# Project 2: My Paint – Brush Selector

due 11:59pm Tuesday, September 23, 2014.

Goal

For the next three assignments we will be going through the process of building a basic painting and drawing program. This first assignment in the series will be about creating the toolbar. The goal is that you get some basic experience laying out controls in accordance with responsive design. You will also learn to work with the Bootstrap framework and gain an understanding of some new types of events.
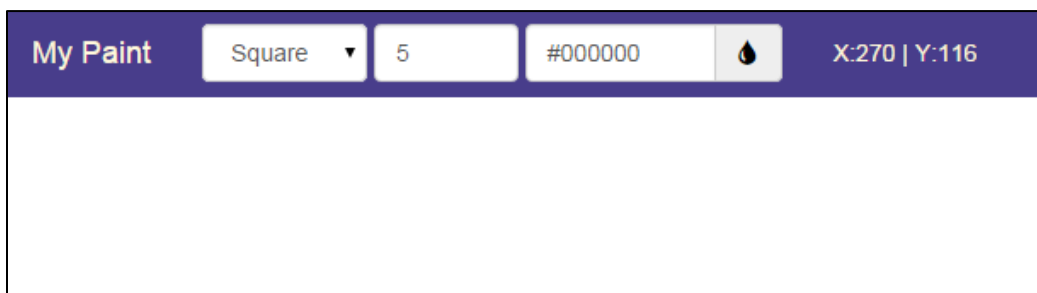
Your task is to create an interface similar to the one shown above. The interface consists of a toolbar above a canvas, which should start white. The toolbar must include a dropdown menu for selecting a brush type (square, circle, or star), a field for entering a brush size (between 1 and 50), and a field for setting the brush color, along with a visual indicator showing the current color selection. Next to these input fields should be a display indicating the current coordinates of the user's mouse on the canvas, where (0,0) is the upper left corner of the canvas. If the user's mouse is not over the canvas it should display "X:? | Y:?".

To test that toolbar fields are working, when the user clicks on the canvas they should see a popup similar to the one below. In later assignments this function will be replaced with actual painting. (Note: the x, y coordinates should be the same as those displayed in the toolbar these are 2 separate screenshots.)
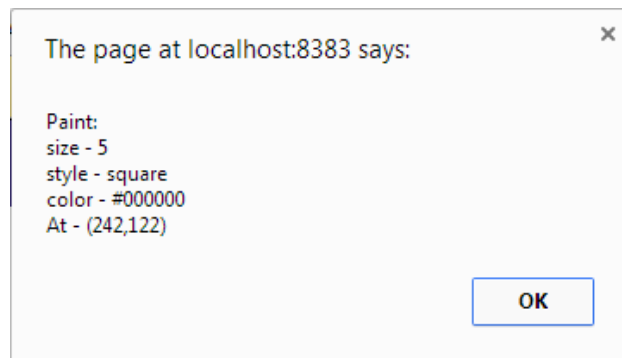
In addition to the functionality of the input fields the interface should also be responsive to the user's screen dimensions. This means that the interface should remain usable regardless of how big the user's screen is and it should adapt to changes in window size. For example when the window becomes small or if the user is on a phone the toolbar could adapt to look like this:

