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Introduction to Computer Science, Winter Semester 2016
Practice Assignment1

Discussion: 8.10.2016 - 13.10.2016

Exercise 1-1 Play Game

To teach you a bit about algorithms we will play a game. You will be divided into groups, each group is given a drawing on graph paper, your task is to write an algorithm so that the other group can draw the drawing you received just by following your algorithm.

After writing the instructions the member is to pass it to the one next to him without communicating in any way but through the instructions he wrote.

First group to finish is the winner .

Exercise 1-2 Towers of Hanoi

The **Towers of Hanoi** is a mathematical puzzle invented by a mathematician in 1883. The puzzle setting consists of eight disks and three pegs. Disks can slide onto the pegs. Initially, the disks are neatly stacked in order of their sizes on one peg so that they form a conical shape. The objective of the puzzle is to move the disks from one peg to another using only the three pegs. The following rules have to be obeyed during the moves:

- The same order of the pegs has to be maintained after moving them.
- Only one disk has to be moved at a time.
- No large disk can be placed on a smaller one.

A simple version of the towers of Hanoi consists of **three** disks instead of eight. In plain simple English write a set of steps by which you can move the three disks from one peg to the other.

Exercise 1-3 Balance puzzle

The **Balance puzzle** is a logic puzzle that is based on balancing similar-looking items. A well-known example has 8 balls that are identical in weight except for one odd ball. The objective of the puzzle is to find the different ball using the least number of weighings.

a) Start by trying to find the smallest the number of weighings for 4 balls, knowing that the odd ball is heavier than the rest. What could be the number weighings for 8 balls?.

b) What will happen if you know that the odd ball is just different i.e could be heavier or lighter?
What could be the number weighings for 4 balls? Can you do it for 6, what about 8, what about 13?