

Basic Python

1. Split this string

```
s = "Hi there Sam!"  
  
# Splits at space  
s.split()  
  
['Hi', 'there', 'Sam!']
```

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

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

```
planet = "Earth"  
diameter = 12742  
  
# Reverse the index numbers with the  
# parameters of the placeholders  
'The diameter of {0} is {1} kilometer'.format(planet,diameter)  
  
{"type":"string"}
```

3. In this nest dictionary grab the word "hello"

```
d = {'k1':[1,2,3,{'tricky':['oh','man','inception',{'target':[1,2,3,'hello']}]}]}  
  
#In this nest dictionary grabing the word "hello"  
print(d["k1"][3]["tricky"][3]["target"][3])  
  
hello
```

Numpy

```
import numpy as np
```

4.1 Create an array of 10 zeros?

4.2 Create an array of 10 fives?

```
#array of 10 zeros  
array1=np.zeros(10)  
print(array1)  
  
[0. 0. 0. 0. 0. 0. 0. 0. 0. 0.]  
  
# array of 10 fives  
array2=np.ones(10)*5  
print(array2)  
  
[5. 5. 5. 5. 5. 5. 5. 5. 5. 5.]
```

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

```
#array of all the even integers from 20 to 35  
array3=np.arange(20,36,2)  
print(array3)
```

```
[20 22 24 26 28 30 32 34]
```

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

```
#3x3 matrix with values ranging from 0 to 8  
x = np.arange(0, 9).reshape(3,3)  
print(x)
```

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

7. Concatenate a and b

```
a = np.array([1, 2, 3]), b = np.array([4, 5, 6])  
a = np.array([1, 2, 3])  
b = np.array([4, 5, 6])  
#Concatenate  
np.concatenate((a,b),axis=None)  
  
array([1, 2, 3, 4, 5, 6])
```

Pandas

8. Create a dataframe with 3 rows and 2 columns

```
import pandas as pd
```

1.Numpy arrays

```
A = np.random.randint(10, size=(3,2))  
#dataframe  
df = pd.DataFrame(A,columns=['cola', 'colb'])  
df
```

```
   cola  colb  
0      1     5  
1      5     5  
2      2     2
```

2.Dictionary

```
dict_a = {  
    'col_a':[1,2,3],  
    'col_b': [2,5,6],  
}  
#dataframe
```

```
df = pd.DataFrame(dict_a)
df
```

```
   col_a  col_b
0      1     2
1      2     5
2      3     6
```

3.List

```
lst_a = [['John', 23], ['Jane', 25], ['Mary', 21]]
#dataframe
df = pd.DataFrame(lst_a,columns=['Name', 'Age'])
df
```

```
   Name  Age
0  John   23
1  Jane   25
2  Mary   21
```

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

```
import pandas as pd
```

```
# calling DataFrame constructor
df = pd.DataFrame()
```

```
# Create 6 dates
```

```
df['time'] = pd.date_range(start="1/1/2023",end="2/10/2023", freq
='24H')
```

```
# print dataframe
```

```
# Extract features - year, month, day, hour, and minute
```

```
df['year'] = df['time'].dt.year
df['month'] = df['time'].dt.month
df['day'] = df['time'].dt.day
```

```
# Show six rows
```

```
df.head(len(df["time"]))
```

```
   time      year  month  day
0 2023-01-01  2023      1    1
1 2023-01-02  2023      1    2
2 2023-01-03  2023      1    3
3 2023-01-04  2023      1    4
4 2023-01-05  2023      1    5
5 2023-01-06  2023      1    6
6 2023-01-07  2023      1    7
7 2023-01-08  2023      1    8
8 2023-01-09  2023      1    9
9 2023-01-10  2023      1   10
```

10	2023-01-11	2023	1	11
11	2023-01-12	2023	1	12
12	2023-01-13	2023	1	13
13	2023-01-14	2023	1	14
14	2023-01-15	2023	1	15
15	2023-01-16	2023	1	16
16	2023-01-17	2023	1	17
17	2023-01-18	2023	1	18
18	2023-01-19	2023	1	19
19	2023-01-20	2023	1	20
20	2023-01-21	2023	1	21
21	2023-01-22	2023	1	22
22	2023-01-23	2023	1	23
23	2023-01-24	2023	1	24
24	2023-01-25	2023	1	25
25	2023-01-26	2023	1	26
26	2023-01-27	2023	1	27
27	2023-01-28	2023	1	28
28	2023-01-29	2023	1	29
29	2023-01-30	2023	1	30
30	2023-01-31	2023	1	31
31	2023-02-01	2023	2	1
32	2023-02-02	2023	2	2
33	2023-02-03	2023	2	3
34	2023-02-04	2023	2	4
35	2023-02-05	2023	2	5
36	2023-02-06	2023	2	6
37	2023-02-07	2023	2	7
38	2023-02-08	2023	2	8
39	2023-02-09	2023	2	9
40	2023-02-10	2023	2	10

10. Create 2D list to DataFrame

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

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

```
#2D list to DataFrame
```

```
df = pd.DataFrame(lists, columns=['col1',"col2","col3"])
df
```

	col1	col2	col3
0	1	aaa	22
1	2	bbb	25
2	3	ccc	24