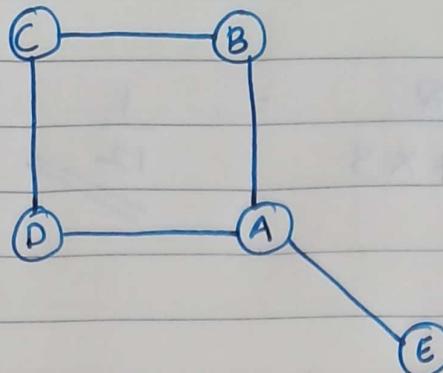


Betweenness Centrality.



Betweenness centrality
for node C.

Let $G = (V, E)$ be a graph with a node $v \in V$. Then the betweenness centrality is given by $bc(v)$.

$$bc(v) = \sum_{\substack{k \neq j \\ v \neq k \\ v \neq j}} \frac{Pr(k, j)}{P(k, j)} \cdot \frac{2}{(n-1)(n-2)}$$

$Pr(k, j)$ = no. of all shortest paths in a n/w beginning with k and ending with j that pass through v.

$P(k, j)$ = total no. of shortest paths between k & j

$bc(C) =$

	$P(k, j)$	$Pr(k, j)$	$Pr(k, j)/P(k, j)$
(B, A)	1	0	0
(B, D)	2	1	$\frac{1}{2}$
(B, E)	1	0	0
(D, A)	1	0	0
(D, E)	1	0	0
(A, C)	1	0	0

$$bc(C) = \left(0 + \frac{1}{2} + 0 + 0 + 0 + 0\right) \cdot \frac{2}{(5-1)(5-2)}$$

$$= \frac{1}{2} \times \frac{2}{4 \times 3} = \frac{1}{12}$$