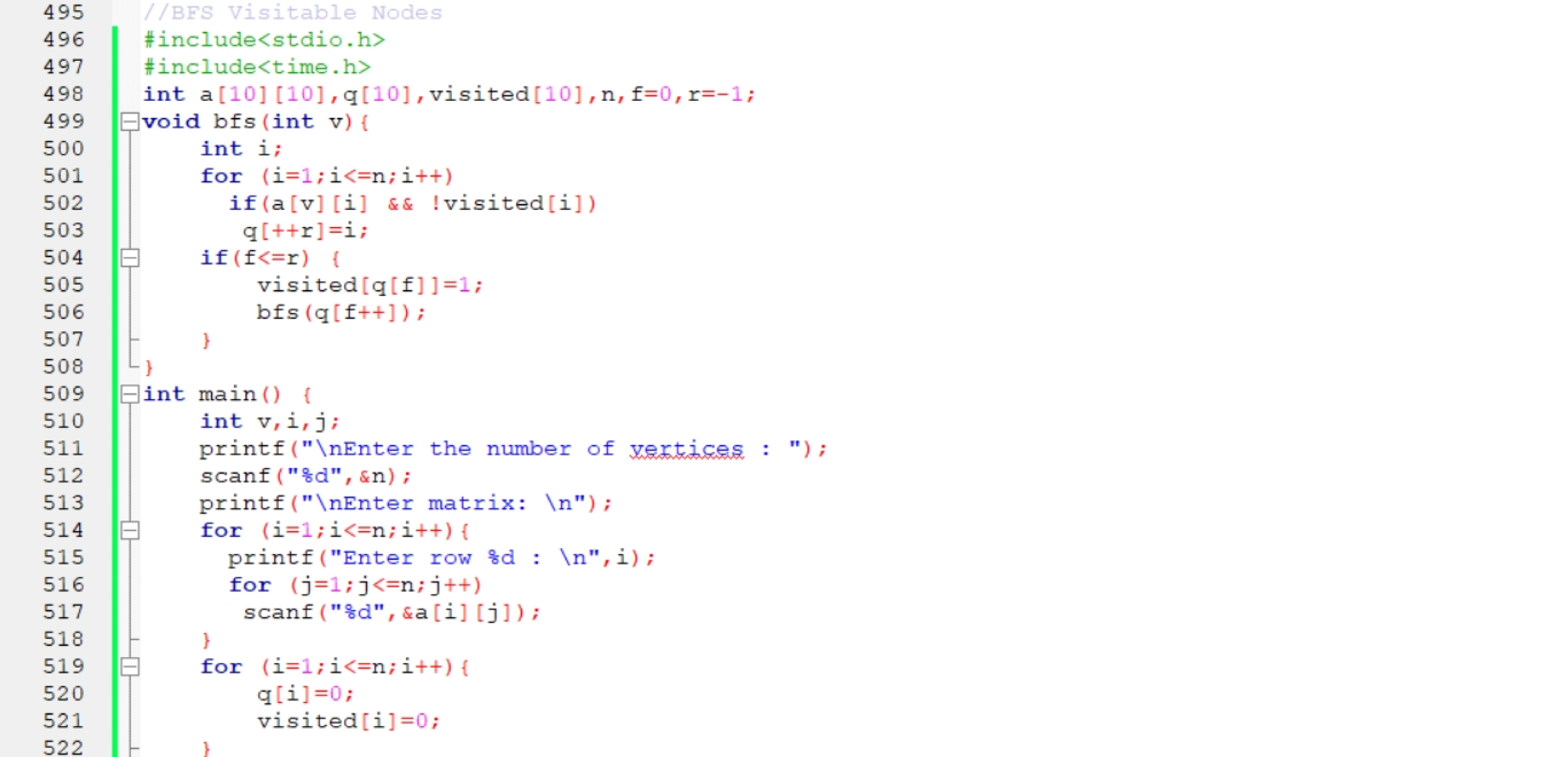
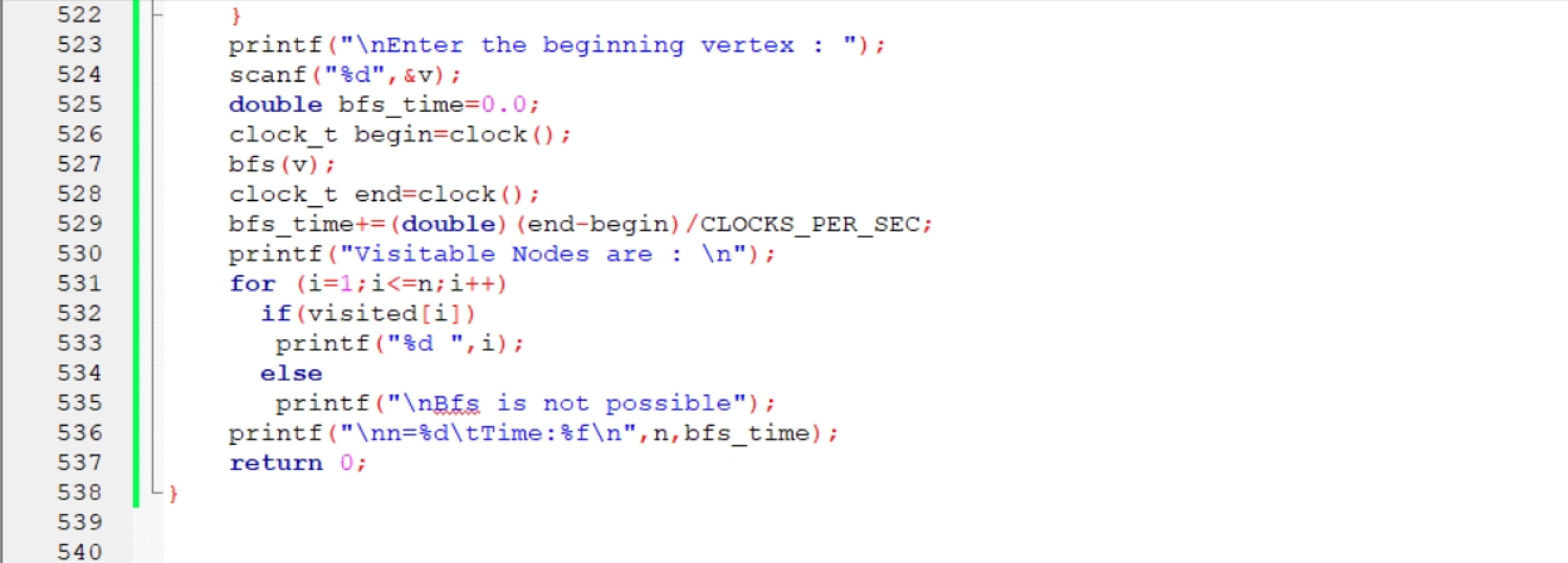
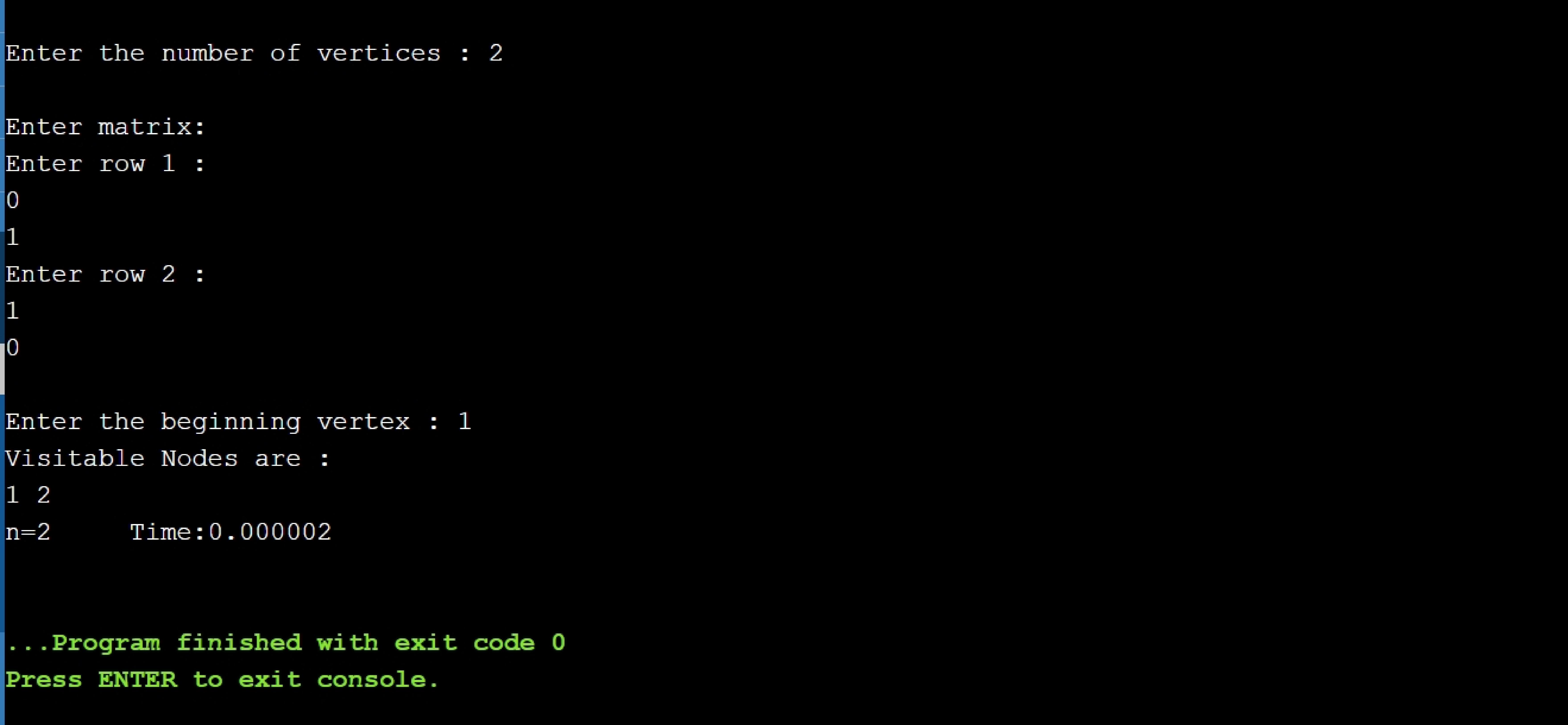


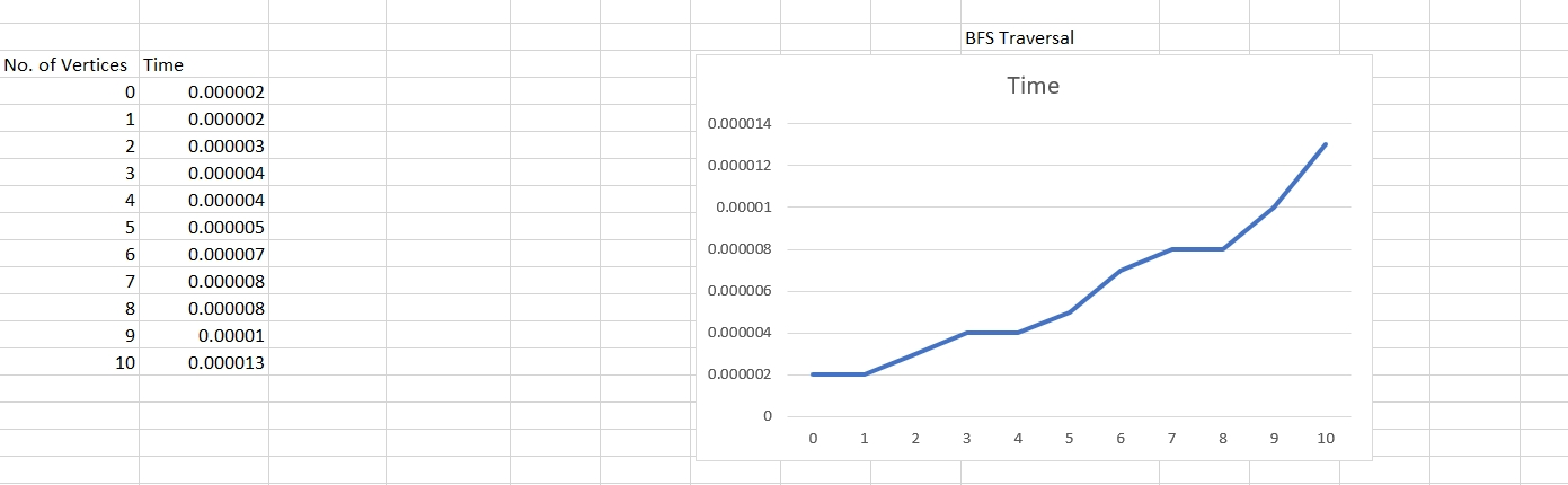
```c
//BFS Visitable Nodes
#include<stdio.h>
#include<time.h>
int a[10][10],q[10],visited[10],n,f=0,r=-1;
void bfs(int v){
    int i;
    for (i=1;i<=n;i++)
      if(a[v][i] && !visited[i])
       q[++r]=i;
    if(f<=r) {
        visited[q[f]]=1;
        bfs(q[f++]);
    }
}
int main() {
    int v,i,j;
