

Practical-2: Implement Python Program for NumPy Arrays

```
import numpy as np

# Creating array object
arr = np.array([[1, 2, 3],
                [4, 2, 5]])

# Printing type of arr object
print("Array is of type: ", type(arr))

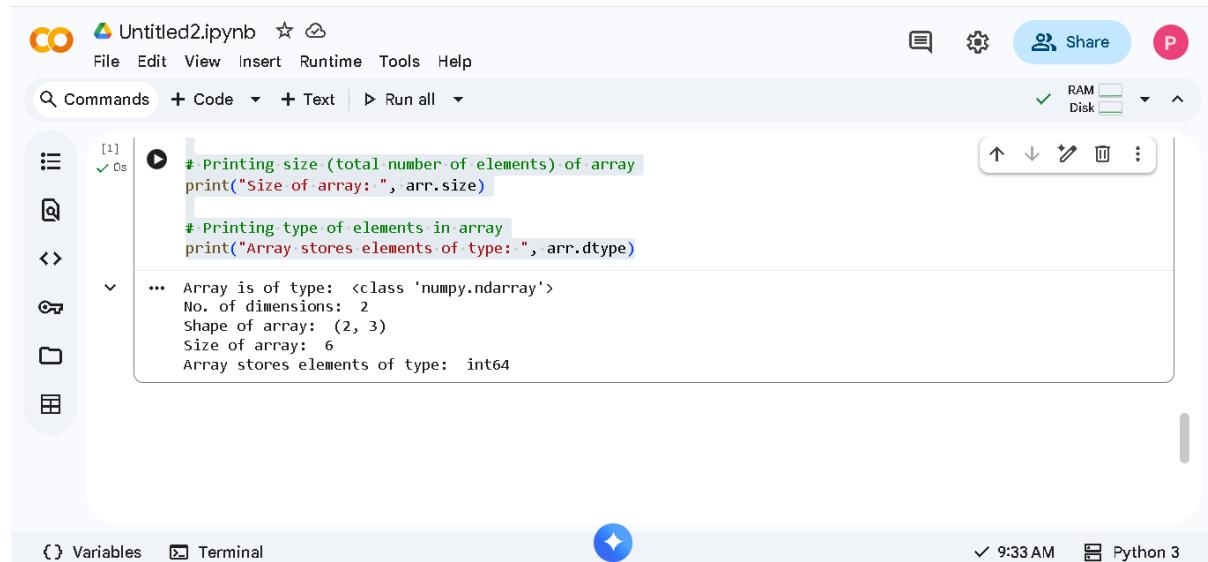
# Printing array dimensions (axes)
print("No. of dimensions: ", arr.ndim)

# Printing shape of array
print("Shape of array: ", arr.shape)

# Printing size (total number of elements) of array
print("Size of array: ", arr.size)

# Printing type of elements in array
print("Array stores elements of type: ", arr.dtype)
```

Output:



```
# Printing size (total number of elements) of array
print("Size of array: ", arr.size)

# Printing type of elements in array
print("Array stores elements of type: ", arr.dtype)
```

```
... Array is of type: <class 'numpy.ndarray'>
No. of dimensions: 2
Shape of array: (2, 3)
Size of array: 6
Array stores elements of type: int64
```

