

Assignment 5

SPREADSHEET ENGINE

You have to implement a simple spreadsheet engine (also known as Excel).

A spreadsheet is formed from a grid of cells. For simplification the coordinates are integer numbers.

Each cell can be one of the following types:

- absolute value: contains an absolute value (a number);
- reference: contains a reference to an existing cell;
- binary formula: contains a formula based on two others cells and a binary operator. We can have the following operators: +, -, * and /. In the future any number of other operations can be added. The architecture of the application must support easy integration for these.

Each cell knows its current value, based on the attached formula (in the case of formula cells) or its reference (in the case of reference cells). That means that the computation of the value of a cell it's not made on the cell read operation, but it's pre-computed on declaration and updated on each change.

To test the functionality of the application you designed create a test for a spreadsheet that contains at least 1 cell of each type. Each cell will be initialized with the following data:

- absolute value cell – a number
- reference cell- a reference to another cell
- formula cell – reference to 2 operand cells and a specification of the operand to be applied

For testing purposes create a print function for the entire spreadsheet.

Hint: you face here (at least) two problems, one has to do with how to keep each cell updated with its current value, the other one with how to make formula cells as generic as possible.

Attention: Don't use SWITCH/CASE statements. Don't use a pre-defined table (table [1000] [1000]) for storage, this is highly inefficient.