Program

```c
#include <stdio.h>

#define MAX_SIZE 100

int size;
int array[MAX_SIZE];


void readInput() {
    printf("Enter the size of the array: ");
    scanf("%d", & size);

    printf("Enter the array elements:\n");
    for (int i = 0; i < size; i++) {
        scanf("%d", & array[i]);
    }
}

void insertionSort() {
    for (int i = 1; i < size; i++) {
        int key = array[i];
        int j = i - 1;

        while (j >= 0 && array[j] > key) {
            array[j + 1] = array[j];
            j--;
        }
        array[j + 1] = key;
    }
}

void printArray() {
    printf("Sorted array:\n");
    for (int i = 0; i < size; i++) {
        printf("%d ", array[i]);
    }
    printf("\n");
}

int main() {
    readInput();
    insertionSort();
    printArray();

    return 0;
}
```

Experiment No: 21
Date:

INSERTION SORT

Aim:

To implement insertion sort algorithm.

Algorithm:

1. **Start**
2. Set $MAX\_SIZE = 100$
3. Declare an integer variable *size* and an integer array , $array[MAX\_SIZE]$
4. **Function ReadInput()**

```
Print "Enter the size of the array:"
Read size
Print "Enter the array elements:"
For i = 0 to size - 1:
    Read array[i]
```

5. **Function InsertionSort()**

```
For i = 1 to size - 1:
    Set key = array[i]
    Set j = i - 1
    While j >= 0 and array[j] > key:
        Set array[j + 1] = array[j]
        Decrement j
    Set array[j + 1] = key
```

6. **Function PrintArray()**

```
Print "Sorted array:"
For i = 0 to size - 1:
    Print array[i]
```

7. **Function Main()**

```
Call readInput()
Call insertionSort()
Call printArray()
```

8. **Stop**

Output

```
Enter the size of the array: 7
Enter the array elements:
1 9 2 6 3 5 4
Sorted array:
1 2 3 4 5 6 9
```

```
Enter the size of the array: 7
Enter the array elements:
9 7 1 4 2 6 5
Sorted array:
1 2 4 5 6 7 9
```

Result:

Program has been executed successfully and obtained the output.