
Paint Java Application

By:

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Description :

Our program is a simple paint application, it's an object-oriented model for geometric shapes.

Different design patterns are applied : Singleton DP , Factory DP, Command DP, Memento DP, Strategy DP.

It's designed as a user- friendly app where the user can draw different shapes , edit them in different ways , save their work and load previous drawings.

Features :

Our paint application offers his/her user a collection of features that would help them to unleash their imagination in drawing and painting by presenting various shapes : circle , ellipse , square , rectangle and line segment . And also applying various changes to them like copying , removing , resizing and undo redo as well And also changing the fill color and outline color. And our user can change the background from a white one and a black one at anytime of using the app and it will keep the drawings with every detail in them . and last but not least like any other successful application our user can save their paints and load them again .

Design Overview :

The construction of the program is done using MVC (Model-view-controller) , So Code is divided into 3 main packages :

- **Paint. Model** : Which includes an interface for shapes , and shapes classes which implement the interface , it describes the logical part of the program .
 - **Paint . View** : Which includes the GUI class that controls the styling usage of the program .
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- **Paint . Controller** : Which includes the classes that link the model to the view.

Team Work :

Work Division :

- Zeyad Mostafa : Memento DP, Undo , Redo , Black/White mode.
- Marwan Mostafa : Save/Load (XML AND JSON FILES).
- Noha Ahmed : MVC division , Drawing process, editing, multi selection.
- Yara Magdy : MVC, Drawing , editing , Save/Load.

Data Structure:

Array-list :

Shapes are generally Controlled by an array-list:

- A main array-list of shapes that is filled each time the user adds a shape
- An array-list for selected shapes that includes all the shapes that the user selects (Multi-Selection)
- A temporary array-list used in the UNDO/REDO process

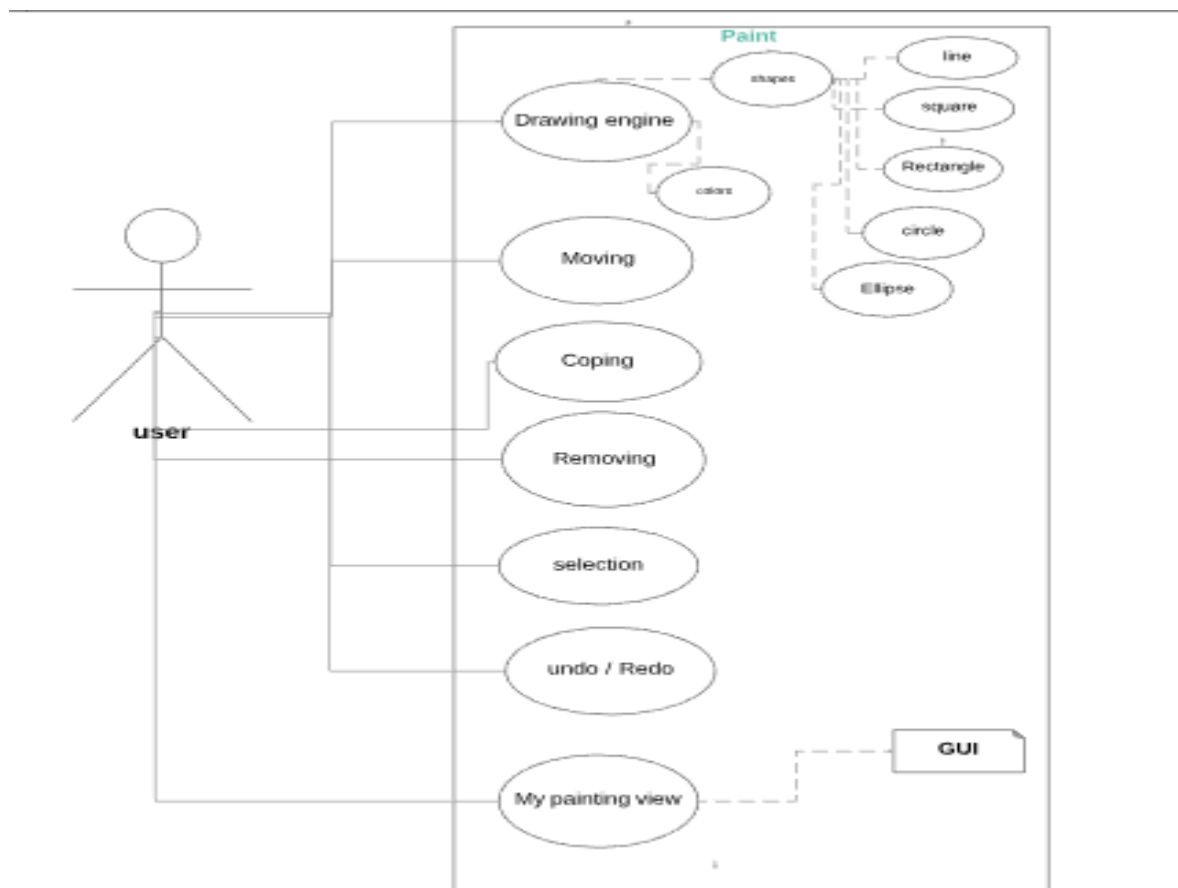
Stack:

