

```
Enter the size of data:5
Enter the Elements:
34
45
6
7
56
Elements before Quick sorting:
34 45 6 7 56
Elements after sorting:
After sorting:
6 7 34 45 56
No. of Steps required : 71
```

```
Enter the size of data:7
Enter the Elements:
78
45
12
456
77
8
322
Elements before sorting:
78 45 12 456 77 8 322
Elements after sorting:
0 8 12 45 77 78 322
No. of Steps required : 306
```


Bubble Sort

Before sorting:

110 2 22 44 819 30 10 1 210

After Bubble sorting:

1 2 10 22 30 44 110 210 819

No. of Steps required : 612

Selection Sort

Enter the size of data:7

Enter the Elements:

123

4

34

5

56

768

8

Elements before sorting:

123 4 34 5 56 768 8

Elements after sorting:

4 5 8 34 56 123 768

The total number of steps for selection sort is:182

Insertion Sort

```
Enter the size of data:5
Enter the Elements:
4
23
1
23
4
Elements before sorting:
4 23 1 23 4
Elements after sorting:
1 4 4 23 23
The total number of steps for insertion sort is:56
```

```
Enter the size of data:8
Enter the Elements:
23
345
54
65
12
54
6
56
Elements before sorting:
23 345 54 65 12 54 6 56
Elements after sorting:
6 12 23 54 54 56 65 345
The total number of steps for insertion sort is:161
```

Heap Sort

Enter the size of the array: 7

Enter the Elements:

34

45

56

788

45

2

1

Elements before Heap sorting:

34 45 56 788 45 2 1

Elements after sorting:

1 2 34 45 45 56 788

Total number of steps: 255

Randomized Quick Sort

```
Enter the size of data:5
```

```
Enter the Elements:
```

```
324
```

```
45
```

```
2
```

```
3
```

```
4
```

```
Elements before sorting:
```

```
324 45 2 3 4
```

```
Elements after sorting:
```

```
2 3 4 45 324
```

```
The total number of steps required is:73
```

```
Enter the size of data:8
```

```
Enter the Elements:
```

```
34
```

```
23
```

```
534
```

```
65
```

```
2
```

```
9
```

```
67
```

```
8
```

```
Elements before sorting:
```

```
34 23 534 65 2 9 67 8
```

```
Elements after sorting:
```

```
2 8 9 23 34 65 67 534
```

```
The total number of steps required is:139
```

Recursive Binary Search

```
Enter the size of the array: 5
Enter 5 elements in sorted order:
 12
 14
 23
 24
100
Enter the element to search:25
Element not found in the array.
The total number of steps required are: 19
```

```
Enter the size of the array: 5
Enter 5 elements in sorted order:
 12
 14
 23
 24
100
Enter the element to search:23
Element found at index 2
The total number of steps required are: 5
```