Group Activity

Group L

Submitted to

Dr. Sayed Mohammad Zeeshan
Assistant professor – SASL
VIT Bhopal University

Group Members

Lokesh Banthia-22BCE10517

Teja. M-22BOE10113

Shreyansh Pattanaik-22BCE11348

Marvin Gabriel-22BCE10345

Stanley Richard-22BCE11224

Vinay Kumar-22BAI10396

Izhan Ahmad Khan-22BCE10334

Jebaslin. H-22BOE10104

Jatin Patel-22BCE11491

Utkarsh-22BCE11456

Q1

ALGORITHM

1. Ask the user to enter the first number
2. Read the input value and store it in a variable A
3. Ask the user to enter the second number
4. Read the input value and store it in a variable B
5. Add the values of A and B and store the result in a variable S
6. Print the value of S on the screen

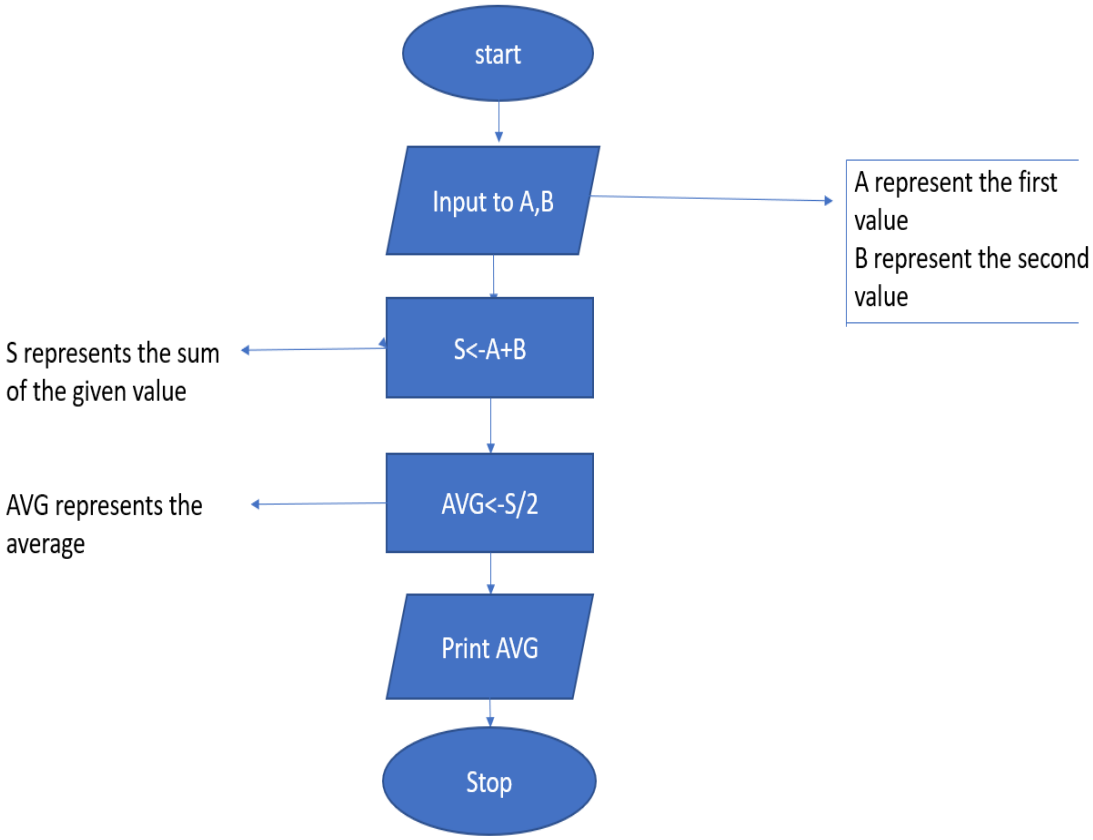
PSEUDO CODE

GET A
GET B
SET S = A + B
DISPLAY S

CODE

```
A = int(input("Enter the first number: "))
B = int(input("Enter the second number: "))
S = A+B
print(S)
```

Q2



Pseudocode:

