

## DM817 – Fall 2020- Weekly Note 4

### Stuff covered in Week 38:

We covered the following

- Selected exercises on Weekly notes 2 and 3.
- BJG 3.6 (Similar to parts of Ahuja 7.1-7-6) (Video Lectures 9, 10 and 12).
- Ahuja Application 1.3 page 12 (Video Lecture 11)

In particular we covered the following polynomial algorithms for finding a maximum  $(s, t)$ -flow in a network: The Edmonds-Karp algorithm (shortest augmenting paths) and Dinic's algorithm (finding a blocking flow in layered networks). The preflow push algorithm which constructs a maximum  $(s, t)$ -flow by working with so-called preflows. Such a flow is only an  $(s, t)$ -flow when the algorithm terminates. I also showed how to formulate an orientation problem similar to Ahuja application 1.3 as a feasible flow problem.

### New exercises

- BJG 3.22, 3.23, 3.25, 3.37, 3.38
- Ahuja 6.33, 6.45, 6.47

### Plan for Week 39

- Ahuja 7.7 [Video Lecture 13]
- BJG 3.7 (Ahuja 8.2). [Video Lectures 14 and 14B]
- We will discuss selected exercises (if you have some particular to discuss, please tell me in advance).