

<b>Ex.No: 8a</b>	<b>PROGRAMS USING WRITTEN MODULES AND PYTHON STANDARD LIBRARIES(numpy)</b>
<b>Date :</b>	

### **AIM:**

To write a python program using written modules and python standard libraries(numpy).

### **ALGORITHM:**

1. Start the program.
2. Import the numpy package.
3. Values are stored in array as arr.
4. First, the initial array gets displayed.
5. Values are get sliced and displayed.
6. Mathematical operations are performed on elements and displayed.
7. Stop the program.

### **Program:**

```
import numpy as np
arr = np.array([1, 2, 3])
print("Array with Rank 1: \n", arr)
arr = np.array([[1, 2, 3],[4, 5, 6]])
print("Array with Rank 2: \n", arr)
arr = np.array((1, 3, 2))
print("\nArray created using passed tuple:\n", arr)
arr = np.array([[-1, 2, 0, 4],
                [4, -0.5, 6, 0],
                [2.6, 0, 7, 8],
                [3, -7, 4, 2.0]])
print("Initial Array: ")
print(arr)
sliced_arr = arr[:2, ::2]
print ("Array with first 2 rows and alternate columns(0 and 2):\n", sliced_arr)
Index_arr = arr[[1, 1, 0, 3],
```

```

[3, 2, 1, 0]] print ("\nElements at indices (1, 3), (1, 2), (0,
1), (3, 0):\n", Index_arr) a = np.array([[1, 2],
[3, 4]])
b = np.array([[4,
3],
[2, 1]]) print ("Adding 1 to every
element:", a + 1) print ("\nSubtracting 2 from
each element:", b - 2) print ("\nSum of all array
elements: ", a.sum()) print ("\nArray sum:\n", a
+ b)

```

### **OUTPUT:**

Array with Rank 1:

```
[1 2 3]
```

Array with Rank 2:

```
[[1 2 3]
```

```
[4 5 6]]
```

Array created using passed tuple:

```
[1 3 2]
```

Initial Array:

```
[[-1.  2.  0.  4. ]
```

```
[ 4. -0.5  6.  0. ]
```

```
[ 2.6  0.  7.  8. ]
```

```
[ 3. -7.  4.  2. ]]
```

Array with first 2 rows and alternate columns(0 and 2):

```
[[-1.  0.]
```

```
[ 4.  6.]]
```

Elements at indices (1, 3), (1, 2), (0, 1), (3, 0):

```
[0.  6.  2.  3.]
```

Adding 1 to every element: [[2 3]

```
[4 5]]
```

Subtracting 2 from each element: `[[ 2 1]`

`[ 0 -1]]`

Sum of all array elements: 10

Array sum:

`[[5 5]`

`[5 5]]`

### **RESULT:**

Thus the programs using written modules and python standard libraries(numpy) is executed.