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**Course: MCA 3 B**

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**Subject: Machine Learning Using Python**

**Ques 1: Write a Program to use mathematical operators?**

**Source Code:**

a=9

b=2

c=a+b

print("Addition",c)

c=a-b

print("Subtraction",c)

c=a\*b

print("Multiplication",c)

c=a/b

print("Divison",c)

c=a%b

print("Modulus",c)

c=a\*\*b

print("Exponential",c)

c=a//b

print("Floor",c)

**Output:**

Addition 11

Subtraction 7

Multiplication 18

Divison 4.5

Modulus 1

Exponential 81

Floor 4

**Ques 2: Write a program to take an input of numbers from the user and print the Fibonacci series to the terminal number?**

**Source Code:**

n=int(input("Enter terminating number:"))

f=0

s=1

count=1

sum=0

print("Fibonacci Series:")

while (count<=n):

print(sum,end=" ")

count+=1

f=s

s=sum

sum=f+s

**Output:**

Enter terminating number:5

Fibonacci Series:

0 1 1 2 3

**Ques 3: Write a program to print factorial of the number input by the user**

**Source Code:**

n=int(input("Enter number:"))

print("Factorial of number:",end=" ")

f=1

for i in range(1,n+1):

f=f\*i

print(f)

**Output:**

Enter number:5

Factorial of number: 120

**Ques 4: Write a program to check whether a given number is prime or not using loops**

**Source Code:**

n=int(input("Enter number greater than 0:"))

flag=0

num=n//2

for i in range (2,num+1):

if(n%i==0):

flag==0

break

else:

flag=1

if(flag==0 and n!=2):

print("Number is not prime")

elif(flag==1 or n==2):

print("Number is prime")

**Output:**

Enter number greater than 0:2

Number is prime

**Ques 5. Write a program to demonstrate the importing of modules of python**

**Source Code:**

Import.py

import test

print(test.display\_message())

test.py

def display\_message():

return "Hello World"

**Output:**

Hello World

**Ques 6:**  **Write a program to demonstrate the use of nested if statements.**

**Source Code:**

n=int(input("Enter any number:"))

if(n>=0):

print("number is positive")

if(n<=50):

print("number is greater than 0 and less than 50")

if(n>=50 and n<=100):

print("number is greater than 50 and less than 100")

if(n<0):

print("number is negative")

**Output:**

Enter any number:55

number is positive

number is greater than 50 and less than 100

**Ques 7. Write a program to demonstrate the use of the else clause.**

**Source Code:**

n=int(input("Enter any number:"))

if(n%2==0):

print("number is even")

else:

print("number is odd")

**Output:**

Enter any number:5

number is odd

**Ques 8. Write a program to illustrate the usage of Tuples.**

**Source Code:**

t=()

print("Type: ",type(t))

t=("Saumya",18.9,False,8,"Gupta")

print(t[0:])

**Output:**

Type: <class 'tuple'>

('Saumya', 18.9, False, 8, 'Gupta')

Ques 9: Write a program for searching an element and sorting a List.

**Source Code:**

l=[3,5,1,10,12,8,4,7]

n=int(input("Enter element to be search:"))

flag=0

for i in range(0,len(l)):

if l[i]==n:

flag=1

break

if flag==1:

print("Element Found")

else:

print("Element not Found")

l.sort()

print("List after sorting:",l[0:])

**Output:**

Enter element to be search:5

Element Found

List after sorting: [1, 3, 4, 5, 7, 8, 10, 12]

**Ques 10:** . Write a program to illustrate the usage of Dictionaries.

**Source Code:**

d={

"brand":"Maruti",

"model":"suzuki",

"year":2010

}

print("Type : ",type(d))

print(d)

print(d["brand"])

x=d.get("model")

print(x)

y=d["year"]

print(y)

**Output:**

Type : <class 'dict'>

{'brand': 'Maruti', 'model': 'suzuki', 'year': 2010}

Maruti

suzuki

2010

**Ques 11: Write a program to find the mean. mode and median of the given range of numbers.**

**Source Code:**

sum=0

x=[2,3,4,6,2,6,5,6,7,7]

for i in x:

sum=sum+i

mean=sum/len(x)

print(mean)

n=len(x)

x.sort()

if(n%2==0):

med1=n//2

med2=(n//2)+1

final\_median=(x[med1-1]+x[med2-1])/2

else:

final\_median=x[n//2]

print(final\_median)

import statistics

mode2=statistics.mode(x)

print(mode2)

**Output:**

4.8

5.5

6

**Ques 12: Write a program to calculate the standard deviation of a given set of numbers.**

**Source Code:**

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

sum=0

for i in range(len(ob)):

sum+=ob[i]

mean= sum/len(ob)

sum\_of\_squared\_deviation = 0

for i in range(len(ob)):

sum\_of\_squared\_deviation+=(ob[i]- mean)\*\*2

sd = ((sum\_of\_squared\_deviation)/len(ob))\*\*0.5

print("Standard Deviation of sample is ",sd)

**Output:**

Standard Deviation of sample is 1.4142135623730951

**Ques 13: . Write a program to calculate the addition of two 3x 3 matrices.**

**Source Code:**

A = [[10, 13, 44],

[11, 2, 3],

[5, 3, 1]]

B = [[7, 16, -6],

[9, 20, -4],

[-1, 3 , 27]]

C = [[0,0,0],

[0,0,0],

[0,0,0]]

matrix\_length = len(A)

for i in range(len(A)):

for k in range(len(B)):

C[i][k] = A[i][k] + B[i][k]

print("The sum of Matrix mat1 and mat2 = ", C)

for i in C:

print (i)

**Output:**

The sum of Matrix mat1 and mat2 = [[17, 29, 38], [20, 22, -1], [4, 6, 28]]

[17, 29, 38]

[20, 22, -1]

[4, 6, 28]

**Ques 14. Write a program to calculate the multiplication of two 3x 3 matrices.**

Source code:

X = [[12,7,3],

[4 ,5,6],

[7 ,8,9]]

Y = [[5,8,1,2],

[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(X)):

for j in range(len(Y[0])):

for k in range(len(Y)):

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

for r in result:

print(r)

**Output:**

[114, 160, 60, 27]

[74, 97, 73, 14]

[119, 157, 112, 23]

**Ques 15: Write a program to calculate the transpose of the given matrix.**

**Source Code:**

X = [[12,7,3],

[4 ,5,6],

[7 ,8,9]]

T = [[0,0,0],

[0,0,0],

[0,0,0]]

for i in range(len(X)):

for j in range(len(X[0])):

T[j][i] = X[i][j]

for t in T:

print(t)

**Output:**

[12, 4, 7]

[7, 5, 8]

[3, 6, 9]