```cpp
#include <iostream>

using namespace std;

int getMax(int arr[], int n)
{
    int max = arr[0];
    // O(n)
    for (int i = 1; i < n; i++)
    {
        if (arr[i] > max)
        {
            max = arr[i];
        }
    }
    return max;
}

void countSort(int arr[], int n, int exp)
{
    int output[n];
    int i, count[10] = {0};

    // O(n)
    for (i = 0; i < n; i++)
    {
        count[(arr[i] / exp) % 10]++;
    }
```

```
    // O(n)

    for (i = 1; i < 10; i++)

    {

        count[i] += count[i - 1];

    }


    // O(n)

    for (i = n - 1; i >= 0; i--)

    {

        output[count[(arr[i] / exp) % 10] - 1] = arr[i];

        count[(arr[i] / exp) % 10]--;

    }
    // O(n)

    for (i = 0; i < n; i++)

    {

        arr[i] = output[i];

    }

}


void radixsort(int arr[], int n)

{


    int m = getMax(arr, n);
    // O(n)

    for (int exp = 1; m / exp > 0; exp *= 10)

    {

        countSort(arr, n, exp);

    }

}
```

```cpp
main()

{

    int sizenumberin;

    cout << "Enter a number: ";

    cin >> sizenumberin;

    cout << "You entered Size of Number: " << sizenumberin << endl;

    int n[sizenumberin] = {};

    for (int j = 0; j < sizenumberin; j++)

    {

        cout << "Enter a number: ";

        cin >> n[j];

    }


    int arr_size = sizeof(n) / sizeof(n[0]);

    radixsort(n, arr_size);


    int sizenumberout;

    cout << "Enter a number output: ";

    cin >> sizenumberout;

    cout << "First " << sizenumberout << " number is ";

    if (sizenumberout <= sizenumberin)

    {

        for (int j = 0; j < sizenumberout; j++)

        {

            cout << n[j] << " ";

        }

    }

    else

    {

        cout << "Error";
```

```
    }
    cout << endl;
    cout << "BIG O: O(n)";
}
```

Output :

```
Enter a number: 10
You entered Size of Number: 10
Enter a number: 1
Enter a number: 10
Enter a number: 5
Enter a number: 3
Enter a number: 4
Enter a number: 2
Enter a number: 8
Enter a number: 7
Enter a number: 6
Enter a number: 9
Enter a number output: 6
First 6 number is 1 2 3 4 5 6
BIG O: O(n)
```