Start
Input x
Input y
sum= x+y
Avg=sum/2
Display Avg
End

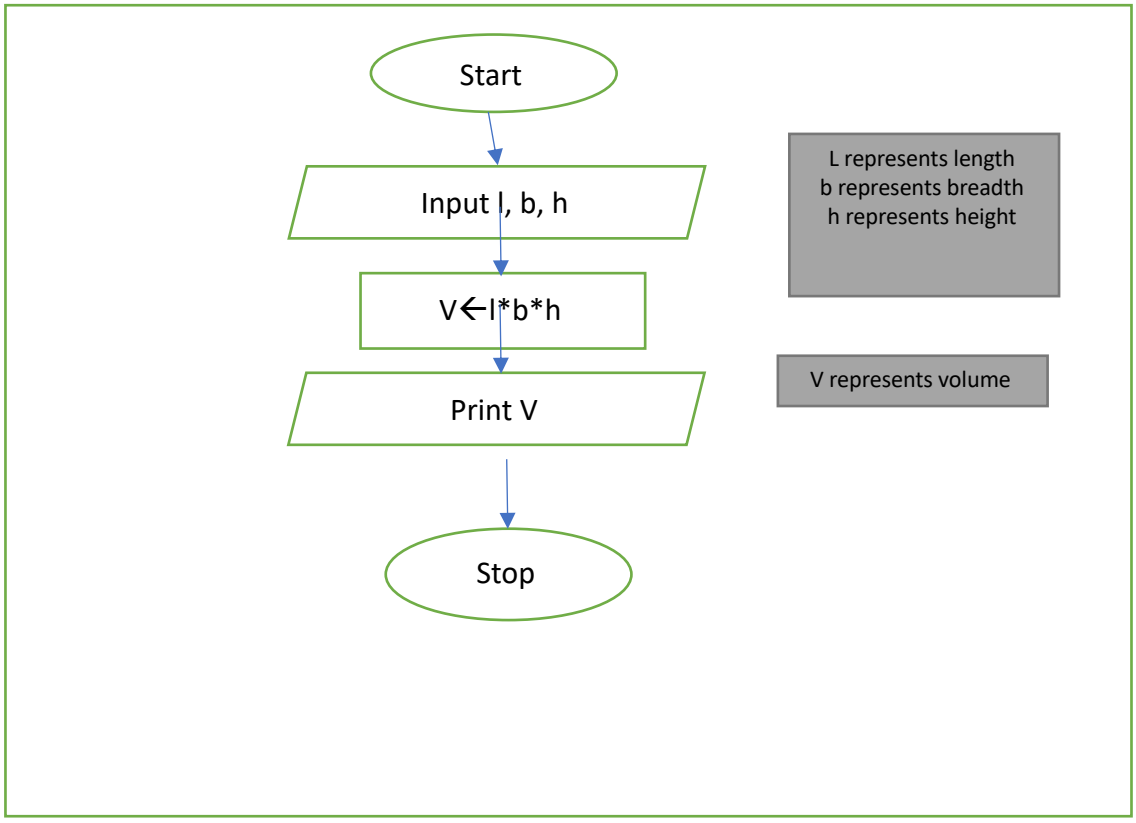
Python code:

```
X = float (input("Enter the value of x: "))
Y = float (input("Enter the value of y:"))
Sum = x+y
Avg = sum/2
Print("The average value is: ",avg)
```

3. Construct a flowchart to show how to obtain the volume of a rectangular box with the help of given algorithm and write the pseudo code and python code

SOLUTION:-

Flow Chart:



Pseudo Code:

Take input for length 'l'
Take input for breadth 'b'
Take input for height 'h'
Set volume 'V' = l*b*h
print volume 'V'

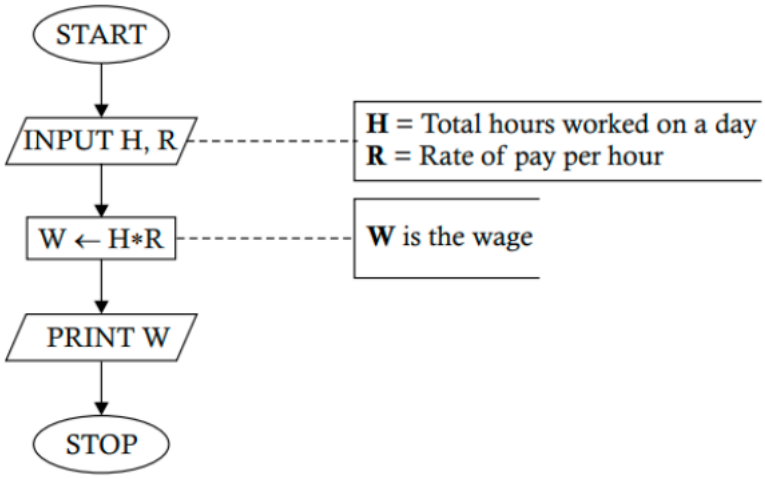
Python program:

```
l=float(input("enter length: "))   #taking input for length
b=float(input("enter breadth: ")) #taking input for breadth
h=float(input("enter height: "))   #taking input for height
V=l*b*h                            #assigning formula to calculate volume ,
V
print(V)                           #printint volume , V
```

