

## Worksheet 1.5

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**Branch: CSE - AIML**

**Semester: 3rd**

**Subject Name: Python for Machine Learning**

**UID: 21BCS6615**

**Section/Group: 21AML - 9 - A**

**Subject Code 21CSH-238**

### Program 1

Create 1D, 2D, 3D arrays in python using NumPy.

#### Code:

```
import numpy as np

oneDArray = np.array((1, 2, 3, 4, 5))

twoDArray = np.array([[1, 2, 3], [4, 5, 6]])

threeDArray = np.array([[[1, 2, 3], [4, 5, 6]], [[1, 2, 3], [4, 5, 6]], ])

print("1D Array: ")

print(oneDArray)

print()

print("2D Array: ")

print(twoDArray)

print()

print("3D Array: ")

print(threeDArray)

print()
```

## Output:

```
Garv Khurana@LAPTOP-ANP8Q125 MINGW
$ python -u "d:\Chandigarh Univers
1D Array:
[1 2 3 4 5]

2D Array:
[[1 2 3]
 [4 5 6]]

3D Array:
[[[1 2 3]
  [4 5 6]]
 [[1 2 3]
  [4 5 6]]]
```

## Program 2

Create a user defined 2D array in Python

### Code:

```
import numpy as np
mt = []
```

```
rows = int(input("Enter the number of rows: "))
columns = int(input("Enter the number of columns: "))
```

```
for i in range(rows):
    arr = []
    for j in range(columns):
```

```
val = int(input("Enter the Value: "))  
arr.append(val)  
mt.append(arr)
```

```
matrix = np.array(mt)
```

```
print("The user defined 2D array: ")  
print(matrix)
```

### Output:

```
Garv Khurana@LAPTOP-ANP8Q125 MING  
$ python -u "d:\Chandigarh Univer  
Enter the number of rows: 3  
Enter the number of columns: 4  
Enter the Value: 1  
Enter the Value: 4  
Enter the Value: 5  
Enter the Value: 6  
Enter the Value: 7  
Enter the Value: 8  
Enter the Value: 9  
Enter the Value: 2  
Enter the Value: 1  
Enter the Value: 3  
Enter the Value: 5  
Enter the Value: 6  
The user defined 2D array:  
[[1 4 5 6]  
 [7 8 9 2]  
 [1 3 5 6]]
```

### Program 3

Create a Program to solve polynomial using NymPy

#### Code:

```
import numpy as np

deg = int(input("Enter the degree of the polynomial: "))
coeffArr = np.array(())

print("Enter the values of the coefficient starting from highest degree")
for i in range(deg):
    x = int(input("Enter the Value: "))
    coeffArr = np.append(coeffArr, x)

roots = np.roots(coeffArr)

print(f"There are {roots.shape[0]} Roots: ")

for i in roots:
    print(f"\tRoot = {i}")
```

#### Output:

```
Garv Khurana@LAPTOP-ANP8Q125 MINGW64 /d/Chandigarh University/Coding Excercises/Sem - 3
$ python -u "d:\Chandigarh University\Coding Excercises\Sem - 3\Python for Machine Learn
Enter the degree of the polynomial: 2
Enter the values of the coefficient starting from highest degree
Enter the Value: 1
Enter the Value: 2
Enter the Value: -15
There are 2 Roots:
    Root = -5.0
    Root = 3.0
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```

## Learning Outcomes:

1. Problem solving using python
2. Python data types
3. Python Lists, Tuples, and Dictionaries.

**Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):**

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			