- Stack for undo which is updated each time the user makes a change.

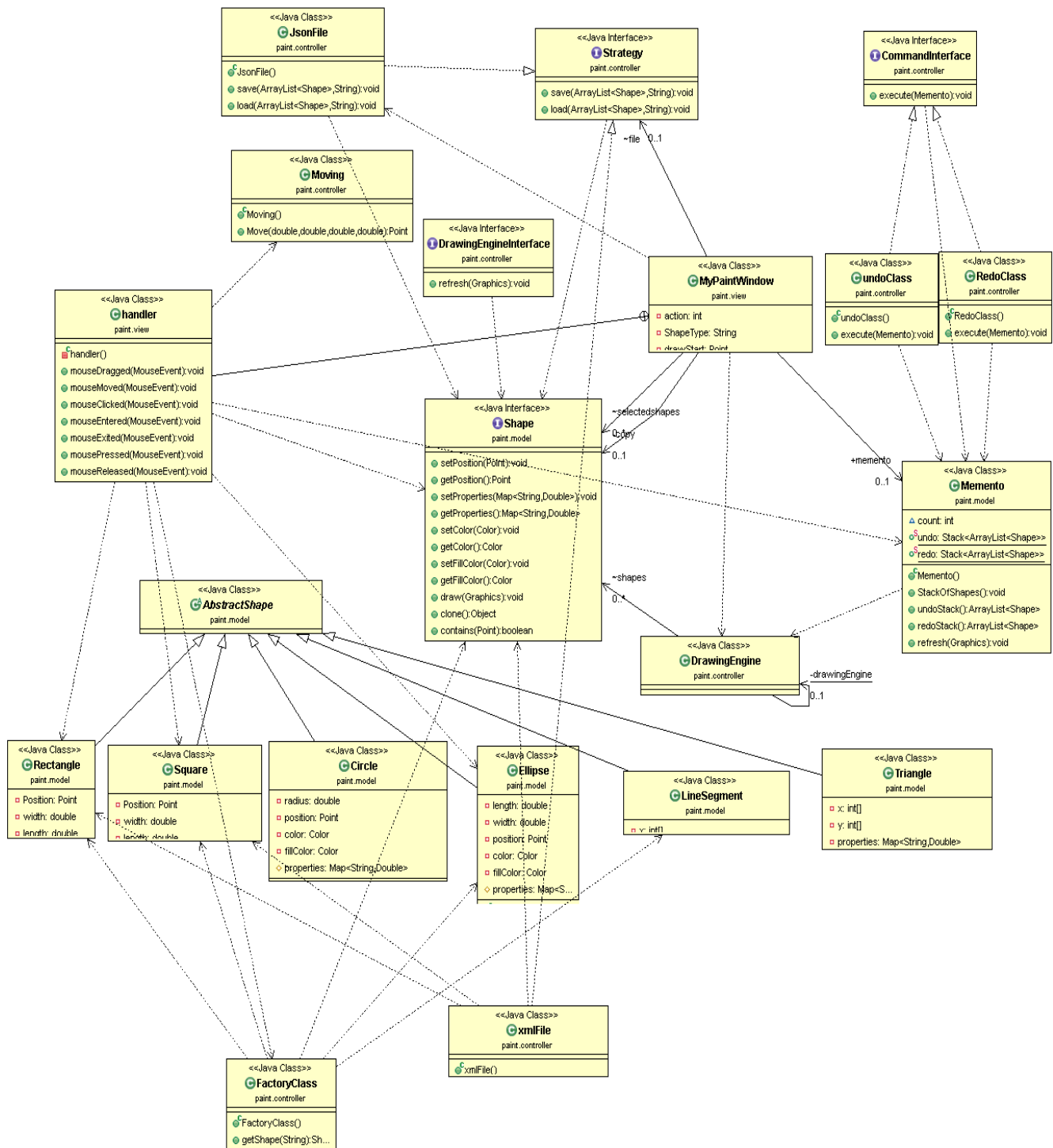
- Stack for redo that is pushed in each time the user chooses to undo.

