

# Paint Application

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Done by

Ahmed Oraby 3121

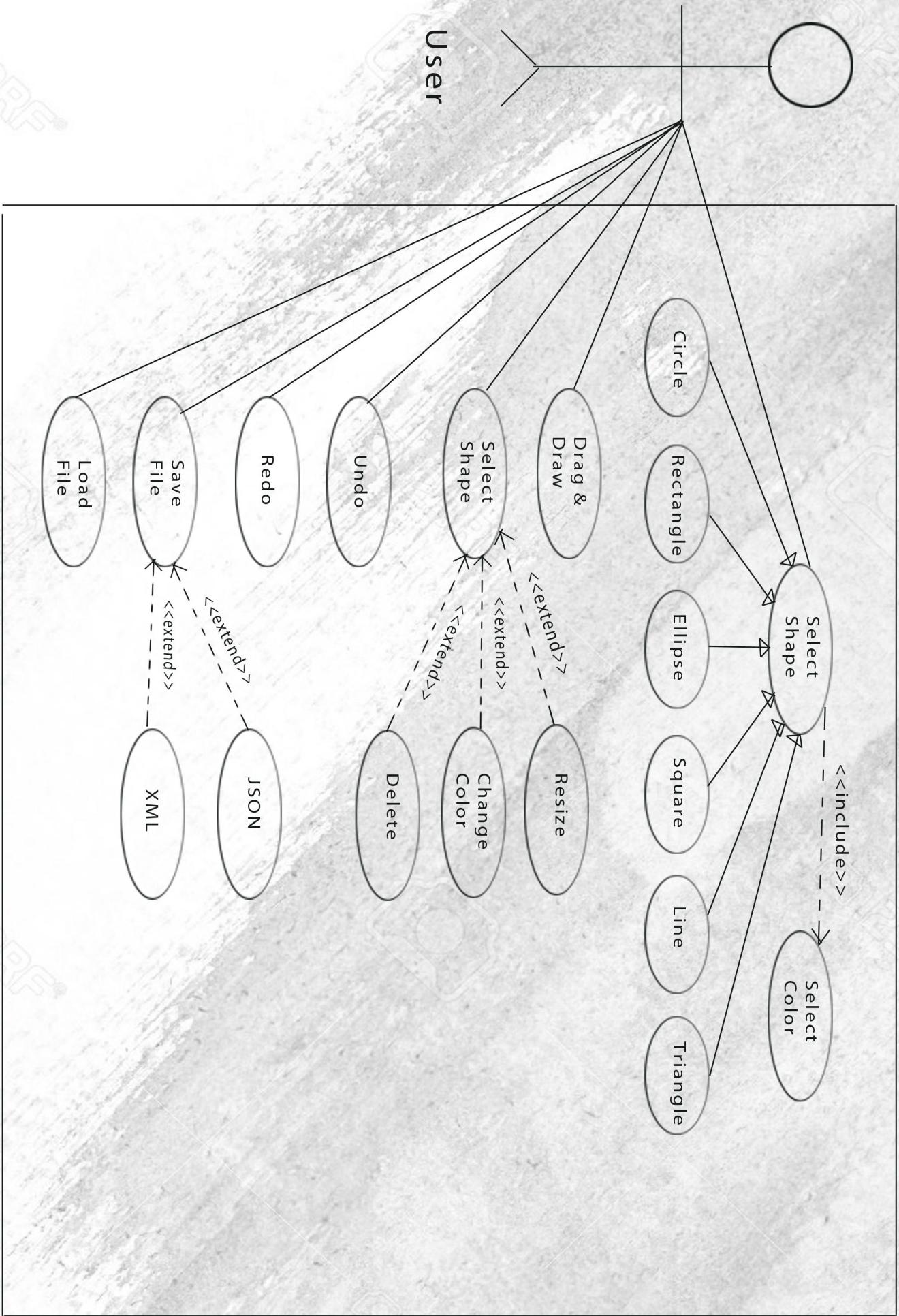
Alaa-El-Din Medhat 3369

Hassan Mahmoud 2811

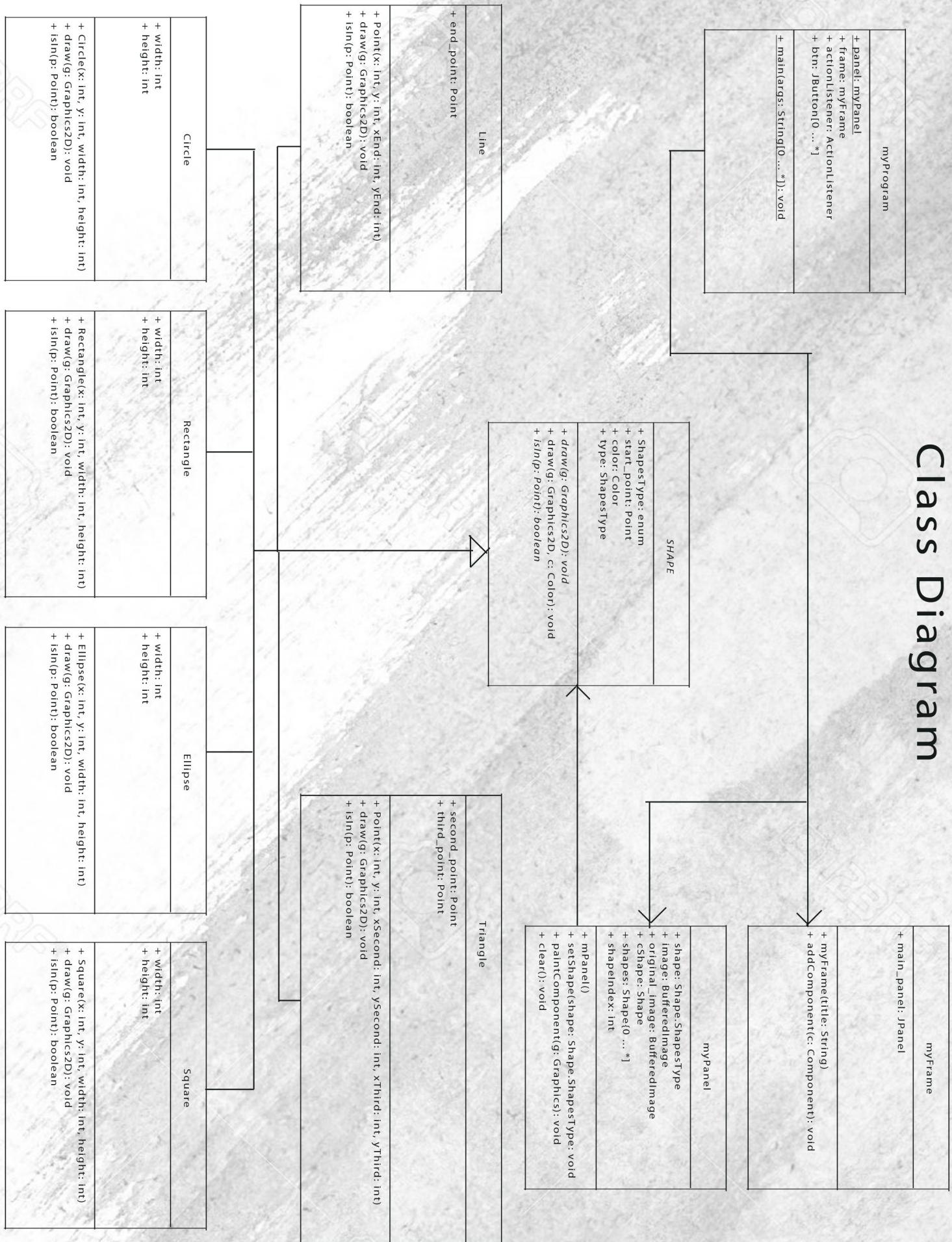
Mo'men Ashraf 3017

# Use Case Diagram

Paint Application System



# Class Diagram



# State Diagram

Start the application



Choose Shape

Choose one of  
the shapes

Select Color

Choose one of  
the colors

Drag & Draw

Choose an option

Select Shape

Resize Shape

Change Color

JSON

XML

choose format

Save Shape

Delete Shape

choose format



End the program

# Description

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## Design

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- Java paint applications is one of the most important tools in the field of graphics & designing softwares.
- In the design of our application we used something like the MVC design pattern because it's more effective & more readable.
- Considering "Model", All the different shapes are divided into different classes & all these classes inherit from the parent class "Shape" & it deals with the controller class "MyProgram".
