Project 3

This project builds on Project 2. The purpose of this project is for students to practice the skills and techniques covered by chapters 9-12 of the John Dean's book. This project requires students to add more contents and features by utilizing as many of the mechanisms and skills covered by these 4 chapters (as recapped in the slides posted at D2L) as possible or as they can. The following specific requirements shall be considered as the basic/minimum requirement of this project. Students are encouraged to go beyond the basis requirement in order to earn the creativity points (10%) and bonus points (beyond the 100% scale):

1. Make a further improvement on any/all aspect(s) of your Project 2 as you think suitable using the new mechanisms and skills you learned from chapter 9 to chapter 12, ***especially on the layout and the overall looks*** of your pages. You may consider to split your single index page into multiple pages (like many of you had already done with Project2), leaving the main (index) page as the entry/portal page with general introductions and links well organized (e.g., in a ***sidebar***) that point to other content pages.
2. Enhance the validity check of user's input to your feedback form that you already built with Project 2: set and enforce ***required*** entries, and particularly ***verify the format*** of email and phone number (e.g., 618-453-6011) to make sure they are valid email address and phone number. (Note: you must prompt users what format is expected so that they don't have to practice "trial-and-error", which is a crucial part of user-friendliness.)
3. Add **a fun element** to your home page: ***shape transformation game***. Initially, preset a canvas (see Chapter 12) element as a *hidden* placeholder (i.e., without taking any visual space). Upon user clicking on the ***play*** button, a boxed canvas area (nicely fit into your page's overall layout) shall explicitly show up with a play instruction displayed inside such as "*Please click on 4 arbitrary spots within this box, and see my shape transformation magic to happen.*" **Behind the scene**, you will need to use JavaScript to first locate the 4 points clicked on by the user, randomly select 4 shapes (e.g., from the this list: rectangle, square, circle, oval, triangle, line), and then "grow" each shape from a corresponding point (the origin) clicked by the user filled with a randomly selected color from the list of your favorite colors (e.g., the 7 common colors: red, orange, yellow, green, cyan, blue, purple). After growing to a reasonable "full size" (of your choice), the shapes then start to retract (i.e., the opposite process of growing) back to their respective origins. Then, the shapes indefinitely repeat the process of growing and retracting until the user clicks on anywhere in the canvas (you may choose to use an explicit ***stop*** button instead). The growing/retracting of the shapes must be made observable and comfortable to human vision.
4. **Submission requirement** and **grading scale** are same/similar as prior project.
5. **Note:** With game element, only a very basic description is provided, which leaves you a big space for you to tap your creativity and make the game a real fun.
6. **Hints**:

a. You will need to use *event.clientX* and *event.clientY* to get the coordinates of the 4 points within the canvas clicked on by the user (refer to the point tractor example in chapter 11)

b. You also need to give a pause within the loop to avoid the shapes transforming too fast for human vision to discern.

c. You are advised to start with only one figure. When everything works, you then extend to 4 figures.