#Roshan Chawan 22CV013

# Calculation of total Infiltration by Horton's Equation

fo = float(input("Enter the value of initial Infiltration Rate:"))

fc= float(input("Enter the value of Final infiltration Rate:"))

t= float(input("Enter the value of Time:"))

kh= float(input("Enter the value of Decay Coefficient:"))

# The total Infiltration is given by:

Fp= fc\*t+(fo-fc)/kh

print("The value of Total Infiltration is:", Fp)

Output:-

Enter the value of initial Infiltration Rate:6

Enter the value of Final infiltration Rate:1.2

Enter the value of Time:8

Enter the value of Decay Coefficient:0.888

The value of Total Infiltration is: 15.005405405405405

#Roshan Chawan 22CV013

#Calculation of Mean precipitation by theissen's polygon Method

#The value of precipitation at Each station is

p1=float(input("Enter the value of rainfall at Station 1:"))

p2= float(input("Enter the value of rainfall at Station 2:"))

p3 =float(input("Enter the value of rainfall at Station 3:"))

p4 =float(input("Enter the value of rainfall at Station 4:"))

p5 =float(input("Enter the value of rainfall at Station 5:"))

#Area for each station

A1= float(input("Enter the value of Catchment Area for raingauge station 1:"))

A2= float(input("Enter the value of Catchment Area for raingauge station 2:"))

A3 =float(input("Enter the value of Catchment Area for raingauge station 3:"))

A4=float(input("Enter the value of Catchment Area for raingauge station 4:"))

A5= float(input("Enter the value of Catchment Area for raingauge station 5:"))

#The total catchment area is

A=A1 + A2 + A3 + A4+ A5

print("The value of Total Catchment area is:", A)

# Runoff Volume

#The volume shall be multiplied by the coefficient 2500 to cater scale effects

#Runoff Volume

V= (p1\* A1+ p2\* A2+ p3\* A3+ p4 \*A4+p5\* A5)\*2500

print("The runoff volume from the given catchment is:", V)

#Mean Precipitation

p=(p1\* A1+ p2\* A2 + p3\* A3+ p4\*A4+ p5\* A5)/A

print ("The value of Mean Precipitalon is:", p)

Output:-

Enter the value of rainfall at Station 1:125

Enter the value of rainfall at Station 2:175

Enter the value of rainfall at Station 3:225

Enter the value of rainfall at Station 4:275

Enter the value of rainfall at Station 5:325

Enter the value of Catchment Area for raingauge station 1:25

Enter the value of Catchment Area for raingauge station 2:30

Enter the value of Catchment Area for raingauge station 3:30

Enter the value of Catchment Area for raingauge station 4:10

Enter the value of Catchment Area for raingauge station 5:5

The value of Total Catchment area is: 100.0

The runoff volume from the given catchment is: 48750000.0

The value of Mean Precipitalon is: 195.0

#Roshan Chawan 22CV013

  #Calculation of Mean precipitation by Isohytel Method

  #The value of precipitation at Each station i

  p1=int(input("Enter the value of rainfall at Station 1:"))

  p2= int(input("Enter the value of rainfall at Station 2:"))

  p3=int(input("Enter the value of rainfall at Station 3:"))

  p4=int(input("Enter the value of rainfall at Station 4:"))

  p5= int(input("Enter the value of rainfall at Station 5:"))

  p6=int(input("Enter the value of rainfall at Station 6:"))

  p7= int(input("Enter the value of rainfall at Station 7:"))

  p8=int(input("Enter the value of rainfall at Station 8:"))

  # Area for each station

  A1= int(input("Enter the value of Catchment Area for raingage station 1:"))

  A2= int(input("Enter the value of Catchment Area for raingauge station 2:"))

  A3= int(input("Enter the value of Catchment Area for raingauge station 3:"))

  A4=int(input("Enter the value of Catchment Area for raingauge station 4:"))

  A5= int(input("Enter the value of Catchment Area for raingauge station 5:"))

  A6= int(input("Enter the value of Catchment Area for raingauge station 6:"))

  A7= int(input("Enter the value of Catchment Area for raingauge station 7:"))

  # The total catchment area is

  A= A1+ A2+ A3+ A4+ A5+ A6+ A7

  print("The value of Total Catchment area is :", A)

  # Mean Precipitation

  p=((p1+p2) \*A1/2 + (p2+p3)\*A2/2+ (p3+p4)\*A3/2+ (p4+p5)\* A4/2 + (p5+p6)\*A5/2 + (p6+p7)\*A6/2 + (p7+p8)\*A7/2)/A

  print("the value of Mean Precipitation is:", p)

Output:-

Enter the value of rainfall at Station 1:14

Enter the value of rainfall at Station 2:12

Enter the value of rainfall at Station 3:10

Enter the value of rainfall at Station 4:8

Enter the value of rainfall at Station 5:6

Enter the value of rainfall at Station 6:4

Enter the value of rainfall at Station 7:2

Enter the value of rainfall at Station 8:0

Enter the value of Catchment Area for raingage station 1:90

Enter the value of Catchment Area for raingauge station 2:140

Enter the value of Catchment Area for raingauge station 3:125

Enter the value of Catchment Area for raingauge station 4:140

Enter the value of Catchment Area for raingauge station 5:85

Enter the value of Catchment Area for raingauge station 6:40

Enter the value of Catchment Area for raingauge station 7:20

The value of Total Catchment area is : 640

the value of Mean Precipitation is: 8.40625