

Lab 3: Paint Web Application

Report

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1- The steps required to run application:

1. We run Spring Boot and Angular
2. We open <http://localhost:4200>
3. We start using the Paint Application (use the provided user guide if needed)

2- UML diagram describing your code design:

Link

<https://drive.google.com/file/d/1qhW8HRSGhf7rX2by5MSEugtZnKXtaNS3/view?usp=sharing>

3- How you have applied the required design pattern in your code:

1. Delegation pattern
 - Relation between controller and the interface IPaintService
 - Relation between controller and the interface Shape
 - Relation between controller and Point Class
 - Relation between all the shapes classes and Point Class
2. Interface pattern
 - Relation between controller and the PaintService
 - Relation between controller and shapes classes
3. Prototype pattern
 - All shapes classes together with the interface implement *cloneable* interface to be cloned (in deep copy)

4- Design decisions:

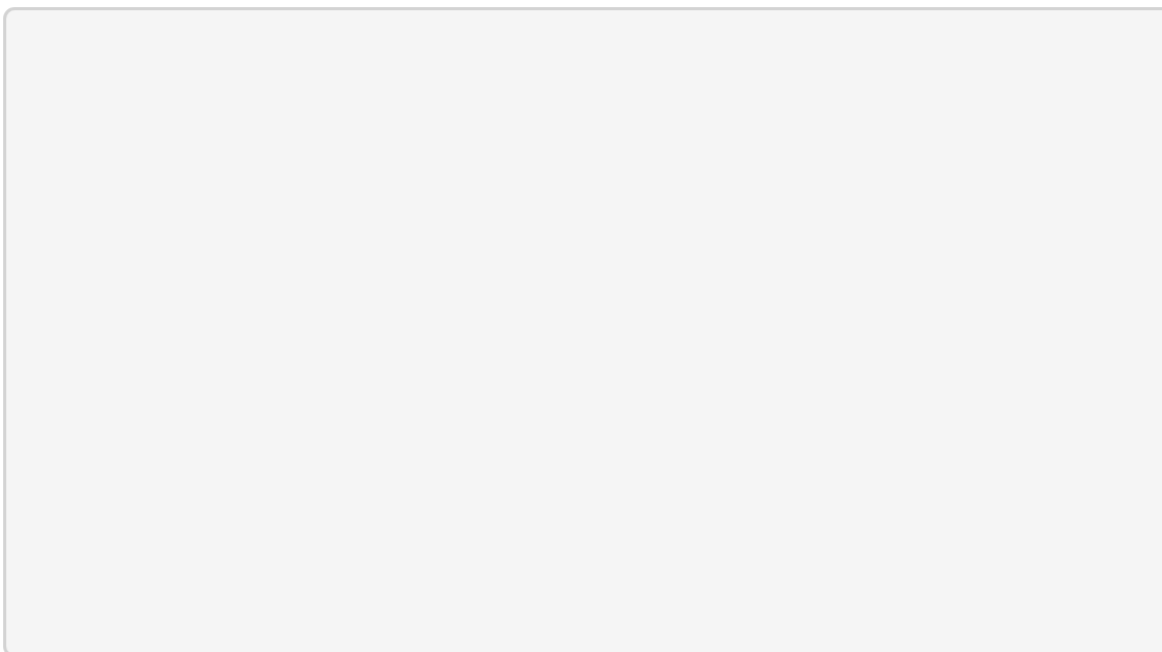
Front-End

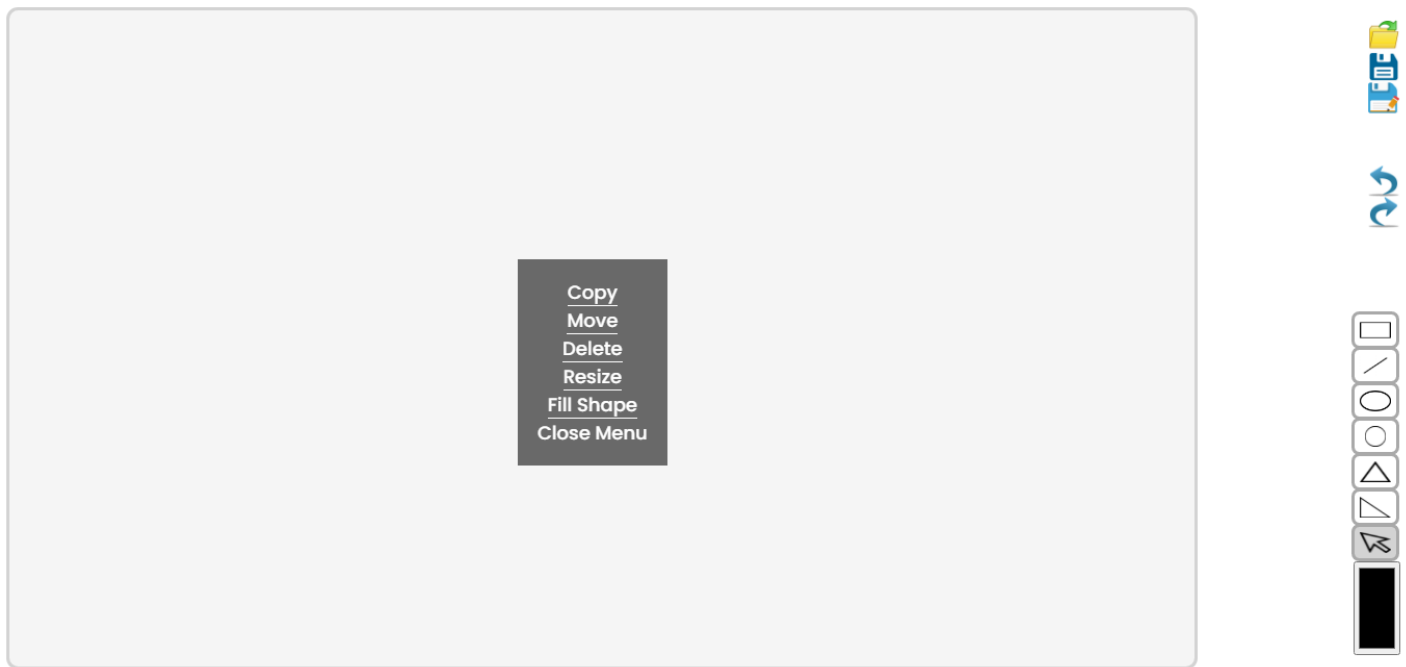
- We can't undo or redo options after saving the file.
- We can't use save options without previously using save as option to create new file.
- We must use Cursor from shape list to be able to use function containing (fill-move-copy-delete-resize) functions.

Back-End

- all shape classes implement an interface so that, any other classes using functionality of such classes be independent from them
- objects are sent between Front-End and Back-End as JSON-objects

5- snapshots of UI:





6- User Guide:

Shapes List (the tool bar at the bottom right side of screen):

contain shapes and colors that can be drawn on Painting area. Just choose a shape and define its border color to draw it

Cursor: in shape list

Used to (left)click on a drawn shape to show a menu from which we can (copy - move - delete - resize -fill) the selected shape by the cursor.

Color Button:

we click on it to be able to select border color or background color before drawing or filling the shape.

Menu (the tool bar at the top right side of screen):

We select (undo - redo - save - save as - open) options but there are some assumptions:

- We can't save file without previously using save as option to create new file.
- We can't undo or redo options after saving the file.
- In save as option we select the type to save file either json or xml file.

Note that: For all buttons of shape list: The background of color changes when we click on it and select it to be shown that this button is selected