1. Split this string

```
s = "Hi there Sam!"
```

Basic Python

```
x = s.split()
print(x)
```

```
['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

print( 'The diameter of {} is {}
kilometers.' .format(planet,diameter));
```

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

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

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

```
np.zeros(10)
```

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

```
np.ones(10) * 5
```

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

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

```
print(np.arange(20,35,2))
```

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

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

```
np.arange(0,9).reshape((3,3))
```

```
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])

```
import numpy as np
a = np.array([1, 2, 3])
b = np.array([4, 5, 6])
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

d = {'col1': [1,2,3], 'col2': [4,5,6]}
df = pd.DataFrame(data=d)
df
```

```
   col1  col2
0     1     4
1     2     5
2     3     6
```

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

```
import pandas as pd
cal = pd.date_range(start ='1-1-2023',end ='02-10-2023', freq ='12H')
print(cal)
```

```
DatetimeIndex(['2023-01-01 00:00:00', '2023-01-01 12:00:00',
               '2023-01-02 00:00:00', '2023-01-02 12:00:00',
               '2023-01-03 00:00:00', '2023-01-03 12:00:00',
               '2023-01-04 00:00:00', '2023-01-04 12:00:00',
               '2023-01-05 00:00:00', '2023-01-05 12:00:00',
               '2023-01-06 00:00:00', '2023-01-06 12:00:00',
               '2023-01-07 00:00:00', '2023-01-07 12:00:00',
               '2023-01-08 00:00:00', '2023-01-08 12:00:00',
               '2023-01-09 00:00:00', '2023-01-09 12:00:00',
               '2023-01-10 00:00:00', '2023-01-10 12:00:00',
               '2023-01-11 00:00:00', '2023-01-11 12:00:00',
               '2023-01-12 00:00:00', '2023-01-12 12:00:00',
               '2023-01-13 00:00:00', '2023-01-13 12:00:00',
```

```
               '2023-01-14 00:00:00', '2023-01-14 12:00:00',
               '2023-01-15 00:00:00', '2023-01-15 12:00:00',
               '2023-01-16 00:00:00', '2023-01-16 12:00:00',
               '2023-01-17 00:00:00', '2023-01-17 12:00:00',
               '2023-01-18 00:00:00', '2023-01-18 12:00:00',
               '2023-01-19 00:00:00', '2023-01-19 12:00:00',
               '2023-01-20 00:00:00', '2023-01-20 12:00:00',
               '2023-01-21 00:00:00', '2023-01-21 12:00:00',
               '2023-01-22 00:00:00', '2023-01-22 12:00:00',
               '2023-01-23 00:00:00', '2023-01-23 12:00:00',
               '2023-01-24 00:00:00', '2023-01-24 12:00:00',
               '2023-01-25 00:00:00', '2023-01-25 12:00:00',
               '2023-01-26 00:00:00', '2023-01-26 12:00:00',
               '2023-01-27 00:00:00', '2023-01-27 12:00:00',
               '2023-01-28 00:00:00', '2023-01-28 12:00:00',
               '2023-01-29 00:00:00', '2023-01-29 12:00:00',
               '2023-01-30 00:00:00', '2023-01-30 12:00:00',
               '2023-01-31 00:00:00', '2023-01-31 12:00:00',
               '2023-02-01 00:00:00', '2023-02-01 12:00:00',
               '2023-02-02 00:00:00', '2023-02-02 12:00:00',
               '2023-02-03 00:00:00', '2023-02-03 12:00:00',
               '2023-02-04 00:00:00', '2023-02-04 12:00:00',
               '2023-02-05 00:00:00', '2023-02-05 12:00:00',
               '2023-02-06 00:00:00', '2023-02-06 12:00:00',
               '2023-02-07 00:00:00', '2023-02-07 12:00:00',
               '2023-02-08 00:00:00', '2023-02-08 12:00:00',
               '2023-02-09 00:00:00', '2023-02-09 12:00:00',
               '2023-02-10 00:00:00'],
              dtype='datetime64[ns]', freq='12H')
```

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]]

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

```
           col1          col2          col3
0  [1, aaa, 22]  [2, bbb, 25]  [3, ccc, 24]
```