QUESTION 4:

Write the algorithm to show how to obtain the daily wage of a worker on the basis of the hours worked during the day and write the pseudo code and python code

SOLUTION:



ALGORITHM:-

i)In this program first we have to take two inputs H,R representing total hours worked and rate of pay assigned to them.

ii)Then the wage is calculated by product that is (total hours worked*rate of pay)

iii)lastly the value of wage is displayed

PSEUDO CODE:-

```
In [ ]: #DAILY WAGE OF A WORKER
        H="INPUT THE HOURS FOR WHICH THE WORKER IS ASSIGNED"
        R="INPUT THE RATE OF PAY PER HOUR"
        #CALCULATION OF WAGE
        W=H*R
        print("wage of worker is:",W)
```

PROGRAM:-

```
In [2]: #DAILY WAGE OF A WORKER
        H=int(input("enter the number of hours:"))
        R=float(input("enter the rate of pay:"))
        #calculation of wage by doing the product
        W=H*R
        print("wage of worker is:",W)

        enter the number of hours:12
        enter the rate of pay:50.0
        wage of worker is: 600.0
```

5) Construct a flowchart to show how to obtain the area of a triangle on the basis of the base and height and write the algorithm, the pseudo code and Python code.

We know that the formula to find out the area of a triangle is Area = 1/2 × base × height

Algorithm :
Step 1) Input to B,H
Step 2) Compute Area – ½*B*H
Step 3) Print Area
Step 4) Stop

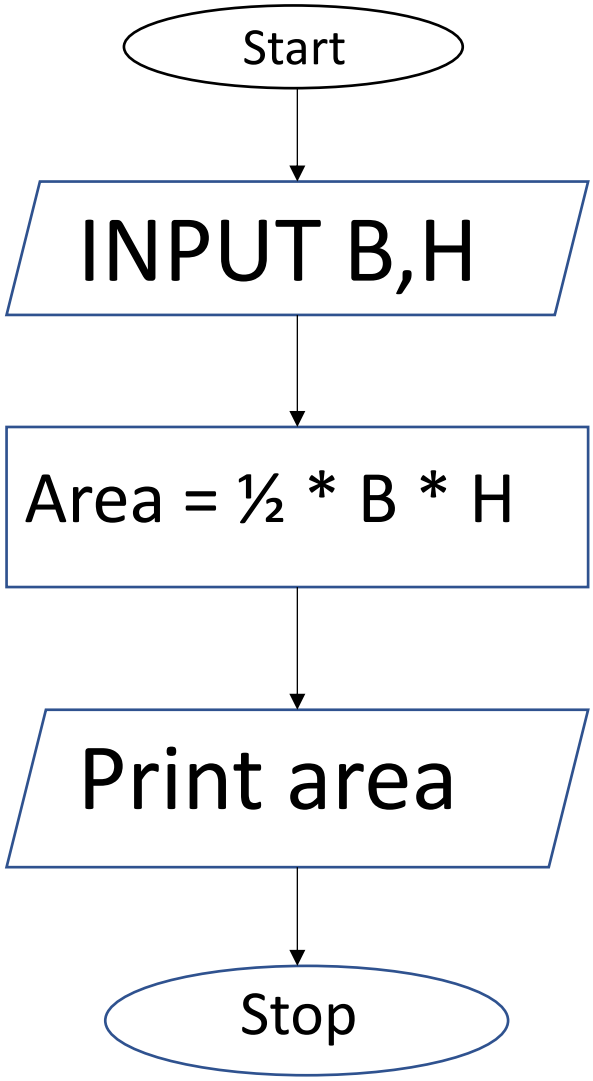
Pseudo Code:

```
BEGIN
   READ base
   READ height
   area = (base * height) / 2
   PRINT area
END
```

