

Assignment 6

Java for C ++ programmers, 7,5 hp

Objective: To use classes in Swing for creating graphical user interfaces. In addition, to use event classes in Java for example capturing mouse cursor movements.

To read: Lecture 7

Tasks: 1

Submission: Inlämningslåda 6 at Moodle

Good luck!



Task 1

In this task, you will start with your previous solution from Lab 5.

Create a new Java project in Eclipse, which will be a copy from your previous solution. Your classes should belong to the package:

`dt062g.studentid.assignment6` where `studentid` is your username in the student portal / Moodle.

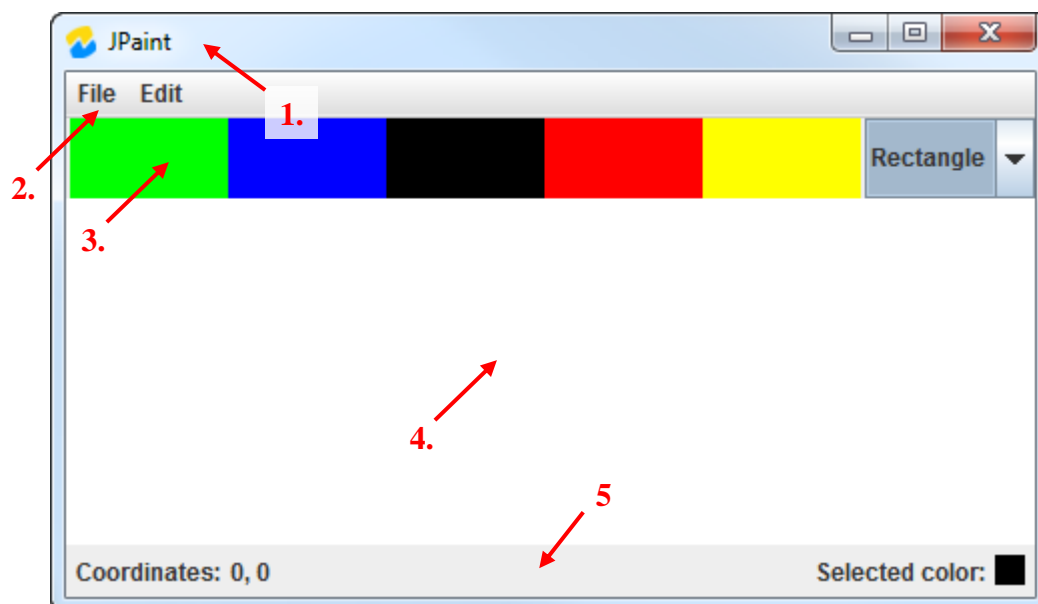
The program should have a graphical user interface based on Swing. `System.in` may not be used for user input. `System.out` and `System.err` can only be used for debugging or error messages. You may not expect the user of the program to see these messages.

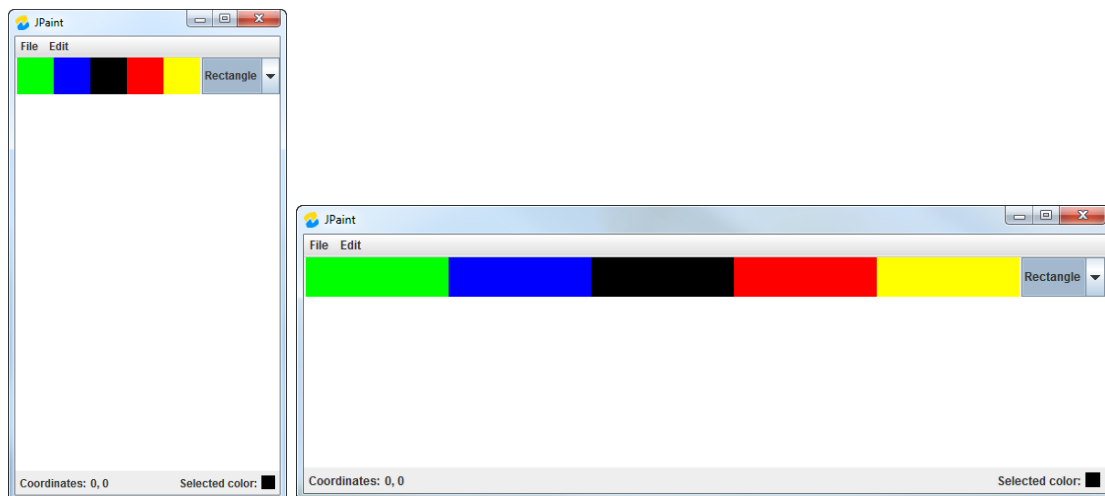
Each class and interface (interface) that you create must be documented with comments. Ex.

```
/**
 * A short description (in Swedish or English) of the class.
 *
 * @author Your Name (your student id)
 * @version 1.0
 * @since yyyy-mm-dd (last edited)
 */
```

You will create a graphical user interface that is intended to be used to draw rectangles and circles. In this task, you will only create the graphical components and what will happen when we press them. The actual drawing of figures will be done in an upcoming task.

