

DM817 – Fall 2022 – Weekly Note 3

Stuff covered in Week 37:

We covered the following sections.

- BJG 3.8-3.9 (corresponds to Ahuja 6.7 and exercise 6.18) .
- BJG 3.11.1 on König's theorem and Hall's theorem (Ahuja 6.6).
- BJG 7.3 Theorem 7.3.1. Menger's theorem (Ahuja 6.6).

In particular we proved the max flow min cut theorem and gave some other important results such as the integrality theorem. We proved the theorems of Menger, König and Hall using the max flow min cut theorem.

We also discussed how to find a maximum (s, t) -flow as well as a feasible circulation in a network with lower bounds on the arcs. This is also described in Ahuja pages 169 and 192-196.

Program for week 38:

I have uploaded 3 new videos 9-11 which you should watch after reading the material below.

- BJG 3.6.1 and 3.6.2 (Similar to Ahuja 7.1-7.6 but we will use the material from BJG). This is Video lectures 9 and 10
- Ahuja Application 1.3 page 12 (Video lecture 11)

Problems for Week 38:

- Ahuja Section 6.2: applications 6.3 (you should read the remaining ones yourself).
- BJG 3.33, 3.34, 3.35, 3.45, 3.55
- Ahuja 6.1, 6.2, 6.25, 6.26, 6.41,