

Faculty of Engineering
Alexandria University
CSED 2024
Programming 2
CSE-232

Lab 3

(Paint)

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Opening both angular and Spring boot code:

Running Angular:

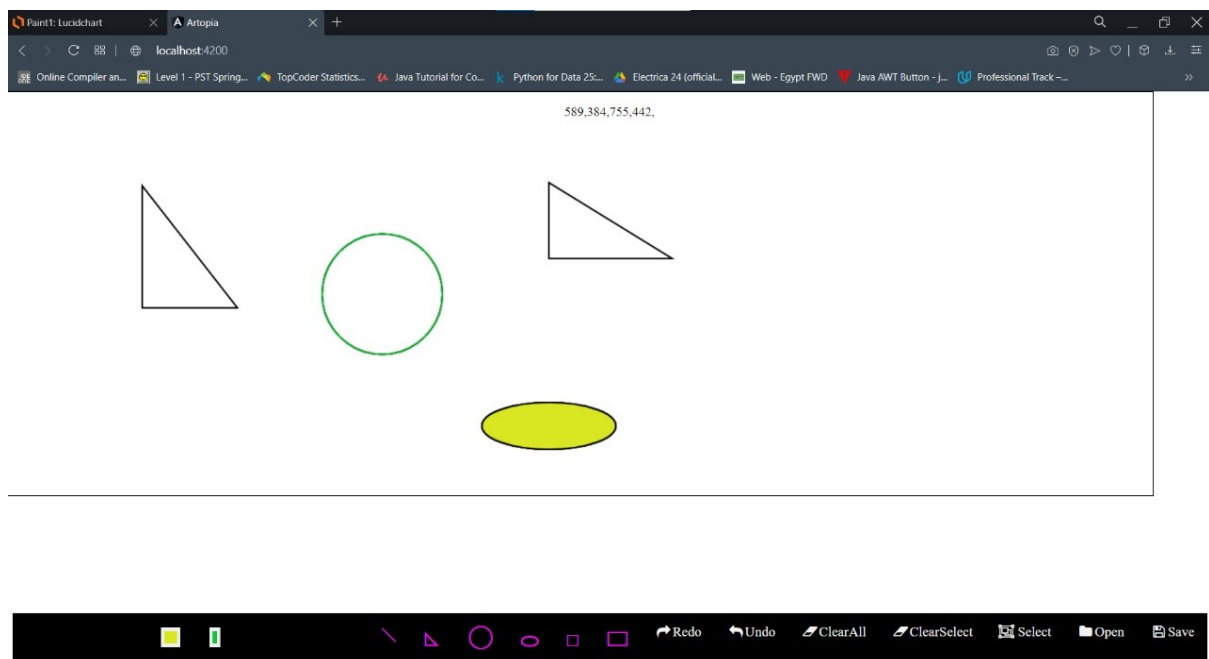
- 1- Unzip downloaded file.
- 2- you must have NodeJS and angular-Cli on your computer.
- 3- After unzipping the file, open the project file and press right click on the background of the folder. Open **cmd** window.
- 4- Write **npm install** in cmd window.
- 5- Then you can open the project by writing **ng serve --open in cmd window (port number: 4200)**.

Running Spring Boot project:

- 6- Open Eclipse ide or any other ide.
- 7- Import the whole Spring boot folder into ide.
- 8- Make sure while running the code that the port number inside (Crossorigin is the same port number of angular project).

How to run Paint:

- 1-Run Angular Code while Running Spring boot program to be able to receive data from the front end.
- 2- As shown the picture this page will appear in the browser which contains Paint interface as shown in fig.1



How to use paint Application:

- 1-If You want to draw any shape first, you must choose the wanted shape then to draw the shape in the wanted position by dragging the cursor.
- 2-You can choose the fill colour and the border colour of the shape.
- 3-Saving file is allowed as “json” and “xml”. just click on the button “Save” and choose your preferred type of saving the file, then enter the path(anywhere you want to save in your pc).
- 4-On opening a file that was saved before, just click on the button “Open” and choose the type of the save file that you want to open (either it was “json” or “xml”), then enter the path of this saved file.
- 5-If you want to clear the canvas to draw a new painting, click on the button “ClearAll”.
- 6-You can undo your action by clicking on the “Undo” button.
- 7-Redo operation is only allowed after making an undo by clicking the Redo button.

