

Q1

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# Calculation of total infiltration by Horton's Equation
fc = float(input("Enter the value of initial infiltration rate (f)"))
f0 = float(input("Enter the value of final infiltration rate (f0)"))
t = int(input("Enter the value of time (t)"))
k = float(input("Enter the value of delay coefficient (k, 0.0001)"))
# The total infiltration is given by:
f1 = 10 # Replace with actual value of f0
f2 = 20 # Replace with actual value of f0
t = 30 # Replace with actual value of t
fp = f0 * t + (f1 - f0)/k
print("The value of total infiltration is:", fp)
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Enter the value of Initial Infiltration Rate:66
Enter the value of Final Infiltration Rate:1.24.2
Enter the value of flow :80
Enter the value of Resa Coefficient 0.8000 0.80
The value of Initial Infiltration is 331.26126126126127

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Q2

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# Calculation of Mean precipitation by the given's polygon Method
# The value of precipitation at each station is
p1 = float(input("Enter the value of rainfall at Station 1 (1.25'') # the float to handle decimal values
p2 = float(input("Enter the value of rainfall at Station 2 (1.25'')
p3 = float(input("Enter the value of rainfall at Station 3 (1.25'')
p4 = float(input("Enter the value of rainfall at Station 4 (1.25'')
p5 = float(input("Enter the value of rainfall at Station 5 (1.25'')

#Area for each station
A1= float(input("Enter the value of Catchment Area for catchment Station 1 (25'') # change int to float to accept decimal values
A2= float(input("Enter the value of Catchment Area for catchment Station 2 (30'')
A3 = float(input("Enter the value of Catchment Area for catchment Station 3 (30'')
A4= float(input("Enter the value of Catchment Area for catchment Station 4 (30'')
A5= float(input("Enter the value of Catchment Area for catchment Station 5''))

The_total_catchment_area = A2 + A1 + A4 + A5
print("The total catchment area is", The_total_catchment_area)
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 # you had a typo here, A1 should be A1
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 Precipitation is:", p)
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Enter the value of rainfall at Station 1: 1.1251 1.25
Enter the value of rainfall at Station 2: 2.1252 1.75
Enter the value of rainfall at Station 3: 1.253 2.25
Enter the value of rainfall at Station 4: 4.2754 2.75
Enter the value of rainfall at Station 5: 5.1255 3.25
Enter the value of Catchment Area for rain gauge station 1: 2525
Enter the value of Catchment Area for rain gauge station 2: 1010
Enter the value of Catchment Area for rain gauge station 3: 1010
Enter the value of Catchment Area for rain gauge station 4: 1010
Enter the value of Catchment Area for rain gauge station 5: 55
The total catchment area is: 75.0
The value of Total Catchment area is: 100.0
The runoff volume from the given catchment is: 648750.0
The value of Mean Precipitation is: 2.59%

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Q3

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#Calculation of Mean precipitation by Isohyetal Method
#the value of precipitation at each station i
print(input("Enter the value of rainfall at 'Station 1:43'"))
Q2= int(input("Enter the value of rainfall at 'Station 2:12'"))
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p3=input("Enter the value of rainfall at Station 3:10")
p4=input("Enter the value of rainfall at Station 4:8")
p5= input("Enter the value of rainfall at Station 5:6")
p6=input("Enter the value of rainfall at Station 6:4")
p7= input("Enter the value of rainfall at Station 7:2")
p8=input("Enter the value of rainfall at Station 8:0")
# Area for each station
A1= input("Enter the value of Catchment Area for raingauge station 1:90")
A2= input("Enter the value of Catchment Area for raingauge station 2:140")
A3= input("Enter the value of Catchment Area for raingauge station 3:125")
A4= input("Enter the value of Catchment Area for raingauge station 4:140")
A5= input("Enter the value of Catchment Area for raingauge station 5:85")
A6= input("Enter the value of Catchment Area for raingauge station 6:40")
A7= input("Enter the value of Catchment Area for raingauge station 7:20")
# 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)

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22 Enter the value of rainfall at Station 1:1414
Enter the value of rainfall at Station 2:1212
Enter the value of rainfall at Station 3:1010
Enter the value of rainfall at Station 4:88
Enter the value of rainfall at Station 5:66
Enter the value of rainfall at Station 6:44
Enter the value of rainfall at Station 7:22
Enter the value of rainfall at Station 8:00
Enter the value of Catchment Area for raingauge station 1:9090
Enter the value of Catchment Area for raingauge station 2:140140
Enter the value of Catchment Area for raingauge station 3:125125
Enter the value of Catchment Area for raingauge station 4:140140
Enter the value of Catchment Area for raingauge station 5:8585
Enter the value of Catchment Area for raingauge station 6:4040
Enter the value of Catchment Area for raingauge station 7:2020
The value of Total Catchment area is : 640
The value of Mean Precipitation is: 5.23810359375

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