- Considering "View", There are two classes "myFrame" which extends JFrame & contain the main panel on which buttons & drawing area exists, Second class is "myPanel" which extends JPanel & this is where the shapes are drawn.
- Considering "Controller", There is one class called "MyProgram" which uses "myPanel" & "myFrame" to interact with each other along with the "Model".
- We used three ArrayList, One to save the Shapes itself, Second to save the stroke color for each Shape, Third to save the fill color for each Shape.
- We used a Stack to save each step the Shape drawn goes through during the application, It's used to be able to undo & redo any step done.
- We used a BufferedImage to save the drawings on & each time we call the repaint() method the BufferedImage is drawn on the drawing area.

# Features

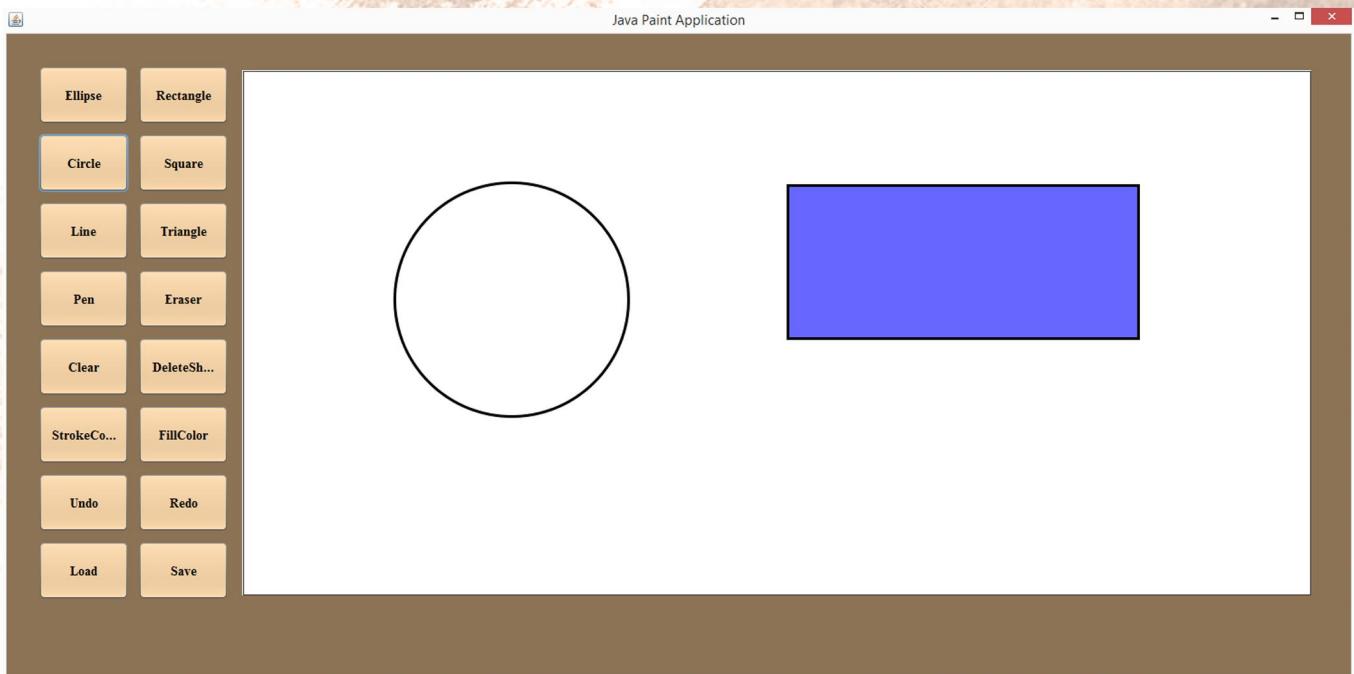
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- The application is able to draw six types of shapes (Ellipse, Rectangle, Circle, Square, Triangle, Line) & you can specify the stroke color & the fill color for each shape before drawing.
- You can choose any shape drawn & then a border appears around the shape & you can resize from 8 different small boxes surrounding the shape on the border.
- After choosing any shape you can simply move & drag it to anywhere else on the drawing area & you can change its stroke color or fill color.
- You can choose any shape & delete it from the drawing area
- Undo for any step is possible even if the step is resizing or moving the shape or after changing its color.
- Redo for any step is also possible, It only works after undoing any step.
- You can save the drawing as a .xml file & you can choose where is the location to save it.
- You can load any .xml file on your computer & the drawing you saved before will appear & you can modify it & then resave it.
- Brush tool is added in the application which you can use to draw any free-hand drawing on the drawing area, You also can specify the stroke color before & after drawing.
- Eraser tool is also added by which you can erase any of your free-hand drawing or any shape you have drawn.
- There is an option to clear all the shapes & drawings you have made & start drawing from scratch

