**Simple Shapes**

In this first assignment, we will create an application to draw polymorphic shapes on a canvas. We will use the MVC programming paradigm to structure our code. The app will use buttons to draw shapes. There will be at least one button that allows the user to draw a shape that utilizes the composite design pattern. There should also be a clear button that enables the user to clear the canvas.

Use Chrome as your standard supported browser.

**Model Requirements**

You will need to create at least 5 different shapes by extending the abstract class AShape. These shapes will be in the edu.rice.comp504.model package. For each shape, choose a color from the array of available colors in AShape. At least one of the shapes should use the composite design pattern. The coordinate (0,0) is the top left corner of the canvas. You may add any fields to a concrete shape that are helpful for drawing the shape in canvas. In this assignment, the shape color (existing shapes) changes each time a new shape is created.

**Controller Requirements**

The SimpleShapesController will process GET requests from the view. There should be at least one GET endpoint that matches each shape in the view. One of the shapes must be a circle. There should be no logic in the controller that influences how a shape is created. The only job of the controller is to communicate to the DispatchAdapter a view shape request. The controller will then communicate the response from the DispatchAdapter in JSON format. Users should be redirected back to the home page if they type the endpoint GET /canvas in the url. This will remove all the shapes on the canvas.

The first request made to the SimpleShapesController will be a POST /canvas/dims request. This will allow the SimpleShapesController to retrieve the canvas height and width. Subsequently, the SimpleShapesController will pass the canvas dimensions to the dispatch adapter. The model ensures that shapes are created within the canvas dimensions.

**View Requirements**

You must draw a shape when the user clicks the shape button. At least one shape should use the composite design pattern. Clicking on the clear button or performing a redirect should remove all of the shapes from the canvas.

For this assignment you should write *unobtrusive* JavaScript, i.e., all script will be included in separate js files. You should not have any checkstyle errors. You should host your app on heroku with the app name [netid]-hw1-shapes. Please indicate in the first line of the README file the use of any slip days.

**What to commit to the github classroom**

Be sure to commit early and often to your github classroom hw1 repository. You should commit all your java source files as well as the index.html and view.js files in the resources directory. Do not add and commit the .idea directory.

| **item** | **pts** |
| --- | --- |
| **Model** | **[30]** |
| shapes extend the abstract AShape class | 2 |
| no checkstyle errors | 5 |
| there is a shape that properly uses the composite design pattern | 10 |
| there are at least 5 different shapes | 8 |
| properly determine the shape's color | 5 |
| **View** | **[50]** |
| contains a clear button | 3 |
| contains a shape that uses the composite design pattern | 8 |
| a redirect happens for the /canvas endpoint | 2 |
| there is a way to draw at least 5 shapes | 7 |
| user-friendly design | 10 |
| shapes are drawn with appropriately chosen color | 5 |
| shapes are drawn based on the JSON data received from the controller | 5 |
| app hosted on heroku | 10 |
| **Controller** | **[20]** |
| There's at least one GET request that matches each shape in the view | 5 |
| There is no logic that creates shapes in the controller | 4 |
| redirect from canvas endpoint to home page | 3 |
| appropriate shape is created for each request | 5 |
| returns JSON for each GET shape endpoint | 3 |
| **Total** | **[100]** |