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Algorithms

WS 2013/14

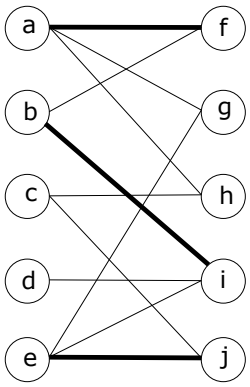
Exercises 2

1. **Network Flow (Niveau I)**

   Assume a flow network with edge and additional vertex capacities. Each vertex v has a limit on the flow that can pass through it. Explain how to transform this flow network into an equivalent flow network without vertex capacities.

2. **Matching and Bipartite Graphs (Niveau I)**

   (a) Apply the matching augmenting algorithm for bipartite graphs to the graph below and compute a maximum cardinality matching from the initial matching.



3. **Maximal and maximum matchings (Niveau II)**

   Prove that every *maximal* matching in a graph G has size at least half the size of a *maximum* matching.