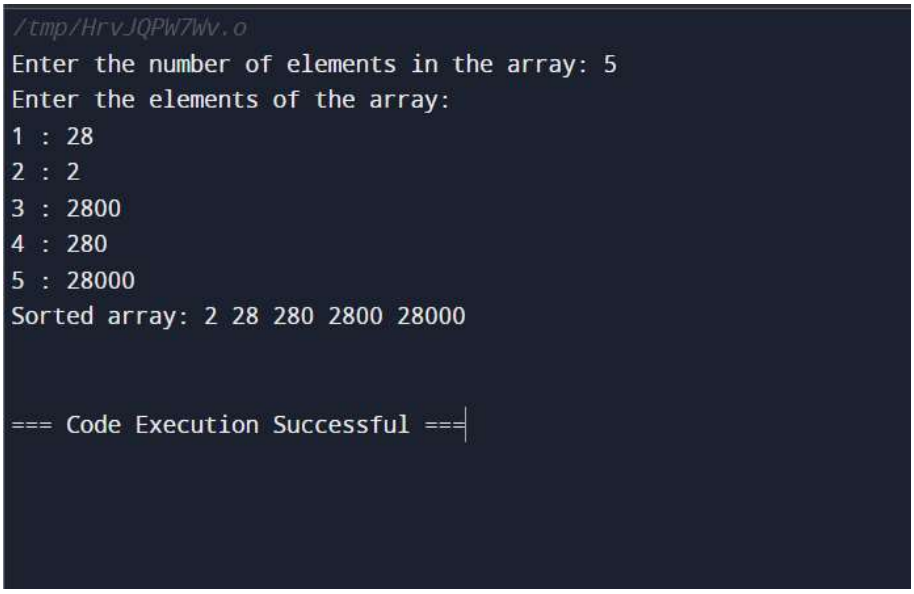
RADIX SORT

CODE:

```
#include <iostream>
using namespace std;

// Function to get the maximum element from an array
int getMax(int arr[], int n) {
   int max = arr[0];
   for (int i = 1; i < n; i++) {
      if (arr[i] > max) {
         max = arr[i];
      }
   }
   return max;
}

// Function to perform counting sort of arr[] based on the digit represented by
exp
void countSort(int arr[], int n, int exp) {
   int output[n];
   int count[10] = {0};

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

   for (int i = 1; i < 10; i++) {
      count[i] += count[i - 1];
   }

   for (int i = n - 1; i >= 0; i--) {
      output[count[(arr[i] / exp) % 10] - 1] = arr[i];
      count[(arr[i] / exp) % 10]--;
   }
```

```
    for (int i = 0; i < n; i++) {
        arr[i] = output[i];
    }
}

// Function to implement Radix Sort
void radixSort(int arr[], int n) {
    int m = getMax(arr, n);

    for (int exp = 1; m / exp > 0; exp *= 10) {
        countSort(arr, n, exp);
    }
}

int main() {
    int n;
    cout << "Enter the number of elements in the array: ";
    cin >> n;

    int arr[n];
    cout << "Enter the elements of the array: "<<endl;
    for (int i = 0; i < n; i++) {
        cout<<i+1<<" : ";
        cin >> arr[i];
    }

    radixSort(arr, n);

    cout << "Sorted array: ";
    for (int i = 0; i < n; i++) {
        cout << arr[i] << " ";
    }
    cout << endl;
    return 0;
}
```

OUTPUT:


/tmp/HrvJQPW7Wv.o
Enter the number of elements in the array: 5
Enter the elements of the array:
1 : 28
2 : 2
3 : 2800
4 : 280
5 : 28000
Sorted array: 2 28 280 2800 28000
=== Code Execution Successful ===