Extra:**Practical-2.1: More about NumPy Arrays and data frames**

```
import numpy as np
import pandas as pd
data = np.array([['', 'Col1', 'Col2'], ['Row1', 1, 2],
                 ['Row2', 3, 4]])
print(pd.DataFrame(data=data[1:,1:],
                    index = data[1:,0], columns=data[0,1:]))
# Take a 2D array as input to your DataFrame
my_2darray = np.array([[1, 2, 3], [4, 5, 6]])
print(pd.DataFrame(my_2darray))

# Take a dictionary as input to your DataFrame
my_dict = {1: ['1', '3'], 2: ['1', '2'], 3: ['2', '4']}
print(pd.DataFrame(my_dict))

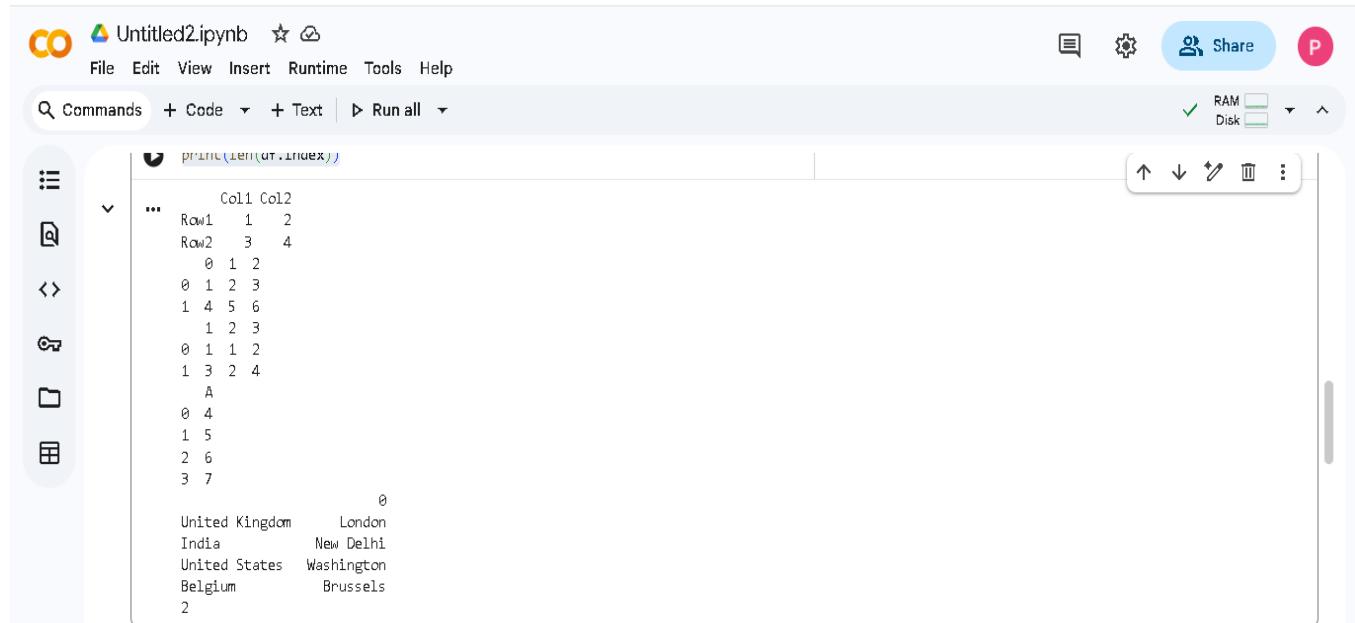
# Take a DataFrame as input to your DataFrame
my_df = pd.DataFrame(data=[4,5,6,7], index=range(0,4), columns=['A'])
print(pd.DataFrame(my_df))

# Take a Series as input to your DataFrame
my_series = pd.Series({'United Kingdom': "London", "India": "New Delhi",
                       "United States": "Washington", "Belgium": "Brussels"})
print(pd.DataFrame(my_series))

df = pd.DataFrame(np.array([[1, 2, 3], [4, 5, 6]]))

# Use the `shape` property print(df.shape)

# Or use the `len()` function with the `index` property
print(len(df.index))
```

Output:

The screenshot shows a Jupyter Notebook interface with the following details:

- File Bar:** Untitled2.ipynb, File, Edit, View, Insert, Runtime, Tools, Help.
- Toolbar:** Share, RAM/Disk status.
- Code Cell:** `print(len(df.index))` (highlighted in blue). Output:
 - ... Col1 Col2
 - ... Row1 1 2
 - Row2 3 4
 - 0 1 2
 - 0 1 2 3
 - 1 4 5 6
 - 1 2 3
 - 0 1 1 2
 - 1 3 2 4
 - A
 - 0 4
 - 1 5
 - 2 6
 - 3 7
- Code Cell:** `df = pd.DataFrame(np.array([[1, 2, 3], [4, 5, 6]]))`. Output:
 - 0
 - United Kingdom London
 - India New Delhi
 - United States Washington
 - Belgium Brussels
 - 2