The graphical interface will consist of a `JFrame` designed as shown below.





Some general requirements, tips and guidelines:

- You must use Swing.
- Your window (JFrame) should have a title and should end when the user presses the red cross.
- Use preferably a BorderLayout in your JFrame.
- The colorful areas (palette) are made from JPanel and have been placed in their own JPanel which is placed in PAGE_START.
- At the end there is a JComboBox with the selections (Rectangle and Circle)
- At the bottom (PAGE_END) there should be a status line of information as shown above.
- All components will automatically adjust to the size of the window.
- The supposed "drawing surface" should be white and always occupy as much space as possible.
- Remember to place the components in the right places and a container may contain other components (containers and/or buttons/labels/ ...).

The interface consists of five main parts (arrow 1 to 5 in the first image). Below are more specific requirements for the different main parts.

1. Icon and title

Your JFrame should have an icon in its title line (Mid Sweden University logo in my example). Choose the appropriate picture for your drawing program. Your drawing program should have its own name that is used as the window's title (JPaint in my example).

Your drawing program will keep track of the name and author of the drawing. Initially, these should be an empty string ("") and the title should only be the name of your drawing program. Ex:



If the name and/or author have another input, the window title will be updated as described below.

If only name is set, the name of your drawing program along with the name of the drawing should be displayed as the title of the window. Eg. if the name is Test:



If only author is set, the name of your writing program together with the author's name will be displayed as the title of the window. Eg. if the author is Robert:



If both the name and the author are set, the name of your drawing program together with the name of the drawing and the author will be displayed as the title of the window. Eg. if the name is Test and the author is Robert:

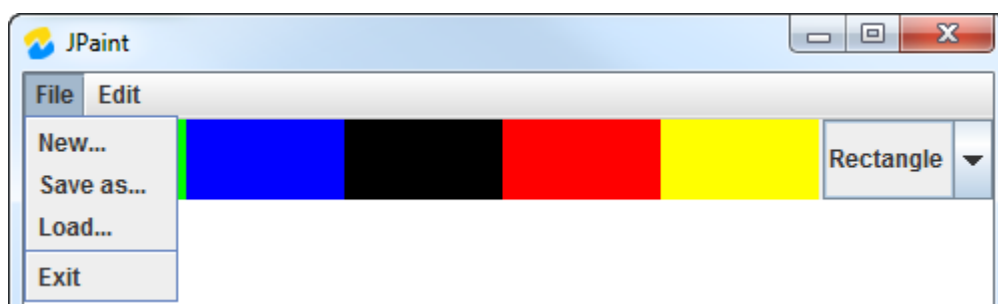


2. Menu Bar

In the menu bar, there will be two menus (File and Edit).



In the menu option File, there will be menu items New..., Save as..., Load... and Exit. Between the menu items Load ... and Exit, a separator line will be displayed.

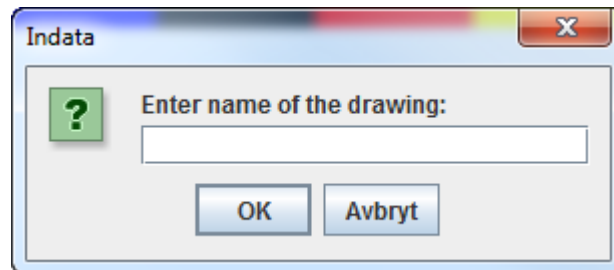


In the menu option Edit, there will be menu items Undo, Name... and Author...

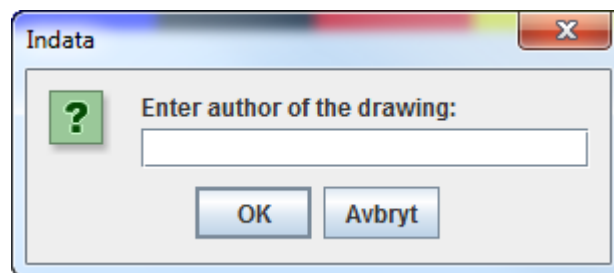


The following should happen when selecting one of the menu items:
Undo in this assignment needs not to be functional.

Name ... will display a dialog box in which the user can enter a new name of the drawing. Dialog box should be centered in the middle of the window. The window title will be updated according to previous rules.

