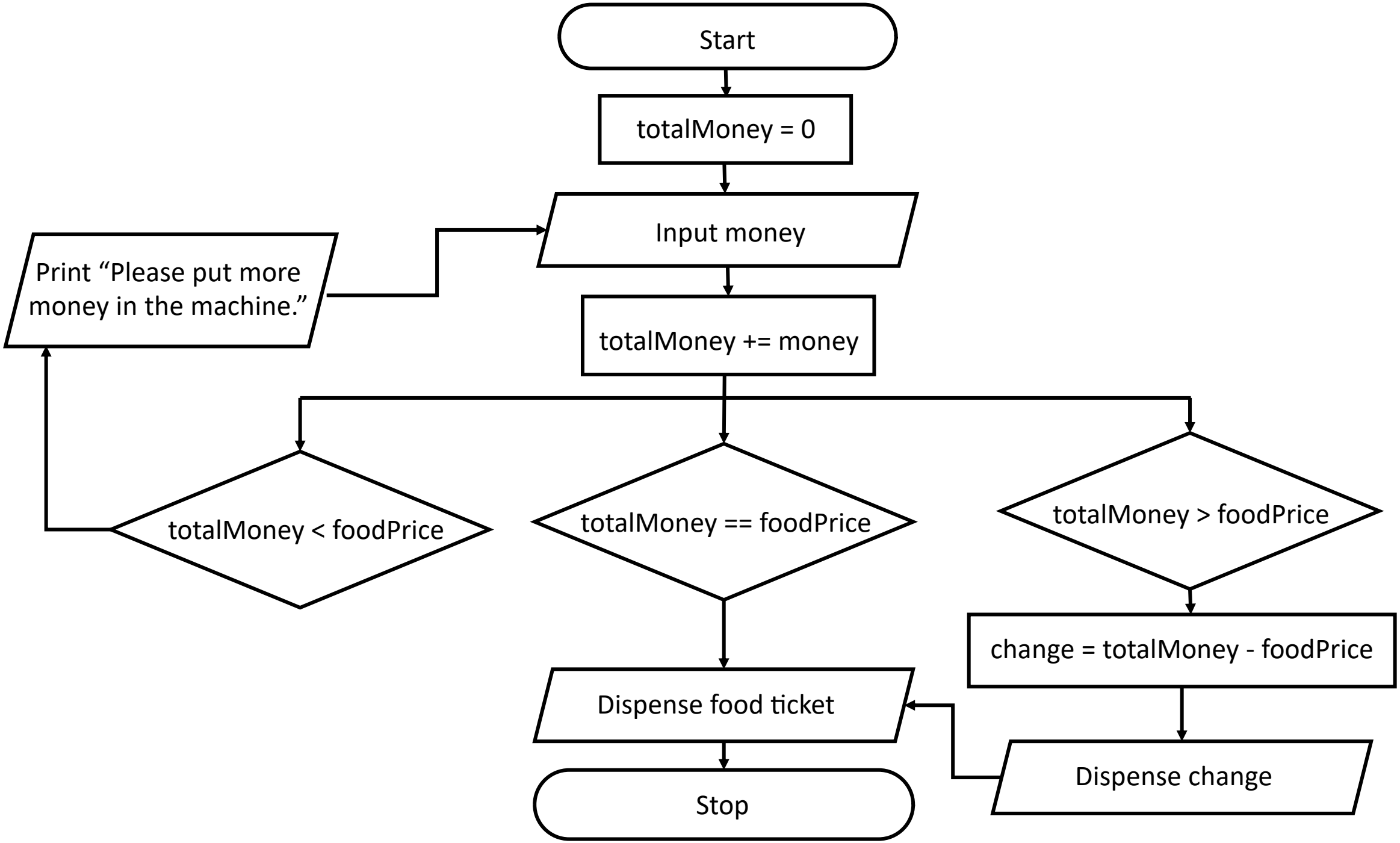


Case Flowchart: Python Code

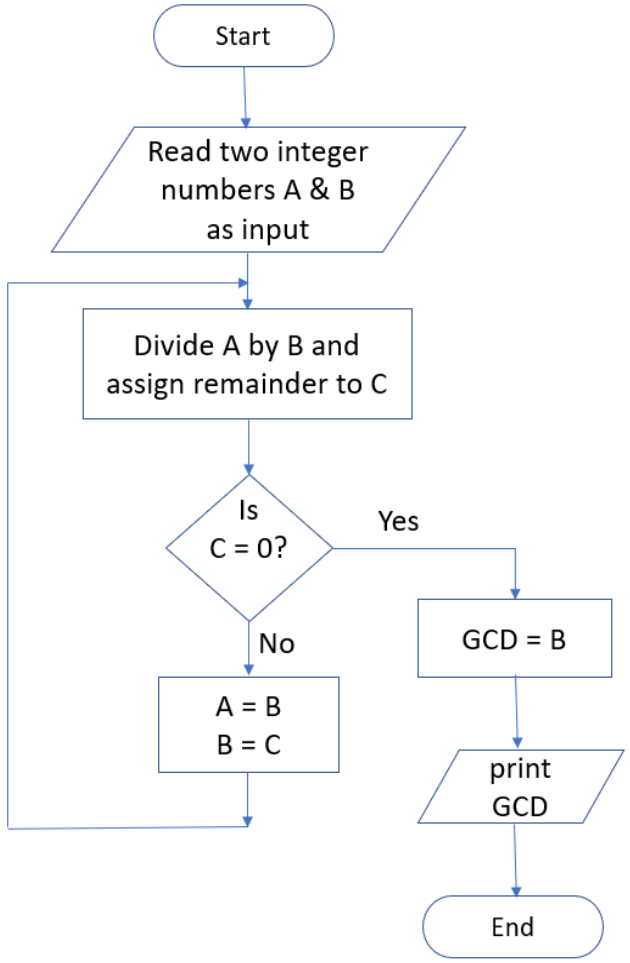



```
temp = float(input("Temperature:"))

if temp < 5:
    print("Brrr, feels like Winter! ☃️")
elif temp >= 5 and temp < 15:
    print("Starting to get cold, must be Fall. 🍁")
elif temp >= 15 and temp < 25:
    print("Enjoy the nice Spring weather! 🌸")
else:
    print("Summer is so hot! ☀️")
```


Start
totalMoney = 0
Input money
Print “Please put more money in the machine.”
totalMoney += money
totalMoney < foodPrice
totalMoney == foodPrice
totalMoney > foodPrice
change = totalMoney - foodPrice
Dispense food ticket
Dispense change
Stop

Write a program for the following flowchart:



- This flowchart corresponds to calculation of the greatest common divisor (GCD) of two numbers using the Euclidian method
- Write Python code (without using a function) to calculate the greatest common divisor of two integers A & B following this flowchart