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**Course: MCA 3 c**

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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 tocheck 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

```
defdisplay_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
```

**Ques8. 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]
```