

Escape Molinaroli Virtual Escape Room

Software Requirements Specification



ESCAPE MOLINAROLI

CSCE 247 Software Engineering

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1. Introduction

Purpose

^[1] As people look for more interactive online experiences, virtual escape rooms as a market are set to grow at an annualized rate of 24.7%. With brick-and-mortar escape rooms growing in cost, we hope to be able to provide a more affordable alternative without sacrificing the quality of challenge. We are developing an asymmetric virtual escape room that provides an immersive, puzzle-driven online experience for those seeking to challenge their logical reasoning skill. Our program will use a graphical user interface of static images taken from within a real building to immerse the player in the virtual escape room. We will then use software to work out the internal logic of the puzzle and the user's interaction with the room.

Scope

This document will cover:

- The personas of potential users and stakeholders invested in this project
- Any constraints that have been applied to this project
- A description of the overall game, including functionality and gameplay
- A competitive analysis to outline the purpose of the project

2. Stakeholders

- Puzzlers
- Young Adults
- Designer
- Developer
- Project Manager
- Writer

Personas

LINDA NOBEL



“I enjoy seeing others peoples creations and using them as inspiration for my own

Tech-Savvy Social Passionate

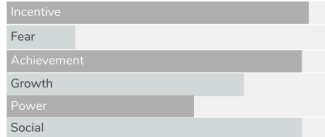
PROFILE

Gender : Female
Age : 23
Education : Bachelor's degree
Occupation : Software Engineer
Address : San Diego, CA

BRANDS



MOTIVATIONS TECHNOLOGY



GOALS

Apply her technical mindset to crack codes, decipher digital clues, and solve tech-based puzzles

Discover new challenges that push both her technical and interpersonal skills.

FRUSTRATIONS

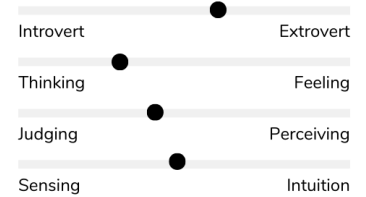
Gets impatient when puzzles rely too heavily on brute force or guesswork instead of logical or structured problem-solving

Can feel limited by puzzles that don't allow her to use her tech-savviness or reward creative problem-solving.

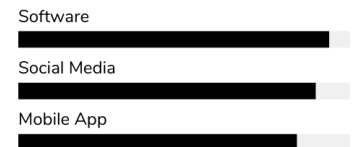
BIO

Linda shines when the challenge requires teamwork, pattern recognition, or anything involving technology or codes. She's a connector between players, ensuring information flows smoothly, though her eagerness for engagement means she can get restless if puzzles are too straightforward or out of her hands.

PERSONALITY



TECHNOLOGY



ALVIN FLORES



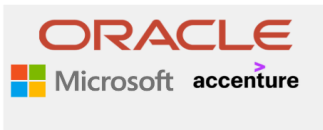
“I love being challenged to keep my brain active

Logical Clever Passionate

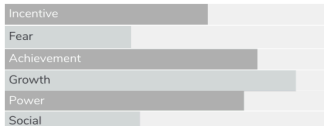
PROFILE

Gender : Male
Age : 28
Education : Bachelor's degree
Occupation : Analytics Engineer
Address : New York City, NY

BRANDS



MOTIVATIONS TECHNOLOGY



GOALS

Find new fun ways to keep his brain stimulated.

Find new talking points to socialize with others with

FRUSTRATIONS

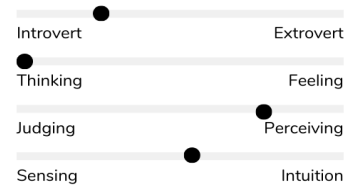
Not very good at using his creative side.

Finds difficulty in using analytical skills in different mediums

BIO

Alvin is a logical, clever, and passionate thinker who thrives on solving puzzles and uncovering hidden patterns. As a more introverted and perceiving type, he tends to quietly observe and calculate before making his move. He values deep thinking and often seeks out challenges that keep his mind stimulated.

PERSONALITY



TECHNOLOGY



MARCUS VEGA



“

I love seeing the use of architectural design in media and discussing if they could actually work.

Creative Social Free Thinking

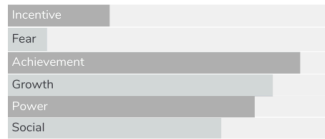
PROFILE

Gender : Male
Age : 31
Education : Bachelor's degree
Occupation : Architect
Address : Charleston, SC

BRANDS

AECOM
Gensler

MOTIVATIONS TECHNOLOGY



GOALS

Use his architectural eye to notice subtle design details, hidden symbols, or physical logic in puzzles.

Challenge himself by applying his real-world skills in a playful, high-pressure environment.