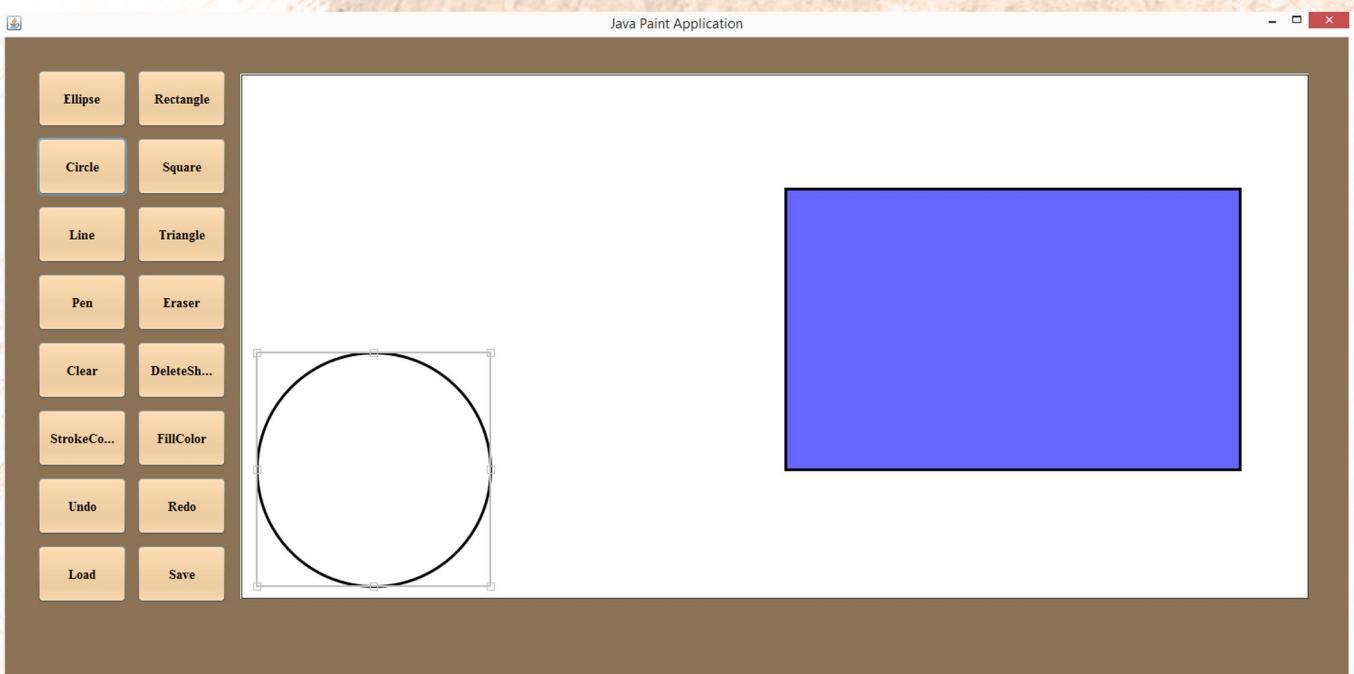
# Screenshots

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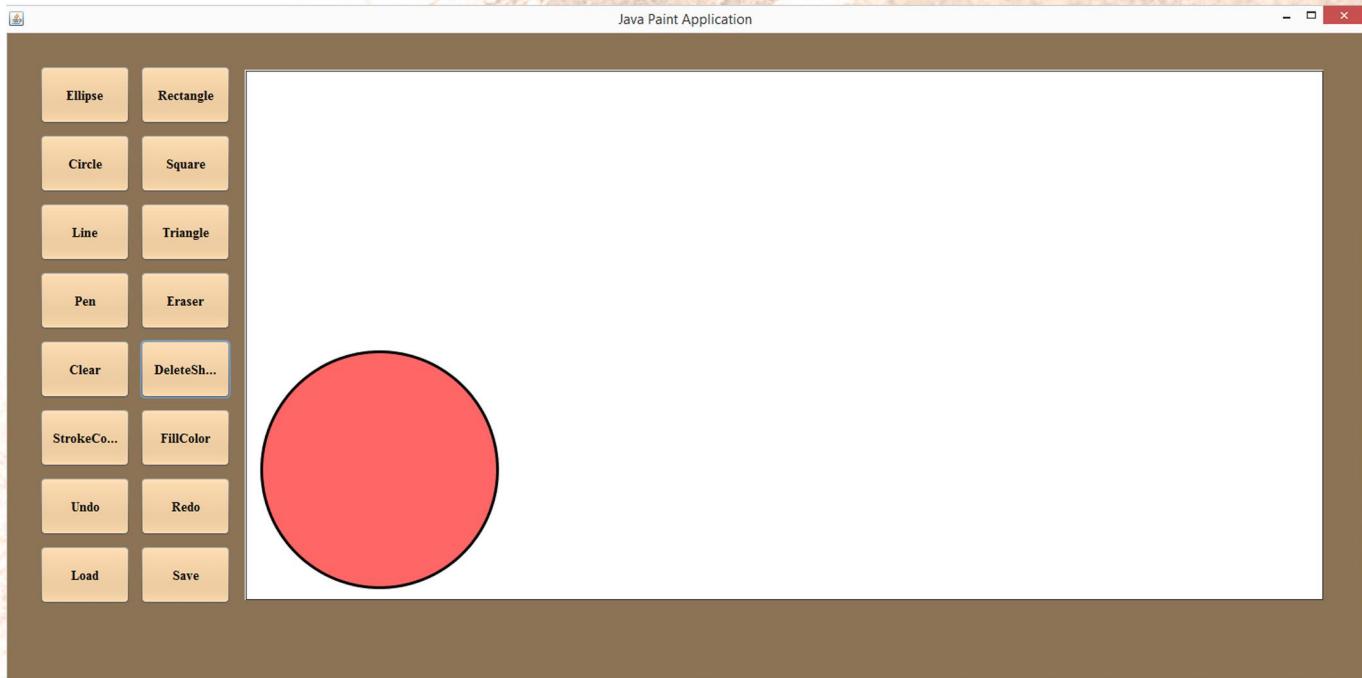
