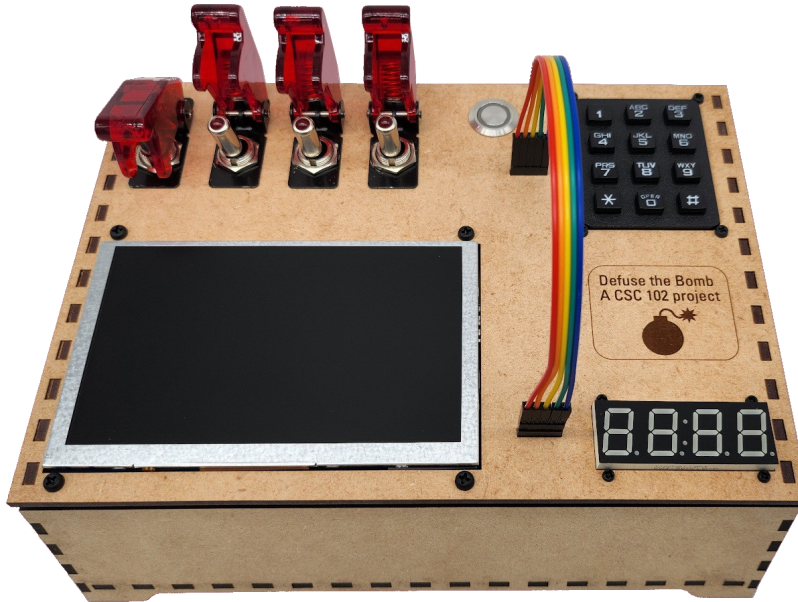


Defuse the Bomb¹



This project is based on the game [Keep Talking and Nobody Explodes](#)², a cooperative bomb defusing party game. As the game designers put it, “You're alone in a room with a bomb. Your friends, the 'Experts', have the manual needed to defuse it. But there's a catch: the Experts can't see the bomb, so everyone will need to talk it out – fast! Put your puzzle-solving and communication skills to the test as you and your friends race to defuse bombs quickly before time runs out!”

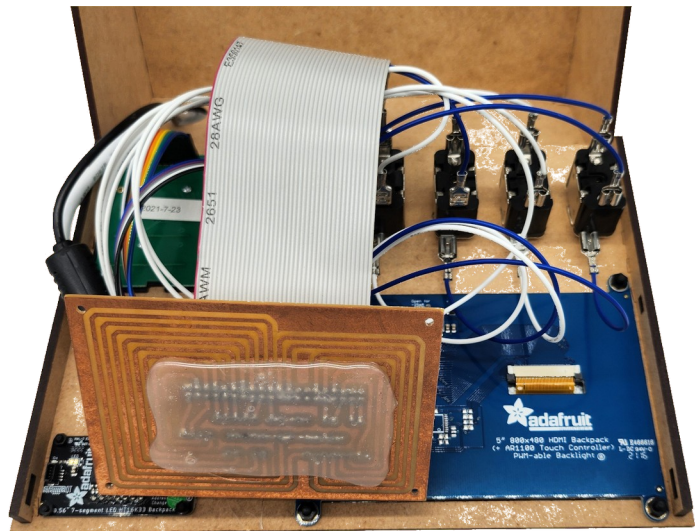
Their version is a software game. Our version takes the idea and realizes it as a physical hardware device with buttons, switches, and more! Although our version of the bomb can be played just like theirs, players can interact with both the bomb and the manual at the same time (i.e., players can simultaneously defuse the bomb and serve as the “Experts”, using the manual to help disarm the phases).

The backend of our version of the game is a Raspberry Pi computer (currently the RPi 400). The underlying software is written in Python3. The bomb's case was fabricated in-house, using the lasers in our Makerspace! Similarly, the circuit board that connects the Raspberry Pi to the bomb's electronic components was milled using our CNC milling machine, and connectors were soldered using our soldering stations. Throughout the semester, you will be exposed to the project's design, from its enclosure and circuit board, to the source code that integrates the physical components into a dynamic game. Although actually fabricating the bomb's enclosure

¹ To be clear, this is not a real bomb (i.e., it won't actually “explode”).

² See <https://keeptalkinggame.com/>.

In groups, you will iteratively work on the project, slowly building it into a full game. The foundation for the game's source code will be introduced in class, and you will take it from there to customize your own version of the bomb. An exposition may be held at the conclusion of the semester that will allow you to showcase your unique bomb to the public (who get to try their hand at defusing bombs). Of course, you will present your bomb in class at the end of the semester.



A few important notes:

- Revised: 2024-01-16

- You must use Github as the main repository for your project's source code, write-ups, and other files. It must be regularly updated as you progress through the project. Your instructor will periodically check it during the academic term.
- All of the code that you submit will be graded for coding style, structure and organization, and the obvious: functionality. When you work professionally as a programmer, your work will be used and modified by others. Although many CS students are tempted to assume that running code is a substitute for clear explanations in English, this is not typically the case. Many otherwise useful designs or implementations are abandoned because other programmers cannot easily figure out how they work. In short, a solution to a problem is of little value if that solution cannot be understood and modified by others. For those reasons, formatting and style matter. When you submit your work, it should be immediately obvious that it was written to be understood by others.
- You will have the opportunity to evaluate your team members (anonymously).

Note that a portion of your final project will be graded **competitively**! This means that what you submit will be compared to that of other submissions in the class. Yours may be better or worse than others, and a portion of your score will be assigned accordingly. It is absolutely true that every single final project could merit an “A”, for example; however, one will be ranked at the top, another at the bottom, and others somewhere in between.

Deliverables

All deliverables are due as specified on Canvas. This includes the following:

- A *Defuse the Bomb* manual (in PDF format). See your instructor's version for reference.
- A final write-up (in PDF format).
- An updated (**and organized**) Github repository that includes all of your source code (even any parts that were provided by your instructor). Feel free to include your manual and write-up sources, presentation materials, etc, if you wish.
- All presentation materials (e.g., slides, notes, etc).

Presentation

During the final exam period, you will briefly present your version of this project. Your presentation should address the following:

- Keep your presentation to no more than **10 minutes** in total. **Every team member must contribute during the presentation.** Please don't focus on slide development.

- Discuss anything unique that your team implemented. This should include any specific goals and objectives that may differ from the other teams. Talk a bit about how you met your goals, how the team members interacted, etc. Basically, give us a window into your team's dynamics throughout the project. This part should take **approximately 5 minutes**.
- Discuss any ideas that your team has regarding future development plans. If you had another term to work on this, what would you do? How would you improve it? This part should take **approximately 1 minute**.
- Discuss any ideas that your team has regarding lessons learned. How has this project helped you? How do you think it will help you in other courses? This part should take **approximately 1 minute**.
- If you had the freedom to redesign this project as you see fit, what would you do? Basically, how would you improve this project for future students? This part should take **approximately 1 minute**.
- Feel free to discuss anything else that you think is relevant!