

**Assignment -1**  
Python Programming

Assignment Date	19 September 2022
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Maximum Marks	2 Marks

**Basic Python**

**Question-1:**

**1. Split this string**

**s = "Hi there Sam!"**

**Solution:**

```
s = "Hi there Sam!"  
x = s.split()  
print(x)
```

**Output:**

```
In [1]: s = "Hi there Sam!"  
        x = s.split()  
        print(x)  
  
        ['Hi', 'there', 'Sam!']
```

**Question-2:**

**2. Use .format() to print the following string.**

**Output should be: The diameter of Earth is 12742 kilometers.**

```
planet = "Earth"  
diameter = 12742
```

**Solution:**

```
planet = "Earth"  
diameter = 12742  
print ('The diameter of {planet} is {measure}  
kilometers'.format(planet="Earth", measure=12742.34))
```

### Output:

```
In [2]: planet = "Earth"
        diameter = 12742
        print ('The diameter of {planet} is {measure} kilometers'.format(planet="Earth", measure=12742.34))
The diameter of Earth is 12742.34 kilometers
```

### Question-3:

**In this nest dictionary grab the word "hello"**

```
d =
{'k1':[1,2,3,{'tricky':['oh','man','inception',{'target':[1,2,3,'hello']}]}]}
[]
```

### Solution:

```
d =
{'k1':[1,2,3,{'tricky':['oh','man','inception',{'target':[1,2,3,'hello']}]}]}
[]
d['k1'][3]['tricky'][3]['target'][3]
```

### Output:

```
In [3]: d = {'k1':[1,2,3,{'tricky':['oh','man','inception',{'target':[1,2,3,'hello']}]}]}
        d['k1'][3]['tricky'][3]['target'][3]
Out[3]: 'hello'
```

## Numpy

### Question-4:

```
import numpy as np
```

### 4.1 Create an array of 10 zeros?

#### Solution:

```
import numpy as np
array=np.zeros(10)
print("An array of 10 zeros:")
print(array)
```

Output:

```
In [4]: import numpy as np
array=np.zeros(10)
print("An array of 10 zeros:")
print(array)

An array of 10 zeros:
[0. 0. 0. 0. 0. 0. 0. 0. 0. 0.]
```

## 4.2 Create an array of 10 fives?

Solution:

```
import numpy as np
array=np.ones(10)*5
print("An array of 10 fives:")
print(array)
```

Output:

```
In [5]: import numpy as np
array=np.ones(10)*5
print("An array of 10 fives:")
print(array)

An array of 10 fives:
[5. 5. 5. 5. 5. 5. 5. 5. 5. 5.]
```

Question-5:

## Create an array of all the even integers from 20 to 35

Solution:

```
import numpy as np
array=np.arange(20,35,2)
print("Array of all the even integers from 20 to 35")
print(array)
```

Output:

```
In [6]: import numpy as np
        array=np.arange(20,35,2)
        print("Array of all the even integers from 20 to 35")
        print(array)
```

```
Array of all the even integers from 20 to 35
[20 22 24 26 28 30 32 34]
```

**Question-6:**

**Create a 3x3 matrix with values ranging from 0 to 8**

**Solution:**

```
import numpy as np
arr = np.arange(0,9).reshape(3,3)
```

```
print(arr)
```

**Output:**

**6. Create a 3x3 matrix with values ranging from 0 to 8**

```
In [7]: import numpy as np
        arr = np.arange(0,9).reshape(3,3)

        print(arr)
```

```
[[0 1 2]
 [3 4 5]
 [6 7 8]]
```

**Question-7:**

**Concatenate a and b**

**a = np.array([1, 2, 3]), b = np.array([4, 5, 6])**

**Solution:**

In [ ]:

```
import numpy as np
a = np.array([[1,2,3]])

print ('First array:')
print (a)
print ('\n')
b = np.array([[4,5,6]])

print ('Second array:')
```

```

print (b)
print ('\n')
# both the arrays are of same dimensions

print ('Joining the two arrays along axis 0:')
print (np.concatenate((a,b)) )
print ('\n')

print ('Joining the two arrays along axis 1:')
print (np.concatenate((a,b),axis = 1))

