

1. (1) real-life example (2) empirical technique (3) phenomenon

(a) Acyclic directed network :

- (1) 族譜、河流
- (2) 沒有環、有方向性
- (3) 可以整理成每一點都有先後次序的圖

(b) Cyclic directed network :

- (1)
- (2) 有環、有方向性
- (3)

(c) Tree

- (1) 文章目錄
- (2) 沒有環、有方向性、任兩點都相通
- (3) 任兩點之間只有唯一的路徑、在任何地方多加一條邊就會產生環

(d) Planar network

- (1)
- (2) 平面圖、邊與邊不會交叉
- (3)

(e) Bipartite network

- (1) 聯誼配對
- (2) 二分圖、分成兩群、不同群之間有邊、同一群間沒有邊
- (3) 沒有奇數條邊的環、

(f) Temporal network

- (1)
- (2)
- (3)

2.


(a) Adjacency matrix for network (A)

A	1	2	3	4	5
1	0	0	0	0	1
2	1	0	1	1	0
3	0	0	0	0	0
4	0	1	1	0	1
5	0	0	0	1	0

(b) Adjacency list for network (A)

A	
1	→ {5}
2	→ {1, 3, 4}
3	→ {}
4	→ {2, 3, 5}
5	→ {4}

(c) Adjacency matrices for both one-mode projections of network (B)

(1) Adjacency matrix for  of network (B)

B	1	2	3	4	5
1	0	1	1	0	0
2	1	0	1	0	0
3	1	1	0	1	0
4	0	0	1	0	1
5	0	0	0	1	0

(2) Adjacency matrix for  of network (B)

B	1	2	3	4	5	6
1	0	1	1	1	0	0
2	1	0	0	0	0	0
3	1	0	0	1	1	1
4	1	0	1	0	0	0
5	0	0	1	0	0	1
6	0	0	1	0	1	0

(d)

Collaboration: No one.