Paint Application

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This Simple Paint Application is designed to allow the user to draw some pre-determined shapes on a canvas. These shapes include (Line Segments, Squares, Rectangles ,Triangles, Circles and Ellipses).Using the features offered in this application, the user can manipulate the drawn shapes as desired

These features include:

1-Resizing
2-Moving
3-Copying
4-Deleting
5-Saving
6-Loading

The design is fairly simple and user-friendly. The user is allowed to select any of the shapes to draw by clicking their respective buttons, and the color chooser offers a wide range of colors for both line and fill coloring.

The design also offers undo and redo buttons to traverse the various states of the canvas drawn by the user.

The different tasks offered by the application are also arranged into buttons that allow these features to be implemented on the selected shapes.

Assumptions:

1-The user draws each shape by dragging from the top left corner of each shape to its bottom-right corner.

2-The user can select ONE object by pressing the "Select" button then drawing a "transparent rectangle" that encompasses the shape desired to be selected.

Teamwork:

Miral Alaa covered part of the GUI design, along with undo,copy and delete features.

Omar Hesham covered MVC design along with drawing operations, move, resize and Factory Design Patterns.

Maram Hesham covered the GUI design and drawing operations for each shape.

Mohamed El Harouni covered the Memento design pattern and its associated methods, along with GitHub coordination.

Important Methods:

Most of the application's important methods lie within the parser or are associated to it. The canvas is updated with new shapes using the addShape,updateShape and removeShape methods which update the canvas view with the updated array list of shapes.

Undoing and redoing are done by manipulating the array of mementos held in the Caretaker class inside the Controller Package.

User Manual:

As soon as the application is loaded, the user is allowed to select any type of shape to draw inside the canvas. Line Segments are selected by default for convenience. Each shape is drawn by dragging to the required size and releasing. The line and fill colour can also be selected before painting each shape.

If the user desires to undo or redo an action, it is simply required to press the designated buttons.

