Kursus 02122, IMM, DTU
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# A game project.

## 1 General

The students have to implement a game in groups of 3. The programs have to be played by two human players. Moreover the programs have to be able to play against each other or a human. For the program to play alone, it has to have some basic artificial intelligence to drive a strategy. There has to be a graphical interface for showing the game and controlling it. The work done by each group has to documented in a report.

## 2 Instructive Objectives

The students should learn to develop a software project from a loosely specified problem. They should analyze the problem, make a formal specification, evaluate possible solution methods and their implementations. They should learn on group interaction and self-organization.
To achieve this the problem is informally described. A precise formulation has to be found by **all** student working together and agreed upon. The implementations meeting this standard are then performed in groups of 3.

## 3 The Game

Two snakes are moving on a plane area. The game is over when one snake (the looser) runs into itself, the other snake or into an obstacle. The snakes grow longer with time. There are also obstacles which the snake cannot run through. See Figure 1.

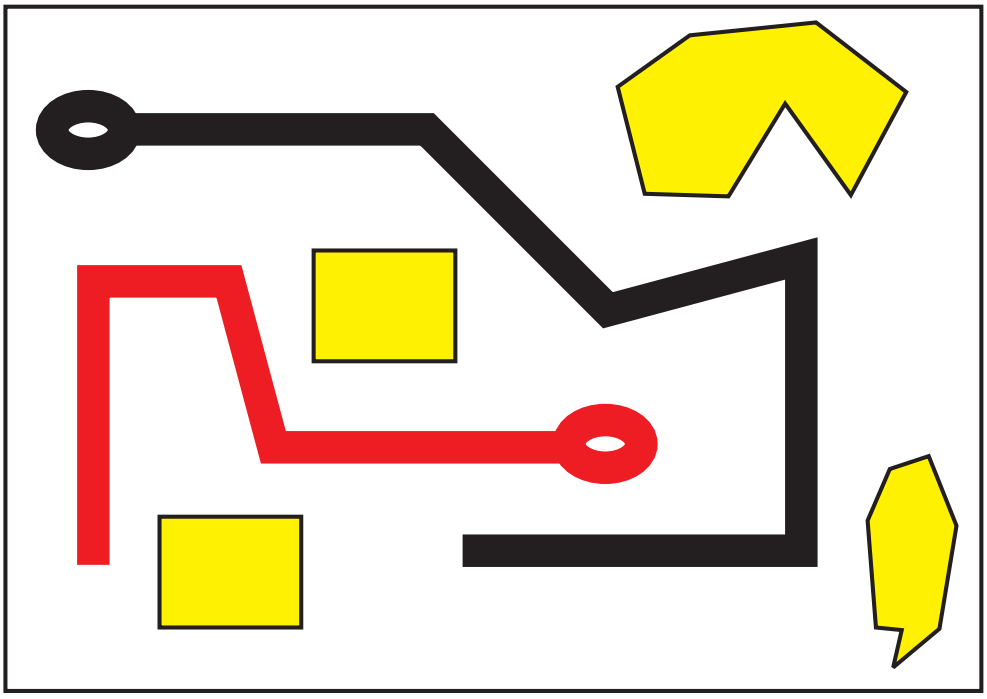

Figure 1: Sketch of the snake game.

# 4 Project Phases

The time schedule for the project phases shown below is just set up as an example.

## 4.1 Phase 1 (3 weeks)

All students who choose this project make a detailed specification of it. This includes to formally specify terms like

- snake
- plane area
- obstacle
- grow longer
- how the snake moves (is moved by the player)
- runs into itself, the other snake, an obstacle

and many more. As part of the precise problem description an interface should be specified that will allow two different implementations of the game to play against each other. This phase takes 3 weeks. The result has to be a single specification upon which all (or a large majority) has agreed. All (also those not agreeing with the specification) have to follow it when implementing their solution. Moreover, rules for a final tournament are decided.
The rules of the game, the specification of the interface, and the rules of the tournament are presented to the course supervisors at the end of Phase 1.

## 4.2 Phase 2 (Rest minus 1 week)

The programs are implemented in groups of 3. This includes the implementation of

- the data structures and algorithms
- a graphical user interface
- an automated strategy (AI)
- the three playing modes (man-man, man-machine, machine-machine)

Besides the implementation the program has to be tested. The tests involve also that the rules of the game are correctly interpreted. It has to be checked that it meets the specification made in phase 1. Every program has to be able to play against **every** other one.

## 4.3 Phase 3 (Last week of 13-week or 3-week period)

On one day of that week a tournament is organized and played to determine the best program. This to check how well the interface is implemented. (The ranking in this tournament has no influence on the grade!!).
Later the individual implementations are presented to the course supervisors and the reports are handed in.