

GTU Department of Computer Engineering

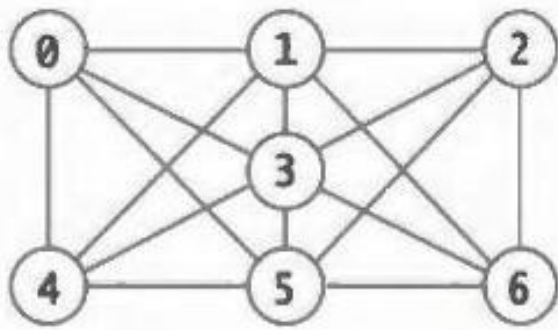
CSE 222/505 – Spring 2020

Homework 8

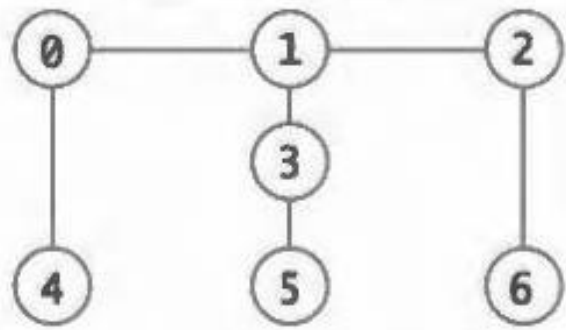
Buğra Eren Yılmaz

1801042669

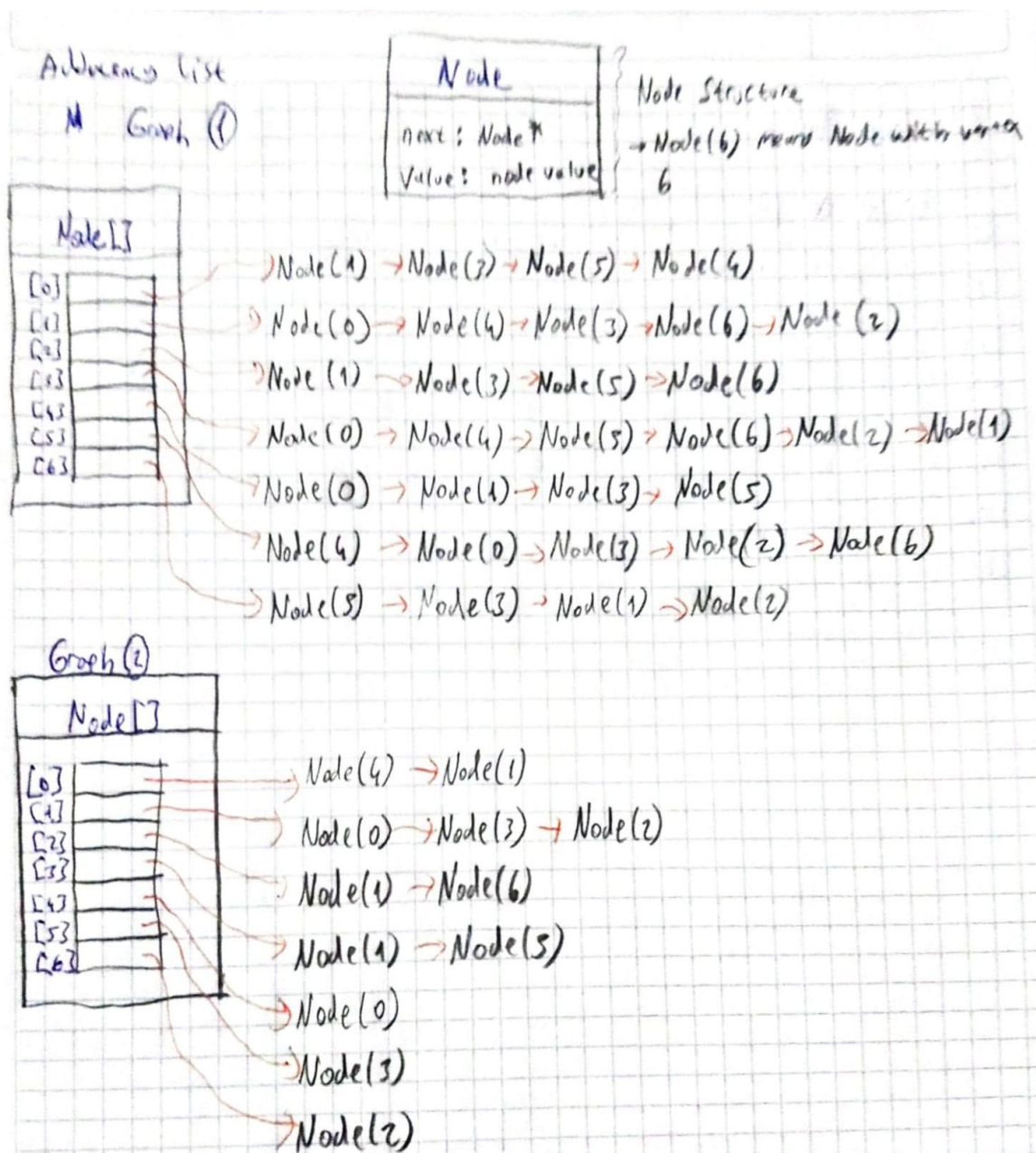
Q1

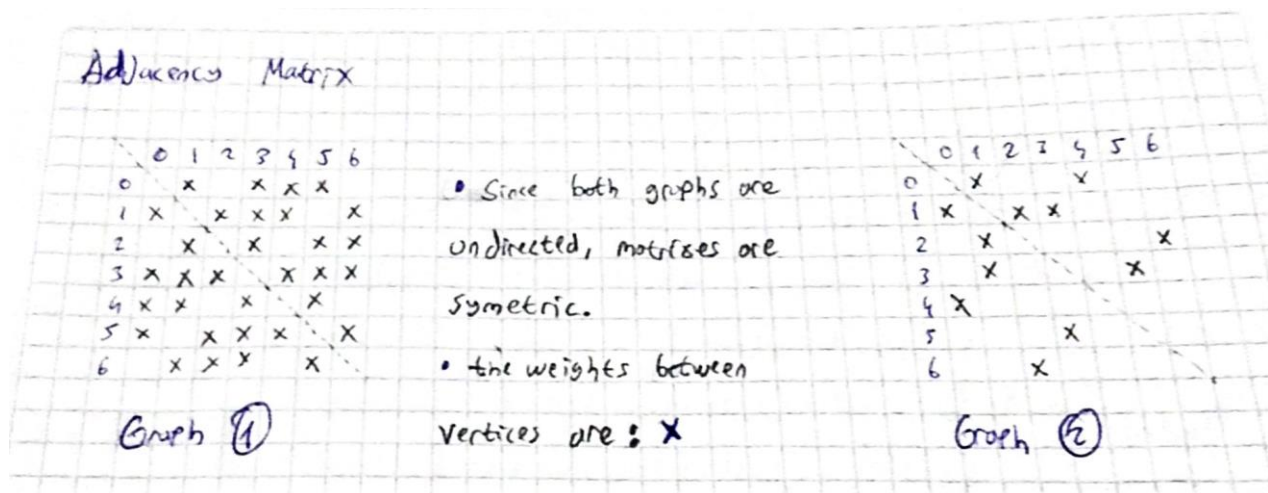


Graph 1



Graph 2





Density

Density of a graph is calculated by finding (number of edges) / (maximum possible number of edges).

Maximum possible number of edges is calculated by $|V| * (|V| - 1)$.

Since graphs are directed, the factor 2 comes in the equation.

Graph 1

$$|V| = 7 \text{ and } |E| = 16$$

