Career Simulator Game

**Senior Design Team Contract**

University of Cincinnati

College of Education, Criminal Justice and Human Services

School of Information Technology

Maria Montgomery

Tyler Meiners

Zachary Davis

Table of Contents

[Intent 2](#_Toc1853059032)

[Senior Design Contract 2](#_Toc912210151)

[Project Summary 3](#_Toc1063439467)

[Problem Statement 3](#_Toc675099533)

[Solution 3](#_Toc1216798648)

[Contact Information 3](#_Toc410280321)

[Project Source 4](#_Toc1469573792)

[Team Members and Responsibilities 5](#_Toc220721837)

[Project Scope 5](#_Toc977832856)

[Quick Project Timeline 6](#_Toc272015747)

[Technologies Used 6](#_Toc1092939765)

[Ethical Considerations 7](#_Toc40545058)

[Team Rules 7](#_Toc126226525)

[References 8](#_Toc813812844)

# Intent

The following contract was written and agreed upon by Maria Montgomery, Tyler Meiners, and Zachary Davis. The contract provides expectations, objectives, and results for developing the Career Simulator Game.

The contract is effective for all team members participating in the Senior Design Capstone class series in the 2025-2026 academic year.

# Senior Design Contract

## Project Summary

High school students face challenges when selecting a major that they will enjoy learning about and make into a career; as a result, they can be dissuaded from selecting the major for them. We will create an interactive website that allows aspiring college students to explore tasks for cybersecurity jobs through a game play style. So, the user can overcome common challenges: lack of knowledge and support system to get an understanding of whether they will truly enjoy this career path.

## Problem Statement

There are two primary reasons, high school students may not choose to major in cybersecurity. A study by Aschbacher et al., discovered that there are few advocates at school or home for science careers, and meaningful opportunities to work with professionals are scarce, so the benefits of pursuing these careers are overlooked by high school students. It was also identified that “many could trace their career interests to positive experiences in activities they saw as relevant to these jobs or that important people in their lives had encouraged them to explore” (Aschbacher et al., 2009).

## Solution

To encourage high school students to confidently choose the Cybersecurity major, our team is committed to creating an interactive website that allows aspiring students to complete tasks related to their career through a game play style. According to Pew Research Center, 85% of U.S. teens game and about 40% do so daily. Therefore, the gaming genre appears to be the most effective at reaching our audience. Furthermore, 50% of teenagers play video games on their laptop or desktop, so the application’s first stage will be compatible with this device type (Gottfried & Sidoti, 2024). Showcasing the benefits of a career choice positively correlated with the ability to preserve despite the difficulty related to studying for a career (Aschbacher et al., 2009). As such, our website needs to demonstrate the impact of the work done by the player to accomplish our objectives. Of the students in Aschbacher et al. study who said they were no longer interested in pursuing a career in the field, a common reason included poor interactions with the field. These interactions eroded the student’s previous interest in their career within two years; therefore, the application’s target audience should specifically be sophomores in high school, have a duration lasting a couple of years, and use an encouraging tone while correcting mistakes during the game. Not least, the student should get a fundamental understanding of the tasks required at the job to make an informed decision. As such clear directions, graphics, and consequences are a requirement.

## Contact Information

|  |  |  |  |
| --- | --- | --- | --- |
| Team Member | Degree + Track  Track N/A for BSCyber | Email | Phone Number OR Other Contact Info |
| Zachary Davis | BSCYBER | Davisz2@mail.uc.edu | 513-846-8908 |
| Maria Montgomery | BSCYBER | Montgm2@mail.uc.edu | 904-553-6541 |
| Tyler Meiners | BSCYBER | Meinertw@mail.uc.edu | 513-659-3856 |

## Project Source

Our team was inspired by our present and past situations as college students. As a result, the problem we strive to solve is tailored to assist students who are similar. Maria incorporated the college student theme from brainstorming done as a team to suggest this project. Everyone contributed to conducting requirements analysis based on sections; for example, Maria completed the Project Summary, Problem Statement, Solution, and Project Source sections. Zachary completed the Quick Project Timeline, Project Objectives, and Ethical Considerations sections. Tyler completed the Technologies used, Project Scope, Team Members and Responsibilities, and Team Rules sections. The team was formed by the professor's direction. Since we had a great experience working together on previous projects in the course everyone chose to be a part of the group for this project.

Project Objectives/Goals

The primary object of Career Simulator Game is to create an interactive browser-based experience that will educate high school students and underclassmen to explore and consider cybersecurity as a possible career path for them. Through interaction from our game and completing real world tasks simulated our aim is to address common barriers such as lack of exposure, limited support, and misperceptions about the cybersecurity field. We aim for at least 75% of students who try out our game to report increased interest in cybersecurity. Additionally, 80% of users should report an improved understanding of at least two cybersecurity job roles based on their in-game experience. To ensure high levels of engagement, we expect that 90% of users will complete the full game experience. We will conduct qualitative feedback from a minimum of 50 students to access instruction clarity, difficulty of tasks, and perceived relevance of the game’s tasks.