FRUSTRATIONS

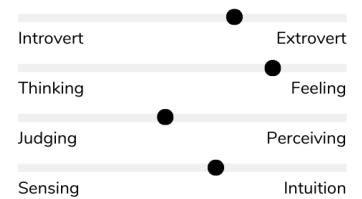
Gets thrown off by puzzles that are too abstract, lacking structure or clear connections.

Not as quick with tech-based or purely wordplay puzzles, which can leave him relying on others.

BIO

Marcus is detail-oriented, patient, and imaginative. He balances a structured mindset with a knack for spatial reasoning, making him strong at visualizing layouts, hidden compartments, and the "big picture." Though not as outwardly social as others, he's approachable and dependable, often acting as the quiet anchor of the group.

PERSONALITY



TECHNOLOGY



3. Constraints

Time Constraints

- This project must be completed during the fall semester.

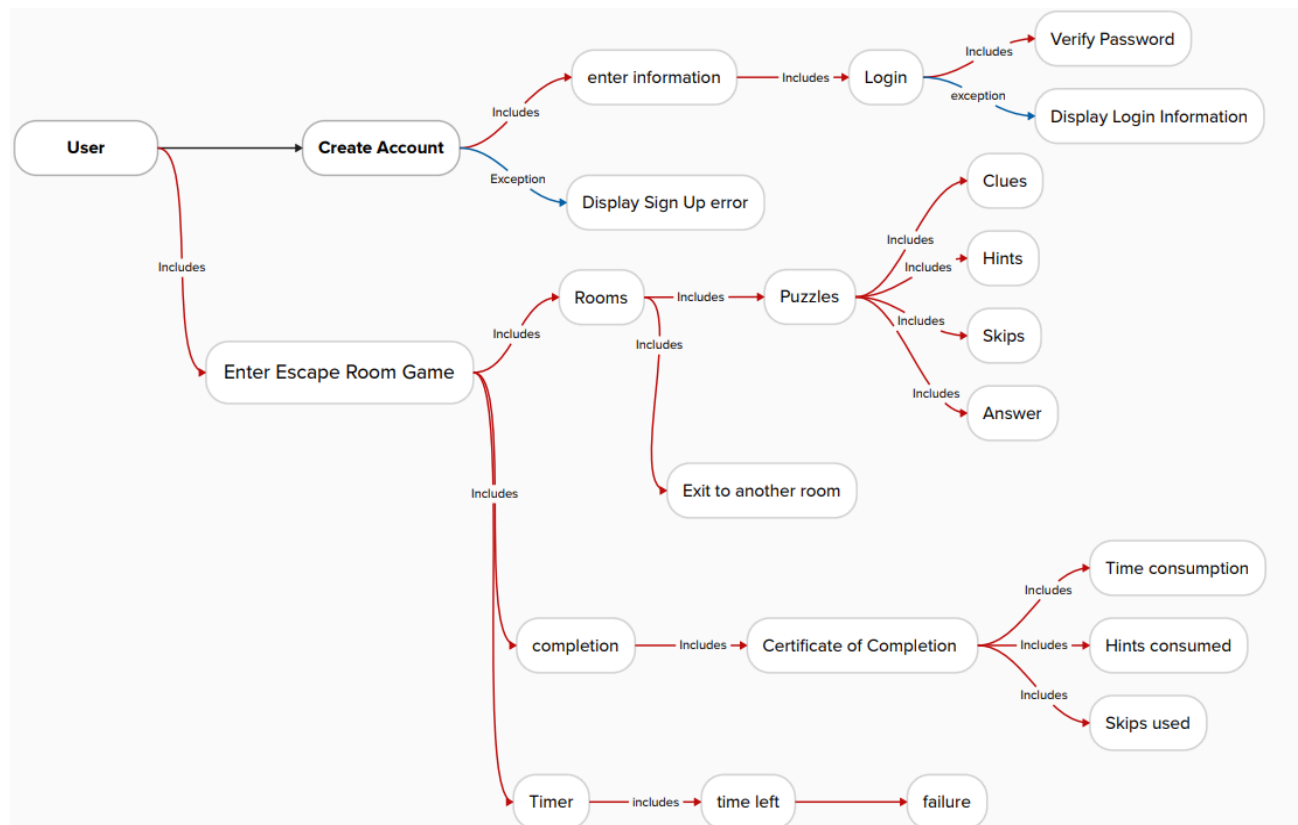
Monetary Constraints

- This project has a budget of \$0.

4. Overall Description

Written in Java, our game will be a point-and-click over real photos. We will use Java's Abstract Window Toolkit (AWT) and Swing to apply overlays to the current image. When hovering over a clickable element, the element will be highlighted and/or the pointer will indicate that it is clickable.

