<div align="center">**Lab 4 Report**</div>

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Write-up Questions

Part A
4.- Which law are you demonstrating and how does your code do that? Extra: Give a real-world example for a software interface which uses that law.

I am demonstrating the laws of proximity and continuity. For this purpose, I have created three different functions that create different shapes (square, circle and cross) of a given size and color. To demonstrate the law of proximity, my code generates a random number of these shapes with different colors and sizes, and groups them into several clusters of different sizes in random locations on the screen. The user will perceive those clustered shapes of different forms, sizes, and colors, as if they were groups, therefore demonstrating the law of proximity. To demonstrate the law of continuity, my code, again, generates a random number of these shapes with different colors and sizes, but this time, they are arranged in a line whose location varies, as it is randomly generated. In this case, the user will also perceive the random shapes as if they belonged together, but in a different way than previously, demonstrating the law of continuity.

The two demonstrated laws are widely used in User Interface design. We can see examples of it in most of the software we use nowadays, in the form of menu bars, toolbars, and other common features of modern software. For example, here's a screenshot of the IDE used for the coding part of this lab, Brackets.
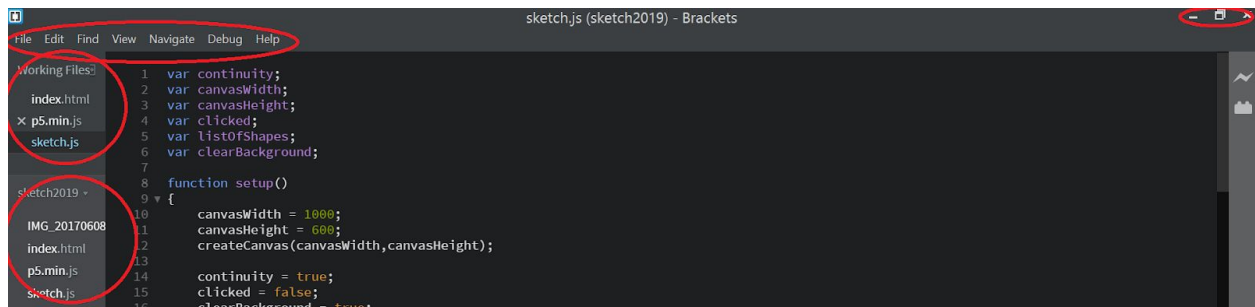

Here, we can see two clear examples of the proximity law on the two menus on the left, which group different files together. This gives the user the sense that they are a single group of files, rather than individual files.

We can also see two examples of the law of continuity in the menus on the top. We are used to seeing this kind of menus in most of the software we use, but what we might not realize is that we perceive them as one because of the law of continuity.

5.- Can you use mouse position in your code to animate the particular law or laws you are demonstrating? Add to your write-up, explaining how this works in your demo.

Yes, I edited the code so that it allows the user to interact with the demonstration of both laws using the mouse.

For the law of continuity, instead of arranging the random shapes in a line located randomly on the screen, the line goes from the center of the screen to the location of the mouse.
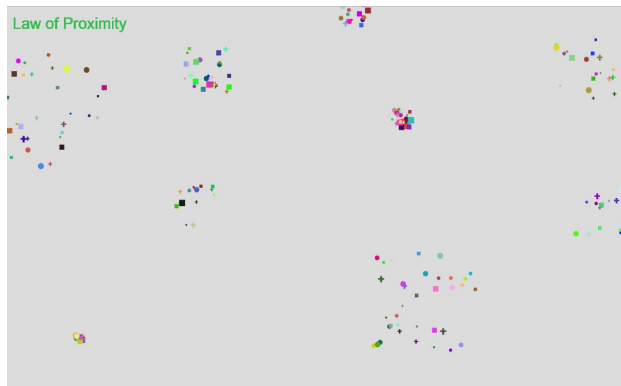
For the demonstration of the law of proximity, the code will generate a cluster of random shapes wherever the user clicks within the canvas.

Part B
4.- Can you think of ways to improve this?

After coding my sketch following the indications and testing out the result, I observed the frames were passing much too fast to appreciate what was happening. In order to fix this, I implemented a counter that allows the draw function to show the same image for 8 consecutive loops. After the 8th loop, the draw function will display the next image. This was a huge improvement, however, the first two images (the titles) were still passing too fast to be read, so I implemented a second counter, which holds the first two images for an even longer time, making them readable.