Python Code:

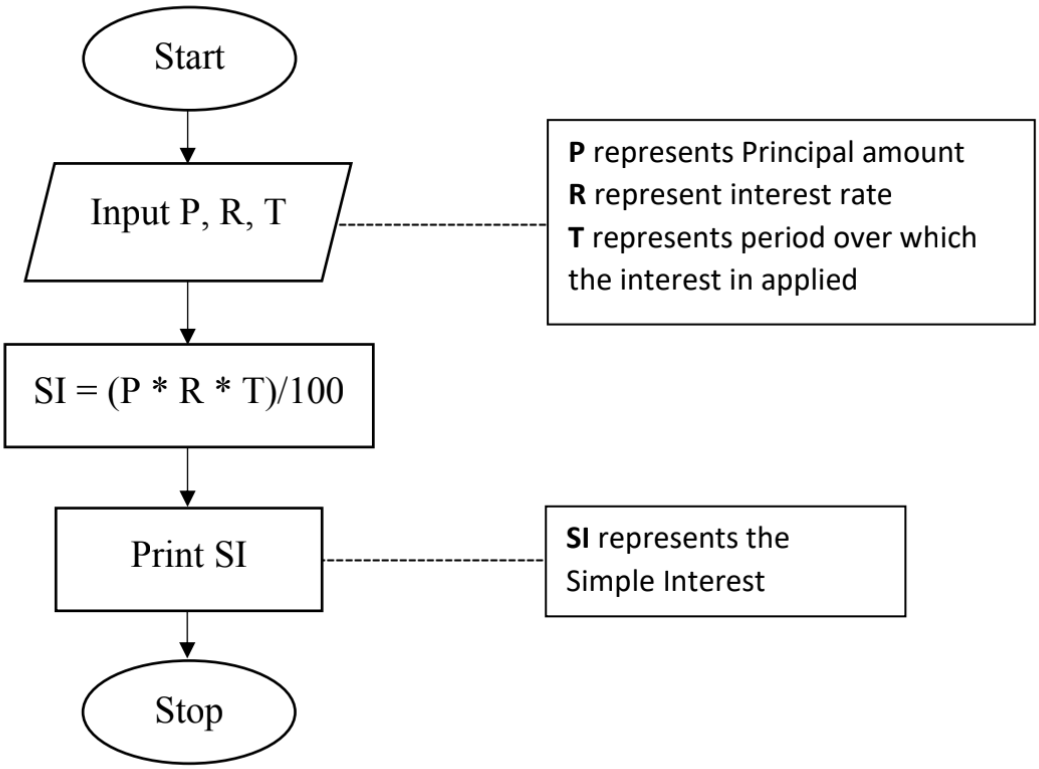
```
base = float(input("Enter the base of the triangle: "))
height = float(input("Enter the height of the triangle: "))

area = (base * height) / 2

print("The area of the triangle is:", area)
```

Flowchart:



Question 6:
Develop a flowchart to show the steps in finding the simple interest on a given amount at a given rate of interest and write the algorithm, the pseudo code and python code.

Solution:




```
P = Principal Amount taken as an input
R = Interest Rate taken as a user input
T = Time Period over which Interest is applied  SI
= (P * R * T)/100
print(The Simple Interest is “, SI)
```

