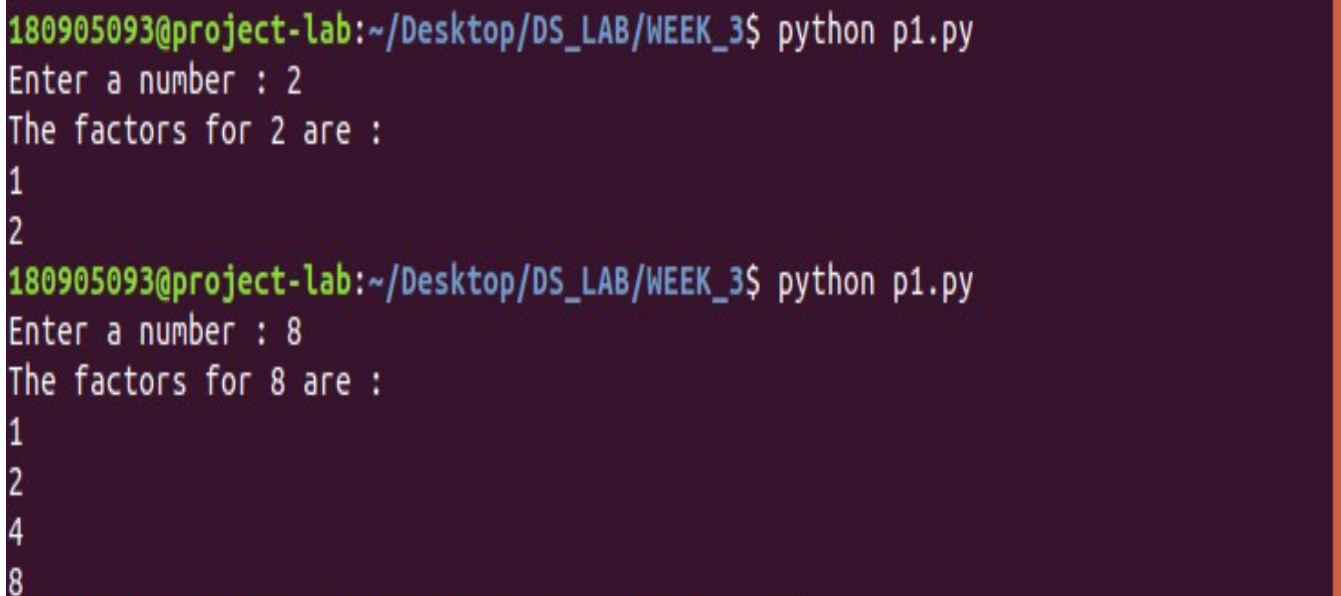


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P1)

```
def print_factors(n):  
    #2  
    for i in range(1, n+1):  
        #3  
        if n % i == 0:  
            print(i)  
  
#4  
number = int(input("Enter a number : "))  
  
#5  
print("The factors for {} are : ".format(number))  
print_factors(number)
```



```
180905093@project-lab:~/Desktop/DS_LAB/WEEK_3$ python p1.py  
Enter a number : 2  
The factors for 2 are :  
1  
2  
180905093@project-lab:~/Desktop/DS_LAB/WEEK_3$ python p1.py  
Enter a number : 8  
The factors for 8 are :  
1  
2  
4  
8
```

P2)

```
import numpy as np  
import pandas as pd  
df = pd.DataFrame( np.array([[1 , 2, 3] , [4, 5, 6], [7, 8, 9]]))  
print(df)  
a = df.sum(axis = 0)
```

```

b = df.sum(axis = 1)
print("The column sum is :")
print(a)
print("The row sum is :")
print(b)

```

```

180905093@project-lab:~/Desktop/DS_LAB/WEEK_3$ python3 p2.py
   0  1  2
0  1  2  3
1  4  5  6
2  7  8  9
The column sum is :
0    12
1    15
2    18
dtype: int64
The row sum is :
0     6
1    15
2    24
dtype: int64
180905093@project-lab:~/Desktop/DS_LAB/WEEK_3$