- After drawing a rectangle with a blue fill color & a circle with a white fill color



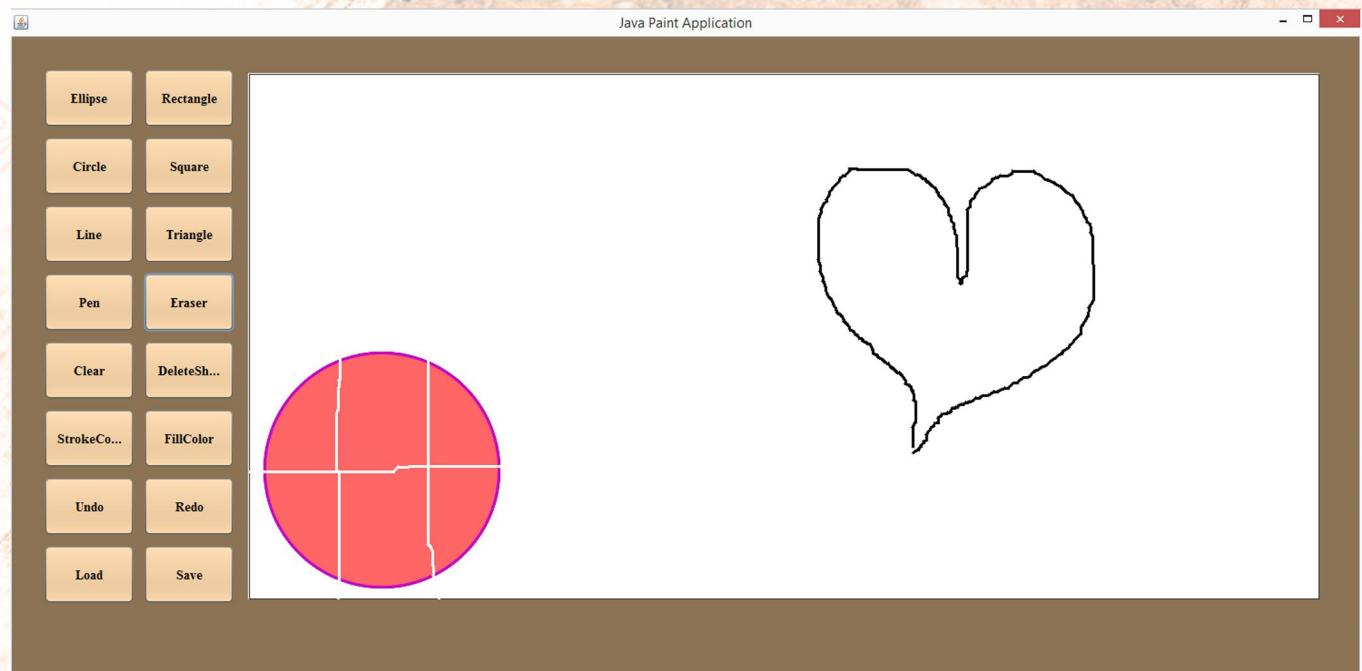
- After resizing the rectangle & moving the circle



