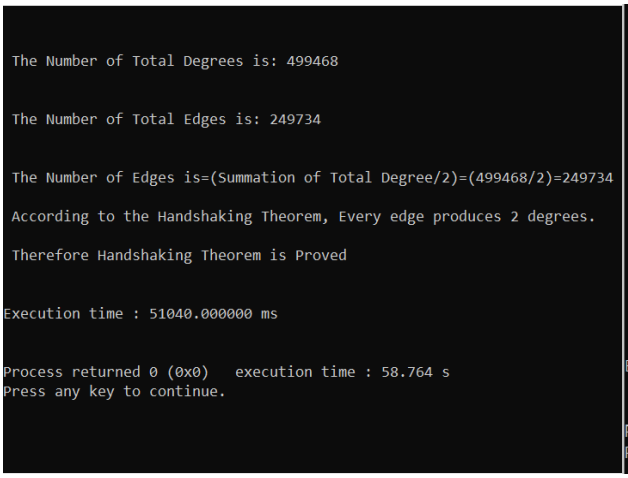
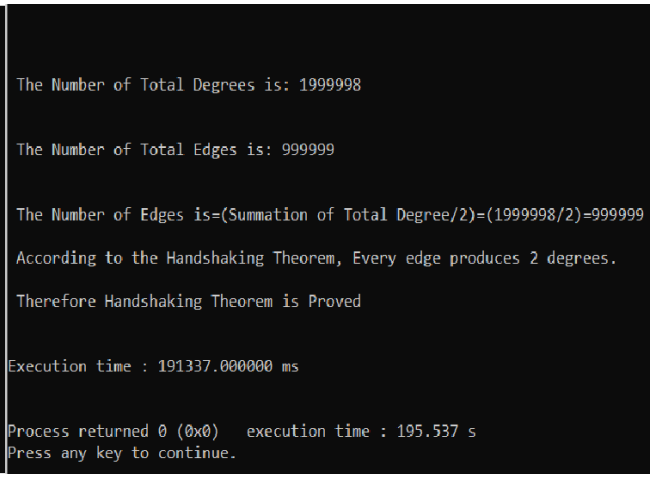
Steps to Generate an Undirected Graph Represented by Adjacency Matrix

- Generated a C program.
- Found the number of edges and degrees for **n=1000,2000,3000,4000 and 5000.**
- Using **MATLAB** to draw a graph of computational time vs n and found an approximate time complexity as a function of **n**.
- Theoretically determined the computational time complexity.
- Compared the theoretical and the practical time complexity.

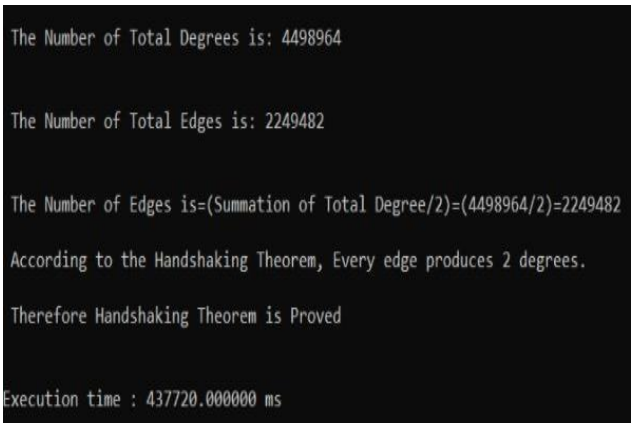
Results



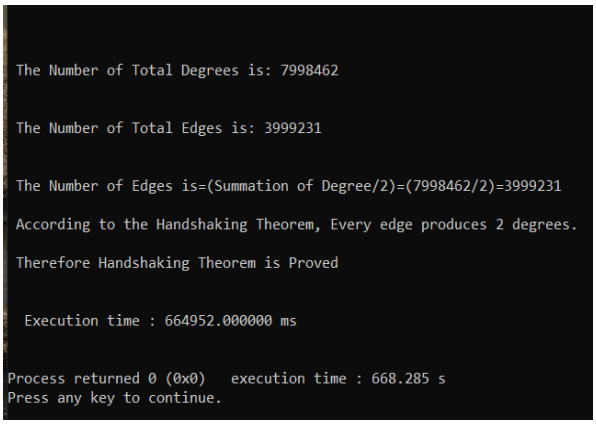
n=1000



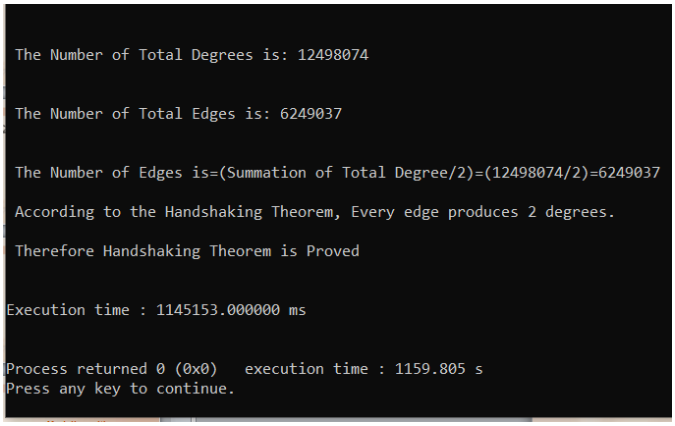
n=2000



n= 3000



n=4000



n=5000

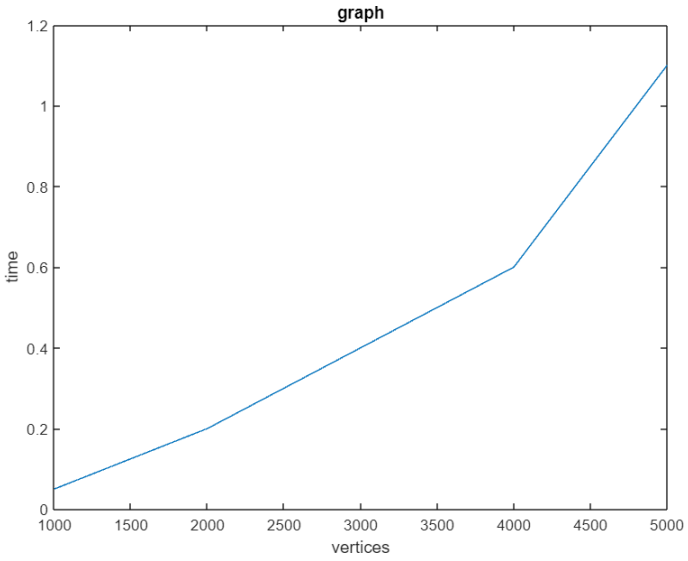
Data table for the graph

Vertices	1000	2000	3000	4000	5000
Time(ms)	$0.05*10^6$	$0.19*10^6$	$0.4*10^6$	$0.6*10^6$	$1.1*10^6$

Procedure of Generating Graph

```
>> x=[1000 2000 3000 4000 5000];
>> y=[0.05 0.2 0.4 0.6 1.1];
>> plot(x,y)
>>
>> title('graph');
>>
>> xlabel('vertices');
>> ylabel('time');
>>
```

Graph


graph
time
vertices
0
0.2
0.4
0.6
0.8
1
1.2
1000
1500
2000
2500
3000
3500
4000
4500
5000