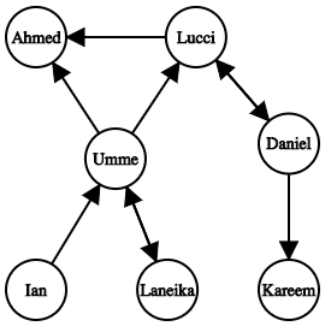
Reminder

- The **in-degree** of a vertex is the number of edges leading to that vertex.
- The **out-degree** of a vertex is the number of edges leading away from that vertex.

EXAMPLE:

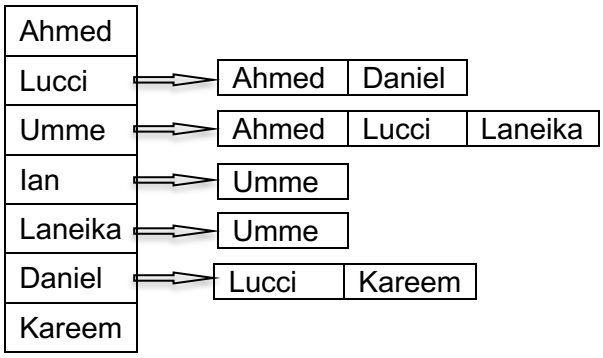


Ahmed
In-degree = 2
Out-degree = 0

Umme
In-degree = 2
Out-degree = 3

Daniel
In-degree = 1
Out-degree = 2

Adjacency-list representation:

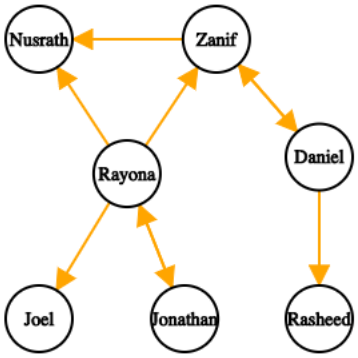


Adjacency-matrix representation:

	Ahmed	Lucci	Umme	Ian	Laneika	Daniel	Kareem
Ahmed	0	0	0	0	0	0	0
Lucci	1	0	0	0	0	1	0
Umme	1	1	0	0	1	0	0
Ian	0	0	1	0	0	0	0
Laneika	0	0	1		0	0	0
Daniel	0	1	0	0	0	0	1
Kareem	0	0	0	0	0	0	0

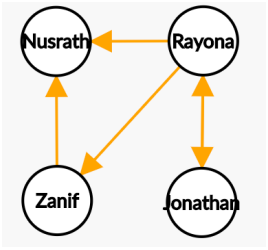
Exercises

1) Give the in-degree and out-degree of each node in the following graph:



	In-degree	Out-degree
Nusrath		
Rayona		
Joel		
Jonathan		
Zanif		
Daniel		
Rasheed		

2) Give the *adjacency-list* and *adjacency-matrix* representations for the following graph:



3) Given the ***adjacency-list*** representation of a ***directed graph***:
   a. how would you compute the out-degree of a vertex *v*? (explain the process or algorithm) How long would that take (big-O notation)?
   b. how would you compute the out-degree of ALL vertices? (explain the process or algorithm) How long would that take (big-O notation)?
   c. How would you compute the in-degree of a vertex *v*? (explain the process or algorithm) How long would that take (big-O notation)?
   d. How would you compute the in-degree of ALL vertices? (explain the process or algorithm) How long would that take (big-O notation)?

4) Repeat 3 for the ***adjacency matrix*** of a ***directed graph***