## 2.1.1. Bubble Sort

Write a C program that reads integer numbers and arranges them in ascending order using Bubble Sort.

```
#include <stdio.h>
void bubbleSort(int arr[], int n)
{
   int temp;
   for (int i = 0; i < n - 1; i++)
   {
      for (int j = 0; j < n - 1 - i; j++)
      {
         if (arr[j] > arr[j + 1])
         {
            temp = arr[j];
            arr[j] = arr[j + 1];
            arr[j + 1] = temp;
         }
      }
   }
}
int main()
{
   int n;
   scanf("%d", &n);
   int arr[n];
```

```
    for (int i = 0; i < n; i++)
    {
        scanf("%d", &arr[i]);
    }
    bubbleSort(arr, n);
    for (int i = 0; i < n; i++)
    {
        printf("%d ", arr[i]);
    }
    return 0;
}
```

### 2.1.2. Selection Sort

Write a program to sort the elements of an array in descending order using the Selection Sort algorithm.

```
#include <stdio.h>
void selectionSort(int arr[], int n)
{
    int maxIndex, temp;
    for (int i = 0; i < n - 1; i++)
    {
        maxIndex = i;
        for (int j = i + 1; j < n; j++)
```

```
        {
            if (arr[j] > arr[maxIndex])
            {
                maxIndex = j;
            }
        }
        if (maxIndex != i)
        {
            temp = arr[i];
            arr[i] = arr[maxIndex];
            arr[maxIndex] = temp;
        }
    }
}
int main()
{
    int n;
    scanf("%d", &n);
    int arr[n];
    for (int i = 0; i < n; i++)
    {
        scanf("%d", &arr[i]);
    }
```

```
    selectionSort(arr, n);
    for (int i = 0; i < n; i++)
    {
        printf("%d ", arr[i]);
    }
    return 0;
}
```

## 2.1.3. Insertion Sort

Write a program in C that implements the Insertion sort to sort a given array of integers in ascending order.

```
#include <stdio.h>
void insertionSort(int arr[], int n)
{
    int key, j;
    for (int i = 1; i < n; i++)
    {
        key = arr[i];
        j = i - 1;

        while (j >= 0 && arr[j] > key)
```

```
        {
            arr[j + 1] = arr[j];
            j--;
        }
        arr[j + 1] = key;
    }
}
int main()
{
    int n;
    scanf("%d", &n);
    int arr[n];
    for (int i = 0; i < n; i++)
    {
        scanf("%d", &arr[i]);
    }
    insertionSort(arr, n);
    for (int i = 0; i < n; i++)
    {
        printf("%d ", arr[i]);
    }
```

```
    return 0;
}
```