$$\text{The density: } d = 2|E| / (|V|(|V|-1)) = 32 / 42 = 0.76$$

The graph is dense, adjacency matrix representation is better.

Graph 2

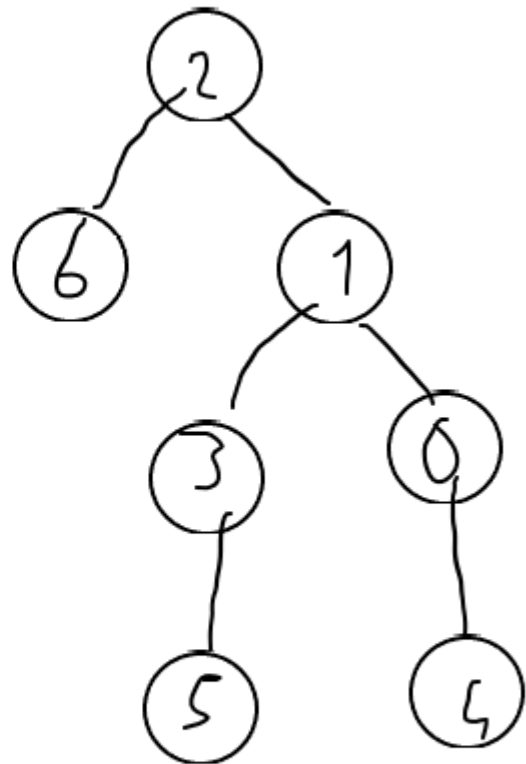
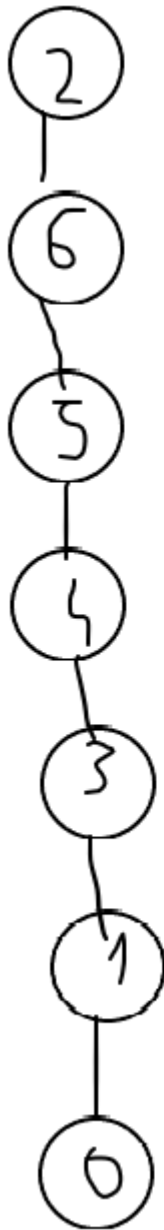
$$|V| = 7 \text{ and } |E| = 6$$

$$\text{The density: } d = 2|E| / (|V|(|V|-1)) = 12 / 42 = 0.28$$

The graph is sparse, adjacency list representation is better.

DFS of graphs starting from vertex 2, largest to smallest.

Graph 1 on the left, Graph 2 on the right.



BFS of graphs starting from vertex 2, largest to smallest.

Graph 1 on the left, Graph 2 on the right.