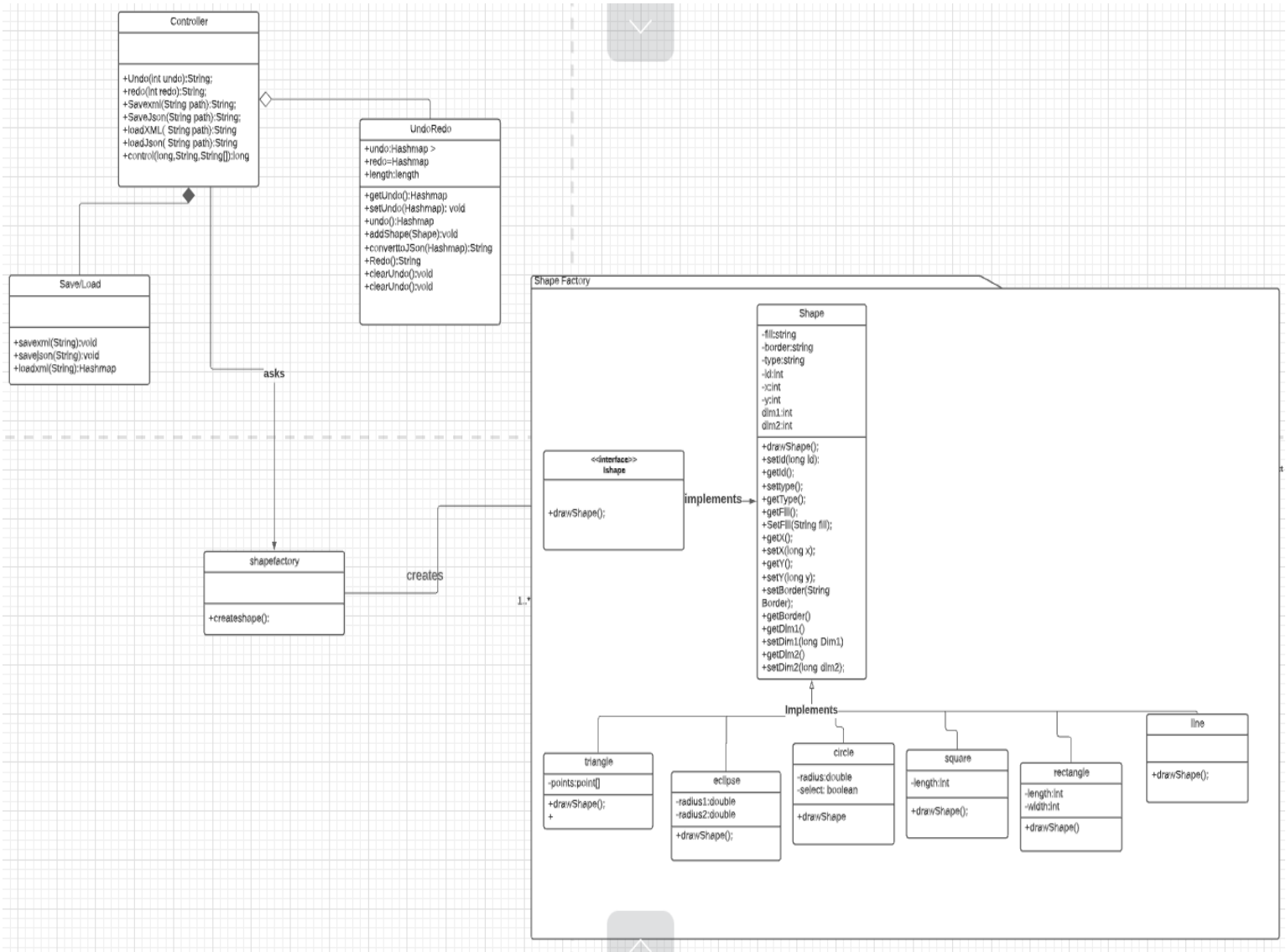
Assumptions:

- 1-Colouring a shape can be done only after it's drawing (i.e. before drawing a new shape) (You can change the fill colour or the border colour).
- 2-After saving your drawing, you have to “load” it again through the “Open” button, in order to add new shapes and drawings to it.
- 3-When you upload a “json” file that was saved you can add to it any shape but you can't use the undo or redo buttons.
- 4-The “Select” button is used only when you want to clear, then click the “ClearSelect” button to clear this selected shape, but from this time, you can't undo or redo as it will give you inaccurate results.

