**Basic Python**

**1. Split this string**

s **=** "Hi there Sam!"

s **=** "Hi there Sam!"

1. **=** 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

planet **=** "Earth"

diameter **=** 12742

s **=** "The diameter of {} is {} kilometers"**.**format(planet,diameter)

print(s)

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']}]}]}

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

**import** numpy **as** np

array**=**np**.**zeros(10)

print("An array of 10 zeros:")

print(array)

An array of 10 zeros:

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

**import** numpy **as** np

array**=**np**.**ones(10)**\***5

print("An array of 10 fives:")

print(array)

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**

**import** numpy **as** np

array**=**np**.**arange(20,35,2)

print("Array of all the even integers from 20 to 35")

print(array)

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**

**import** numpy **as** np

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

[[0 1 2]

[345]

[6 7 8]]

**7. Concatenate a and b**

**a = np.array([1, 2, 3]), b = np.array([4, 5, 6])**

1. **=**np**.**array([1,2,3])
2. **=**np**.**array([4,5,6]) print(np**.**concatenate((a,b)))

[123456]

**Pandas**

**8. Create a dataframe with 3 rows and 2 columns**

**import** pandas **as** pd

data **=** {

"calories": [420, 380, 390],

"duration": [50, 40, 45]

}

df **=** pd**.**DataFrame(data)

print(df)

|  |  |  |
| --- | --- | --- |
|  | calories | duration |
| 0 | 420 | 50 |
| 1 | 380 | 40 |
| 2 | 390 | 45 |

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

**import** datetime

**import** pandas **as** pd

pd**.**date\_range("01/01/2023","02/10/2023")

DatetimeIndex(['2023-01-01', '2023-01-02', '2023-01-03', '2023-01-04', '2023-01-05', '2023-01-06', '2023-01-07', '2023-01-08', '2023-01-09', '2023-01-10', '2023-01-11', '2023-01-12', '2023-01-13', '2023-01-14', '2023-01-15', '2023-01-16', '2023-01-17', '2023-01-18', '2023-01-19', '2023-01-20', '2023-01-21', '2023-01-22', '2023-01-23', '2023-01-24', '2023-01-25', '2023-01-26', '2023-01-27', '2023-01-28', '2023-01-29', '2023-01-30', '2023-01-31', '2023-02-01', '2023-02-02', '2023-02-03', '2023-02-04', '2023-02-05', '2023-02-06', '2023-02-07', '2023-02-08', '2023-02-09', '2023-02-10'],

dtype='datetime64[ns]', freq='D')

**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]]

**import** pandas **as** pd

lists**=** {

"lists1": [1, 'aaa', 22],

"lists2": [2,'bbb', 25],

"lists3": [3,'ccc', 24],

}

df **=** pd**.**DataFrame(lists)

print(df)

|  |  |  |  |
| --- | --- | --- | --- |
|  | lists1 lists2 lists3 | | |
| 0 | 1 | 2 | 3 |
| 1 | aaa | bbb | ccc |
| 2 | 22 | 25 | 24 |