What's examinable, and what's just illustration?

Course pages 2022 – 23

Algorithms 2

Syllabus | Course materials | Ticks | Recordings | For supervisors

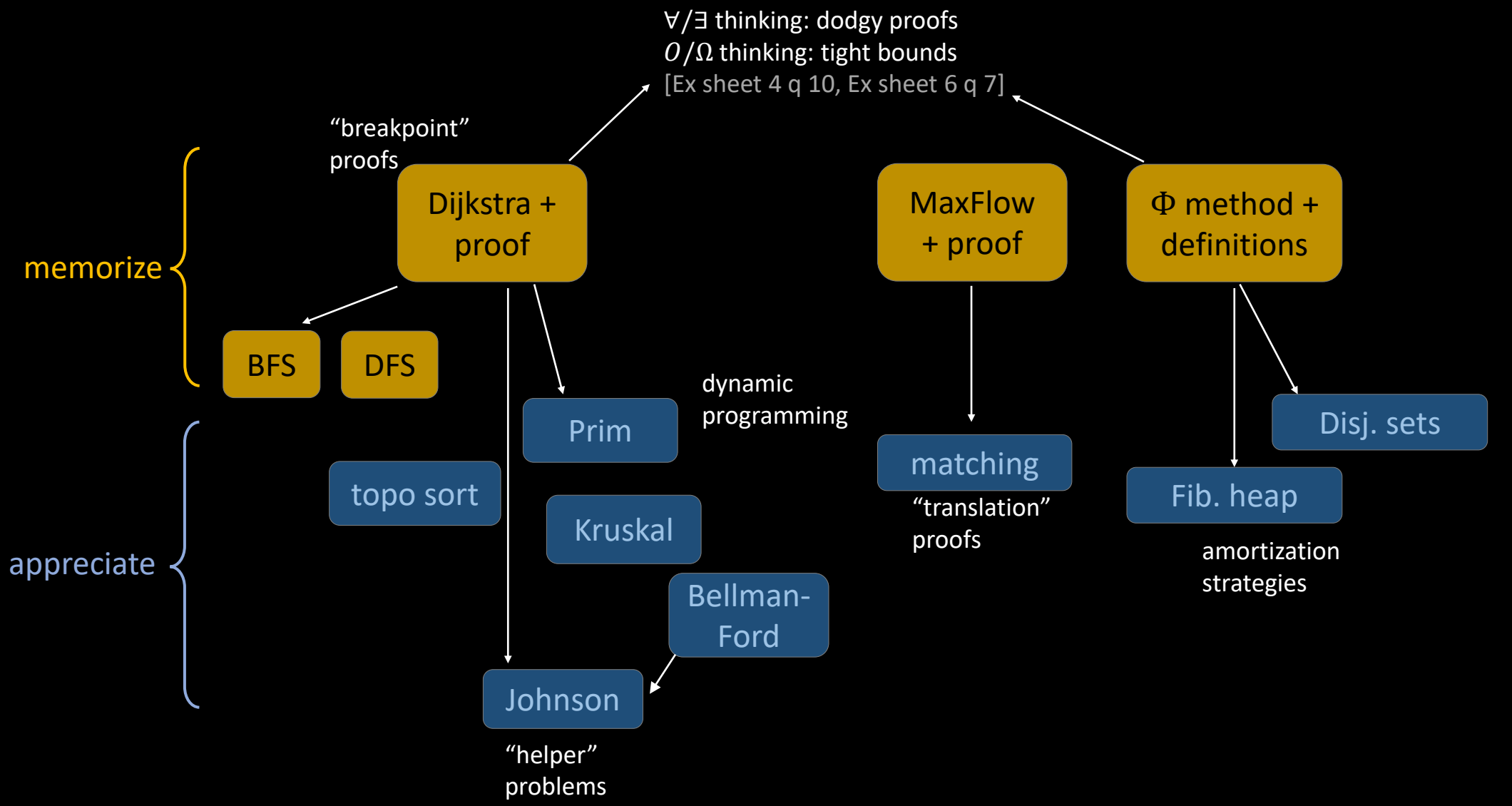
Lectures

Graph algorithms. Graph representations. Breadth-first and depth-first search. Topological sort. Minimum spanning tree. Kruskal and Prim algorithms. Single-source shortest paths: Bellman-Ford and Dijkstra algorithms. All-pairs shortest paths: ~~matrix multiplication~~ and Johnson's algorithms.

Flow networks. Maximum flow: Ford-Fulkerson method, Max-Flow Min-Cut Theorem. Matchings in bipartite graphs.

Advanced data structures. Binomial heap. Amortized analysis: aggregate analysis, potential method. Fibonacci heaps. Disjoint sets.

~~**Geometric algorithms.** Intersection of segments. Convex hull: Graham's scan, Jarvis's march.~~


∀/∃ thinking: dodgy proofs
O/Ω thinking: tight bounds
[Ex sheet 4 q 10, Ex sheet 6 q 7]
"breakpoint" proofs
Dijkstra + proof
MaxFlow + proof
Φ method + definitions
memorize
BFS
DFS
dynamic programming
Prim
Disj. sets
matching
topo sort
Kruskal
Fib. heap
"translation" proofs
amortization strategies
appreciate
Bellman-Ford
Johnson
"helper" problems