

CSC 360 Assignment # 3

Total points: 10 + 20 + 20 = 50

Submission Guidelines:

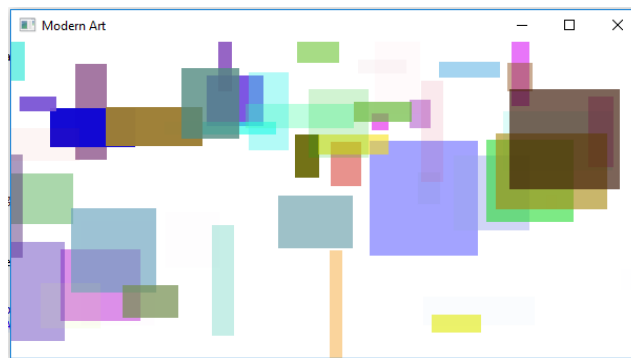
- Submit only the .java files that you have created. If you have more than one file in your program, include all files into a single zip file, and submit the single zip file. Do not upload project folders from your IDE, which includes a lot of other unnecessary files.
- If you have completed problem 1, submit only the .java file for problem 1.
- If you have completed problems 1 and 2, submit only the .java file for problem 2, which includes the features from problems 1 and 2.
- If you have completed problems 1, 2, and 3, submit only the .java file for problem 3, which includes the features from all the problems.

Problem 1: In this program, you are required to write an automatic “Modern Art Generator” program. The following points are specified to generate the automated modern arts.

- Use a 600 x 300 canvas for creating the artwork.
- The artwork will be a composition of rectangles.
- The rectangles will be of random sizes and at random positions.
- The rectangles will be of random colors and opacities.
- The rectangles will be of a minimum size 10x10, and a maximum size 100x100.
- All rectangles should be placed within the default visible area of 600x300.
- The artwork will be made up of a total of 50 rectangles.

Note: Use the basic Pane class to place the rectangles so that absolute object placement is allowed for the random rectangles in the artwork.

Below are some *Modern Arts* from my program.

