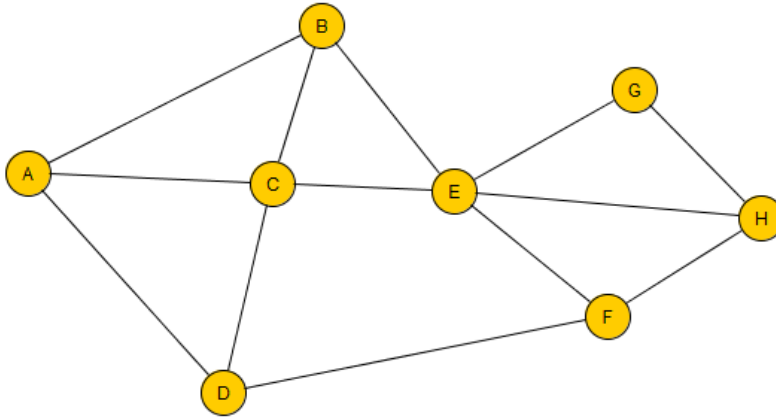


# Lösung: Link-Prediction

Berechnen Sie mit den unten angegebenen Link-Prediction Algorithmen Metriken für die Knotenpaare: A- E, und A-F auf dem Graphen:



## Common Neighbours

$$common\_neighbours(A, E) = |\{B, C\}| = 2$$

$$common\_neighbours(A, F) = |\{D\}| = 1$$

## Jaccard Coefficient

$$jaccard\_coefficient(A, E) = \frac{|\{B, C\}|}{|\{B, C, D, F, G, H\}|} = \frac{2}{6} = \frac{1}{3}$$

$$jaccard\_coefficient(A, F) = \frac{|\{D\}|}{|\{B, C, D, E, H\}|} = \frac{1}{5}$$

## Resource Allocation

$$resource\_allocation(A, E) = \frac{1}{3} + \frac{1}{4} = \frac{7}{12}$$

$$resource\_allocation(A, F) = \frac{1}{3}$$

### Adamic-Adar

$$adamic\_adar(A, E) = \frac{1}{\ln(3)} + \frac{1}{\ln(4)} = 1.63$$

$$adamic\_adar(A, F) = \frac{1}{\ln(3)} = 0.91$$

### Preferential Attachment

$$preferential\_attachment(A, E) = 3 \cdot 5 = 15$$

$$preferential\_attachment(A, F) = 3 \cdot 3 = 9$$