

- 1. Most Frequent Occurrence of Length k :** Find which substring of length k appears the most times as a substring of σ .
- 2. Longest Repeated Substring:** Find the longest substring of σ , which appears at least twice in σ . Najděte nejdelší podslovo σ , které se v σ vyskytuje alespoň dvakrát.
- 3. Multiple Sources and Terminals:** How to find the maximum flow in a situation when there are multiple sources and terminals?
- 4. Ford-Fulkerson with Unit Weights:** How many iterations does Ford-Fulkerson make if all Jak rychle doběhne Ford-Fulkersonův algoritmus pro jednotkové váhy?
- 5. Bad Net:** Give an example of a small network in which the F-F algorithm may perform more than a million iterations. (“May perform” means there is a sequence of choice of augmenting paths; you may adversarially choose these.)
- 6. Edge Disjoint Paths:** Find an algorithm which finds the maximum number of edge disjoint paths between given two vertices $u, v \in V(G)$.
- 7. Vertex Disjoint Paths:** Find an algorithm which computes the maximum number of vertex disjoint paths between given two vertices $u, v \in V(G)$.
- 8. Maximum Bipartite Matching.** Design an algorithm which computes the maximum size matching in a bipartite graph $G = (V, E)$. A matching is a subset of edges $M \subseteq E$ such that no two edges overlap, i.e. $\forall e_1, e_2 \in M : e_1 \cap e_2 = \emptyset$.