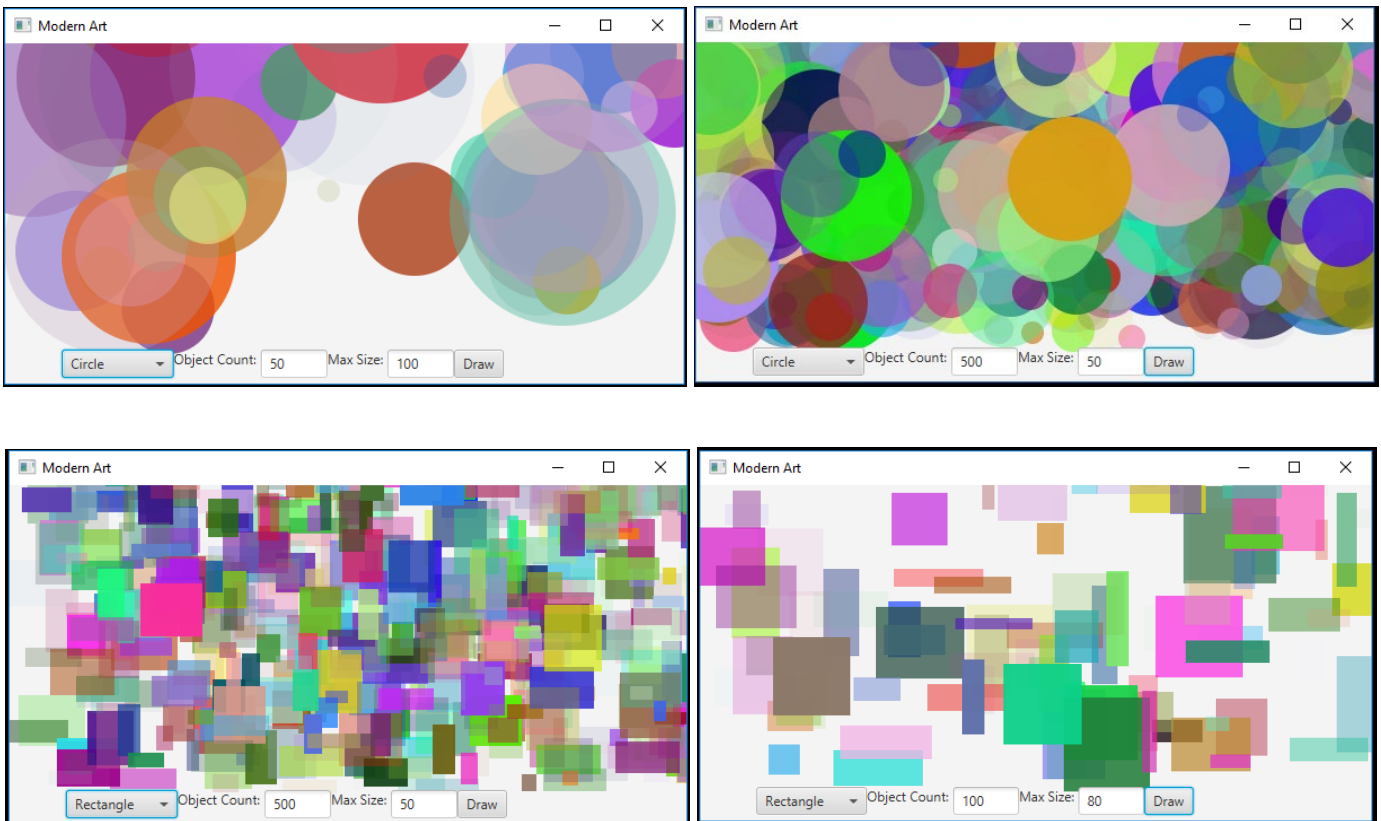


Problem 2: In this program, you are required to improve the features of the “Modern Art” program that you developed in Problem 1. In the enhanced feature version of the Modern Art generator, you will include the following new elements:

- A combo box with the elements *Circle* and *Rectangle*. The selected item from the combo box will trigger the handler, and will either use circles or rectangles, based on the choice of the user, to generate the Modern Art. The default selection will be *Circle*.
Note: Write a new function to generate a circle with a random radius.
- A text field (along with a label for it) for the total number of objects to be used in the Modern Art. The number of objects will be applied for both circles and rectangles. You will need to include a handler for the text field, which will be triggered when the user hit the “Enter” key on the keyboard. The handler will redraw the Modern Art with the current value of the number of objects in the text field. The default value should be 50.
- A text field (along with a label for it) for the maximum size objects to be used in the Modern Art. The size of objects will be applied for both circles and rectangles. The max size of circles will define the radius, and the max size for rectangles will define the maximum length and width. You will need to include a handler for the text field, which will be triggered when the user hit the “Enter” key on the keyboard. The handler will redraw the Modern Art with the current size of objects in the text field. The default value should be 100.
- You will include a Draw button to refresh the displayed Modern Art. The draw button will update the combo box selection, object count, and the maximum size, and then redraw the Modern Art.

Use the basic Pane class to place the circles/rectangles so that absolute object placement is allowed for the random objects in the artwork, and call this pane the artworkPane. Use an HBox pane to place the newly added fields and button, and call it the drawingBarPane. Next, use a BorderPane, and place the artworkPane in the center cell, and the drawingBarPane in the bottom cell.

Below are some *Modern Arts* from my program.



Problem 3: In this program, you will continue to improve the features of the “Modern Art” program developed in Problem 2. In this final enhanced version of the Modern Art generator, you will include the following new elements:

- a) Add an animation feature to the modern art generator. Use a Timeline animation, and call the handler to update the artworkPane by adding random circles/rectangles to the modern art. The choice of shape (circles/rectangles) will be based on the selected item by the user in the combo box.
- b) Add a button to control the animation. The handler for the button will toggle the label between Play and Pause to play/pause the animation.
- c) Add a “Clear” button next to “Draw”, which should clear the currently displaying Modern Art drawing.
- d) Add a label and a slider to control the speed of the animation. Use property binding to bind the value property of the slider to the rate property of the timeline animation. Set the min of the slider to 10, and the max to 100.

Include two rows of controls in the bottom cell of the Border Pane. Add the animation label, the play/pause button, and the slider in an HBox, and call this pane animationPane. Place drawingBarPane (from Problem 1) and animationPane in a VBox, and call it controlBarPane. Place the controlBarPane in the bottom cell of the BorderPane.

A video link to the features of Modern Art is included [here](#).

