

GRAFI = RELAZIONE BINARIA

$$G = (V, E)$$

V = insieme di nodi o vertici

$$E \subseteq V \times V$$

$$n = |V| \quad m = |E|$$

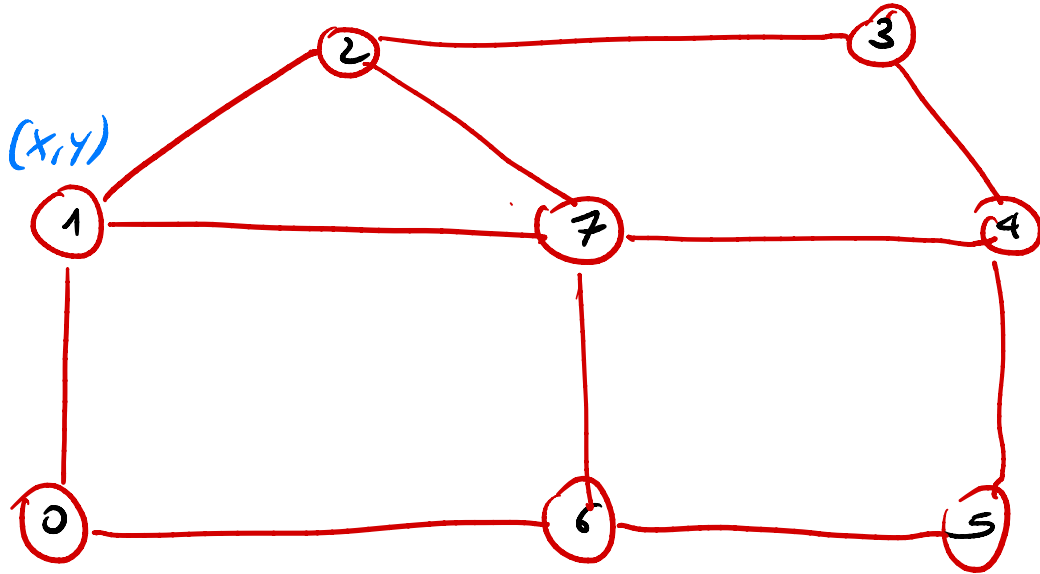
input.txt

8	11	n	m
0	1	x	y
0	6	x	y
...			
6	7	x	y

\Rightarrow arco (x, y)

$$0 \leq m \leq \binom{n}{2}$$

$$\dim(G) = n + m$$



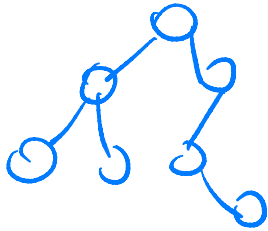
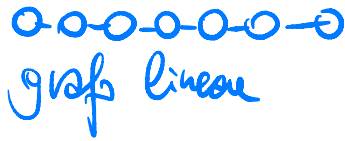
$$V = \{0, 1, \dots, 7\} \quad E = \{(0,1), (0,6), (1,2), (1,7), (2,3), (2,7), (3,4), \dots, (6,7)\}$$

Grafo : relazione binaria che ha come casi particolari

- rel. sequenziale $a_0, a_1, a_2, \dots, a_n$

(array, vector)

$a_i < a_j$ se $i < j$



- ordine parziale e gerarchico : $a_i < a_j$ se
(alberi) i antecede j

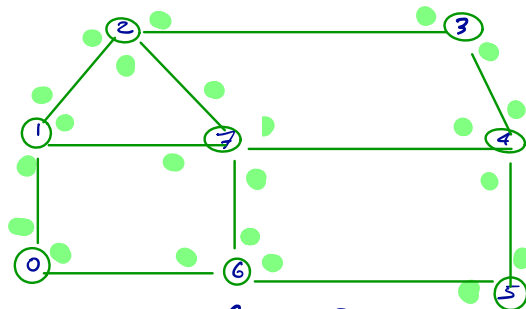
RAPPRESENTAZIONE DI GRAFI

- matrice di adiacenza

	0	1	2	3	4	5	6	7
0	0	1					1	
1	1	0	1					1
2		1	0	1				1
3			1	0	1			
4				1	0	1		1
5					1	0	1	
6	1					1	0	1
7		1	1		1		1	0

grado

2
3
3
2
3
2
3
4



$$\text{vicini}(u) = \{x \in V : \{u, x\} \in E\}$$

$$N(u)$$

$$\text{grado}(u) = |N(u)|$$

$$\# \boxed{1} = 2m$$

$$\text{somma gradi} = \sum_{u \in V} \text{grado}(u) = 2m$$

$$\text{SPAZIO } \boxed{n^2}$$

RAPPRESENTAZIONE DI GRAFI

- matrice di adiacenza

	0	1	2	3	4	5	6	7
0	1						1	
1		1						1
2			1					
3				1				
4					1			
5						1		
6							1	
7		1						1

