ASIGNMENT NO 2 APPLICATION OF PYTHON IN FIELD OF HYDROLOGY

Q-1

```
# Calculation of total Infiltration by Horton's Equation
fo = int(input("Enter the value of initial Infiltration Rate:"))
fc= float (input("Enter the value of Final infiltration Rate:"))
t= int(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)
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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
```

Q-2

```
#Calculation of Mean precipitation by theissen's polygon Method
#The value of precipitation at Each station is
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:"))
#Area for each station
A1= int(input("Enter the value of Catchment Area for raingauge 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:"))
#The total catchment area is
A=A1+A2+A3+A4+A5
print("The value of Total Catchment area is:", A)
#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)
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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
The runoff volume from the given catchment is: 48750000
The value of Mean Precipitalon is: 195.0
```

Q-3

```
#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 Catchnent Area for reingauge station 4:"))
A5= int(input(" Enter the value of Catchment Ares for raingauge station 5:"))
A6= int(input("Enter the value of Catchment Area for raingeuge station 6:"))
A7= int (input("Enter the value of Catchment Area for reingauge station 7:"))
# The total catchment area is
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```
A=A1+A2+A3+A4+A5+A6+A7
print("The value of Total Catchment ar ea 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 Precipitalon is:", p)
```

```
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 Catchnent Area for reingauge station 4:140
 Enter the value of Catchment Ares for raingauge station 5:85
Enter the value of Catchment Area for raingeuge station 6:40
Enter the value of Catchment Area for reingauge station 7:20
The value of Total Catchment ar ea is : 640
the value of Mean Precipitalon is: 8.40625
```