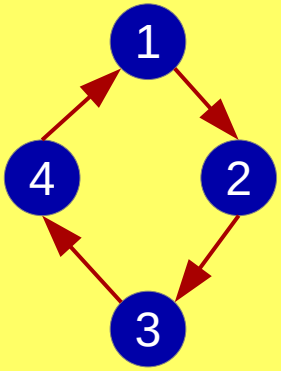
Ejercicios con Grafos

EEDD - GRADO EN ING. INFORMATICA

Conectividad y caminos mínimos

Warshall

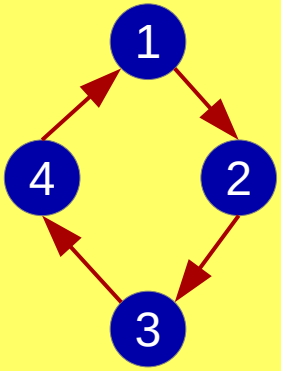


P_0

```
0100
0010
0001
1000
```

{}

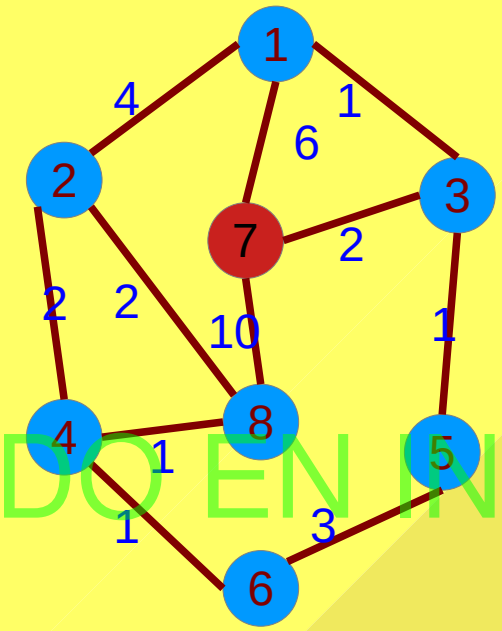
Warshall



P_0	P_1	P_2	P_3	P_4
0100	0100	0110	0111	1111
0010	0010	0010	0011	1111
0001	0001	0001	0001	1111
1000	1100	1110	1111	1111
{}	{4,1,2}	{1,2,3} {4,2,3}	{1,3,4} {2,3,4} {4,3,4}	{1,4,1} {2,4,1} {2,4,2} {3,4,1} {3,4,2} {3,4,3}

Algoritmo de Dijkstra

Caminos mínimos con el nodo 7 como inicial.
Usar orden lexicográfico <dist, u, v>



Camino 7-8:

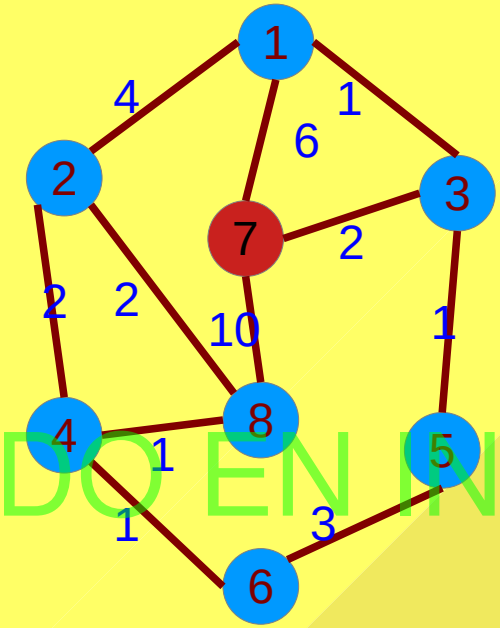
Cola de prioridad:

```
01:{(0,7,7)}
```

	P	D
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	7	0
8	-	-

Algoritmo de Dijkstra

Caminos mínimos con el nodo 7 como inicial.
Usar orden lexicográfico <d, u, v>
(alcanzo ‘u’ desde ‘v’ con distancia d)



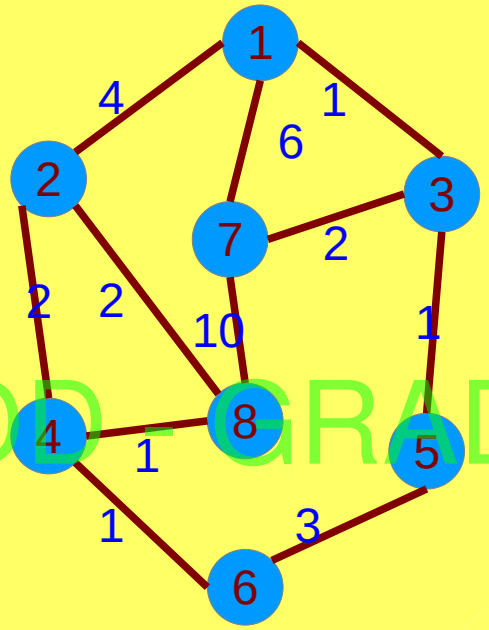
Camino 7-8: D[8]=8
P[8]=4
P[4]=6
P[6]=5
P[5]=3
P[3]=7
P[7]=7 <stop>