5. Business Use Cases



6. Functional Requirements

- [Functional Requirements Spreadsheet](#)

7. Non-Functional Requirements

Look and Feel Requirements

- The cursor shall change appearance when hovering over interactable objects.
- The program shall follow a consistent visual theme and style for all GUI and gameplay elements.
- The game shall present a narrative that players can interact with.

Usability

- New players shall be able to learn the basic controls of the game within two minutes of gameplay.

- GUI elements shall maintain consistent placement and positioning across all screens and menus.
- The games shall be fully operable using a single input device(e.g, mouse or trackpad).

Performance

- The game shall run smoothly (minimum 30 FPS) on most machines.
- The game shall be able to run with or without an internet connection

Maintainability and Support

- The game shall be deployable on most major operating systems (Windows, Mac, Linux).

Security

- User data (e.g, login credentials, saved games, or preferences) shall be stored in a secure manner.

Legal

- The system shall comply with all state and local laws.

8. Definitions and Acronyms

- **Graphical User Interface (GUI)**
 - The point of interaction between the user and program that encompasses all the visual elements that allow a user to input commands and receive feedback
- **Frames Per Second (FPS)**
 - A measure of how many still images are displayed per second to create an illusion of motion

9. Competitive Analysis

	Pirate Panic ^[2]
Strengths	<p>Right off the bat, the escape room started with an animated video explaining the backstory of how we got into the situation that we need to escape. This adds immersion to the user's experience.</p> <p>A cool feature with this product was that the inventory was visible at all times, with custom icons displayed for each of your items.</p> <p>This product had very well-drawn art, which added to the experience.</p> <p>This product has multiplayer support, which is really nice as people can play</p>

	together from separate devices.
Weaknesses	This product has a poorly designed GUI, which takes away from the experience. The puzzle's correct answers were very strict on formatting, which was confusing when a supposed correct answer wasn't.
Audience/Focus	This appears to have been made with kids in mind, as the puzzles were fairly simplistic and the progression was very linear.

	A Tuckaway General Store _[3]
Strengths	The escape room's visuals were made by using an actual photo of an antique general store and some 360 tour software, which was very well done.
Weaknesses	To escape the room, the lock took you to a Google Forms page to input your answers instead of using a GUI. This takes away from the quality of the product. The movement within the environment was very choppy and made it easy to get lost even within a small area.
Audience/Focus	This was focused towards adults and seniors, as the puzzles were about history and some niche references from years past.

	Bitcoin Break-in _[4]
Strengths	I really enjoyed the GUI. It was simple, but it made it easy to see everything in front of you. The puzzles were moderately challenging, but they had a very good hint system if you got lost.
Weaknesses	Occasionally, the clues lacked guidance for how to go about solving it, meaning that if you solved a puzzle, you might struggle to know where to input the answer. Occasionally, the buttons wouldn't work, and one time I unlocked a drawer, but it never removed the lock.
Audience/Focus	The audience was definitely those with more experience doing escape rooms, as it was somewhat challenging. The theme of Bitcoin leads me to believe the target audience was young adults and older teenagers.

Summary

	Strengths	Weaknesses	Focus
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Pirate Panic	<ul style="list-style-type: none"> + Good visuals + Good inventory + Multiplayer Support 	<ul style="list-style-type: none"> + Lackluster GUI + Poor solution checking 	Teens Parents with Children
A Tuckaway General Store	<ul style="list-style-type: none"> + Good visuals 	<ul style="list-style-type: none"> + Poor movement + Poor input options 	Adults Seniors
Bitcoin Break-in	<ul style="list-style-type: none"> + Good GUI + Good Inventory + Multiplayer Support + Challenging puzzles + Good Hint System 	<ul style="list-style-type: none"> + Not enough guidance + Bug issue with a button (resolved upon refresh) 	Older teenagers Young Adults

Following the competitive analysis above, we have analyzed many of the strengths and weaknesses of popular virtual escape rooms. This will help us create an outstanding product. We determined that our product should have real-life graphics, a smooth movement system, and an interactive GUI. Tuckaway's General Store had an amazing 360-degree view of the building, but when trying to move around, it was increasingly frustrating. We hope to accomplish something similar but incorporate a more functional movement system. Additionally, we enjoyed some aspects of the GUI from both Pirate Panic's inventory and Bitcoin Break-in. We hope to replicate similar systems within our product. We desire to incorporate these things to create a streamlined escape room that highlights some of the best qualities of the ones we reviewed above.

10. References

1. [Online Escape Room Market Size, Future Growth and Forecast 2033](#)
2. [Pirate Panic - Online-Escape-Room.com](#)
3. [A Tuckaway General Store - Shelburne Museum](#)
4. [Bitcoin Break-In - Online-Escape-Room.com](#)