Major Features

* Develop a Browser Based Game
  + Impact: Ensures ease of access and use across student devices; no installation barriers for users
* Simulate Real-World Cybersecurity Tasks Through Mini-Games
  + Impact: Provides an engaging hands-on experience that helps users learn abstract cybersecurity concepts and connect them to real job functions.
* Design Clear Instructions and Educational Graphics
  + Impact: Enhances user understanding and reduces frustration, especially for students unfamiliar with cybersecurity or technical tools.
* Include 2–3 Distinct Cybersecurity Career Paths
  + Impact: Expands awareness of the different job types in the field and helps users explore what roles match their interests and strengths.
* Conduct User Testing and Gather Qualitative Insights
  + Impact: Ensures the game is relevant, age-appropriate, and aligned with targeted users' needs and learning styles.
* Implement a Real-Time, Encouraging Feedback System
  + Impact: Reinforces learning and helps users persist through challenges which will promote growth.

## Team Members and Responsibilities

|  |  |
| --- | --- |
| Maria Montgomery | * Create written content for the game * Design scenarios and task descriptions * Ensure content aligns with high school student audience |
| Tyler Meiners | * Handle front-end and UI development * Use React to build the interface |
| Zachary Davis | * Manage back-end logic and database integration * Use Firebase to store and retrieve user data |
| All Members | * Contribute to game design decisions * Participate in testing |

## Project Scope

Our team will develop an interactive, browser-based game that simulates job roles in the cybersecurity field. The target audience for our project is high school students. Specifically, underclassmen so they can get an understanding and explore cybersecurity as a potential college major and career.

The game we are creating will feature simplified task-based mini-games, and a responsive feedback system. This design will simulate job duties such as monitoring logs, identifying threats, and analyzing suspicious activity. Our project will also include two to three cybersecurity career paths (such as Threat Intelligence Analyst and Cybersecurity Analyst). Additionally, we will include an interactive game sequence with clear instructions and graphics. Lastly, a feedback system will be in place that offers encouragement and educational reinforcement.

To maintain our development timeline, some features will be excluded from the current build. These include an expansion into additional majors beyond cybersecurity, and deployment on platforms other than desktop web browsers.

## Quick Project Timeline

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task # | Task Name | Duration | Start Date | End Date |
| Brainstorm Game | Brainstorm Ideas from game | 1 Week | 20250825 | 20250901 |
| Plan out Game Development | Plan out who will do what tasks | 1 Week | 20250901 | 20250908 |
| Mockup | Create mockup of website game | 3 Weeks | 20250908 | 20250929 |
| Create website game | Creation of the website and game | 18 Weeks | 20250929 | 20260309 |
| User Feedback | Obtain user feedback of game | 2 Weeks | 20260309 | 20260323 |
| Refine | Refine the Game from feedback given to us from test users | 3 Weeks | 20260323 | 20260413 |
| Game release | Game is ready to be release and go public | End of Project | 20250825 | 20260413 |

## Technologies Used

* React.js – used for front-end framework for an interactive UI.
* Firebase – used for backend-end to manage authentication, database, and storage.
* Figma – Used for prototyping and wireframe designs.
* GitHub – used for collaboration and codebase changes.
* VS Code – used for front-end and back-end coding.

## Ethical Considerations

When developing a game intended for minors and involving sensitive career decision-making, ethical responsibility is essential. Our team has identified and is committed to addressing several key ethical areas in the design and development of the Career Simulator Game to mitigate those concurrences.

We aim to create an open and inclusive environment for the users in our game regardless of gender, race, socioeconomic status, or background. Users will be able to choose avatars that reflect themselves. According to Niemi et al. (2021), games that reflect users’ identities lead to higher engagement and self-efficacy. By offering choice in representation, we mitigate feelings of exclusion that might otherwise reinforce existing disparities in Cybersecurity interest. “Game-based learning environments that promote self-representation and inclusivity can increase student motivation and reduce feelings of marginalization.” (Niemi, R., Multisilta, J., & Ruoranen, M., 2021)

Our game will be used by students under the age of 18, so data privacy and security are a high concern. To help mitigate this concern, we will not be collecting any personal identifying information. All user interaction and gameplay will remain anonymous. We conduct our feedback and improvement phase of our game. We will comply with the COPPA (Children's Online Privacy Protection Act) and FERPA regulations, ensuring that users' rights and digital safety are protected.

In our game making a mistake will not result in points lost or a negative score. Rather than punishing mistakes made by users, the game will use encouraging, constructive feedback. This will encourage the users to try again and learn why they were incorrect in their decision making with the goal of fostering exploration in the field and an open learning mind. This design philosophy is rooted in the work of Carol Dweck, whose research emphasizes that students who believe their abilities can improve through effort are more likely to persevere and succeed in challenging tasks (Dweck, 2006).

## Team Rules

1. All members will meet deadlines and communicate about conflicts at least 24 hours in advance.
2. Attendance and participation in weekly meetings are required.
3. Plagiarism or unethical behavior will not be tolerated and may result in removal from the team.
4. Members will support one another and contribute equitably to project goals.

**Team Signatures:**

Signature: Tyler Meiners Signature: Zachary Davis

Date: 7/13/2025 Date: 7/13/2025

Signature: Maria Montgomery

Date: 7/13/25

# References

Aschbacher, P. R., Li, E., & Roth, E. J. (2009, December 4). Is science me? high school students’ identities, ... <http://osu-wams-blogs-uploads.s3.amazonaws.com/blogs.dir/548/files/2011/05/Ashbacher2010_science-identity_ron.pdf>

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