Technische Universität München
Fakultät für Informatik
Lehrstuhl für Effiziente Algorithmen
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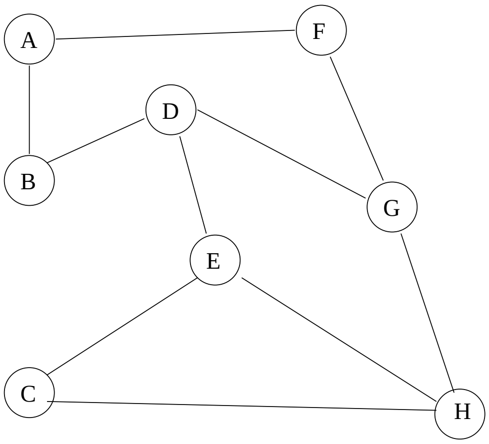
Effiziente Algorithmen und Datenstrukturen I

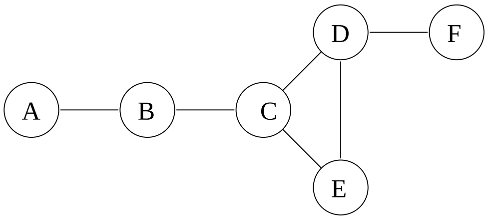
Aufgabe 1

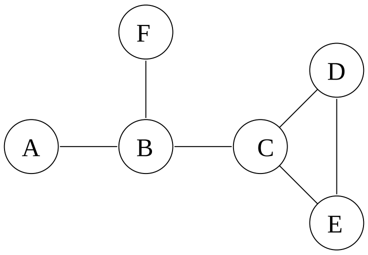
Consider the graph G below and give a Maximum Matching (Matching maximaler Kardinalität) and a Maximal Matching (maximales Matching) for G.



Aufgabe 2

Formulate an alternative DFS-Algorithm for finding an augmenting path in an arbitrary graph. Make sure that your algorithm works for the following two examples:





Aufgabe 3

Remember from the lecture that one can formulate the Maximal Matching problem as a Matroid. Show that this is also possible for Minimum Spanning Tree problem.

Aufgabe 4

Deconstruct the given doubly stochastic matrix into a convex combination of permutation matrices.

0	0.5	0.25	0	0.25
0.5	0.25	0	0	0.25
0	0.25	0	0.75	0
0.25	0	0.5	0.25	0
0.25	0	0.25	0	0.5