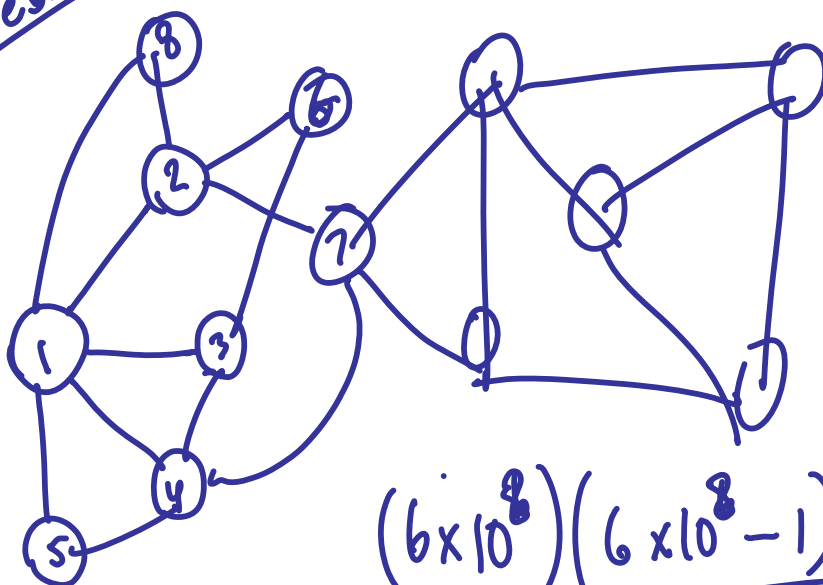


Facebook 600 million = 0.6 billions



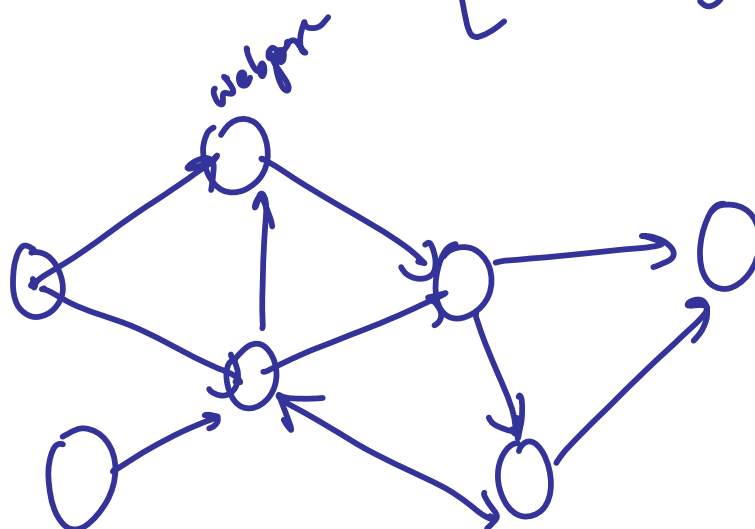
$$\frac{n(n-1)}{2}$$

$$\frac{(6 \times 10^8)(6 \times 10^8 - 1)}{2} \text{ connections}$$

$$\begin{matrix} & 1 & 2 & 3 & 4 \\ \begin{matrix} 1 \\ 2 \\ 3 \\ 4 \end{matrix} & \begin{bmatrix} & & & \\ x & & & \\ x & & x & x \\ x & x & & \end{bmatrix} \end{matrix}$$

$$n = 6 \times 10^8 \rightarrow O(n^2) = 36 \times 10^{16}$$

$$1 \begin{bmatrix} 1 & 2 & \dots & 10^8 \\ 0 & x & 0 & x & \dots & x & x \end{bmatrix}$$



	0	1	2
0	20	15	30
1	15	40	10
2	30	10	60

A is symmetric iff
 $A[i][j] = A[j][i]$
 for all i, j

