Basic Python:

1. Split this string s = "Hi there Sam!"

Program:

```
s="Hi there Sam!"
s=s.split()
print(s);
```

Output:

['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

Program:

```
planet = "Earth"
diameter = 12742
print( 'The diameter of {} is {} kilometers.' .format(planet,diameter));
```

Output:

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']}]}]}

Program:

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

Output:

hello

Numpy

4.1 Create an array of 10 zeros?

Program:

```
import numpy as np
array=np.zeros(10)
print("An array of 10 zeros:")
print(array)
```

Output:

An array of 10 zeros:

[0. 0. 0. 0. 0. 0. 0. 0. 0. 0.]

4.2 Create an array of 10 fives?

Program:

```
import numpy as np
array=np.ones(10)*5
print("An array of 10 fives:")
print(array)
```

Output:

An array of 10 fives:
[5. 5. 5. 5. 5. 5. 5. 5. 5. 5.]

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

Program:

```
import numpy as np
array=np.arange(20,36,2)
print("Array of all the even integers from 20 to 35")
print(array)
```

Output:

Array of all the even integers from 20 to 35
[20 22 24 26 28 30 32 34]

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

Program:

```
import numpy as np
```

```
x =  np.arange(0, 9).reshape(3,3)
print(x)
```

Output:

```
[[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])
Program:

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

Output:

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

Pandas

8. Create a dataframe with 3 rows and 2 columns

Program:

```
students = ['Jackma','Maha','Henry']
df = pd.DataFrame(students, columns=['Name'])
print(df)
```

Output:

```
    Name
0  Jackma
1    Maha
2   Henry
```

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

Program:

```
import pandas as pd
a = pd.date_range(start ='01-01-2023', end ='02-10-2023')
for val in a:
    print(val)
```

Output:

```
2023-01-01 00:00:00
2023-01-02 00:00:00
2023-01-03 00:00:00
2023-01-04 00:00:00
2023-01-05 00:00:00
2023-01-06 00:00:00
2023-01-07 00:00:00
2023-01-08 00:00:00
2023-01-09 00:00:00
2023-01-10 00:00:00
2023-01-11 00:00:00
2023-01-12 00:00:00
2023-01-13 00:00:00
2023-01-14 00:00:00
2023-01-15 00:00:00
2023-01-16 00:00:00
2023-01-17 00:00:00
2023-01-18 00:00:00
2023-01-19 00:00:00
2023-01-20 00:00:00
2023-01-21 00:00:00
2023-01-22 00:00:00
2023-01-23 00:00:00
2023-01-24 00:00:00
2023-01-25 00:00:00
2023-01-26 00:00:00
2023-01-27 00:00:00
2023-01-28 00:00:00
```

2023-01-29 00:00:00
2023-01-30 00:00:00
2023-01-31 00:00:00
2023-02-01 00:00:00
2023-02-02 00:00:00
2023-02-03 00:00:00
2023-02-04 00:00:00
2023-02-05 00:00:00
2023-02-06 00:00:00
2023-02-07 00:00:00
2023-02-08 00:00:00
2023-02-09 00:00:00
2023-02-10 00:00:00

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]]

Program:

```
import pandas as pd
lists = [[1, 'aaa', 22], [2, 'bbb', 25], [3, 'ccc', 24]]
df = pd.DataFrame(lists, columns = ['S.No', 'Name', 'Age'])
print(df)
```

Output:

	S.No	Name	Age
0	1	aaa	22
1	2	bbb	25
2	3	ccc	24