```

P3)

```

import numpy as np
list = [1.0 , 2.0 , 3.0 , 4.0]
a = np.array(list)
print(a , end = "\n\n")
tuple = (1 , 2, 3, 4)
a = np.array(tuple)
print(a , end = "\n\n")
a = np.zeros((3 , 4))
print(a , end = "\n\n")
a = np.arange(0 , 20 , 5)
print(a , end = "\n\n")
a = np.arange(12).reshape((3 , 4))
print(a , end = "\n")
a = np.reshape(a , (2 , 2 , 3))
print(a , end = "\n\n")
a = np.arange(9.0).reshape((3, 3))
print("Full array Max = " , a.max() , " Min = " , a.min() , " Sum = " , a.sum())
print("Rowwise array Max = " , a.max(axis = 1) , " Min = " , a.min(axis = 1) , " Sum = " , a.sum(axis = 1))
print("Rowwise array Max = " , a.max(axis = 0) , " Min = " , a.min(axis = 0) , " Sum = " , a.sum(axis = 0))

```

```

180905093@project-lab:~/Desktop/DS_LAB/WEEK_3$ python3 p3.py
[1. 2. 3. 4.]

[1 2 3 4]

[[0. 0. 0. 0.]
 [0. 0. 0. 0.]
 [0. 0. 0. 0.]]

[ 0  5 10 15]

[[ 0  1  2  3]
 [ 4  5  6  7]
 [ 8  9 10 11]]
[[[ 0  1  2]
  [ 3  4  5]]

 [[ 6  7  8]
  [ 9 10 11]]]

Full array Max =  8.0  Min =  0.0  Sum =  36.0
Rowwise array Max =  [2. 5. 8.]  Min =  [0. 3. 6.]  Sum =  [ 3. 12. 21.]
Rowwise array Max =  [6. 7. 8.]  Min =  [0. 1. 2.]  Sum =  [ 9. 12. 15.]
180905093@project-lab:~/Desktop/DS_LAB/WEEK_3$

```

P4)

Program to transpose a matrix using a nested loop

```

X = [[9,2],
      [5,5],
      [3,9]]

```

```

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

```

```

# iterate through rows
for i in range(len(X)):
    # iterate through columns
    for j in range(len(X[0])):
        result[j][i] = X[i][j]

```

```

for r in result:
    print(r)

```

```
180905093@project-lab:~/Desktop/DS_LAB/WEEK_3$ python p4.py
[9, 5, 3]
[2, 5, 9]
180905093@project-lab:~/Desktop/DS_LAB/WEEK_3$
```

P5)

Program to add two matrices using nested loop

```
X = [[14,5,9],
      [5,4,5],
      [3,7,9]]
```

```
Y = [[5,8,1],
      [6,7,3],
      [4,5,9]]
```

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

```
# iterate through rows
for i in range(len(X)):
    # iterate through columns
    for j in range(len(X[0])):
        result[i][j] = X[i][j] + Y[i][j]
```

```
for r in result:
    print(r)
```

```
180905093@project-lab:~/Desktop/DS_LAB/WEEK_3$ python p5.py
[19, 13, 10]
[11, 11, 8]
[7, 12, 18]
180905093@project-lab:~/Desktop/DS_LAB/WEEK_3$
```

P6)

```
import numpy as np
a = np.matrix([[1,2], [3,4]])
b = np.matrix([[5,6], [7,8]])
#This would result a 'numpy.ndarray'
result = np.array(a) * np.array(b)
print (result)
```

```
180905093@project-lab:~/Desktop/DS_LAB/WEEK_3$ python3 p6.py
[[ 5 12]
 [21 32]]
180905093@project-lab:~/Desktop/DS_LAB/WEEK_3$
```