UML Diagrams:

Use-case :

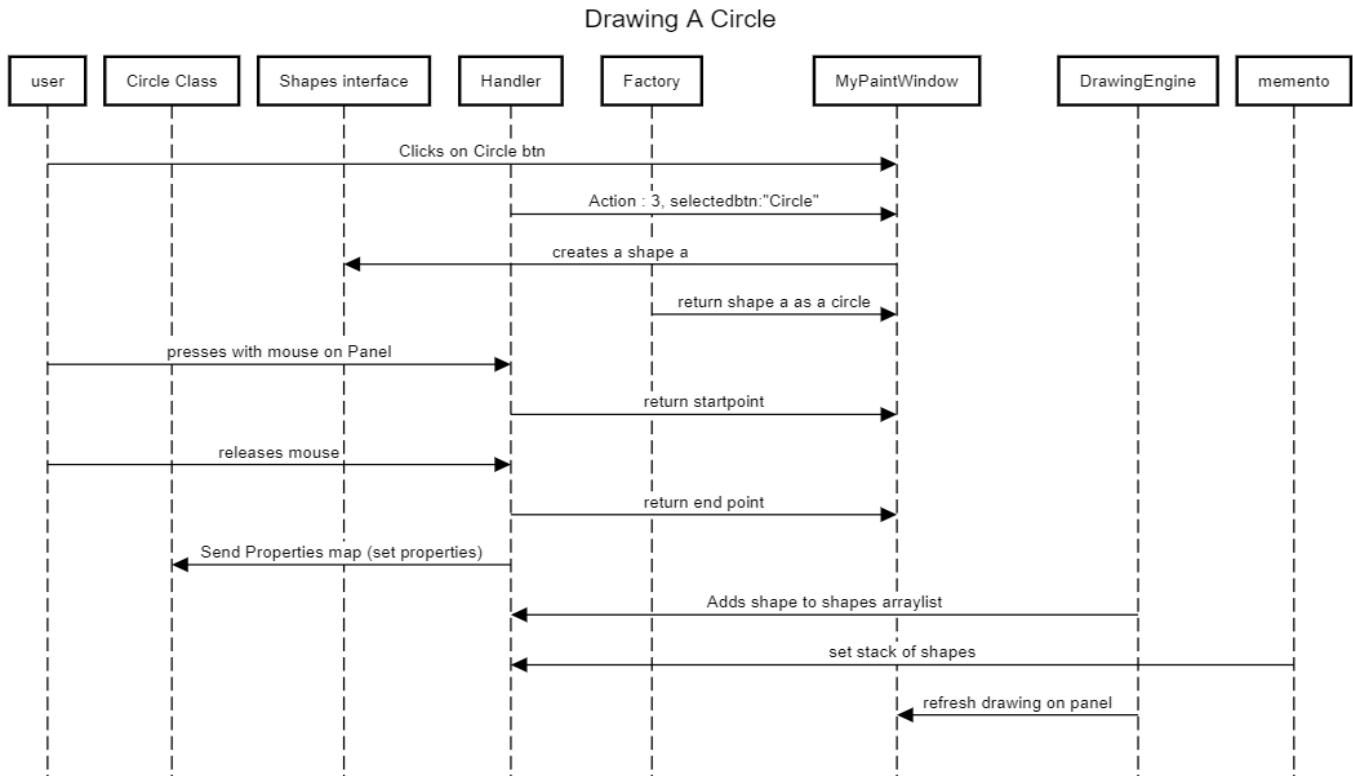