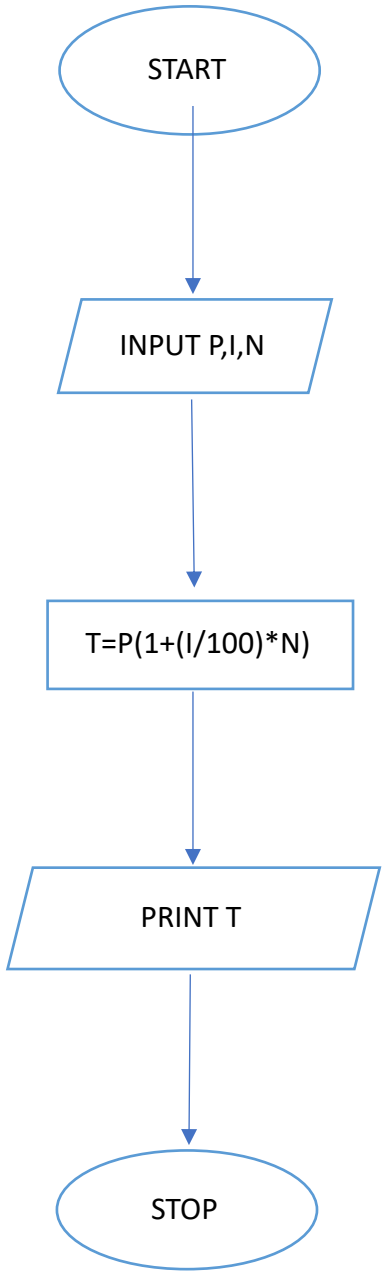
Python Code:

```
#program to find simple interest
#function to accept 3 parameters P, R and T
  def
simple_interest(P,T,R):

    #calculating the simple interest
    SI = (P * T * R)/100

    #displaying the simple interest as output
print('The Simple Interest is', SI)

#taking inputs from user
P = int(input("Enter the principal amount :")) T
= int(input("Enter the time period :"))
R = int(input("Enter the rate of interest :"))

#calling the function with user inputs as arguments
simple_interest(P,T,R)

# End of the program.
```

QUESTION 7

If P amount of money is invested for N years at an annual rate of interest I, the money grows to an amount T, where T is given by T = P (1 + I/100)N . Draw a flowchart to show how T is determined and write the algorithm, the pseudo code and python code.

Solution:



ALGORITHM:-

i) Firstly we have to take three parameters to solve this problem namely principal amount ,time taken and interest from the user.

ii) Then the time that money grows into fixed deposit is calculated by the formula P*(1 + (I/100)*N)

iii) lastly the amount is displayed and the program therein gets terminated.

PSEUDO CODE:

```
# THE DEFINED PSEUDO CODE IS SHOWN BELOW
P="please enter the predefined principal amount:"
I="please enter the rate of interest:"
N="please enter the amount of time the money is invested in:"
#CALCULATION OF T(THE SUM)
T="P((1 + I)/100)N."
#lastly displaying the final amount
print("the amount for which the money is invested is:",T)
```

Python code:

```
In [6]: # program to calculate the stipulated sum for a given principal amount
        P=float(input("enter the principal amount:"))
        I=float(input("enter the rate of interest offered by the bank:"))
        N=int(input("enter the time for which the money  is invested:"))
        #calculation of T
        T= P*(1 + (I/100)*N)
        #display of the stipulated sum after n years.
        print("the sum is:",T)
```

OUTPUT

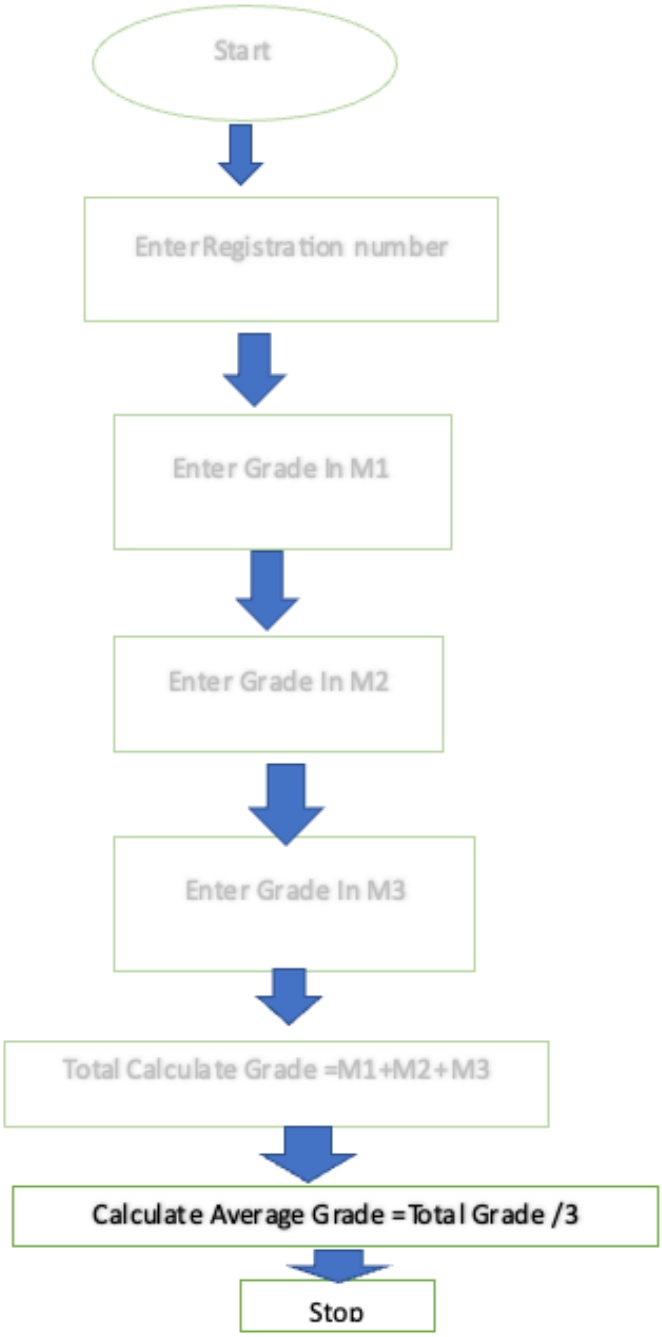
```
enter the principal amount:15000
enter the rate of interest offered by the bank:8.5
enter the time for which the money  is invested:5
the sum is: 21375.0
```

