Software Architecture

Project: List of requirements

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Data requirements

- D001: The Spreadsheet contains cells.
- D002: The Cell class shall contain a content and a TupleKey indicating the position inside the spreadsheet. And the content shall be a Number, a String, or a Formula.
- D003: The TupleKey will contain a String indicating the column of the cell ("A", "AA", "AAA", "B", …) and a natural number indicating the row of the cell (1, 5, 33, …).
- D004: The Formula shall save a list of the operators and operands in order. Operands shall be of different types, a number, a TupleKey or a Function. Operators shall be of different types: summations, multiplications, divisions, and subtractions.
- D005: The Function shall contain a list of Arguments. Each Argument shall be a number, a TupleKey, a range of TupleKey or a Function. There is different kind of functions: SUMA, PROMEDIO, MIN and MAX.

Functionality requirements

- F001: The system shall support several cells in a rectangular way.
- F002: The system shall check which type of content is (number, formula, or string).
- F003: The system shall identify empty cells as zeros.
- F004: The system will differentiate columns with the character ';' and rows with the character '\n'. The first value registered is the value of the cell A1.
- F005: The systems detects if there is a formula, if the content of the cell it starts with '='.
- F006: When using a formula, the program shall check if it uses cells, numbers, or functions.
- F007: The system shall check if the operation is possible.
- F008: The system shall automatically update the cells which have dependence of updated cells and doing it with efficiency, not updating the whole spreadsheet.
- F009: When the value of a cell is required, the system shall return it in string format or in a number format.
- F010: The system shall receive a .s2v file with the value of the input spreadsheet getting the values of it without problems and calculating what is going to be inside each cell if there are formulas.
- F011: The system shall check if there is any error when the user has written the formula, it there is, notice the error.
- F012: The system shall check if there are any circular dependencies, if are, notice the user.
- F013: The application shall compute all the followings functions: SUMA, MIN, MAX, PROMEDIO with multiple numerical values (separated with ";" inside of the program and with "," in the text file), range of cells and other functions inside.
- F014: The application shall return as an output the result in the same format.
- F015: The system shall not need a graphical user interface, with a textual menu of options in the command line is completely enough.

- F016: The menu shall content the following options: Read .s2v, show the spreadsheet (all of it or with limitations), set the cells to empty, read the value of a cell, change the value of a cell, save the spreadsheet in a new .s2v or the original one.