

//C program to Perform Insertion sort

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

```
#include<stdlib.h>
```

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

```
clock_t start,end;
```

```
void insertion(int a[20],int n,int v)
```

```
{
```

```
    int i,j;
```

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

```
    {
```

```
        v=a[i];
```

```
        j=i-1;
```

```
        while(j>=0 && a[j]>v)
```

```
        {
```

```
            a[j+1]=a[j];
```

```
            j=j-1;
```

```
        }
```

```
        a[j+1]=v;
```

```
    }
```

```
}
```

```
int main()
```

```
{
```

```
    int a[20],n,i,v;
```

```
double t;

printf("Enter the number of elements\n");

scanf("%d",&n);

printf("Enter the elements\n");

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

    scanf("%d",&a[i]);

start=clock();

insertion(a,n,v);

end=clock();

printf("Sorted elements are\n");

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

    printf("%d\t",a[i]);

t=(double)(end-start)/CLOCKS_PER_SEC;

printf("\nExecution time required in seconds : %f\n",t);

return 0;

}
```

Output:

```
"C:\Users\Student\Documents\4nm20is120\Insertion Sort\bin\Debug\Insertion Sort.exe"
Enter the number of elements
5
Enter the elements
100
23
2
1
90
Sorted elements are
1      2      23      90      100
Execution time required in seconds : 0.000000

Process returned 0 (0x0)   execution time : 16.475 s
Press any key to continue.
```