UML Class Diagram:

here is also the link

https://lucid.app/lucidchart/888ad606-c67c-4a2f-bc65-fa0a1a39c8da/edit?from_docslist=true&invitationId=inv_6a015c25-0f24-426b-b291-367edb8e42cb&page=0_0#



how we have applied the required design pattern in the code:

Purpose:

Factory method: It is used to protect the content of the code from the client by implementing an interface that is common between Client and the code itself.

inheritance: child classes inherit all the properties and behaviour of the parent method to reuse them instead of writing them again.

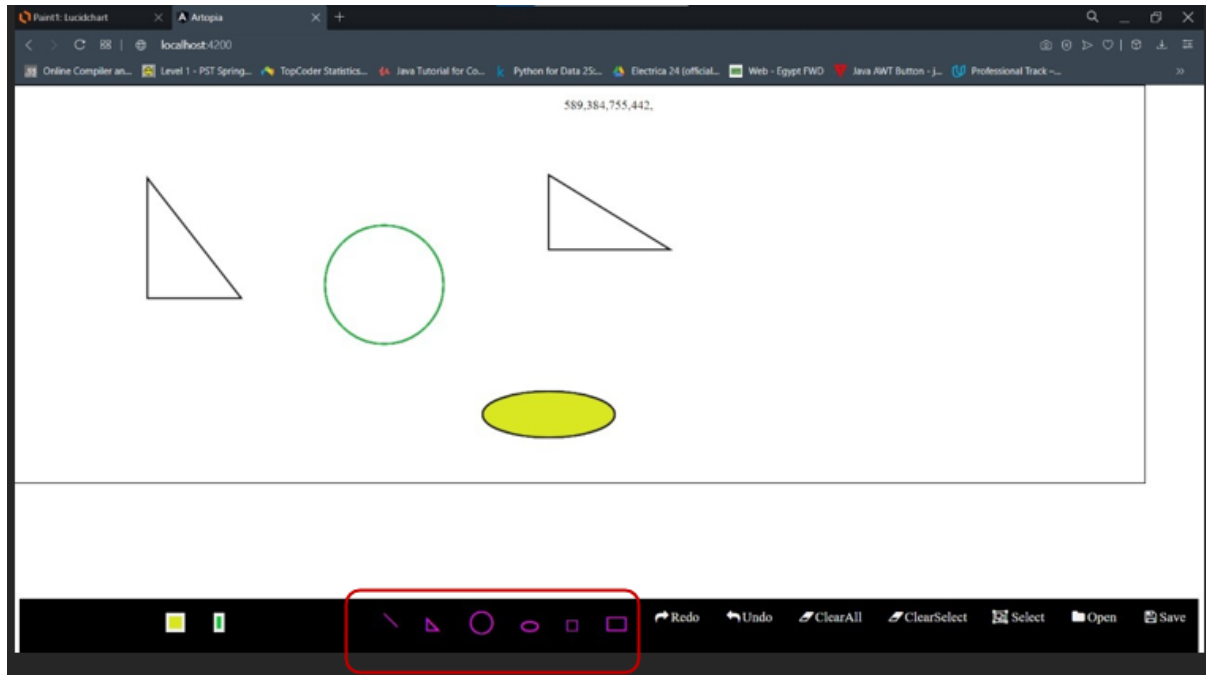
polymorphism: it is used to implement the same method but in different ways. Single variable can be used to store multiple data types. It is easy to debug the codes.

