Tut-Lab Week 9

Aims:

- Understand the issues surrounding user interface design

- Design and implement a simple graphical user interface

- Learn more about the Java class libraries

Preparation:

- Review the material on user interface design

- Review the material on the Java Swing toolkit

- Review the use of the `Observer` pattern

Sudoku User Interface

- You are probably familiar with the puzzle of Sudoku

  - The puzzle uses a 9×9 grid divided into 9 rows, 9 columns and 9 boxes of size 3×3

  - Given a valid initial position, the aim is to fill in all the grid elements with a number from 1 to 9 such that each row, each column and each box contains all and only the numbers from 1 to 9, so that no number appears more than once in any row, column or box

- A sample puzzle and its solution are as follows

	3	5	2	9		8	6	4
	8	2	4	1		7		3
7	6	4	3	8			9	
2	1	8	7	3	9		4	
			8		4	2	3	
	4	3		5	2	9	7	
4		6	5	7	1			9
3	5	9		2	8	4	1	7
8			9			5	2	6

1	3	5	2	9	7	8	6	4
9	8	2	4	1	6	7	5	3
7	6	4	3	8	5	1	9	2
2	1	8	7	3	9	6	4	5
5	9	7	8	6	4	2	3	1
6	4	3	1	5	2	9	7	8
4	2	6	5	7	1	3	8	9
3	5	9	6	2	8	4	1	7
8	7	1	9	4	3	5	2	6

- Design a user interface for an interactive Sudoku solver. A number of questions to consider are:

  - Who are the intended users: are they novice, intermediate or expert, or all sorts of users (if expert, just how expert?)

- What sort of features are basic to the application (i.e. needed by every user)?

- What sort of features are needed by different categories of users: how can the interface handle seemingly different requirements?

- What sort of help or hints should the system be able to provide to users (and how and when is this help given)?

- What platforms with what form factors is the system designed to run on?

- Implement a basic user interface that can display a given Sudoku position

  - Include UI elements for implementing some of the basic features