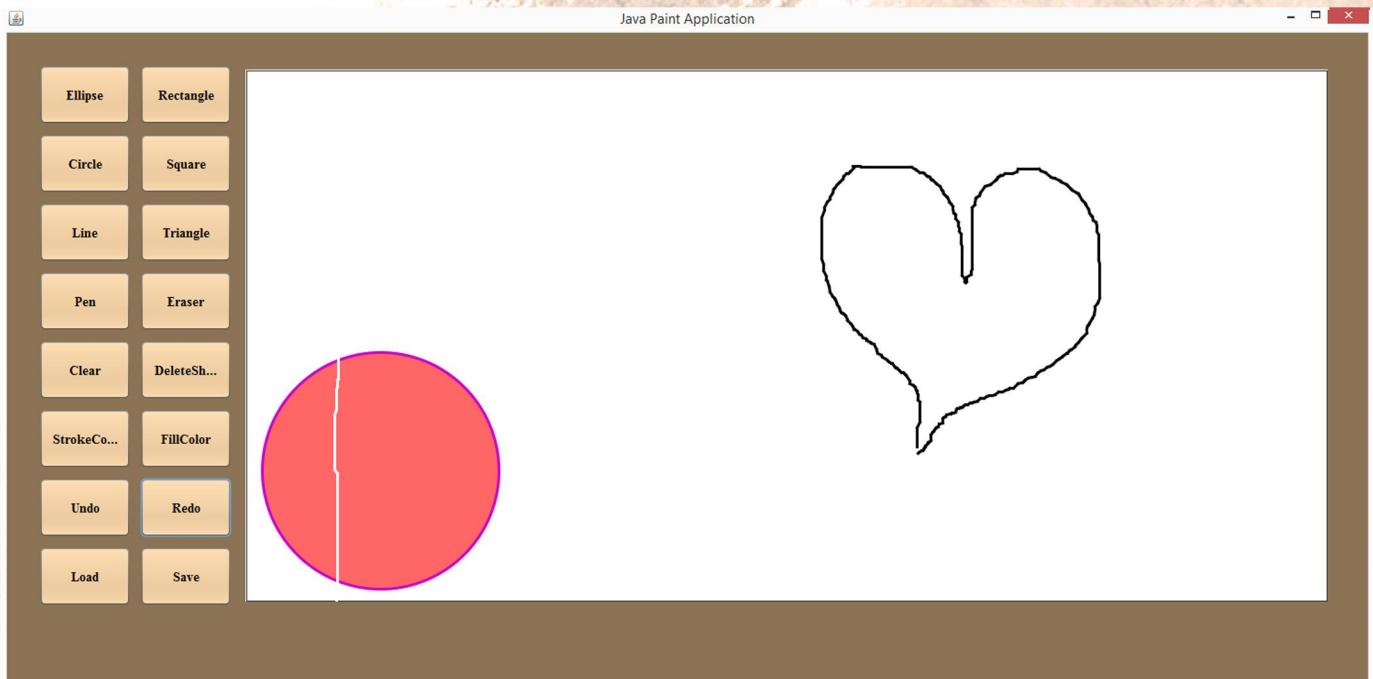
- After deleting the rectangle & changing the fill color of the circle



