**Subject: Machine learning with python**

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Q1

#1.1# mathematical operations

a=100

b=10

print(1+2)

print(a-b)

print(a\*b)

print(a/b)

print(a%b)

print(a\*\*b)

Q2

#1.2 #fabonacci series

def fab1(a):

    if(a==0):

        return 0;

    elif(a==1):

        return 1;

    else:

        return fab1(a-1)+fab1(a-2)

print("Enter a number\n")

number=(int)(input())

print(fab(number))

Q3

# 1.3 #factorial number

def fact(a):

    if(a==0 or a==1):

        return 1

    else:

        return a\*fact(a-1)

print("Enter a number")

number=(int)(input())

print("factorial of the number Entered is")

print(fact(number))

Q4

# 1.4#prime or not

print("Enter a number")

number=(int)(input())

if(number==1):

    print("1 is Not a prime")

i=2

flag=0

for i in range(2, (int)(math.sqrt(number))+1 ):

    if(number%i==0):

        flag=1

if(flag==1):

    print("Not a prime")

else:

    print("Prime")

Q6

#1.6# nested if demonstrations

a=15;

if(a&1!=0):

    if(a%3==0):

        print("divisible by 3")

    else:

        print("nOt divisible by 3")

else:

    print("even no")

Q7

#1.7# else clause

a=14

if(a&1==0):

    print("even")

else:

    print("odd")

Q8

# 1.8#usage of tuples

tup=(1,2,3,4,1,1,1,1,1,"one","two")

print(tup.count(1))

print(tup.index(4))

tup.append(4)

print(tup)

Q9

# #1.9#searching an element in a list

lis=[1,3,4,5,7,8,9,12,45,78]

a=45;

s=0;

e=len(lis)-1

while(s<=e):

    mid=(int)(s+(e-s)/2)

    if(lis[mid]==a):

        print(lis.index(lis[mid]))

        break;

    elif(lis[mid]>a):

        e=mid-1;

    elif(lis[mid]<a):

        s=mid+1;

Q10

# #1.10#usage of dictionaries

a={0:"yoyo",1:"Adarsh", 2:"Ajay", 3:"Abhishek"}

for i in range(0,len(a)+1):

    print(a.get(i))

print(a.popitem())

newone={4:"honey singh"}

a.update(newone)

print(a)

a.pop(1)

print(a)

print(a.keys())

print(a.items())

Q2.1

# #2.1 #mean mode and median of numbers

a={1,2,3,4,4,4,4,5,6,7,7,8,8,9}

b=numpy.mean(a);

c=numpy.median(a)

d=scipy.mode(a);

print(a);

print(b)

print(c)

Q2.2

#2.2# standard deviation

import statistics

sample = [1, 2, 3, 4, 5]

print(statistics.stdev(sample))

Q2.3

#2.3# addition of a matrix

arr=[[1,2,3],

          [5,6,7]

          ,[9,10,11]];

A = [[12, 7, 3],

    [4, 5, 6],

    [7, 8, 9]]

result = [[0, 0, 0, 0],

        [0, 0, 0, 0],

        [0, 0, 0, 0]]

sum=0;

for i in range(len(arr)):

    for j in range(len(arr[0])):

        sum=arr[i][j]+A[i][j]

        result[i][j]=sum

print(result)

Q2.4

#2.4#multiplication of two matrix

arr=[[1,2,3],

          [5,6,7]

          ,[9,10,11]];

Y = [[1, 1, 1, 2],

           [6, 7, 3, 0],

           [4, 5, 9, 1]]

result = [[0, 0, 0, 0],

        [0, 0, 0, 0],

        [0, 0, 0, 0]]

for i in range(len(arr)):

    for j in range(len(Y[0])):

        for k in range(len(Y)):

            result[i][j]+=arr[i][k]\*Y[k][j]

print(result)

Q2.6

# 2.6 transpose of a matrix

arr=[[1,2,3,4],

          [5,6,7,8]

          ,[9,10,11,12]];

a=len(arr[0])

b=len(arr)

transpose=[[0,0,0],

            [0,0,0],

            [0,0,0],

            [0,0,0]]

for i in arr:

    print(i)

for i in range(len(arr)):

    for j in range(len(arr[0])):

        transpose[j][i]=arr[i][j]

print("\n")

print(transpose)