Before performing any task on a shape, it is required to select a shape for the change to be implemented on any of the shapes. Resizing requires dragging to pick a new suitable size for the shape, while the rest only require a simple click anywhere on the canvas.
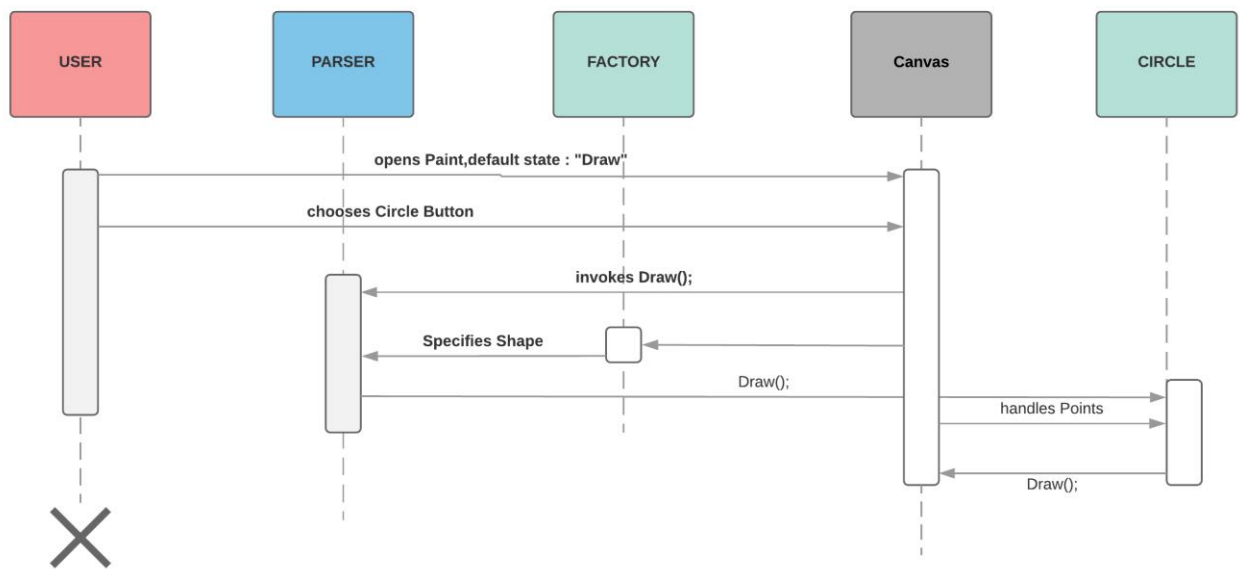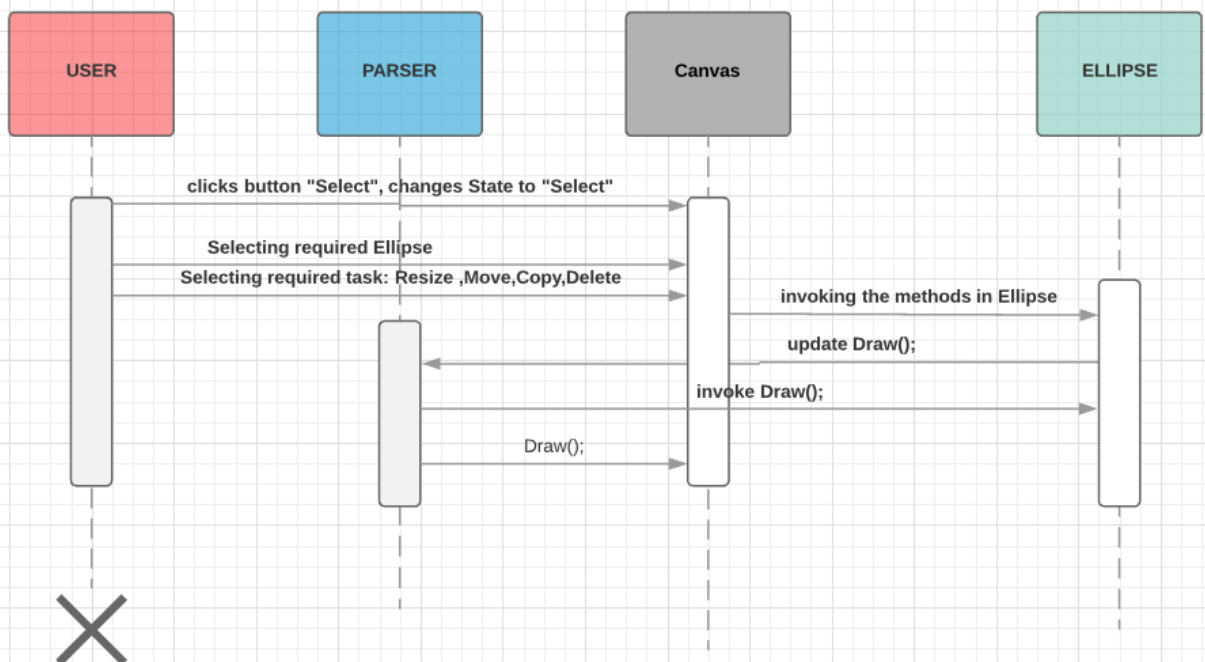
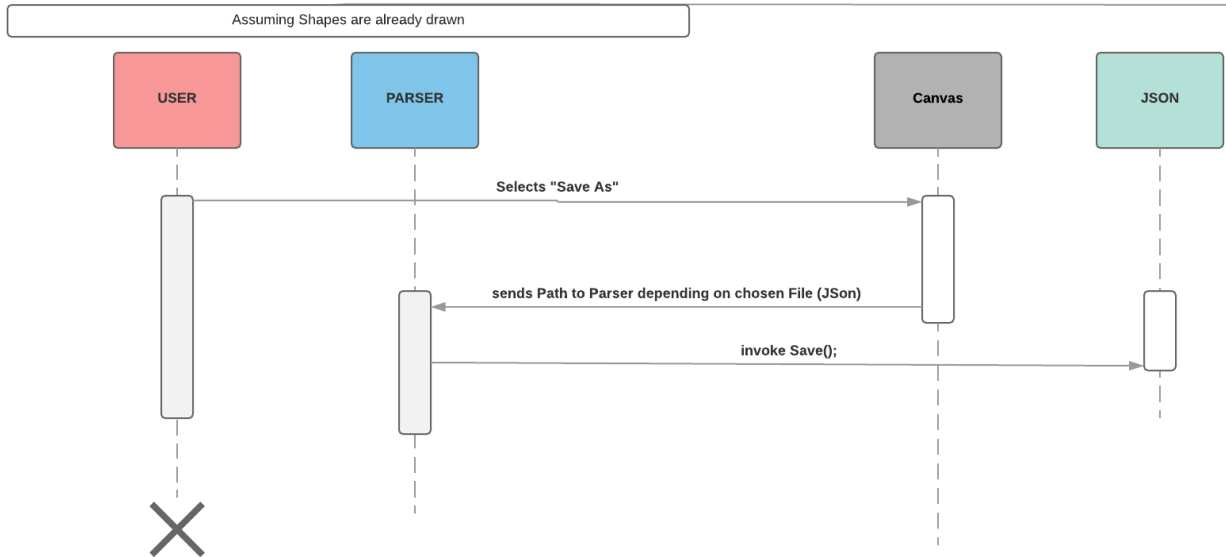**UML: Use Case Diagram**

