Inclass-Lab (Day 3)

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1. Conditional Statements

1. Write a program to check whether a given number is multiple of 7 (use if statement)

In [4]:
```
# type your code here
n = float(input("Enter a number: "))
if(n%7==0):
    print(n," is a multiple of 7")
else:
    print(n," is not a multiple of 7")
```

```
Enter a number: 38
38.0  is not a multiple of 7
```

2. Write a code to print the maximum of two numbers (use if-else)

In [9]:
```
# type your code here
n1 = float(input("Enter 1st number: "))
n2 = float(input("Enter 2nd number: "))
if(n1>n2):
    print(n1," is greater than ",n2)
elif(n2>n1):
    print(n2," is greater than ",n1)
else:
    print("This is not a valid comparison")
```

```
Enter 1st number: 100
Enter 2nd number: 100
This is not a valid comparison
```

Let's begin with some hands-on practice exercises

2. Python Flow Control

4. Write a code to print table of 5 using assignment operand +=.

In [16]:
```
# type your code here
t = 5
for i in range(1,11,1):
    print("5*{}={}".format(i,t))
    t+=5
```

```
5*1=5
5*2=10
5*3=15
5*4=20
5*5=25
5*6=30
5*7=35
5*8=40
5*9=45
5*10=50
```

6. Write a program to check whether a number is greater than the other using if statement (take the input from user).

In [18]:
```
# type your code here
n1 = float(input("Enter 1st number: "))
n2 = float(input("Enter 2nd number: "))
if(n1>n2):
    print(n1," is greater than ",n2)
elif(n2>n1):
    print(n2," is greater than ",n1)
else:
    print("This is not a valid comparison")
```

```
Enter 1st number: 25
Enter 2nd number: 33
33.0  is greater than  25.0
```

7. Write a code to check whether a number is divisible by 7 or not (take the input from user).

In [17]:
```
# type your code here
n = float(input("Enter a number: "))
if(n%7==0):
    print(n," is a divisible by 7")
else:
    print(n," is not a divisible by 7")
```

```
Enter a number: 49
49.0  is a divisible by 7
```

8. Write a code to find factorial of a number (take the input from user).

In [19]:
```
# type your code here
num = int(input("Enter a positive integer: "))
factorial = 1
if num < 0:
   print("Sorry, factorial does not exist for negative numbers")
elif num == 0:
   print("The factorial of 0 is 1")
else:
   for i in range(1,num + 1):
       factorial = factorial*i
   print("The factorial of",num,"is",factorial)
```

```
Enter a positive integer: 25
The factorial of 25 is 15511210043330985984000000
```

9. Write a program to check whether a number is prime or not (take the input from user).

In [29]:
```
# type your code here
num = int(input("Enter a positive integer: "))
# prime numbers are greater than 1
if num > 1:
   # check for factors
   for i in range(2,num):
       if (num % i) == 0:
           print(num,"is not a prime number")
           print(i,"times",num//i,"is",num)
           break
   else:
       print(num,"is a prime number")

# if input number is less than
# or equal to 1, it is not prime
else:
   print(num,"is not a prime number")
```

```
Enter a positive integer: 17
17 is a prime number
```

10. Write a program to check whether two numbers are amicable or not (take the input from user).

In [13]:
```
# type your code here
x=int(input('Enter number 1: '))
y=int(input('Enter number 2: '))
sum1=0
sum2=0
for i in range(1,x):
    if x%i==0:
        sum1+=i
for j in range(1,y):
    if y%j==0:
        sum2+=j
if(sum1==y and sum2==x):
    print('Amicable!')
else:
    print('Not Amicable!')

#Case 1:
#Enter number 1: 220
#Enter number 2: 284
#Amicable!

#Case 2:
#Enter number 1: 349
#Enter number 2: 234
#Not Amicable!#
```

```
Enter number 1: 220
Enter number 2: 284
Amicable!
```

11. Reverse string using a for loop (take the input from user).

In [9]:
```
# type your code here
def reverse_for_loop(s):
    s1 = ''
    for c in s:
        s1 = c + s1
    return s1

input_str = str(input("Enter a string: "))
print('Reverse String using for loop =', reverse_for_loop(input_str))
```

```
Enter a string: fayiq ahmed k
Reverse String using for loop = k demha qiyaf
```

12. Write a code to find the average of given numbers (take the input from user).

In [5]:
```
# type your code here
n=int(input("Enter the number of elements to be inserted: "))
a=[]
for i in range(0,n):
    elem=int(input("Enter element: "))
    a.append(elem)
avg=sum(a)/n
print("Average of elements in the list",round(avg,2))
```

```
Enter the number of elements to be inserted: 5
Enter element: 10
Enter element: 20
Enter element: 30
Enter element: 40
Enter element: 50
Average of elements in the list 30.0
```

13. Write a program to find the area of a circle for a given radius (take the input from user).

In [4]:
```
# type your code here
def findArea(r):
    PI = 3.142
    return PI * (r*r);

x = int(input("Enter the radius of the circle: "))
print("Area is %.6f" % findArea(x));
```

```
Enter the radius of the circle: 6
Area is 113.112000
```