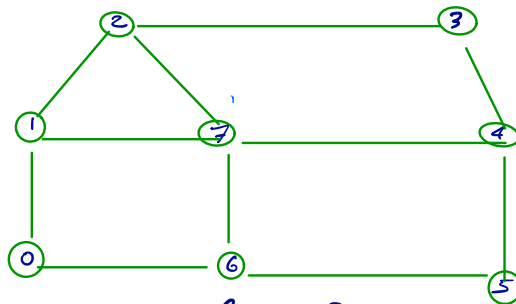
grado

2
3
3
2
3
2
3
4

- lista di adiacenze

grado

2	0	→	[1 6]	vector
3	1	→	[0 2 7]	
3	2	→	[1 3 7]	
2	3		⋮	
3	4			
2	5			
3	6			
4	7	→	[1 2 4 6]	



$$\text{vicini}(u) = \{x \in V : \{u, x\} \in E\}$$

$$N(u)$$

$$\text{grado}(u) = |N(u)|$$

$$0 \leq m \leq \binom{n}{2}$$

4 spazio totale

$$2m + n + n$$

lineare

$$= O(m+n)$$

input.txt

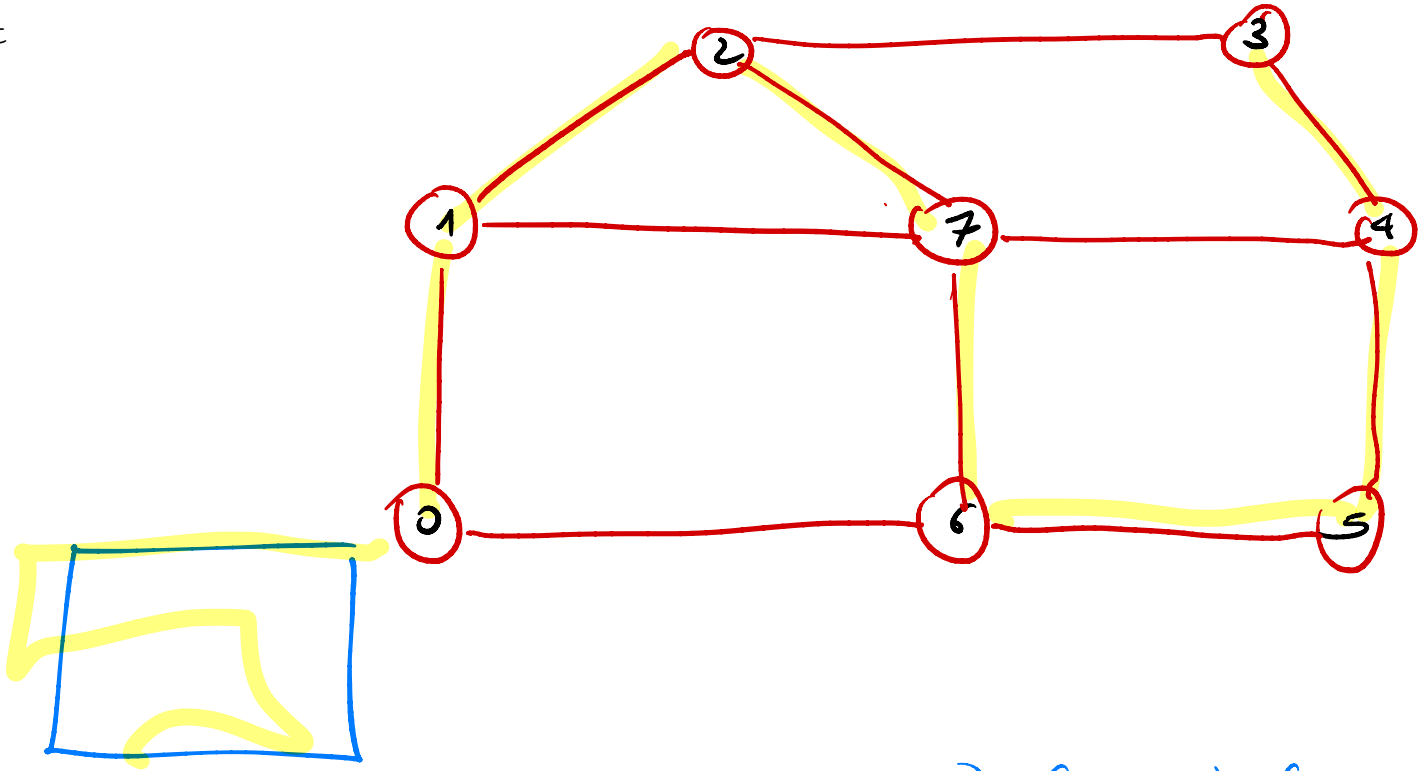
8 11

0 1

0 6

...

6 7



(0,1) (1,2) (2,7) (7,6) (6,5) (5,4) (4,3)