Graphic Era
HILL UNIVERSITY
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ASSIGNMENT

MACHINE LEARNING USING PYTHON

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MCA 'C'

Q1. Write a program to use the mathematical operators..

```
print("Enter first number")
a=int(input())
print("Enter second number")
b=int(input())
print("Enter 1 to add, 2 to subtract, 3 to multiply and 4 to divide")
op=int(input())
if(op==1):
   print("The sum is ",a+b)
elif(op==2):
   print("The difference is ",a-b)
elif(op==3):
   print("The product is ",a*b)
else:
   print("The quotient is",a/b)
```

OUTPUT-

```
Enter first number
5
Enter second number
2
Enter 1 to add, 2 to subtract, 3 to multiply and 4 to divide
1
The sum is 7
```

Q2. Write a program to take an input of numbers from the user and print the Fibonacci series to the terminal number.

```
n=int(input("Enter a number "))
a=1
b=0
c=0
for i in range (0,n):
  print(c)
  c=a+b
  a=b
  b=c
```

OUTPUT-

```
Enter a number 10
0
1
1
2
3
5
8
13
21
34
```

Q3. Write a program to print the factorial of the number input by the user.

```
n=int(input("Enter a number "))
a=1
for i in range(1,n+1):
  a*=i
print(a)
```

OUTPUT-

```
Enter a number 5
120
```

Q4. Write a program to check whether a given number is a prime number or not using loops.

```
n=int(input("Enter a number "))
a=1
if(n==1 or n==0):
   print("Not a prime number")
else:
   for i in range(2,int(n/2+1)):
      if(n%i==0):
         print("Not a prime number")
         quit()
   print("Prime number")
```

OUTPUT-

```
Enter a number 8
Not a prime number
```

Q5. Write a program to demonstrate the importing of modules of python.

FILE NAME: work.py

```
def doitFun():
        return 24
```

FILE NAME: mainFile.py

```
import work
print(“My age is : “, doitFun())
```

OUTPUT-

My age is: 24

Q6. Write a program to demonstrate the use of nested if statements.

```
print("what is your age")
age=int(input("enter your age:"))
if age<18:
   print("you cannot drive:")
elif age==18:
   print("we will think about you:")
else:
   print("you can drive")
```

OUTPUT-

```
what is your age
enter your age:20
you can drive
```

Q7. Write a program to demonstrate the use of the else clause.

```
num=int(input("enter any number:"))
if num>=0:
   print("number is positive ")
else:
   print("number is negative")
```

OUTPUT-

```
enter any number:20
number is positive
```

Q8. Write a program to illustrate the usage of Tuples.

```
tuple=()
print(type(tuple))
tuple=("physics","chemistry","maths",20,30,40,50)
print(tuple)
print(tuple[0])
print(tuple[1:5])
```

OUTPUT-

```
<class 'tuple'>
('physics', 'chemistry', 'maths', 20, 30, 40, 50)
physics
('chemistry', 'maths', 20, 30)
```

Q9. Write a program for searching an element and sorting a List.

```
list=[10,30,60,40,50,20,70,80]
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:20
Element Found
List after sorting: [10,20,30,40,50,60,70,80]
```

10. Write a program to illustrate the usage of Dictionaries.

```
dict={"name":"Rohan","age":20,"city":"dehradun","dob":20-10-2020}
print(type(dict)) #print type
print(dict) #print dictionary
print(dict["name"])
dict["father name"]="jaiprakash"
print(dict)
print(dict.get("age"))
print(dict)
del dict["name"]
print(dict)
```

OUTPUT-

```
<class 'dict'>
{'name': 'Rohan', 'age': 20, 'city': 'dehradun', 'dob': -2010}
Rohan
{'name': 'Rohan', 'age': 20, 'city': 'dehradun', 'dob': -2010, 'father name': 'jaiprakash'}
20
{'name': 'Rohan', 'age': 20, 'city': 'dehradun', 'dob': -2010, 'father name': 'jaiprakash'}
{'age': 20, 'city': 'dehradun', 'dob': -2010, 'father name': 'jaiprakash'}
```

Q11.Write a program to find the mean. mode and median of the given range of numbers.

```
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
```

Q12. Write a program to calculate the standard deviation of a given set of numbers.

```
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

Q13. Write a program to calculate the addition of two 3x 3 matrices.

```
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]
```

Q14. Write a program to calculate the multiplication of two 3x 3 matrices.

```
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]
```

Q15. Write a program to calculate the transpose of the given matrix.

```
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]
```