    printf("\nEnter the number of vertices : ");
    scanf("%d",&n);
    printf("\nEnter matrix: \n");
    for (i=1;i<=n;i++){
      printf("Enter row %d : \n",i);
      for (j=1;j<=n;j++)
       scanf("%d",&a[i][j]);
    }
    for (i=1;i<=n;i++){
        q[i]=0;
        visited[i]=0;
    }
```



```c
    }
    printf("\nEnter the beginning vertex : ");
    scanf("%d",&v);
    double bfs_time=0.0;
    clock_t begin=clock();
    bfs(v);
    clock_t end=clock();
    bfs_time+=(double)(end-begin)/CLOCKS_PER_SEC;
    printf("Visitable Nodes are : \n");
    for (i=1;i<=n;i++)
      if(visited[i])
       printf("%d ",i);
      else
       printf("\nBfs is not possible");
    printf("\nn=%d\tTime:%f\n",n,bfs_time);
    return 0;
}
```

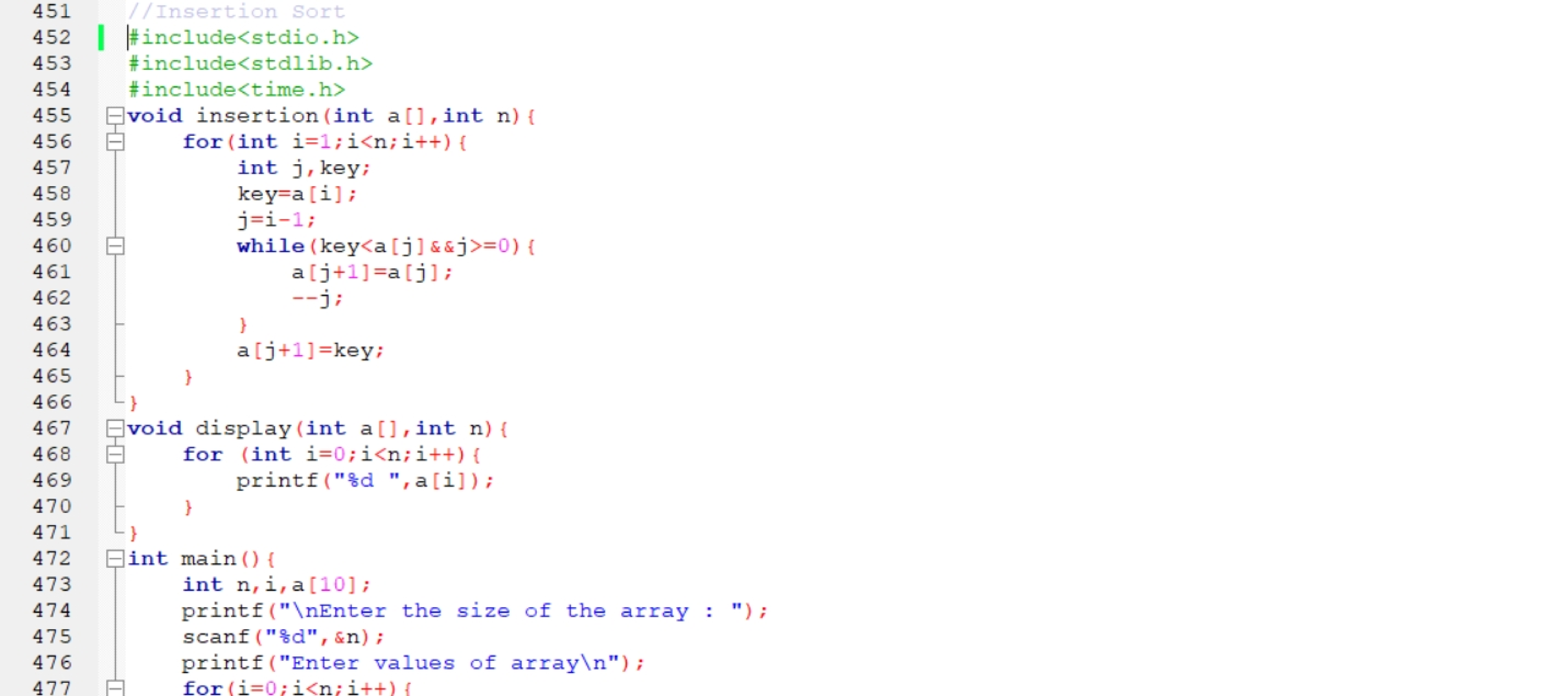


```
Enter the number of vertices : 2

Enter matrix:
Enter row 1 :
0
1
Enter row 2 :
1
0

Enter the beginning vertex : 1
Visitable Nodes are :
1 2
n=2     Time:0.000002



