Jaybirds

Vision Document

Foundations of Software Engineering

Fall 2023

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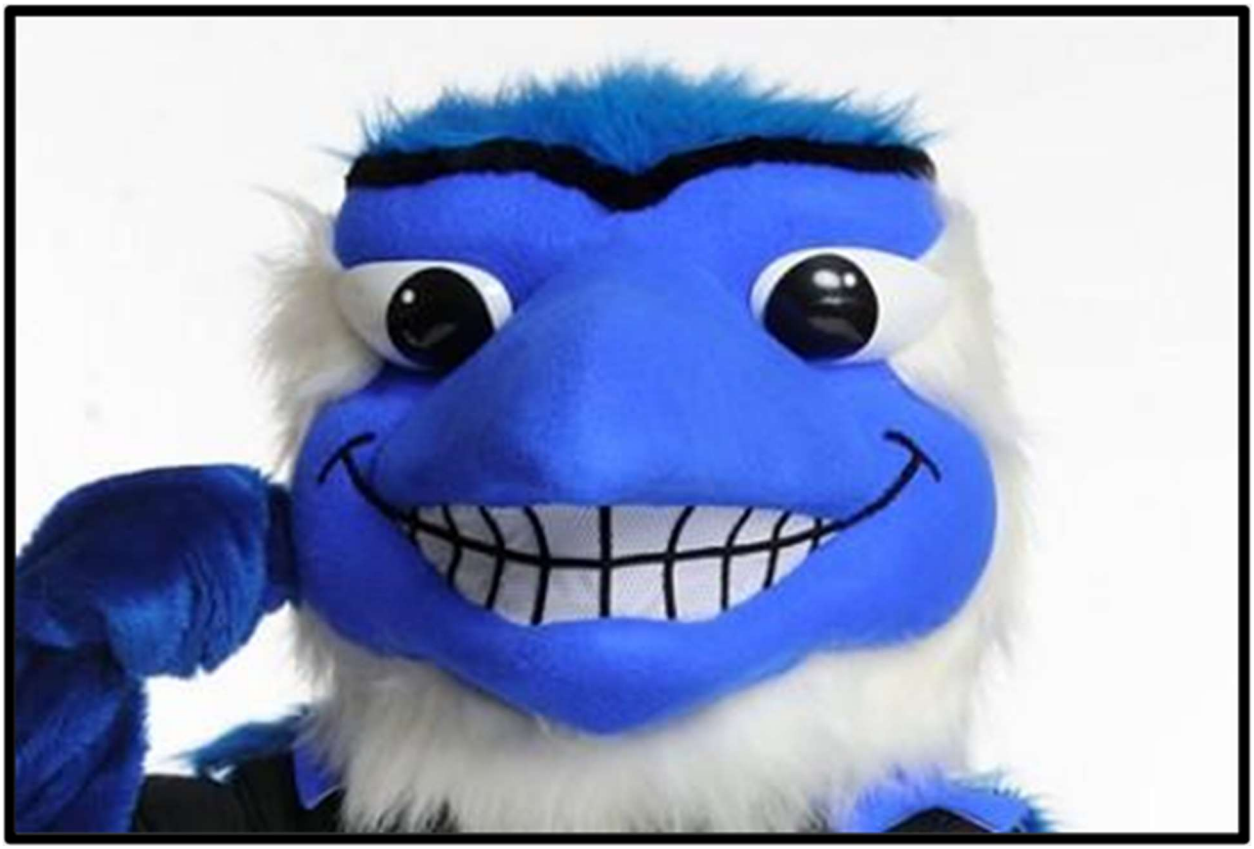


Photo Credit: The Johns Hopkins Hub

1. Introduction

1.1 Purpose

The purpose of this software project is to create a computer version of the popular board game Clue®. This vision document will lay out the project purpose, the program's major functionality and operations, and outline the major program inputs and outputs from the stakeholder view.

1.2 Scope

At a minimum, the product will allow at least three players to take turns generating clues that eventually enable one player to identify a culprit, weapon, and scene of the crime. The final release will enable play from three separate computers and feature an attractive graphical interface that generates interest in repeat game play.

2. Product Positioning

2.1 Business Opportunity

Board game favorite Clue® is due for an update in the form of a computer-based version. For decades, the game has engaged new players with its simple construct and story-like intrigue. A computerized Clue® could offer friends and family–who increasingly use online tools to connect–a familiar setting to spend time together. Major household brands recognize the game's potential draw and several have indicated interest in advertising within the game following a successful implementation and proof of concept demonstration.

