Experiment 16: Insertion Sort

Aim:
To write a C program to arrange a series of numbers using Insertion Sort.

Algorithm:

1. Start the program.
2. Read the number of elements and the array.
3. For each element from index 1 to n-1:
    - Pick the current element (key).
    - Compare it with elements in the sorted subarray.
    - Shift larger elements one position ahead.
    - Insert the key at its correct position.
4. Print the sorted array.
5. Stop.

Code:

```
#include <stdio.h>
void insertionSort(int arr[], int n) {
   int i, key, j;
   for (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 arr[5] = {12, 11, 13, 5, 6}, n = 5;
   insertionSort(arr, n);
   printf("Sorted array: ");
```

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

Sample Output:

```
Sorted array: 5 6 11 12 13

=== Code Execution Successful ===
```

Result:
The program successfully sorts numbers using Insertion Sort.