

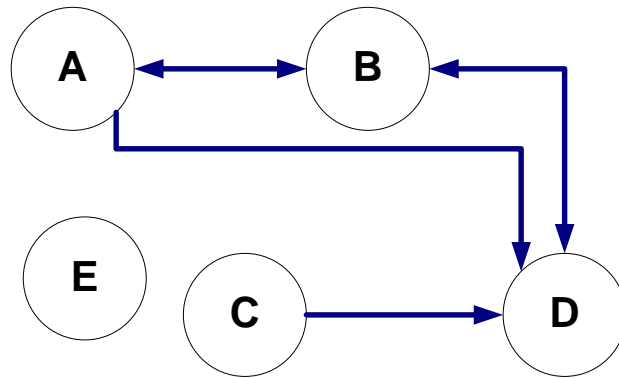
# Foundations of Information Retrieval

## Exercise 10

Exercise session: 26.01.2017  
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### 1. Link analysis with PageRank

1. Given is the following graph:



- Order the nodes in the graph based on the estimated PageRank values (You do not have to compute PageRank now!). Justify your answer.
- Create the link matrix  $A'$  with teleportation for this graph. Use the teleportation probability of 25%.
- Given the PageRank formula:

$$\vec{x}^{k+1} = (1 - c)\vec{x}^k A + \frac{c}{N}\vec{e}$$

$\vec{e}$  is  $\vec{1}$ . In  $\vec{x}_0$  the random walk is uniformly distributed. Compute the vector  $\vec{x}$  for the first five iterations of the PageRank formula ( $k = 0..4$ ) for this graph. Round to 5 decimal places!

*Remark: make use of the link matrix with teleporation  $A'$*