Collapsed
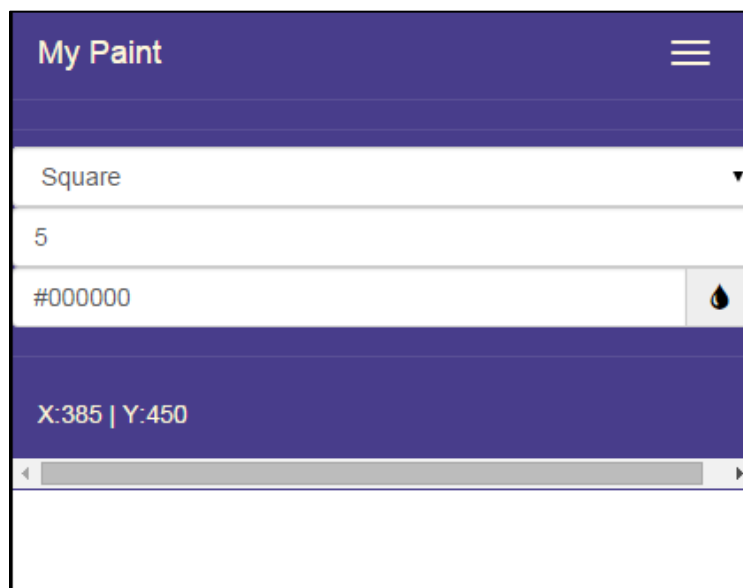
Expanded

In addition to the toolbar responding to the change in screen dimensions the canvas should also be able to resize so that is always remains full screen.

While Bootstrap provides a number of default theming settings, the visual styling of this assignment, in terms of colors, fonts, and other properties is up to you. Assignment grading will be primarily based on functionality with bonus points being awarded to unique visual styles.

Provided Files
The files provided include an index.html file, a theme.css file and a main.js file. Note that the raw provided files contain errors that will cause them to display nothing when run.

The provided HTML file has a similar structure to the one from Project 1a. The `<body>` element already contains a `<div id="toolbar">` where you should put your toolbar content. There is also another `<div id= "canvas-container">` that contains the `<canvas>` element. The `<canvas>` element already has some inner HTML, which is what will display in browsers that do not support the `<canvas>` tag. This text can be left alone.

In the `<head>` element there is a `<link>` to the bootstrap.css file. Additionally at the bottom of the `<body>` there are script elements that reference both bootstrap.js and jquery.js. Bootstrap is not included with the provided files on this assignment and must be downloaded and included separately (see www.getbootstrap.com). In addition to bootstrap you will need to include jquery.js, which should not be included as a download but instead sourced from a Content Delivery Network (CDN). Both Google and Microsoft host jQuery CDNs (see www.jquery.com/download/). These requirements are primarily to give you practice working with JS and CSS plugins and the two main ways of including them in projects (hosted locally or via a CDN).

The theme.css file is provided for you to place any theming you wish to define on top of Bootstrap's default theming. The theme.css already contains an element reference which draws a 1px solid black border around the `<canvas>`, which will be helpful in testing whether the canvas is properly resizing or not. Some additional alterations will be required to the css theme both for properly functionality and individualization.

The main.js file is again similar to the main.js from Project 1a. A global variable has been declared to provide a pointer to the `<canvas>` because it will be referred to often throughout the assignment.

Hints

- The `<input type="color">` element does not seem play nice with bootstrap so consider other ways the user could input color information.
- There a number of useful examples at (www.getbootstrap.com/css/ and www.getbootstrap.com/components/).
- In addition to there being a global `document` object in js there is also a global `window` (www.w3schools.com/jsref/obj_window.asp) object for dealing with window level events, such as resizing (www.w3schools.com/jsref/event_onresize.asp) .
- Take a look at the various HTML DOM events available, particularly the mouse events (www.w3schools.com/jsref/dom_obj_event.asp).

Tentative Rubric

Turned in & compiles:	5 points
All brush property fields are present:	5 points
Bootstrap library is referenced locally:	5 points
jQuery library is referenced from a CDN:	5 points
User has a visual indication of all current brush settings:	5 points
Mouse position is accurately displayed as the mouse moves:	5 points
Clicking the canvas displays correct pop-up dialog:	5 points
Toolbar collapses in small screen sizes:	5 points
Canvas remains full screened as the window size changes:	5 points
Your name is in a comment:	5 points
The toolbar has a unique visual style	Up to 10 bonus points
Total	50 points

Critical Thinking

You are not required to turn in answers to any of the questions in this section, but we recommend that you explore and think about some of the questions.

1. In this assignment we only created the basic settings for a paint brush, what other kinds of settings might need to be included in a paint program and how would you implement them?
2. The way that color input is handled in the design is somewhat hard to use. How else could you do color selection that might make more intuitive sense to users.

Turning it in

Project 2 is due by 11:59pm September 23th, 2014 as a zipped file. Email your file to Erik at eharpste@cs.cmu.edu. Late entries will be penalized -5% for every late day.