

What we believe

Problem presentation is a very important issue in teaching programming.  
The problem must be attractive to students and should engage the students in a structured reasoning.

What we conclude

Structured problem presentation helps students to increase high-level skills in programming activity:

- Problem solutions more structured
- Improved problem comprehension

What we propose

Problem presentation should focus mainly on:

- Problem goals
- Problem concepts
- User interface


Presentation document components:

- Title
- Short description of main problem goal
- Functionalities description
- Application interaction
  - scenarios description
  - functional prototype

Problem Presentation in CSI Courses

**Problem title**

Coverage of a classroom floor.



**Problem description**

Find out how many square tile are needed to cover the largest possible square in the center of the classroom floor.

**Functionalities description**

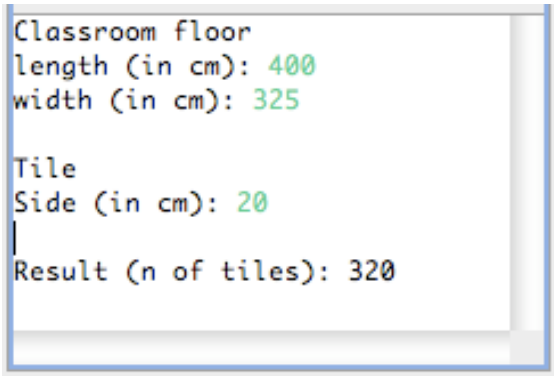
The floor of the classroom is a rectangular surface with a width and a length measured in centimeters. The tile is a square with a side measured in centimeters, an is unicolor.

**Interaction description**

At the beginning the user must provide the width and the length of the classroom and the tile side, then the number of tiles needed to cover the largest possible square will be presented.

**Interaction scenarios**

Scenario 1



**Problem description**

Simulation of a set of cultivation experiments by a farmer in a farm. The farmer has to plant and harvest seeds in order to obtain a profit and a skill level. The simulation goal is to present the more profitable sequence of seed planting and, the one that gives a greatest skill level (in case of a tie choose the last one).

**Functionalities description**

The cultivation done in the farm is similar to that exhibited by the well-known Facebook application Farmville. The farm has only a farmer and three types of seeds (cotton, pumpkin and peas).


A name, a skill level and available cash characterize the farmer. The skill level corresponds to the actual score of the farmer. The available cash indicates how much money each farmer has to spend on seeds. For problem simplicity, the farmer only has one plot available for planting. A cost, a profit, an experience point, and a time characterize each type of seed. The cost is the amount of coins that a farmer spends to buy/plant it. Each type of seed takes a time to be harvested, when harvested the farmer receives the profit and the experience given by that seed. The profit will increment the available cash of the farmer, and the experience will increment the skill level. The values associated to the seeds are:

Seed	Cost (€)	Profit (€)	Experience	Time (hour)
cotton	75	207	2	12
pumpkin	30	68	1	8
peas	190	381	3	24

The farmer can plant on the plot, during a specified time, successive seeds types chosen randomly, that result on a profit and a skill level to be given to the farmer.

**Problem title**

MyFarm an experimentation of cultivations in a farm.



**Interaction description**

At the beginning of simulation, the user must provide the flowing information: farmer name, initial cash, time given for cultivation experiment, and the total number of experiments to be performed. For each experiment the final values of cash and experience of the farmer will be presented.

At the end of simulation, two cultivation experiments must be presented. These are the experiments that result on the greatest profit and skill level to the farmer, respectively.

**Interaction scenarios**

Scenario 1