Implementation of design patterns:

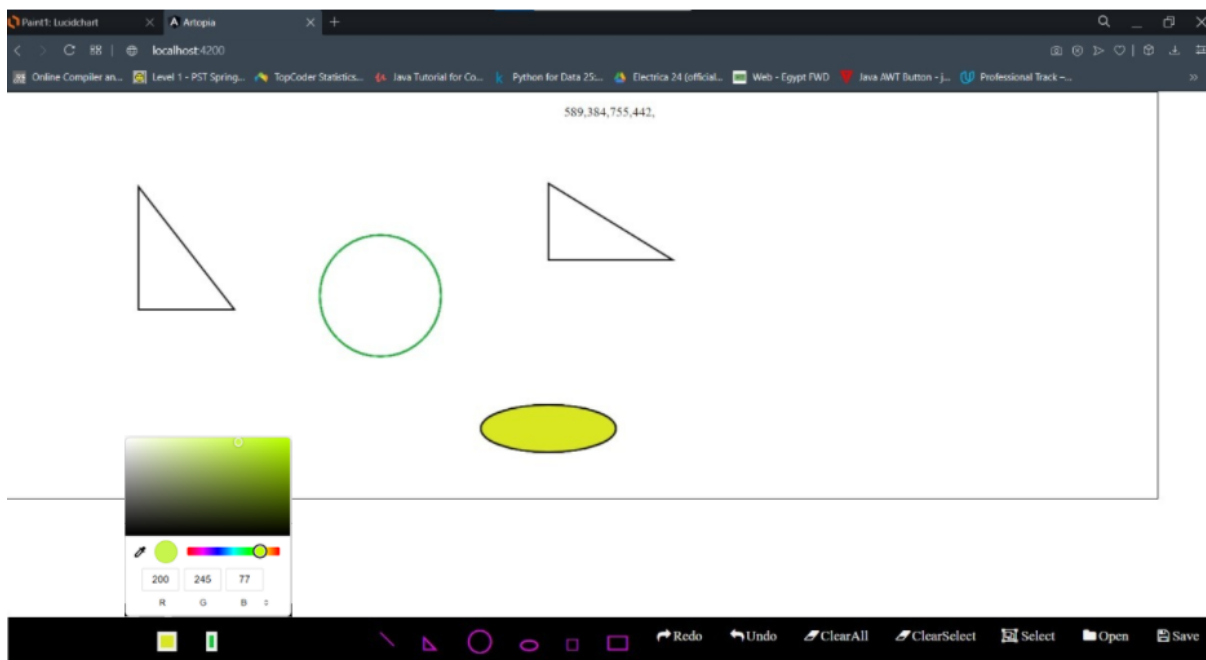
- 1- If the user wants to draw a shape, for example a circle, he must ask a factory that can reach the interface which connects the information from the user and the concrete classes (I-shape interface).
 - 2- The factory takes the information and creates the factory that is responsible for implementing the request of the user (creating shape).
 - 3- Then the interface which contains the functions only of the classes and protects the content of the concrete classes that implement it.
 - 4- (circle/ square/triangle/ellipse/rectangle) inherits some of the function from the shape class.
 - 5- Drawshape() function in (circle/ square/triangle/ellipse/rectangle) has polymorphism relationship as it is implemented in different ways according to the type of the shape.
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User guide to use paint Application:

1- when you open the application an interface containing shapes (circle/square /rectangle/ triangle/ ellipse) to draw any of them, you click on the button of the shape wanted (as shown in the next figure) then drag the mouse from the starting point you want to draw from to the position you want. the shape will appear.

