Basic Python

1. Split this string

In [ ]:
```
s = "Hi there Sam!"
```

In [ ]:
```
s.split()
```

Out[ ]:
```
['Hi', 'there', 'Sam!']
```

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

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

In [ ]:
```
planet = "Earth"
diameter = 12742
```

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

```
The diameter of Earth is 12742 kilometers.
```

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

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

In [ ]:
```
d['k1'][3]['tricky'][3]['target'][3]
```

Out[ ]:
```
'hello'
```

Numpy

In [ ]:
```
import numpy as np
```

4.1 Create an array of 10 zeros?

4.2 Create an array of 10 fives?

In [ ]:
```
np.zeros(10)
```

Out[ ]:
```
array([0., 0., 0., 0., 0., 0., 0., 0., 0., 0.])
```

In [ ]:
```
np.ones(10)*5
```

Out[ ]:
```
array([5., 5., 5., 5., 5., 5., 5., 5., 5., 5.])
```

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

In [ ]:
```
np.arange(20,35,2)
```

Out[ ]:
```
array([20, 22, 24, 26, 28, 30, 32, 34])
```

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

In [ ]:
```
np.arange(9).reshape(3,3)
```

Out[ ]:
```
array([[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])

In [ ]:
```
a = np.array([1, 2, 3])
b = np.array([4, 5, 6])
c=np.concatenate((a,b),axis=0)
print(c)
```

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

8. Create a dataframe with 3 rows and 2 columns

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

In [ ]:
```
p=np.arange(6).reshape(3,2)
df=pd.DataFrame(p)
print(df)
```

```
   0  1
0  0  1
1  2  3
2  4  5
```

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

In [ ]:
```
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"]))
```

Out[ ]:

	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
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]]

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

n [ ]:
```
arr=np.array(lists)
df=pd.DataFrame(arr)
print(df)
```

```
   0    1   2
0  1  aaa  22
1  2  bbb  25
2  3  ccc  24
```