```

### Output:

```

In [8]: import numpy as np
a = np.array([[1,2,3]])

print ('First array:')
print (a)
print ('\n')
b = np.array([[4,5,6]])

print ('Second array:')
print (b)
print ('\n')
# both the arrays are of same dimensions

print ('Joining the two arrays along axis 0:')
print (np.concatenate((a,b)) )
print ('\n')

print ('Joining the two arrays along axis 1:')
print (np.concatenate((a,b),axis = 1))

First array:
[[1 2 3]]

Second array:
[[4 5 6]]

Joining the two arrays along axis 0:
[[1 2 3]
 [4 5 6]]

Joining the two arrays along axis 1:
[[1 2 3 4 5 6]]

```

## Pandas

### Question-8:

#### Create a dataframe with 3 rows and 2 columns

```
import pandas as pd
```

### Solution:

```
import pandas as pd
```

```
data = [[10,20],[30,40],[50,60]]
```

```
# Create the pandas DataFrame with column name is provided explicitly
df = pd.DataFrame(data, columns=['Numbers', 'Numbers2'])

# print dataframe.
Df
```

**Output:**

```
In [9]: import pandas as pd

data = [[10,20],[30,40],[50,60]]

# Create the pandas DataFrame with column name is provided explicitly
df = pd.DataFrame(data, columns=['Numbers', 'Numbers2'])

# print dataframe.
df
```

**Out[9]:**

	Numbers	Numbers2
0	10	20
1	30	40
2	50	60

**Question-9:**

**Generate the series of dates from 1st Jan, 2023 to 10th Feb, 2023**

In [2]:

```
import datetime
import pandas as pd
start = datetime.datetime.strptime("01-01-2023", "%d-%m-%Y")
date_generated = pd.date_range(start, periods=41)
print(date_generated.strftime("%d-%m-%Y"))
```

**Output:**

```
In [10]: import datetime
import pandas as pd
start = datetime.datetime.strptime("01-01-2023", "%d-%m-%Y")
date_generated = pd.date_range(start, periods=41)
print(date_generated.strftime("%d-%m-%Y"))

Index(['01-01-2023', '02-01-2023', '03-01-2023', '04-01-2023', '05-01-2023',
      '06-01-2023', '07-01-2023', '08-01-2023', '09-01-2023', '10-01-2023',
      '11-01-2023', '12-01-2023', '13-01-2023', '14-01-2023', '15-01-2023',
      '16-01-2023', '17-01-2023', '18-01-2023', '19-01-2023', '20-01-2023',
      '21-01-2023', '22-01-2023', '23-01-2023', '24-01-2023', '25-01-2023',
      '26-01-2023', '27-01-2023', '28-01-2023', '29-01-2023', '30-01-2023',
      '31-01-2023', '01-02-2023', '02-02-2023', '03-02-2023', '04-02-2023',
      '05-02-2023', '06-02-2023', '07-02-2023', '08-02-2023', '09-02-2023',
      '10-02-2023'],
      dtype='object')
```

#### Question-10:

#### Create 2D list to DataFrame

```
lists = [[1, 'aaa', 22], [2, 'bbb', 25], [3, 'ccc', 24]]
```

#### Solution:

```
lists = [[1, 'aaa', 22], [2, 'bbb', 25], [3, 'ccc', 24]]
import pandas as pd
lists = [[1, 'aaa', 22], [2, 'bbb', 25], [3, 'ccc', 24]]
pd.DataFrame( lists, columns=['a', 'b', 'c'])
```

#### Output:

```
In [11]: import pandas as pd
lists = [[1, 'aaa', 22], [2, 'bbb', 25], [3, 'ccc', 24]]
pd.DataFrame( lists, columns=['a', 'b', 'c'])
```

Out[11]:

	a	b	c
0	1	aaa	22
1	2	bbb	25
2	3	ccc	24