14. Write a code to find the simple interest (take the input from user).

In [7]:
```
# type your code here
def simple_interest(p,t,r):
    print('The principal is', p)
    print('The time period is', t)
    print('The rate of interest is',r)

    si = (p * t * r)/100

    print('The Simple Interest is', si)
    return si

x = float(input("Enter the principal amount: "))
y = float(input("Enter the time period: "))
z = float(input("Enter the rate of interest: "))
simple_interest(x, y, z)
```

```
Enter the principal amount: 354000
Enter the time period: 3
Enter the rate of interest: 6.5
The principal is 354000.0
The time period is 3.0
The rate of interest is 6.5
The Simple Interest is 69030.0
```

Out[7]:
```
69030.0
```

3. List Comprehension

15. Use list comprehension to obtain the squre root of first 10 natural numbers.

In [14]:
```
# type your code here
sq_lst = [ i**2 for i in range(10)]
print(sq_lst)
```

```
[0, 1, 4, 9, 16, 25, 36, 49, 64, 81]
```

16. Use list comprehension to find the used vowels in a given sentence and/or word (take the input from user).

In [19]:
```
# type your code here
string = "python for data science"
vowels = "AaEeIiOoUu"
final = [each for each in string if each in vowels]
print(final)
```

```
['o', 'o', 'a', 'a', 'i', 'e', 'e']
```

17. Create a dictionary and access it values using a condition on its key. The data is given below. Let the condidtion on the key is that it should be a even number.

Key	1	2	3	4	5
Name	Aman	Mohit	Guari	Imran	Roma
Marks	24	25	26	24	27

In [14]:
```
# type your code here
name = ['Aman','Mohit','Guari','Imran','Roma']
marks = [24,25,26,24,27]
dict_values = list(zip(name,marks))
print(dict_values)
```

18. Use list comprehension to find even and odd numbers from first 20 whole numbers.

In [20]:
```
# type your code here
even_lst = [ i for i in range(20) if(i%2==0)]
odd_lst = [i for i in range(20) if(i%2!=0)]
print("Even list is: ",even_lst)
print("Odd list is: ",odd_lst)
```

```
Even list is:  [0, 2, 4, 6, 8, 10, 12, 14, 16, 18]
Odd list is:  [1, 3, 5, 7, 9, 11, 13, 15, 17, 19]
```

19. Use list comprehension to print numbers divisible by 2 and 3 in between 1 and 100.

In [16]:
```
# type your code here
lst = [ i for i in range(1,100) if((i%2==0) and (i%3==0))]
print(lst)
```

```
[6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84, 90, 96]
```

20. Use list comprehension to create a dictionary such that its keys are numbers from 1 to 10 and values are the corresponding to that key are its cube.

In [21]:
```
# type your code here
newdict = {x: x**3 for x in range(10) }
print(newdict)
```

```
{0: 0, 1: 1, 2: 8, 3: 27, 4: 64, 5: 125, 6: 216, 7: 343, 8: 512, 9: 729}
```

21. Use list comprehension to extract numbers from a string

In [17]:
```
# type your code here
test_string = "There are 2 apples for 4 persons"
print("The original string : " + test_string)
# using List comprehension + isdigit() +split()
# getting numbers from string
res = [int(i) for i in test_string.split() if i.isdigit()]
print("The numbers list is : " + str(res))
```

```
The original string : There are 2 apples for 4 persons
The numbers list is : [2, 4]
```

22. Use list comprehension to print table of 11 to 20 as shown below.

11	22	33	44	55	66	77	88	99	110
12	24	36	48	60	72	84	96	108	120
13	36	39	52	65	78	91	104	117	130
14	28	42	56	70	84	98	112	126	140
15	30	45	60	75	90	105	120	135	150
16	32	48	64	80	96	112	128	144	160
17	34	51	68	85	102	119	136	153	170
18	36	54	72	90	108	126	144	162	180
19	38	57	76	95	114	133	152	171	190
20	40	60	80	100	120	140	160	180	200

In [29]:
```
# type your code here
for r in range(11,21):
    for c in range(1,11):
        x = r*c
        print(x,end=' ')
    print('\n')
```

```
11 22 33 44 55 66 77 88 99 110

12 24 36 48 60 72 84 96 108 120

13 26 39 52 65 78 91 104 117 130

14 28 42 56 70 84 98 112 126 140

15 30 45 60 75 90 105 120 135 150

16 32 48 64 80 96 112 128 144 160

17 34 51 68 85 102 119 136 153 170

18 36 54 72 90 108 126 144 162 180

19 38 57 76 95 114 133 152 171 190

20 40 60 80 100 120 140 160 180 200
```

23. Use list comprehension to find transpose of the matrix given below.

1 2

3 4

5 6

7 8

In [28]:
```
x = [[1,2],[3,4],[5,6]]
result = [[x[j][i] for j in range(len(x))] for i in range(len(x[0]))]
for r in result:
    print(r)
```

```
[1, 3, 5]
[2, 4, 6]
```