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

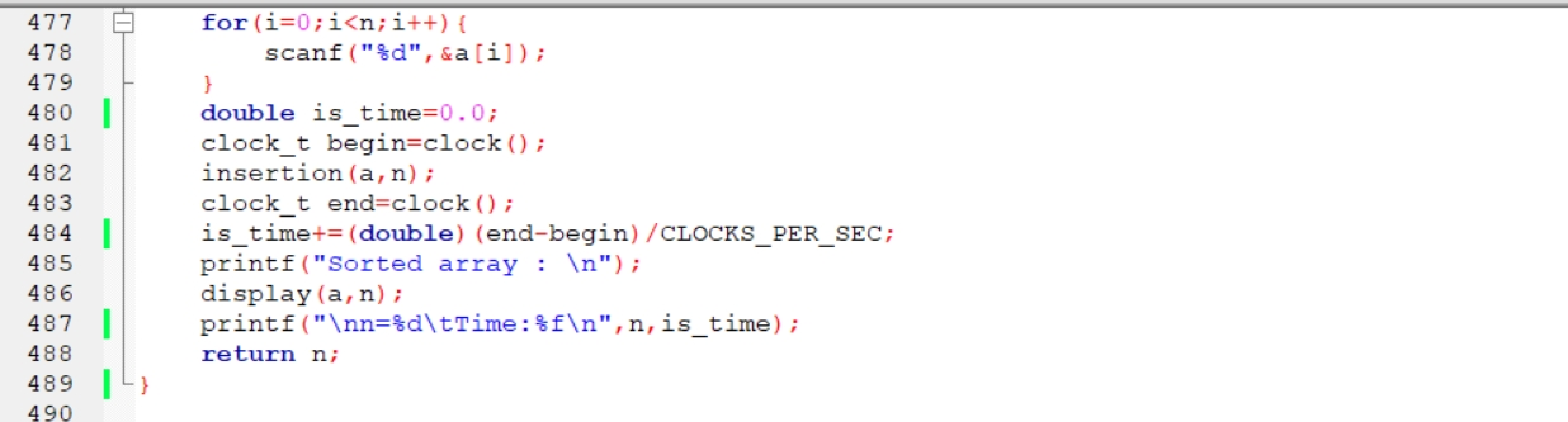


BFS Traversal

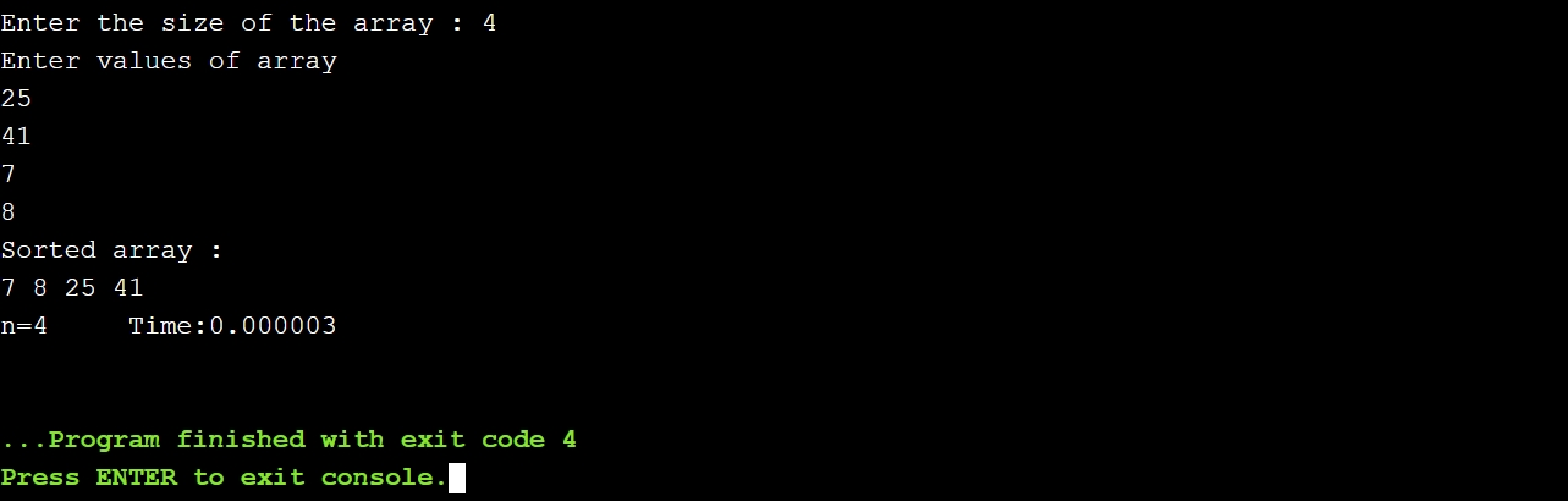
No. of Vertices	Time
0	0.000002
1	0.000002
2	0.000003
3	0.000004
4	0.000004
5	0.000005
6	0.000007
7	0.000008
8	0.000008
9	0.00001
10	0.000013



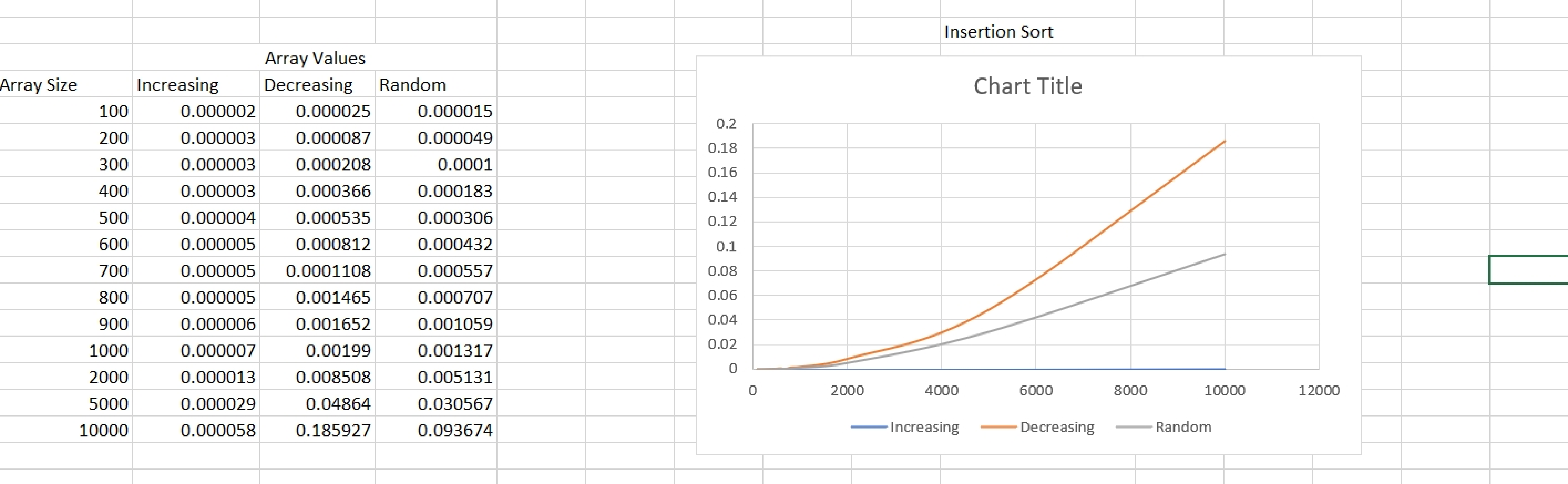
```c
//Insertion Sort
#include<stdio.h>
#include<stdlib.h>
#include<time.h>
void insertion(int a[],int n){
    for(int i=1;i<n;i++){