Class diagram :

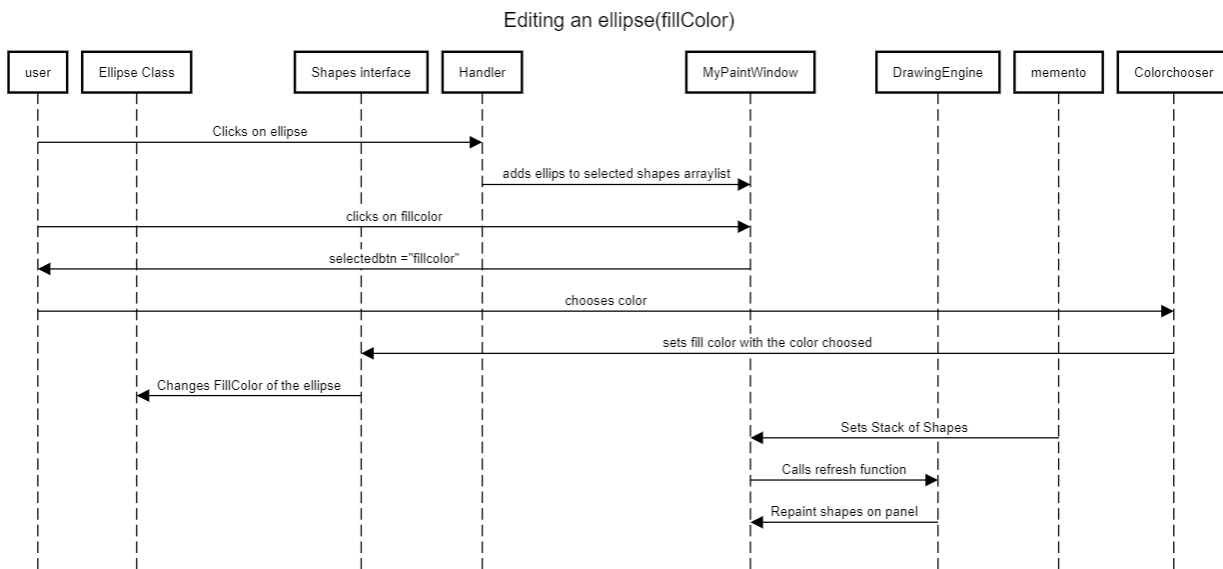


Sequence Diagrams :

