

main.c

```
1 #include <stdio.h>
2 #include <time.h>
3 #include <math.h>
4 void insertionSort(int arr[], int n)
5 {
6     int i, key, j;
7     for (i = 1; i < n; i++) {
8         key = arr[i];
9         j = i - 1;
10        while (j >= 0 && arr[j] > key) {
11            arr[j + 1] = arr[j];
12            j = j - 1;
13        }
14        arr[j + 1] = key;
15    }
16    for (i = 0; i < n; i++)
17        printf("%d ", arr[i]);
18    printf("\n");
19 }
20 int main()
21 {
22     int arr[] = { 12, 11, 13, 5, 6 };
23     int n = sizeof(arr) / sizeof(arr[0]);
24     clock_t start, end;
25     start = clock();
26     insertionSort(arr, n);
27     end = clock();
28     printf("Time taken:%f\n", (((double)(end - start)) / CLOCKS_PER_SEC));
29     return 0;
30 }
```

```
8      key = arr[i];  
9      j = i - 1;  
10     while (i >= 0 && arr[i] > key) {
```

5 6 11 12 13

Time taken:0.000039

< ...Program finished with exit code 0
Press ENTER to exit console.

* Insertion sort:

```
#include <stdio.h>
```

```
#include <time.h>
```

```
int main()
```

```
{
```

```
    int n, i, j, temp;
```

```
    clock_t start, end;
```

```
    printf("Enter number of elements: \n");
```

```
    scanf("%d", &n);
```

```
    int arr[n];
```

```
    printf("\n The elements are: ");
```

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

```
    {
```

```
        arr[i] = rand() % 10000;
```

```
        printf("%d", arr[i]);
```

```
    }
```

```
    start = clock();
```

```
    for(i=0; i<800000000; i++);
```

```
    for(i=1; i<=n-1; i++)
```

```
    {
```

```
        j = i;
```

```
        while(j>0 && arr[j-1]>arr[j])
```

```
        {
```

```
            temp = arr[j];
```

```
            arr[j] = arr[j-1];
```

```
            arr[j-1] = temp;
```



```
end = clock();  
printf("In Time taken to sort %d number  
is %f secs", n, ((double)(end-start))/(CLOCKS  
PER_SEC));
```

```
printf("Sorted list in ascending order : \n");
```

```
for(i=0; i<=n-1; i++)
```

```
{  
    printf("%d", arr[i]);
```

```
}
```

```
return 0;
```

```
}
```