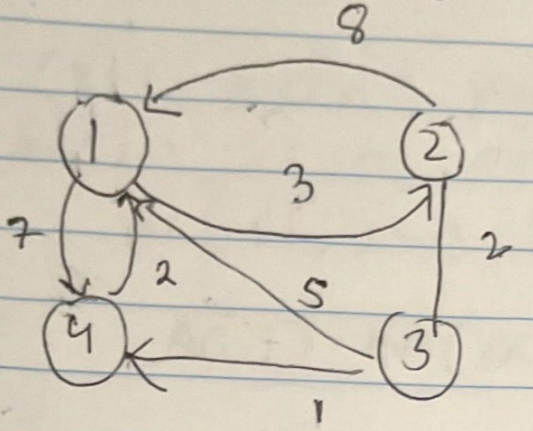
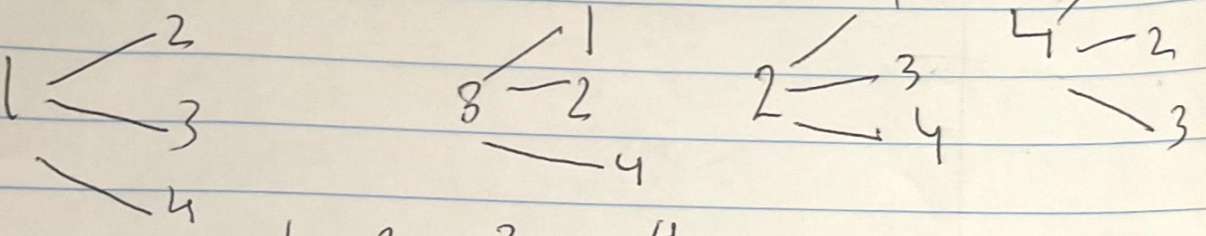
Dijkstra algorithm for all nodes $O(n^3)$
$n^2 \times n$

Floyd Marshalls Algorithm = All pair shortest path.
- Works with negative cycle





D^0 =

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

- self loop zero
- no path ∞

A^1 → path of row 1 & column 1 remains same & diagonal

$A^0[2,3] \leq A^0[2,1] + A[1,3]$
if its less update

$A^k[i,j] = \min\{A^{k-1}[i,j], A^{k-1}[i,k] + A^{k-1}[k,j]\}$

Time complexity $n \times 2$

$\Theta(n^3)$

Algorithm

```
for (k=1; k<=n; k++)
    for(i=1; i<=n; i++)
        for (j=1; j<n; j++)

            A(i,j) = min( A(i,j), A(i,k) + A(k,j) )
```