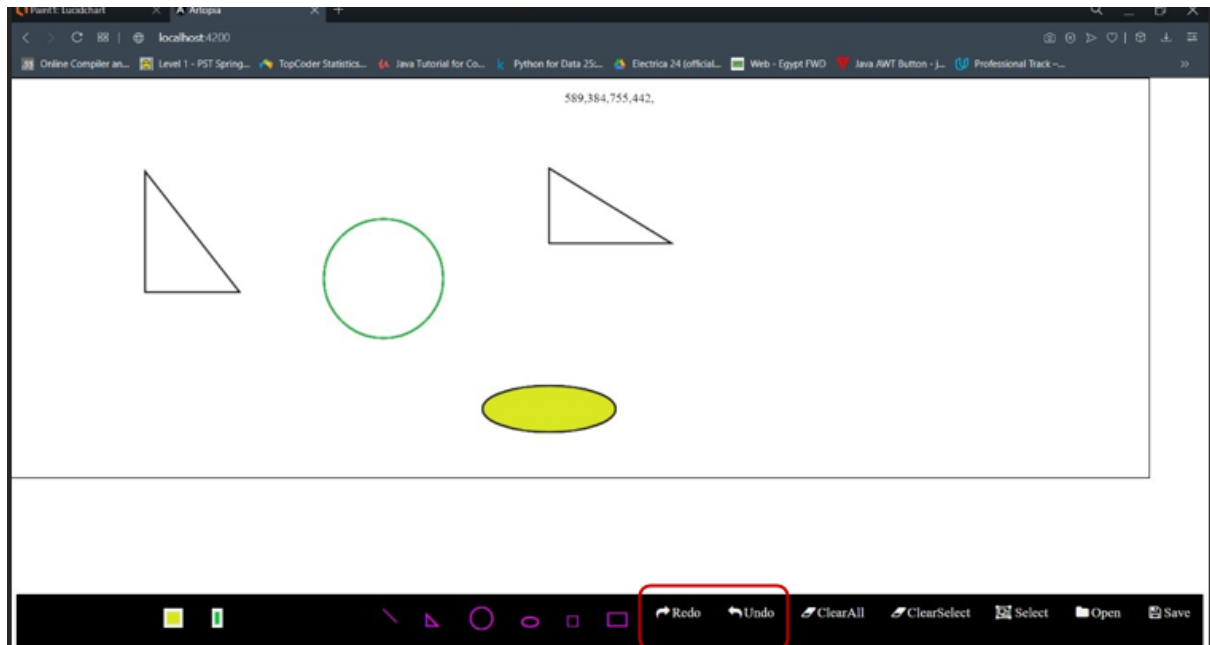


2- colouring the shape/ change the colour of the border: if you want to colour any shape, you can colour them only when you create the object. By clicking on the colour button (as shown in the figure), choose the wanted colour then click on it again to apply the colour on the shape. changing the border colour done in the same way.

