Assignment 3 Final WriteUp:

Project Description:

Our project shows the percent ionic character of a hypothetical bond between any two elements (for which data was available - thus, a few obscure elements have been left out) which is based on each element's electronegativity. All of the elements occupy a space on the circumference of the outer circle. Electrons occupy the circumference of the middle circle. When an element is clicked, it shifts to the center and every element’s electron shifts position to indicate the ionic character between the center element and itself. If the electron stays on the middle circle, the bond is covalent, else it shows which element pulls the electron more strongly and by how much based on where it shifts to.

The elements on the perimeter are organized according to periods on the Periodic table. The six dark radial lines indicate the start/end of a given period.

There are many different features to our program including the ability to zoom in and out, add/remove “electron orbits” to better compare different bonds, highlighting of elements and electrons when moused over as well as titles that pop up to indicate which element it is you are hovering over.

StoryBoard vs Final Implementation:

Our final project remained pretty close in concept to our storyboard except for a few difference. This was mostly because we had a pretty clear vision in mind of what we wanted to do before we even began programming. Some earlier ideas had included using an actual periodic table as a backdrop and comparing different types of element bonds, clicking on an element and being able to read information about it, etc but when we came upon our idea of using circles/electrons from that point on the transition from brainstorming to storyboarding to implementation was relatively straightforward.

1) We were originally going to organize the elements on the circle in order of their electronegativity, but we decided to order them by period instead and add in the radial lines.

2) We added features later that we didn’t originally think of such as
   a - Electron orbits that show up when you click on an electron
   b - Zoom functionality
   c - Highlighting
   d - Demo function

Division of Work:
Storyboard - Lorenzo
Data Organizing/Collecting - Lorenzo
Starter code (getting elements to show up, etc) - Lorenzo
Element/Atom interactivity - Chris
Electron interactivity - Chris & Lorenzo
Electron Orbits - Chris
Highlighting - Lorenzo
Buttons - Chris & Lorenzo
Zoom - Lorenzo
Final Adjustments/Error Checking - Chris
Final Write Up - Chris

When we first met up to work on our project we hashed out a bunch of different ideas until we came to the one we liked. Then Lorenzo, who knew more about Chemistry than I did, wrote the storyboard which explained the math behind ionic character and collected data about elements and organized them. He then coded a static image of the two circles with elements on the circumference of the outer circle. After handing the code over to me, I added interactivity to the elements and coded in the electrons and added some interactivity to them as well. We then met up and worked together from that point on and divided up work as described above. This way we’d be able to help each other if someone encountered a bug, etc while efficiently making use of time by doing tasks in parallel. So it was during this time that we added highlighting, orbits, etc. Lorenzo went on to add in zoom functionality on his own later so that I could complete the final write up.

Collectively we spent roughly 4 full days working on our project. The aspect that took the most time was getting the electrons to correctly shift their location based on our formula. But after we did that most of the other functionality we added was more or less straightforward with the exception of the zoom function which was trickier to implement than we had previously thought.