Cola de prioridad:

```
01:{(0,7,7)}
02:{(2,3,7),(6,1,7),(10,8,7)}
03:{(3,1,3),(3,5,3),(6,1,7),(10,8,7)}
04:{(3,5,3),(6,1,7),(7,2,1),(10,8,7)}
--:{(6,1,7),(6,6,5),(7,2,1),(10,8,7)}
05:{(6,6,5),(7,2,1),(10,8,7)}
06:{(7,2,1),(7,4,6),(10,8,7)}
07:{(7,4,6),(9,4,2),(9,8,2),(10,8,7)}
08:{(8,8,4),(9,4,2),(9,8,2),(10,8,7)}
--:{(9,4,2),(9,8,2),(10,8,7)}
--:{(9,8,2),(10,8,7)}
--:{(10,8,7)}
--:{}
```

	P	D
1	3	3
2	1	7
3	7	2
4	6	7
5	3	3
6	5	6
7	7	0
8	4	8

Algoritmo de Floyd



D

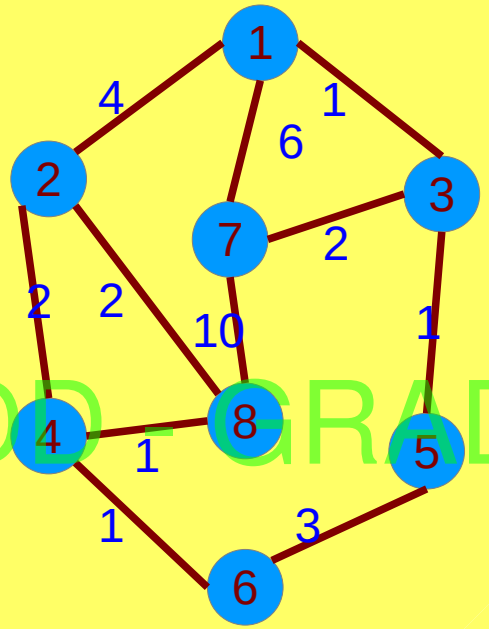
	1	2	3	4	5	6	7	8
1	-	4	1	-	-	-	6	-
2	4	-	–	2	-	-	-	2
3	1	–	-	–	1	–	2	-
4	–	2	–	-	–	1	–	1
5	-	-	1	–	-	3	-	-
6	-	-	-	1	3	-	-	-
7	6	–	2	-	-	-	-	10
8	-	2	-	1	-	-	10	-

I

	1	2	3	4	5	6	7	8
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0

Camino 7-8:

Algoritmo de Floyd



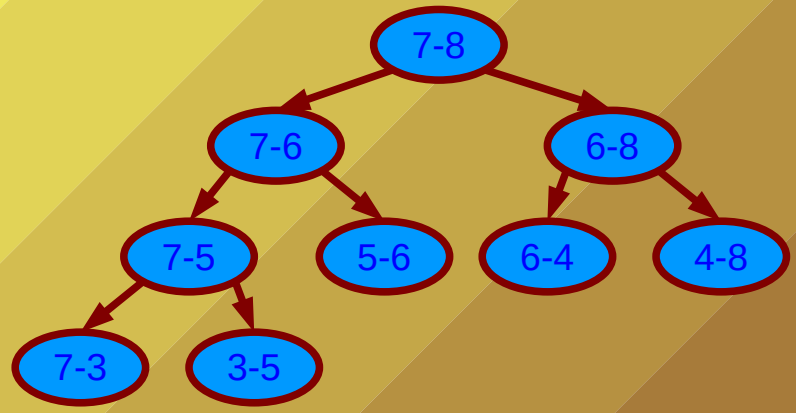
D

	1	2	3	4	5	6	7	8
1	2	4	1	6	2	5	3	6
2	4	4	5	2	6	3	7	2
3	1	5	2	5	1	4	2	6
4	6	2	5	2	4	1	7	1
5	2	6	1	4	2	3	3	5
6	5	3	4	1	3	2	6	2
7	3	7	2	7	3	6	4	8
8	6	2	6	1	5	2	8	2

I

	1	2	3	4	5	6	7	8
1	3	-	-	2	3	5	3	2
2	-	4	1	-	3	4	3	-
3	-	1	1	6	-	5	-	6
4	2	-	6	6	6	-	6	-
5	3	3	-	6	3	-	3	6
6	5	4	5	-	-	4	5	4
7	3	3	-	6	3	5	3	6
8	2	-	6	-	6	4	6	4

Camino 7-8: 7-3-5-6-4-8 Coste: 8



Using '1' : (2,2:8) (2,3:5) (2,7:10) (3,2:5) (3,3:2) (7,2:10) (7,7:12)
Using '2' : (1,1:8) (1,4:6) (1,8:6) (3,4:7) (3,8:7) (4,1:6) (4,3:7) (4,4:4) (4,7:12) (7,4:12) (8,1:6) (8,3:7) (8,8:4)
Using '3' : (1,1:2) (1,5:2) (1,7:3) (2,5:6) (2,7:7) (4,5:8) (4,7:9) (5,1:2) (5,2:6) (5,4:8) (5,5:2) (5,7:3) (5,8:8) (7,1:3) (7,2:7) (7,4:9) (7,5:3) (7,7:4) (7,8:9) (8,5:8) (8,7:9)
Using '4' : (1,6:7) (2,2:4) (2,6:3) (3,6:8) (6,1:7) (6,2:3) (6,3:8) (6,6:2) (6,7:10) (6,8:2) (7,6:10) (8,6:2) (8,8:2)
Using '5' : (1,6:5) (3,6:4) (6,1:5) (6,3:4) (6,7:6) (7,6:6)
Using '6' : (3,4:5) (3,8:6) (4,3:5) (4,4:2) (4,5:4) (4,7:7) (5,4:4) (5,8:5) (7,4:7) (7,8:8) (8,3:6) (8,5:5) (8,7:8)
Using '7' :
Using '8' :