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
```