2.2 Problem & Product Position Statement

The updated, computerized game should retain the original's construct: players moving to various rooms and asking each other questions to generate clues about a crime that the winner will solve. In order to maintain the game's cross-generational appeal, the user screen should appear similar to the original board but simplify the room layout to speed game play. The game should connect players participating in up to three separate locations.

3. Stakeholder & User Descriptions

3.1 Stakeholder Summary & Goals

The stakeholders in this project include the future game players, the software engineer students building the game, and the course instructors. The stakeholders' interests largely align around the same core goals for the game: simple to set up and use, recognizable as the game Clue®, and complete by the end of the semester.

3.2 User Summary & Profiles

The product users include board game players of all ages who may play with peers or in cross-generational groups. Initial marketing research indicates that the cohorts likely to engage with the product have various goals. (*See Figure 1: User Personas*.)

3.3 User Environment

The final product should interface easily from various user computer setups, because the targeted age ranges and typical computing hardware will vary. The development team will target early, incremental product releases toward standard consumer-grade laptops with an internet connection. Later releases will aim for tablet functionality.

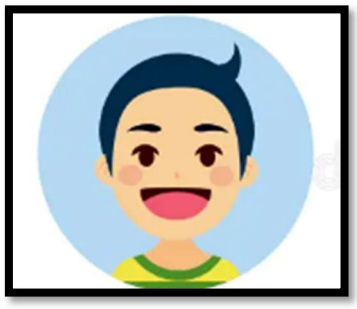
User Personas: Market Study[1]		
Gen Z Child	**Gen X Parent**	**Baby Boomer Grandparent**
		
General Attitude Toward Free Time		
Enjoys new game-like challenges. Seeks connections with family. Enjoys screen-based activity.	Seeks enrichment for children. Seeks connections with family. Tired of work-like screen activity.	Enjoys mental challenges. Seeks connection with family. Tolerates screen-based activity.
Likely Preferences in a Computer-Based Board Game		
Prefers simple language. Follows animated directions. Dislikes waiting and turn taking.	Prefers novel interface. Avoids activities that will require lots of explanation or coaching for other players.	Prefers classic illustrations. Follows written directions. Dislikes "busy" interfaces.

Figure 1[2]

4. Product Overview

4.1 Product Functionality

The product will enable 2-3 players to access its graphical interface from separate computers. The players move around the board simulating rooms in a manor and obtain clues from other players about the crime, which is a winning condition of a room, character and weapon that the program sets randomly at the game outset. Each time the game state changes–a character moves, a player makes a suggestion, other players respond to a suggestion, or a player makes an accusation–the program will notify all players through its message interface.

[1] Fictional market study to demonstrate course concepts.

[2] Family Member Icons: Set of Seven Family Members Avatars Icons in Flat Style Stock Vector - Illustration of child, baby: 56515621 (dreamstime.com)

4.2 Product Features

The game will feature a "board" with nine rooms and a deck of 21"cards" that depict the nine rooms, six weapons, and also six characters. Each character will also be displayed as a persona token to move players around the board. The game provides each player with a "notebook" for recording clues about which cards are *not* the winning condition and eventually "solving" the crime by deducing the winning condition. Longtime Clue® players will recognize the graphical interface's classic illustration while lighting and animation choices will draw younger players into the game. *(See Figure 2)*

Graphical Interface Features:

