Object Oriented Programming

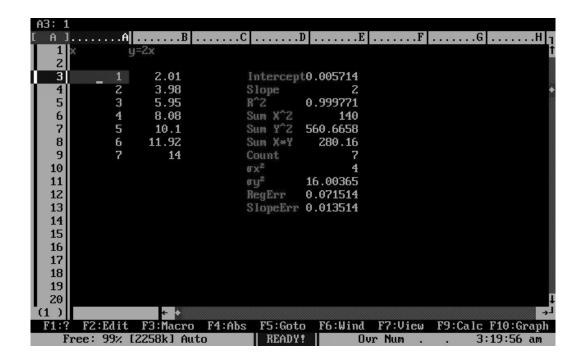# Term Project

Spring 2015

Problem Statement

Design and Develop a Power Spread Sheet (PSS) program (much like MS Excel / Lotus 123) that can be used to edit & save data. The spread sheet is displayed in the form of cells (you can create cell boundaries using ASCII characters (_, |, - etc.) or even use graphics mode and lines to create the spread sheet.

The sheet can contain up to 100 columns and up to 256 rows. The bottom of the screen will be reserved for command e.g. F2 to Save, F3 to Exit, F1 to load a file, F4 to Search, F5 to create a new spreadsheet (do not save until the user doesn't ask for it) etc. When in a cell, pressing Enter once will make it editable and after editing the value pressing Enter again will lock the cell back.

The user can scroll through the sheet cell by cell using the arrow keys. One arrow key will jump by one cell horizontally or vertically if it is not a dead-end (pressing down on first page will jump to the next page vertically etc.). The user may also jump directly to the next filled cell by holding the CTRL key down while pressing the arrow keys.

The file contents can be saved by the user in any folder (path and name of the file to be asked when a new file is saved for the first time), on subsequent save(s), the same file will be overwritten with the latest contents. Use Random filing to load the contents of the page in view only i.e. do not load the complete file all at once.

An example window is given below. You don't need to replicate this, it's there to give you an idea.

```
A3: 1
[ A ]........A|......B|......C|......D|......E|......F|......G|......H|
  1 x        y=2x
  2
  3      1    2.01         Intercept0.005714
  4      2    3.98         Slope            2
  5      3    5.95         R^2       0.999771
  6      4    8.08         Sum X^2        140
  7      5    10.1         Sum Y^2   560.6658
  8      6    11.92        Sum X*Y    280.16
  9      7     14          Count          7
 10                        σx²            4
 11                        σy²       16.00365
 12                        RegErr    0.071514
 13                        SlopeErr  0.013514
 14
 15
 16
 17
 18
 19
 20
(1 )
 F1:?  F2:Edit  F3:Macro  F4:Abs  F5:Goto  F6:Wind  F7:View  F9:Calc F10:Graph
     Free: 99% [2258k] Auto       | READY! |    Ovr Num  .   .   3:19:56 am
```

Approach

- Design the UML Class Diagram
- Translate the diagram to code structure
- Provide implementation
- Run, debug and submit

Groups

Your groups have already been made. You can ask for help from your collogues, the instructor and the TAs but write your own code. Plagiarism will not be tolerated.

Evaluation

After the submission of your code (on LMS), a viva will be conducted to test your concepts and understanding of the methods used. You'll be asked about why you have used a certain mechanism or why you have not used an alternate way.

It would be advised to make a well documented code, with comments and explanations to what a certain code segment does.

The deliverables would be UML class diagram and code file(s).

The deadline is set before the final term exam week.

References

1. The following link has a good tutorial for console streams, IO and formatting.

   http://courses.cs.vt.edu/cs1044/Notes/C04.IO.pdf

2. This link has a library which has console functions in it. You might find it helpful.

   https://cppconlib.codeplex.com/

We may provide more references from time to time if deemed necessary.