**What made our bomb project different**

- Our toggles can only consist of even numbers when converting to decimal from 1s and 0s. We made our toggles like this because the last toggle, the one that would add 1 to the value, was broken and did not function.

- The reason we did this was to make it so the bomb could actually be defused, instead of having to continuously go through the retry process until we get an even value.

- Our bomb also does not take away a strike if you mess up on the toggles due to this setback. We decided to give it an easy phase.

- Finally, Our bombs keywords are not the same as Professor Gourd used, coming up with a whole new list of words.

**What made our bomb project difficult**

would be a few things:

- First, it would have to be the broken toggle. This made us have to change the code to only get even numbers. It wasn’t a huge setback, but clogged some of our ideas with the toggles, limiting our creativity.

- Another thing that made the project difficult was the fact that we had been using the old code, the original one that was given in class on the first day of receiving our built bombs, up until the second to last day of working on it. We never knew that there was new code, but of course, this also limited our ability to be creative as we had little time to redo everything.

- The final, but the most minor of things, that made this project difficult would have to be the fact that all of our wires pins got bent on the first day of storage since we did not unplug them from the bomb before putting it away. We were able to fix it, but it made the wires face all different directions and not be presented as neat.

# Future development plans

We feel our deadly detonators bomb could reach its full potential with a few improvements. With more time, we hope to add more replay value. This can be done by requiring the player to complete each defusal in a specified order. This would order would be random per round. An example of this process is that you cannot defuse the button until the toggles are finished. However, in a different game, the button may come after the toggles. Doing this would make the bomb more intense and force the reader to follow the instructions more closely. Additionally, to punish the player for mistakes, we hope to edit the timer and strike system. Our goal is to speed up the timer for each strike. This will make the player think carefully about each decision, just like a real bomb. Additionally, we hope to have more interactions with our bomb. This includes more sounds and pictures. We want there to be the option for sounds when you click the keypad, toggles, button, and wires. By doing this, the player will feel more immersed in their choices. Also, we want to add sound throughout the process, which continues to beep.

If we were going to continue with this project, the first change we would make would be to change our rightmost toggle, as it stopped working halfway through the project. This would allow us to have more possible combinations and get rid of the part of our serial number that only allows for even numbers. Another change we would do is to make the time go faster after each strike and cut time off for every strike you get when defusing the bomb. We would also make sound play throughout whole bomb countdown instead of just when the bomb is planted, explodes, or is defused. Finally and probably the biggest change we would make to our bomb would be to make it so each phase has to be defused in a certain order before you can go onto the next phase. This would make it so the toggles have to be defused first, then the keypad, then the button, and finally the wires, or a similar order. This would make the game more unique and difficult and add something to our bomb that no other groups really tried.

# Lessons learned

With this project, we learned about the importance of staying up to date. With a lot of our hardware and software outdated it left a large impact on us. Working on older versions will drag you back more than you think. On previous coding assignments, I would use old Python versions and not notice anything, but now I realize the importance of updates. This can be beneficial in other courses, as it is always good to have the right information. In accounting, for example, information should be relevant and readily available. When working with outdated or irrelevant information, you are at a disadvantage to others.

While working on this project we learned a few things. One of the main things we learned was how to adapt to issues with our project in order to make it work as best as possible, which we had to do with our right toggle. We also learned how to edit and change a code that is given to us instead of writing it from scratch, which is useful when trying to change a program to work for a specific reason other than why it was made, and to learn how to debug. It related to the Science of Computing curriculum because it taught us important lessons on how to combine multiple parts of a program into one major project, and like mentioned above, learn to alter code to our specific wants and needs. These skills will be beneficial in our future as no matter what path we take with computer science, we will always have to change and adapt the materials we are given in order to work more efficiently and effectively.

