Basic Python

1. Split this string

```
s = "Hi there Joel!"
```

```
# Splits at space
s.split()
```

```
['Hi', 'there', 'Joel!']
```

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)
```

```
'The diameter of Earth is 12742 kilometer'
```

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

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

	cola	colb
0	8	2
1	8	4
2	8	2

```
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

10. Create 2D list to DataFrame

18	2023-01-19	2023	1	19

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

20	2023-01-21	2023	1	21

```
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

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

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