Institut for Matematik og Datalogi
Syddansk Universitet – Odense Universitet

September 21, 1999
JFB

DM19 – E99 – Lectures 7 and 8

Lecture, September 15

We continued with some material from sections 5.4, 5.5 and 23.1 on graphs. Then we reviewed minimum spanning tree algorithms from chapter 24 and began to introduce matroids from chapter 17.

Lecture, September 17

We finished matriods from chapter 17, except for the task scheduling example, which was introduced.

Lectures, Week 38

We will finish chapter 17 (skipping the section on Huffman coding). Then we will cover sections 25.3 and 25.4 of chapter 25 (we are skipping the other sections), and begin on chapter 26. The following algorithm will be presented. It is essentially the same as the Bellman-Ford algorithm in the textbook:

```
for i ← 2 to n do Old(i) ← w(1,i)
for i ← 2 to n − 1 do { for paths of length i}
    for j ← 2 to n do { for each vertex a path could go to}
        New(j) ← Old(j)
        for k ← 2 to n (skipping j) do
            if New(j) > Old(k) + w(k,j)
                then New(j) ← Old(k) + w(k,j)
        end
    end
    for j ← 2 to n do Old(j) ← New(j)
end
for each edge (v_i, v_j) ∈ E
    if New(j) > New(i) + w(i,j)
        then return False
return True
end
```

Lectures, Week 39

We will finish chapter 26, except for section 26.4, which will be skipped. We will begin on chapter 27.

Problems to be discussed in week 40

17.1-2, 17.1-3, 25.3-3, 25.4-4, and 26.1-8.

Extra problem 1: If one were to try to define a matroid for the activity-selection problem, the natural thing to do would be to define the independent sets to be the sets of mutually compatible activites. Show that this does not give a matroid.

Extra problem 2: Define a matroid for the fractional knapsack problem. Hint: You have to define which fractions of each item are possible.

Repeat announcement

There will be a lecture on Friday, October 1, as usual, since U49E is far from where the Årsfest will take place. There will of course also be a lecture on Friday, September 24, despite the typo in the official schedule of courses.

New announcement

Copies of slides used in class will be given out in class. Extra copies will be put in the DM19 slot up on the first floor.

New announcement

Remember that the Matalogifest will be Saturday, October 9, and you should sign up by October 4 if you are interested in coming.