QUESTION :8

Construct a flowchart to show how a student's registration number and grades in 3 subjects, m1, m2, and m3, are displayed along with the total average grade.

Hint: The data supplied as inputs are the registration number and grades obtained in three subjects. The registration number contributes nothing to the process of deriving the desired output; it just identifies the person about whom the total grade and the average grade are obtained. The total grade can be obtained by taking the sum of the marks ml, m2, and m3, and the average can be obtained by dividing the total by 3.

Solution:



This flowchart takes the input of the student's registration number and grades for three subjects (M1, M2, and M3). It then calculates the total grade by adding the grades for the three subjects and calculates the average grade by dividing the total grade by 3. Finally, it outputs the student's registration number, grades, and the total and average grades.

9. Draw a flowchart to determine the volume V2 of a certain mass of gas at a pressure P2 if the initial volume is V1 at a pressure P1, keeping the temperature constant.

Algorithm:

Step 1. Input V1, P1, P2

Step 2. Calculate V2 = (P1 * V1) / P2

Step 3. Output V2

Step 4. End

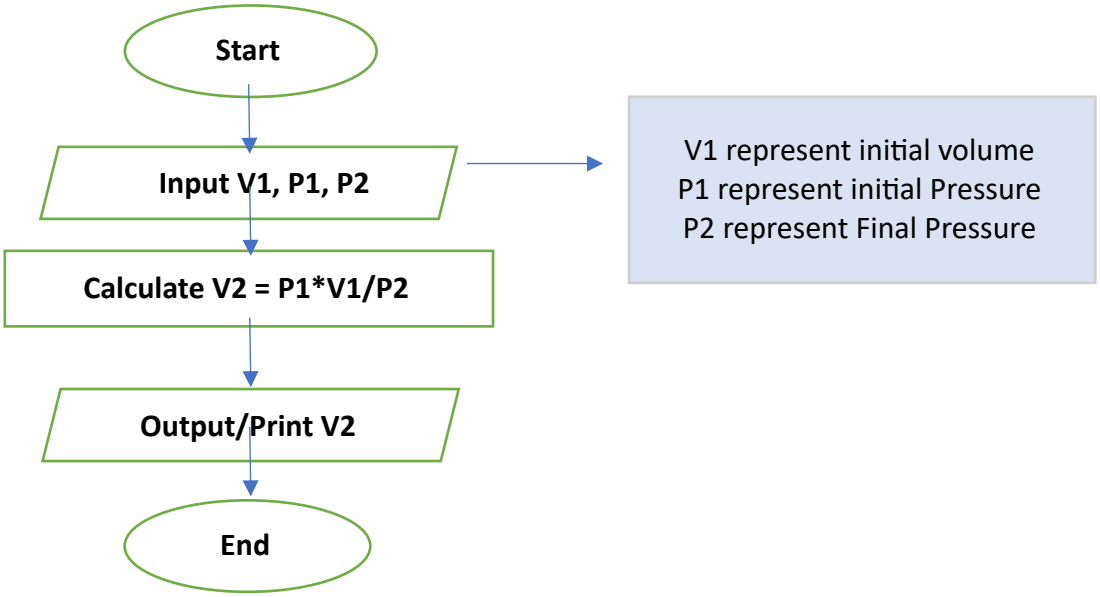
Pseudo Code:

```
START
INPUT V1, P1, P2
V2 = (P1 * V1) / P2
OUTPUT V2
END
```