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USER

PARSER

FACTORY

Canvas

CIRCLE

opens Paint,default state : "Draw"

chooses Circle Button

invokes Draw();

Specifies Shape

Draw();

handles Points

Draw();

EDITING AN ELLIPSE

Assuming Ellispe is already drawn

USER

PARSER

Canvas

ELLIPSE

clicks button "Select", changes State to "Select"

Selecting required Ellipse

Selecting required task: Resize ,Move,Copy,Delete

invoking the methods in Ellipse

update Draw();

invoke Draw();

Draw();

SAVING SHAPES TO FILE

Assuming Shapes are already drawn
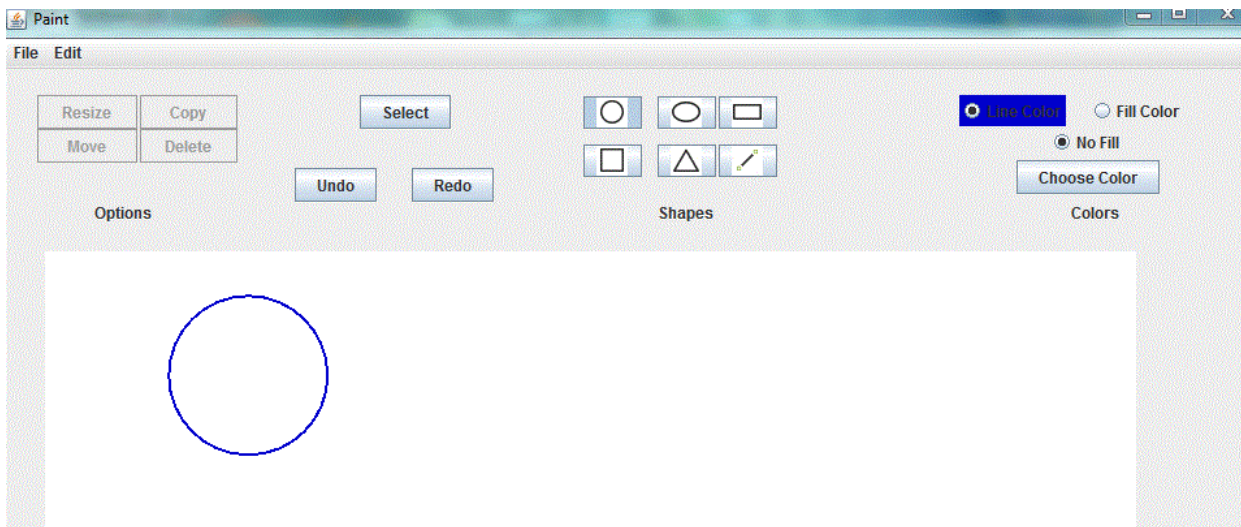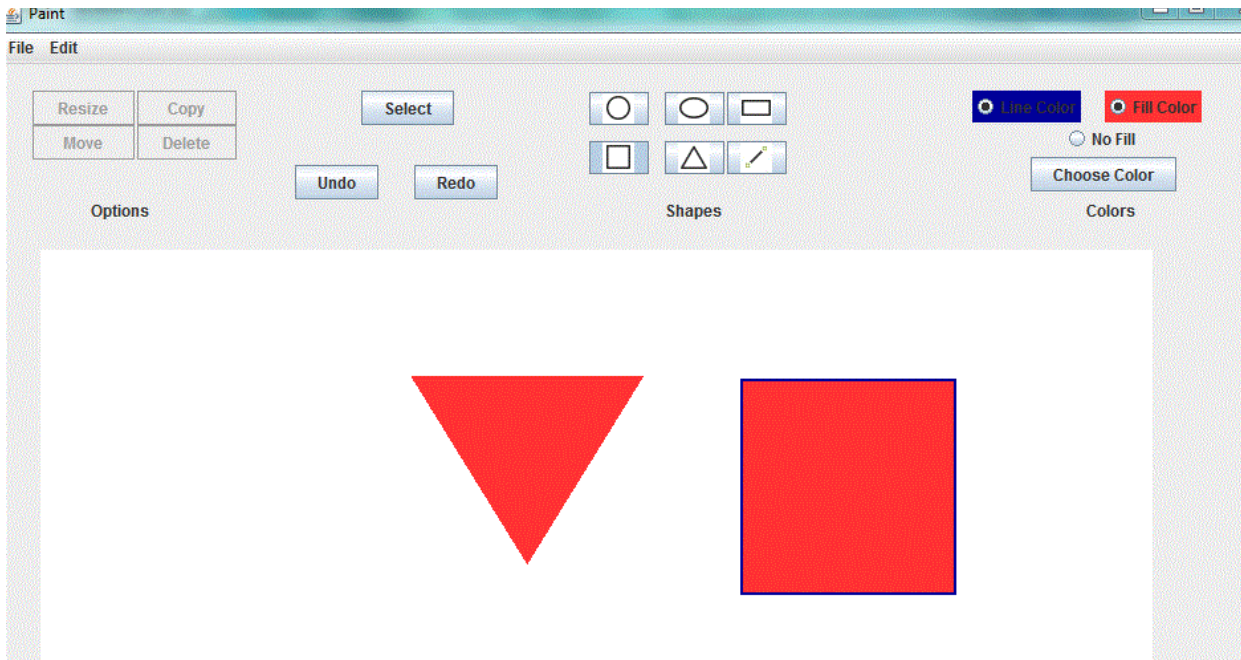

