# Cyber Sleuth: Case of the Missing Cell Phones

Target Age Group: Grades 4-7 (ages 8-12)

**Inspiration:**

With the world increasingly going digital cybersecurity is important now more than ever. There are many unfilled jobs in the cyber security world with not enough people wanting to study the field. Therefore, more people are needed in the field!

To help encourage kids to become interested in the field we’ve created a game that will help teach them some basics of the cybersecurity field. Our game took inspiration from games such as “Where in the World is Carmen Sandiego?”

We wanted this game to be something that kids would enjoy playing while still learning something.

**Project Description:**

The game would consist of a casebook in which there would be multiple cases that the player could solve. Each case would each have something to do with a topic in cybersecurity. The game is in the format of a point and click. There will be various objects within each scene that the player can interact with. Each scene will have a cipher that the player will need to successfully break before they are able to move on. The game is completed when the student solves all the ciphers in the case.

**Goal for Hackathon:**

Our goal in this 24 hour hackathon was to create a simple prototype of the game that would showcase one case in a casebook. The cybersecurity concept this case was focused on was encryption and decryption. Various famous ciphers are hidden throughout the game that the player has to solve. Because our game is aimed toward middle-grade children there is a reference manual at the bottom of the screen that the player can reference to find a description of the cipher and the key they must use to break the code.

The narrative of the game is that a middle school student has had their cell phone confiscated and they want it back. Instead of waiting for the principal to return their cell phone the student has decided to take matters into his own hand and find out where the principal has hidden the cell phone. All the teachers at the school used to be members of the CIA and they all have a nasty habit of encrypting everything in his life using various ciphers. The first scene is the student breaking into the principal’s office to look for his phone. The student instead finds a sticky note attached to the computer (for a former CIA guy the principal doesn’t follow good practices) that is obviously the password. The player then must solve the cipher and enter the password to the computer to gain access.

Once the student gets access to the computer they find an encrypted file on their desktop that contains the cell phone location. Again, the player must then use a different decryption method to decipher what the encrypted file says. The file leads the student to the football field where the gym teacher has left a note that is clearly in Morse Code. The student must use the reference book to translate the message which they then find is still encrypted. So the player needs to decrypt the translated message again. The message is the code to a safe that the student knows is in the gym teacher’s office. If the code is inputted correctly then the student gets back their cellphone and has successfully completed the case.

**What’s Next for Cyber Sleuths:**

* Adding more cases that the player can solve. Each case will be a new topic of cyber security
* Adding a page where the player can encrypt and decrypt their own messages so that the player can get some practice with the ciphers presented in the case.
* An idea we were toying around with at the beginning was creating this game as a web app. That way the game could be played anywhere, including cell phones, and if a teacher wanted to use this game in a classroom then they wouldn’t have to install the game on every computer.

**Stuff We Learned/New Technologies We Used:**

* The UI was written in PyQt5. No one on the team had any experience with PyQt or with building a fully functional UI.
* Most members of our team didn’t have much experience with Python
* Our biggest learning goal for this hackathon was to get more practical experience with Python and to learn about UI design and implementation.

**Challenges We Faced:**

* We originally wanted to use PyQt because we thought that we would be able to use QtCreator with the designer to help us build the interface. Then we could spend most of our time linking the scenes.
* No one on the team knew anything about PyQt and getting started with doing simple actions such as adding a button to the screen proved to be more time consuming than we expected.
* PyQt5 doesn’t have a lot of documentation therefore making it difficult for us to figure out how to connect all the UI elements.