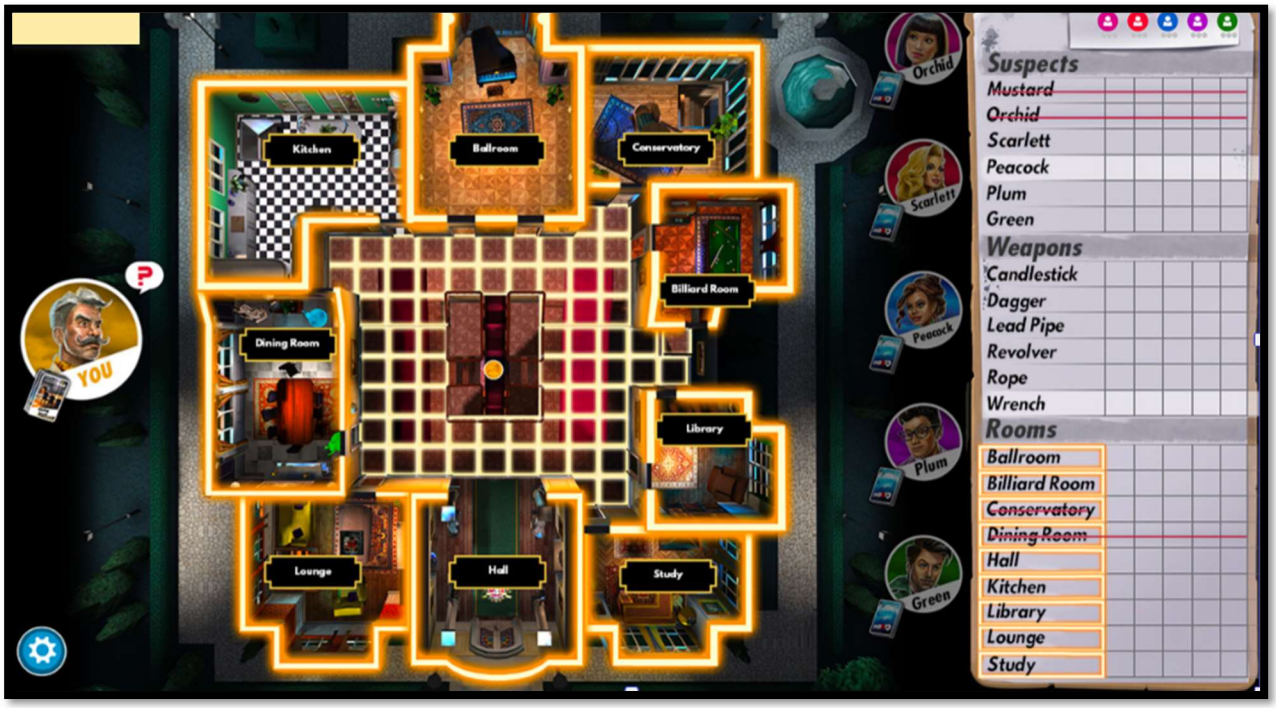


Figure 2

4.3 Product Inputs

Web Server User Actions

- Create a game.
- Join a game.
- Select a character.
- Manage available choices for player movement.
- Leave a game.

Gameplay User Actions:

- Character Selection.
- Movement - User chooses to move the character to a hallway or a room.
- Suggestion - When in a room, the user suggests a character and murder weapon.
- Accusation - User goes all in and commits to their suggestion. If the user is correct, the user wins. If not, the user forfeits their chance to win.
- Show proof that another player's suggested card is not part of the crime.
- Update the notebook - Add/remove checkmarks and X's from the slots on the notebook.

4.4 Product Outputs

GUI Outputs

- Display a Home screen with a join game dialogue box.
- Display a character selection screen.
- Display the game board synchronized across players.
- Display character sprites in the correct location on the board.
    - Update character locations when a player moves.
    - Update character locations when a crime suggestion is made by another player.
- Display a unique notebook to each player.
    - Display a column for each player.
    - Display a row for each character, weapon, or room.
    - Allow the player to add checkmarks, X's, ?'s, !'s in notebook cells at any time.
    - Allow the player to remove notes from any cell on the notebook at any time.
- Display user suggestions.
    - Show the character, room, and murder weapon suggested.
    - Show all players whether another player successfully refuted part of the suggestion.
    - Show the proposer any cards being refuted by another player.
- Display the accusation cards.
- Display a "Incorrect Accusation" screen in the case of an incorrect accusation.
- Display a "game over" screen in the case of a correct accusation.
    - Additionally display this screen if a player leaves the game and there are less than the minimum 2 players left.

5. **Constraints:**

Product Constraints

- Must support 2-34 players.
- Must be web accessible.
- Must have a Graphical User Interface (GUI).
- Game board must be synchronized across players.
- No animations in initial increments.

Development Constraints

- Limited development time.
- Fully remote development: workflow managed via GitHub, Zoom, and Discord.
- Use inexpensive or free services for feature design: free, open-source web frameworks.
- Limited developer prior experience with games and web applications.
- Limited overlap in developer programming knowledge.
- Limited experience with graphic design.
    - GUI will be limited to a fully functional but minimal representation of the game.

Note: If features are delivered ahead of time, the team could spend the additional time learning skills to overcome some of the above developer constraints (i.e. web development or graphic design experience)

6. Conclusion: The envisioned computer-based game Clue® will address the traits sought by multi-age game players—its most important stakeholder. The program design and functionality should achieve a proof-of-concept demonstration that recognizes the developers' varied experience levels and instructors' aggressive timeline.