• Drawing a Circle

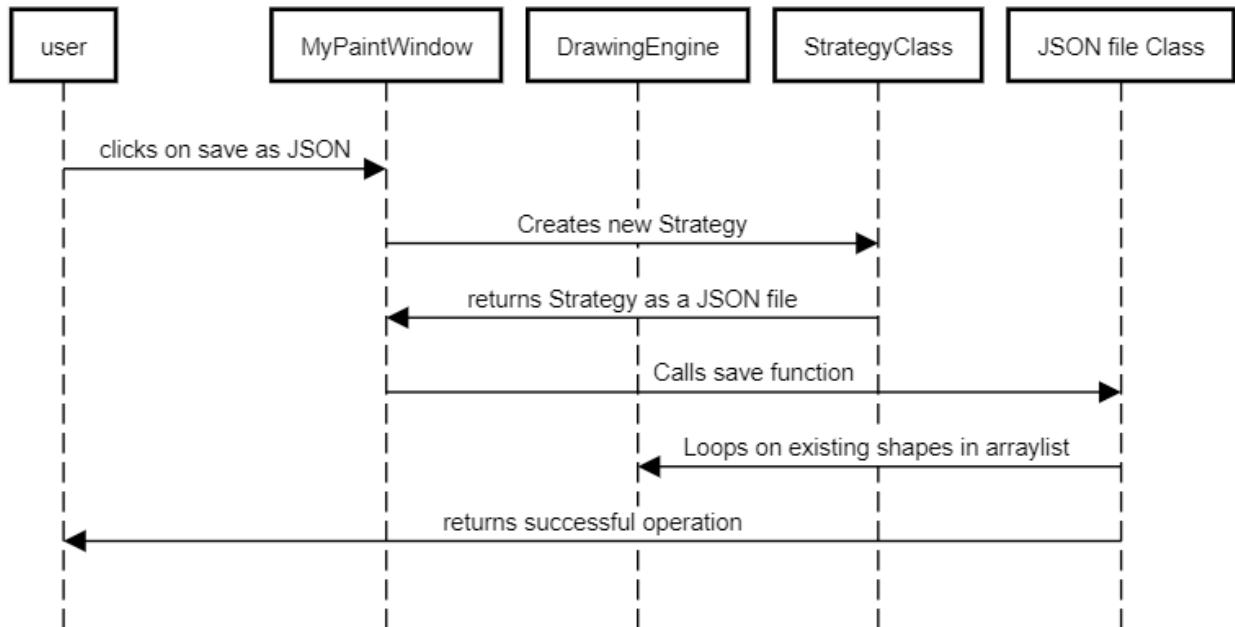


• Editing an Ellipse

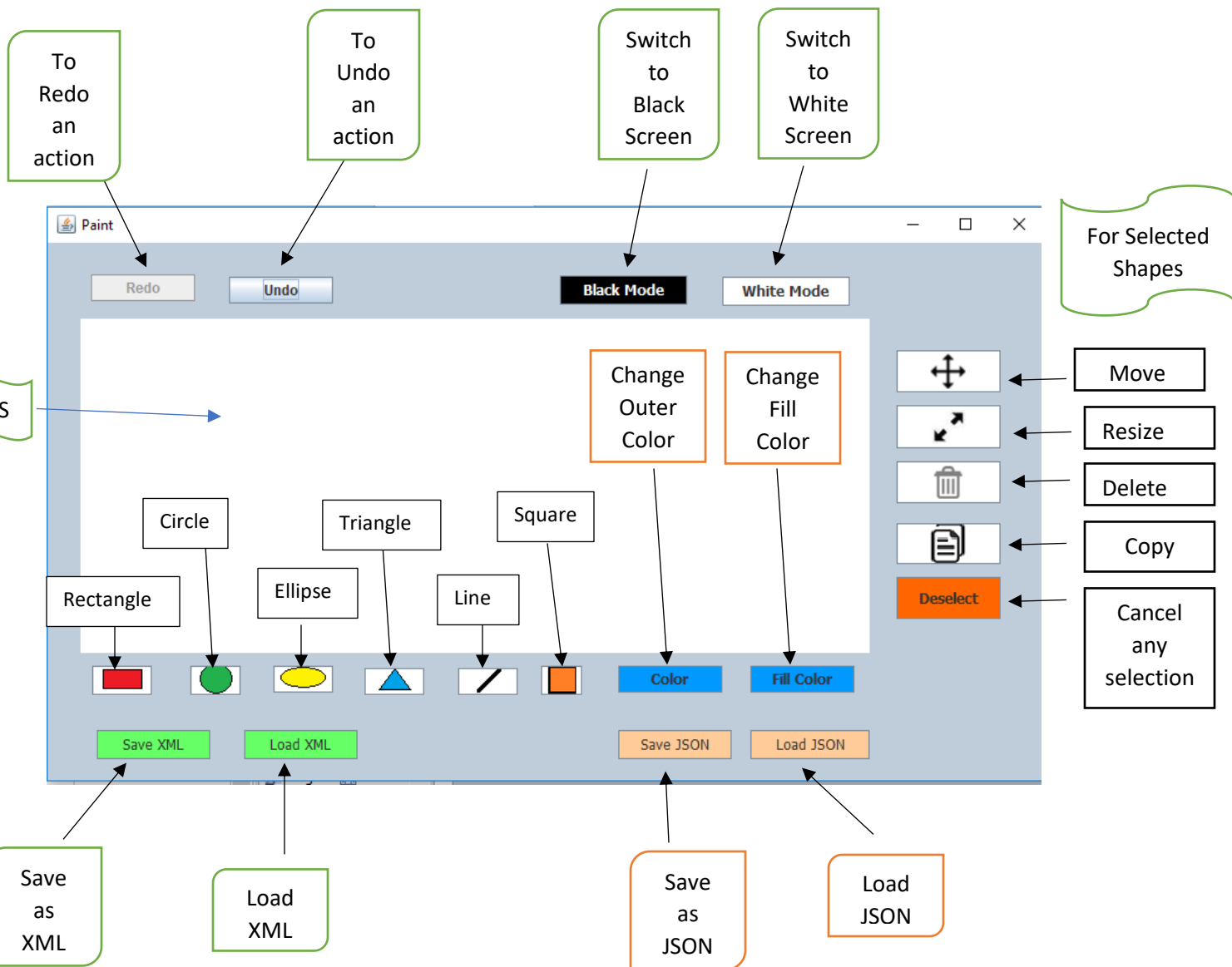