Python Code:

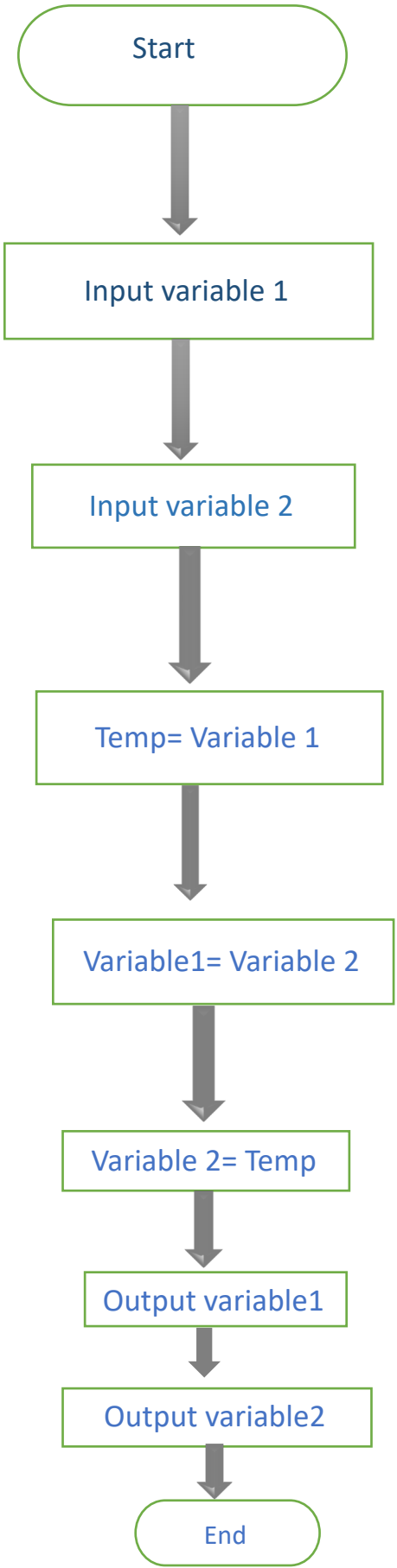
```
# Function to calculate the volume of gas at pressure P2
# given the initial volume V1 at pressure P1 with constant temperature
def calculate_gas_volume(V1, P1, P2):
    V2 = (P1 * V1) / P2
    return V2
# Input variables
V1 = float(input("Enter the initial volume of gas (V1): "))
P1 = float(input("Enter the initial pressure of gas (P1): "))
P2 = float(input("Enter the new pressure of gas (P2): "))
# Calculate the volume of gas at pressure P2
V2 = calculate_gas_volume(V1, P1, P2)
# Output the result
print("The volume of gas at pressure P2 is:", V2)
```

Flow Chart:


Start
Input V1, P1, P2
Calculate V2 = P1*V1/P2
Output/Print V2
End
V1 represent initial volume
P1 represent initial Pressure
P2 represent Final Pressure

10. Draw a flowchart to show how to interchange the values of two variables and write the algorithm, the pseudo code and the Python code.

Solution:



Algorithm:

1. Get the values of variable1 and variable2 from the user.
2. Create a temporary variable temp.
3. Assign the value of variable1 to temp.
4. Assign the value of variable2 to variable1.
5. Assign the value of temp to variable2.
6. Display the values of variable1 and variable2.
7. End.

Pseudo code:

```
GET variable1
GET variable2
SET temp = variable1
SET variable1 = variable2
SET variable2 = temp
DISPLAY variable1
DISPLAY variable2
```

Python code:

```
variable1 = input("Enter value for variable1: ")
variable2 = input("Enter value for variable2: ")
temp = variable1
variable1 = variable2
variable2 = temp
print("After interchange, variable1 is: ", variable1)
print("After interchange, variable2 is: ", variable2)
```