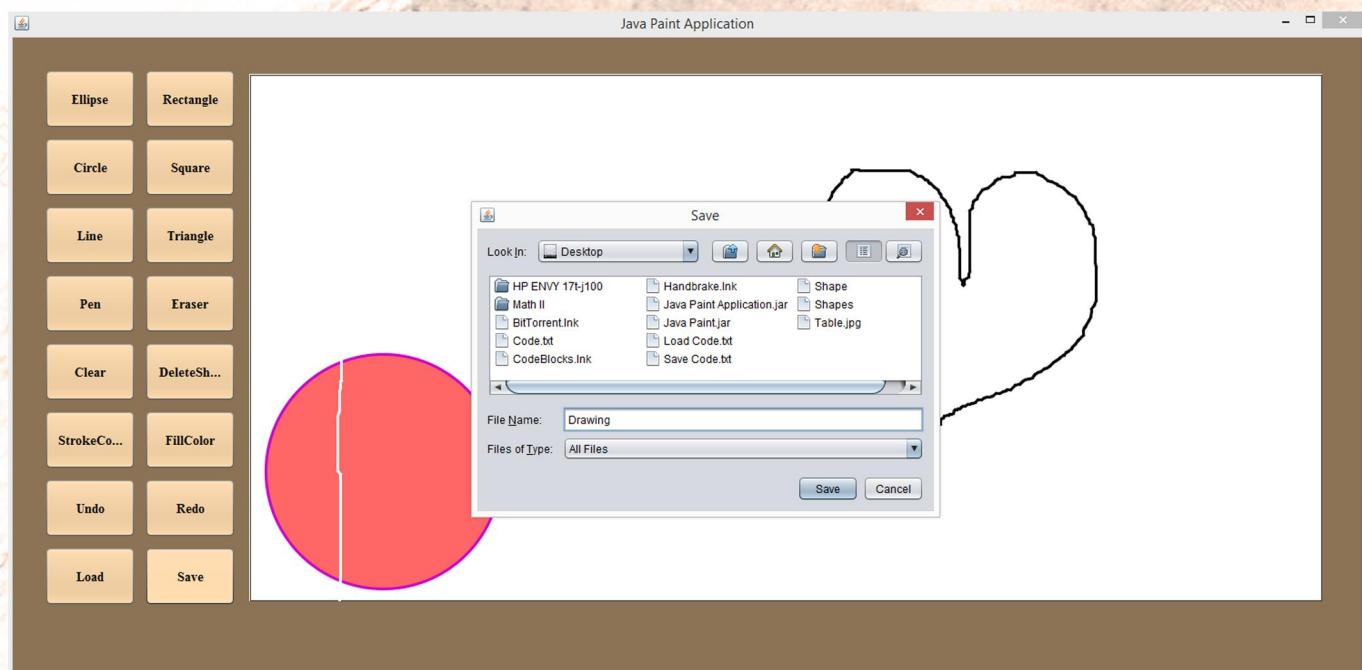
- After drawing a heart with the brush tool & erasing some parts from the circle



- After undoing last two steps on which I erased some parts from the circle



- After pressing save & choosing where to save the drawing



# User Guide

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- To draw any shape just press the equivalent button to this shape & start drawing & dragging inside the drawing area.
- To specify the fill color & the stroke color to your shape just press the equivalent button to each type of color & choose your color & then start drawing.
- To resize or move any shape drawn just press the shape itself & then a border appears around the shape then you can either move the shape or resizing it by dragging one of the small boxes on the border.
- To change color of any shape just press it & then choose which color you want after pressing the equivalent button to each type of color either stroke or fill color.
- To use the free-hand drawing just bress the brush button & then start dragging in the drawing area.
- To erase any part of your shape or any part of your free-hand drawing just press the eraser button & start erasing the areas you want.
- To undo any step you have made e.g. (resizing, moving, .. etc) just press the undo button.
- To redo any step just like the undo press the redo button but only redo works after undoing any step you have made to redo it again.
- To delete any shape just press it & then press the delete shape button.
- To clear all of your shapes & drawings just press the clear button & start drawing from scratch.
- To save your drawing just press the save button & choose the location to save your file in .xml format.
- To load any of your drawings just press the load button & choos the file but be aware that it must be in .xml format to be loaded & drawn.