- *Saving to JSON File*

Saving to JSON file

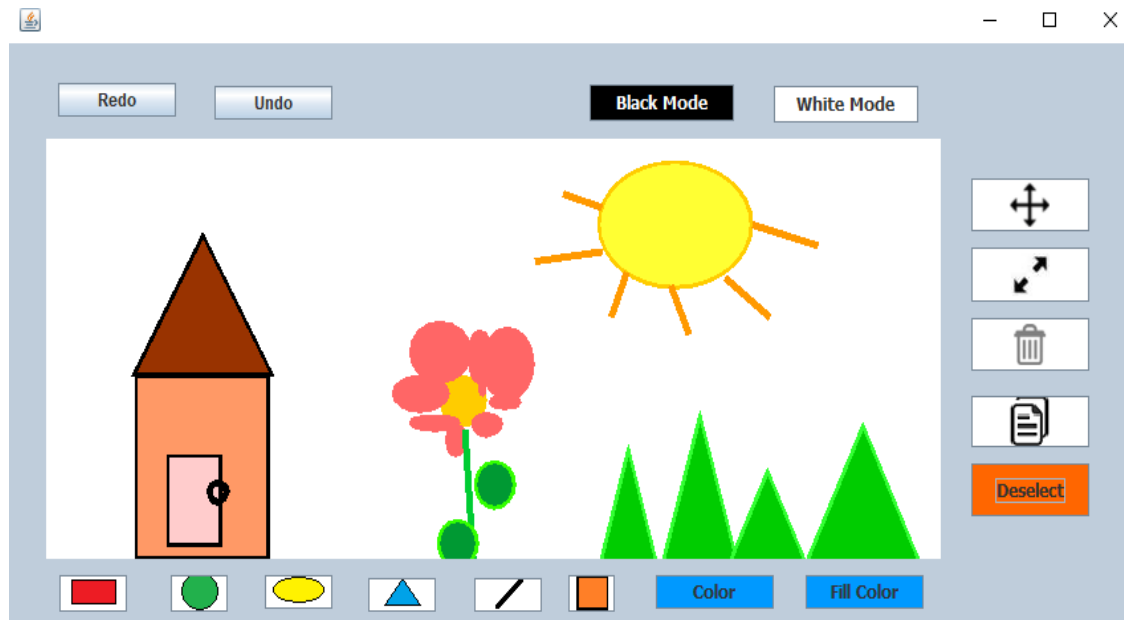


User Manual:

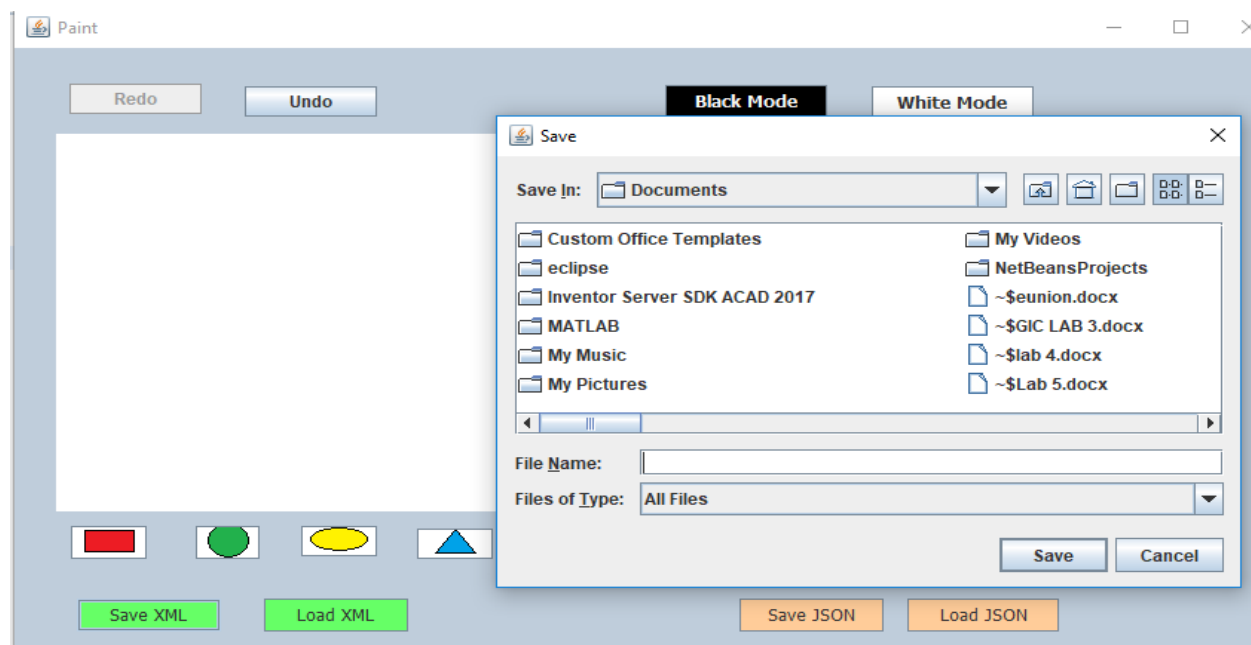


Sample runs:

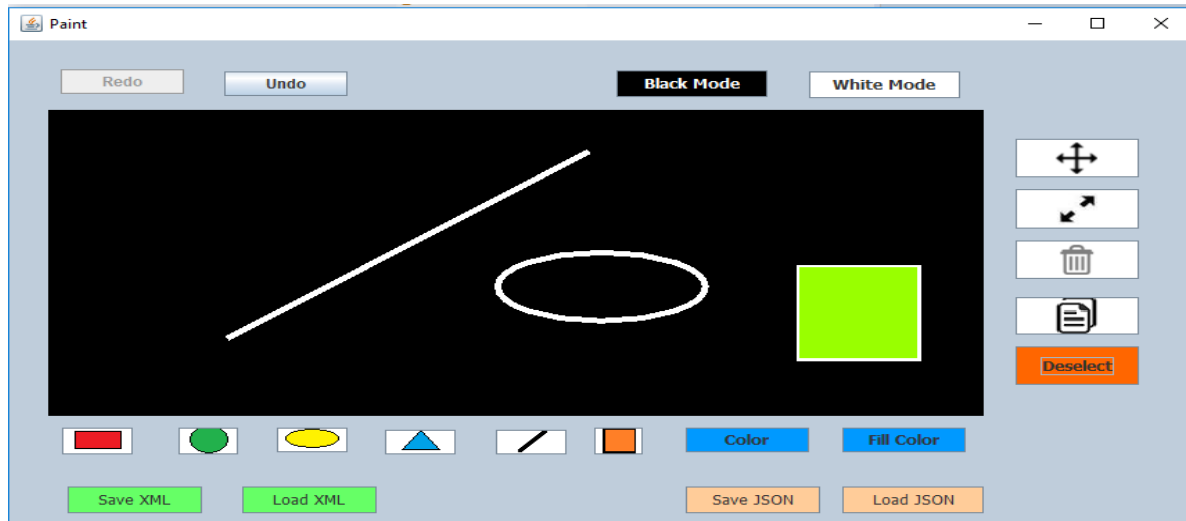
- *Drawing Different Shapes*



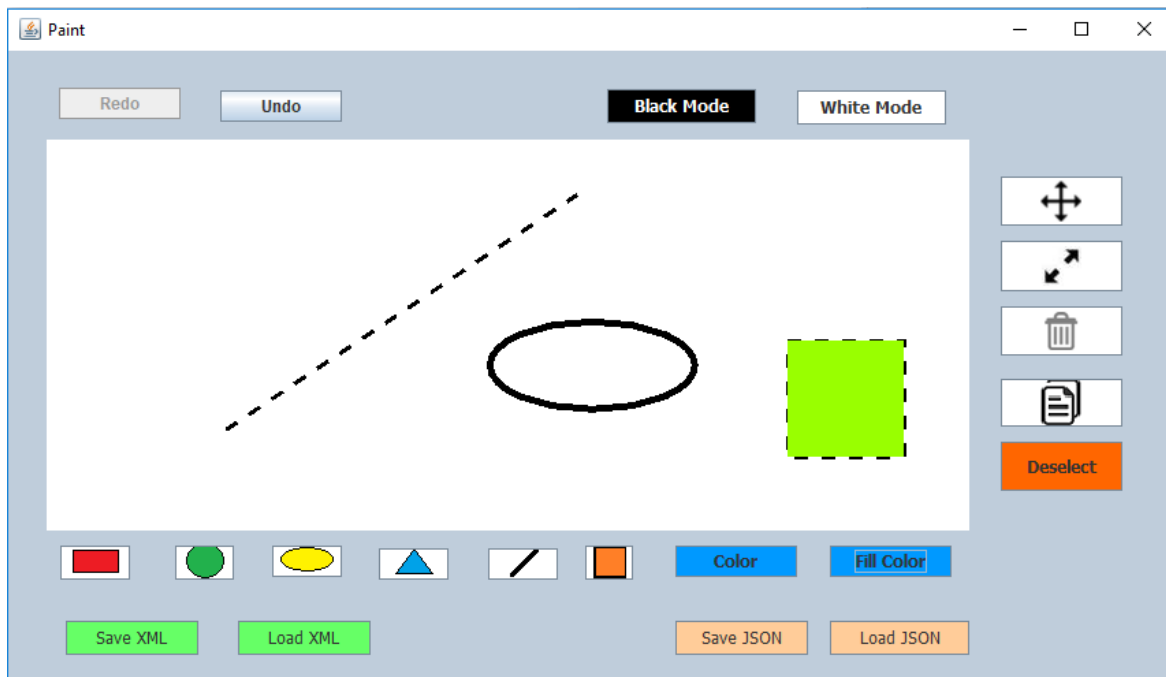
- *Saving :*



- *Black Mode:*



- *Selection :*



References :

- <https://www.youtube.com/watch?v=235mse79MCw&t=41s>
- <https://www.youtube.com/watch?v=T6FxiYQ7nI&t=858s>
- <https://github.com/osama1225/Java-Paint-App/blob/master/Paint%20App/src/XmlFile.java>