

# Paint

Homework for ITP-368 GUIs

## Goal

You are to make a simple paint program. This will exercise mousing, files, layouts, and OOP.

## Requirements

Paint programs work a lot of different ways. This one is more for diagrams than sketching.

- The layout should have a vertical row of buttons/controls on the left edge, and then a drawing area to the right of that occupying most of the window.
- The user should be able to draw ovals and boxes and lines. This can be done via dragbox and snapline. The usual way to know which of the types the user wants is to have modes. So there will be symbols for oval, rectangle and line in the controls, and the user picks one, and then when they drag, they get that kind of a shape.
- The user should be able to drag objects around.  
This can be another mode, selectable by button on the left. When the user creates or drags or clicks a shape, that shape should be 'selected'.
- The user should then be able to write a word on a box. I recommend having a text box in the controls, and if the user enters a word, that word should appear on the currently selected box.
- Work out some feedback so the user knows which shape is selected. This could be big dots on the corners or endpoints, or change in color. Dark border is what is in the demo video.
- The user should be able to delete a shape (the selected one, presumably).
- The user should be able to change the color of selected shapes.
- The user should be able to save a drawing to a file and load a drawing from a file.
- extra: adjust box sizes as well as location.

## Suggestions on coding

The various shapes can be made from the Shape types in JavaFX: Rectangle, and Line, but I recommend making your own type for each of these that extends or contains Line or Rectangle, so you can add your own functions and information. I also recommend making a super type for all of them, which can have code for common operations like changing the color. This supertype could be an interface.

In lab I will also give you a color picker object (or you can use the JavaFX one).

The file save/load code can be done a zillion ways. We'll look at the file chooser dialog in lab. Java knows how to store objects. Or you can use a command language to describe everything in a shape as a text string. For example

```
box 135 34 209 80 .3 .5 .7 bob
line 100 120 200 300 .7 .4 .3
```

could say there are 2 objects of these types, at the given coordinates (x1 y1 x2 y2 ) with the given colors (r g b) and text (for the box type). Objects are easier, but text file is more robust.

## Grading

lines	10
boxes	10
layout and smoothness of control use	15
words	10
colors	10
adjust positions of things	15
removing items	5
file read and write	15
code structure and comments	10
total	100
extra credit: stretch boxes	5

## submission

Your program will have several files. Put your name in the comments in the top of the main file, with the name of the course and semester. Other files should at least have your name in them. Make them a package called PaintLastname\*, zip it, and put on Blackboard.