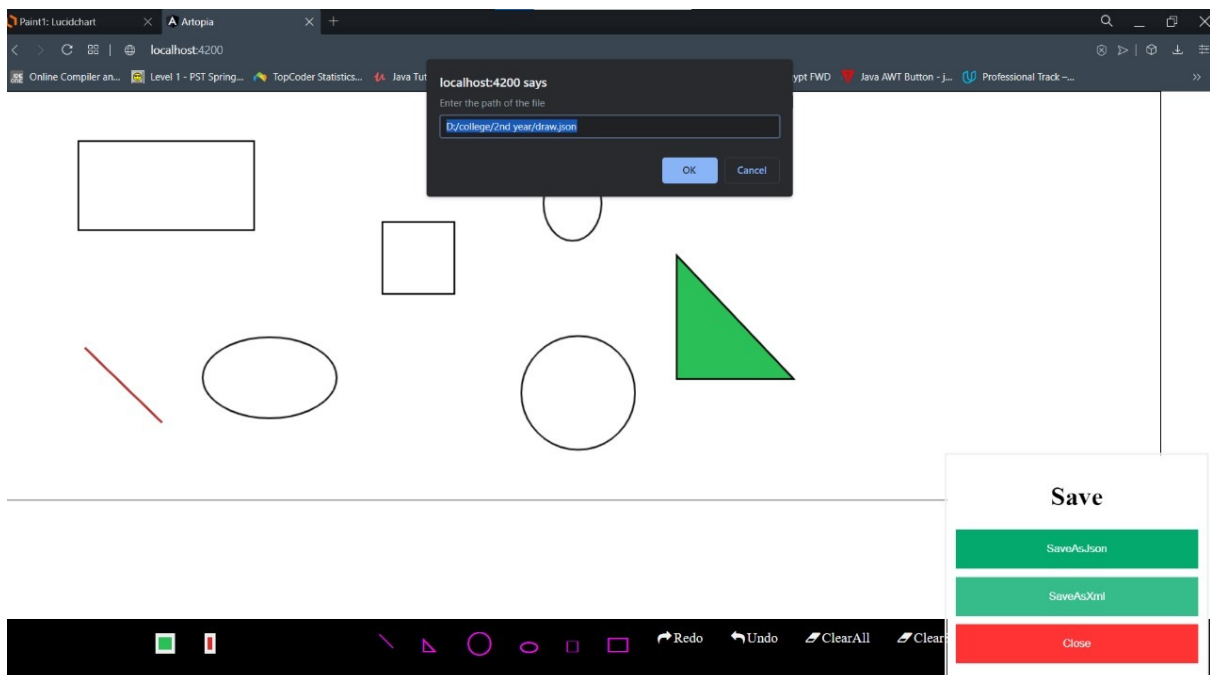


3- if You done anything wrong and you want to undo what you have done, just click on the undo button (shown in the figure) that gives you the ability to undo any of the moves that you have done.

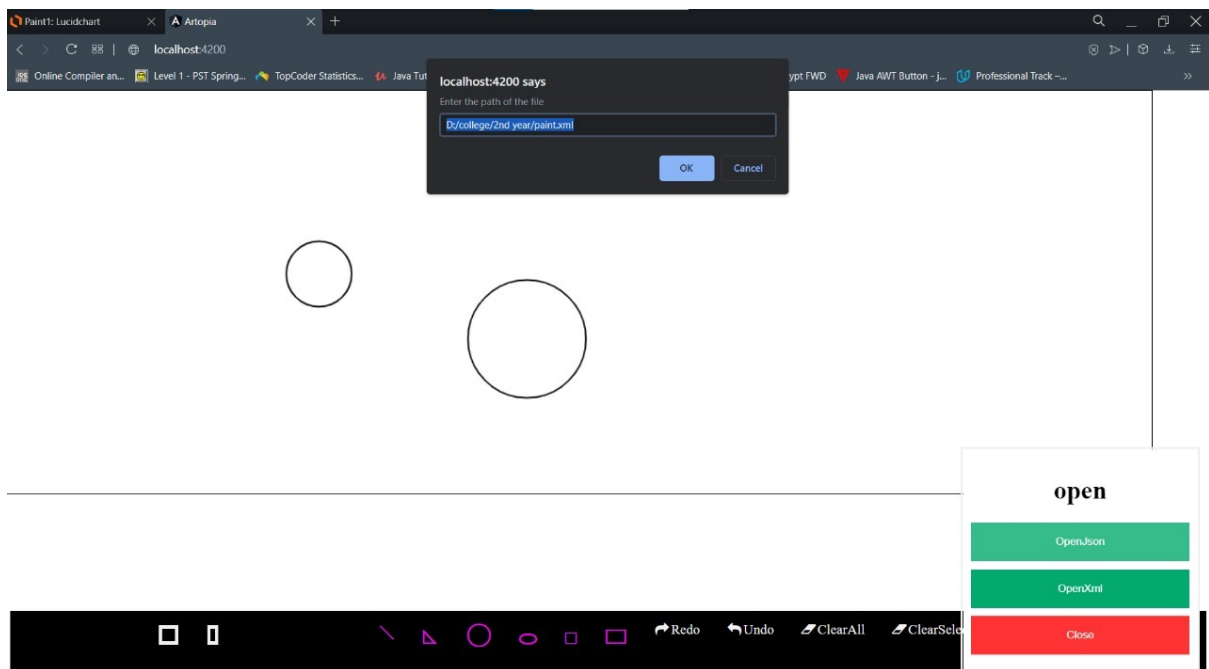
4- You are also able to redo the movements that you have undone, just click on the redo button then it will redo again.



5- In order to make sure that the data of the drawing isn't lost from you, you can save them in two options either JSON file or Xml, this happen by clicking save button and a pop up window appear that you have to write the path of the location that you want to save your file in it. Two options ("json" and "Xml") appear, you have to choose one of them.



6- To upload any saved file (Json type or Xml), just click on the open button in which a pop up window appears with two options to upload ("json" file or "xml") and a text box where you have to write the location of the file, then you are ready to modify the file after that.



If you like to see how to document in a video please use this link:

https://drive.google.com/file/d/1rT7PQlxc6jRym7bR2FQhHO0D_33U_eSq/view?usp=sharing