

# Introduction to Computer Science

## E06 – Lecture 11

### **Lecture, October 10**

We finished with cryptology and began on the theory of computation, covering sections 11.1, 11.2, and 11.4.

### **Lecture, October 13**

We will continue with the theory of computation from chapter 11 during the first hour (covering sections 11.3 and 11.5) and Lene Monrad Favrholt will lecture on bioinformatics during the second hour.

### **October 17 and October 20**

There will be no lectures or discussion sections in this week.

### **Lecture, October 24**

We will finish section 11.5 in the textbook and begin on chapter 10.

### **Discussion section: week 43**

Do problem 15 on page 534 before coming to discussion section, so that you can compare solutions. Discuss the following problems in groups of three or four.

1. Discuss questions 2, 3, and 5 on page 508.
2. Discuss questions 3 on page 514.

3. Discuss questions 2, 3, and 5 from page 529.
4. Discuss questions 15 from page 534.
5. Discuss problems 20 and 25 on page 535.
6. Discuss problems 27, 29, 31, 32, 33, 37, 42, 44 on pages 535–536.
7. Discuss how the Shortest Path Problem (defined in lecture – given two cities, find the shortest path between them) and the Traveling Salesman Problem differ.
8. Discuss the social issues 1, 2, 5, 6, and 7 on pages 537–538.

### **Assignment due 9:00, Friday, October 27, in my office**

Late assignments will not be accepted. Working together is not allowed. (You may write this either in English or Danish, but write clearly if you do it by hand.) Include enough comments to make your programs easy to understand.

1. Do problem 5 on pages 533-534.
2. Design a Turing machine that reads a string of zeros and ones between two asterisks and does the following: (Assume it starts on the asterisk to the left of the string.) If the string has an even number of bits, the string should keep its original value. Otherwise, the middle bit should be complemented, but all other bits should retain their original values. Note that you can use symbols other than 0, 1, and \*.