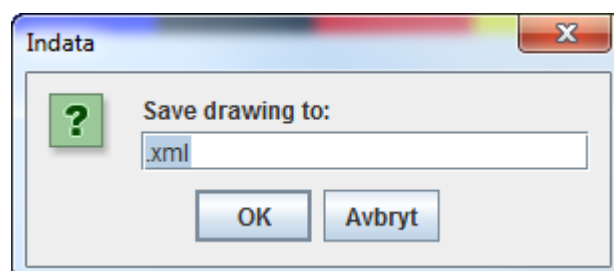


Author ... will display a dialog box in which the user may enter a new name of the author. Dialog box should be centered in the middle of the window. The window title will be updated according to previous rules.

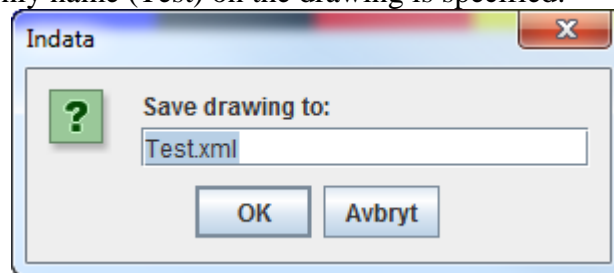


New ... will through two dialogs ask the user for a new name for the drawing followed by the new name of the author. Dialog boxes should be centered in the middle of the window. The window title will be updated according to previous rules.

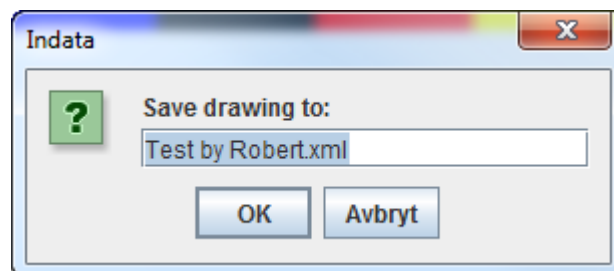
Save as ... will be used to save current drawing to file. In this task you will only display a dialog box in which the user can enter the name of the file to which the drawing is to be saved. The dialog box should be centered in the middle of the window. The text field in the dialog must be pre-filled with a suggested filename according to the guidelines given for the window title. The file extension should always be .xml. Example where neither name nor author has been specified by user:



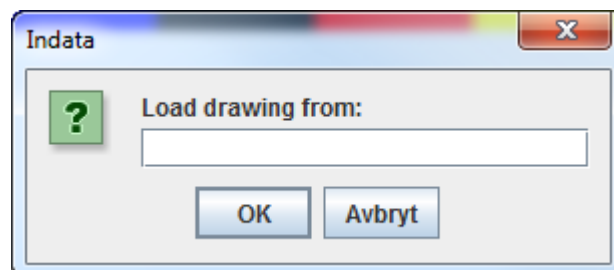
Examples where only name (Test) on the drawing is specified:



Examples where both name (Test) and author (Robert) on the drawing has been specified:



Load ... will be used to open a previously saved drawing. In this task you will only display a dialog box in which the user can enter the name of the file . The dialog box should be centered in the middle of the window.



Exit to close the application.

3. Toolbar

In the toolbar there are colored boxes and a combo box (JComboBox) for selecting which drawing tool to use.



The colored boxes should be clickable and when the user clicks on a color, the selected color should be used while drawing the objects (in next assignment). The status line should also be updated to display the selected color (see below). At least five colors should be used, but you can add more if you want. You can use the colors of your choice. Each color should occupy an equal size. The surface should be evenly distributed between the different colors. Changing the width of the window should change the width of the color areas as well.

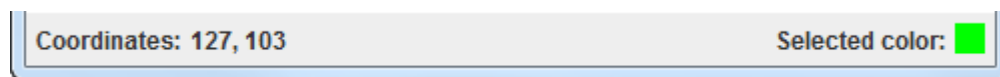
In the combo box, the user should be able to choose the type of drawing object. Available options should be Rectangle and Circle (subclasses to the `Shape` class). The combination box should have a fixed width and not resize when the size of the window changes.

4. Drawing board

In the drawing area, the idea is that the user can use the mouse to draw rectangles and circles with the selected color. In this assignment, it is sufficient that the coordinates in the status bar gets updated as the cursor moves across the drawing area. It is only over the drawing area where the coordinates are to be updated.

5. The status bar

In the bottom status bar, the selected color will be updated as soon as the user click on a new color in the toolbar. In addition, the mouse coordinates will be updated when the mouse is in the drawing area.



Assignment6

This class is attached to the task description. The class is used to create and display your `JFrame`. You will have to change the code so that the correct name of the class is used. There is some code in this class that have not been explained in any lesson. You will eventually use the code as it is. Explanation comes in a later lesson about threads.