Sample Runs:

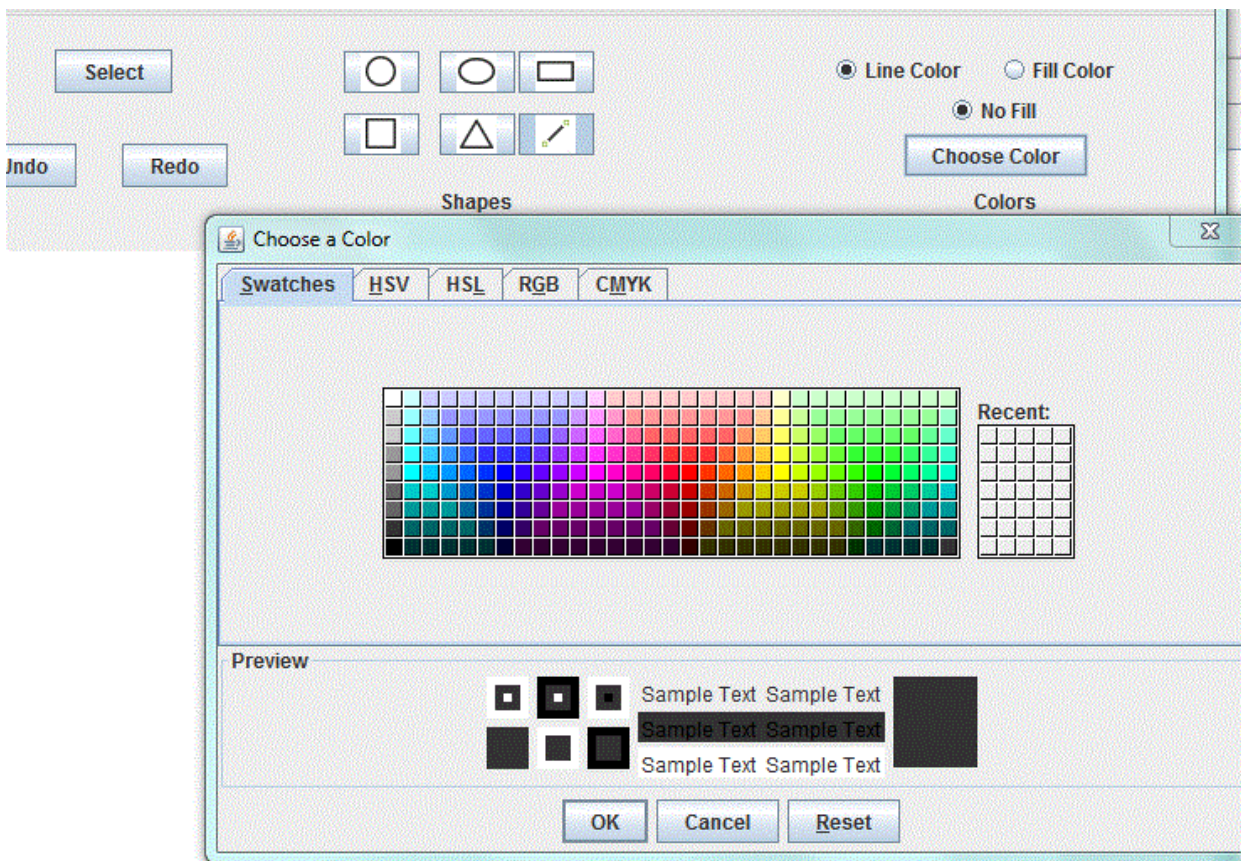**Depending on the state (String) the program:**

By default the state is set to "Draw" , User chooses the shape and whether to draw with no fill (Here shape: Circle, no Fill)

Or to draw with Fill Color

Colors can be modified using "Choose Color"

To update any shape (Resize, Move , Delete or creating a Copy) Shape must be selected first.