        int j,key;
        key=a[i];
        j=i-1;
        while(key<a[j]&&j>=0){
            a[j+1]=a[j];
            --j;
        }
        a[j+1]=key;
    }
}
void display(int a[],int n){
    for (int i=0;i<n;i++){
        printf("%d ",a[i]);
    }
}
int main(){
    int n,i,a[10];
    printf("\nEnter the size of the array : ");
    scanf("%d",&n);
    printf("Enter values of array\n");
    for(i=0;i<n;i++){
```



```c
    for(i=0;i<n;i++){
        scanf("%d",&a[i]);
    }
    double is_time=0.0;
    clock_t begin=clock();
    insertion(a,n);
    clock_t end=clock();
    is_time+=(double)(end-begin)/CLOCKS_PER_SEC;
    printf("Sorted array : \n");
    display(a,n);
    printf("\nn=%d\tTime:%f\n",n,is_time);
    return n;
}

```



```
Enter the size of the array : 4
Enter values of array
25
41
7
8
Sorted array :
7 8 25 41
n=4     Time:0.000003



...Program finished with exit code 4
Press ENTER to exit console.
```



Insertion Sort

	Array Values		
Array Size	Increasing	Decreasing	Random
100	0.000002	0.000025	0.000015
200	0.000003	0.000087	0.000049
300	0.000003	0.000208	0.0001
400	0.000003	0.000366	0.000183
500	0.000004	0.000535	0.000306
600	0.000005	0.000812	0.000432
700	0.000005	0.0001108	0.000557
800	0.000005	0.001465	0.000707
900	0.000006	0.001652	0.001059
1000	0.000007	0.00199	0.001317
2000	0.000013	0.008508	0.005131
5000	0.000029	0.04864	0.030567
10000	0.000058	0.185927	0.093674