**Problem**

The computer science (CS) field is high in demand but there's a well-documented lack of gender and racial diversity. Women, Blacks and Hispanics are underrepresented in obtaining CS degrees. Educational institutions have attempted to make CS more appealing and accessible to these groups, yet the diversity gap endures.

**Current System**

Today’s games that focus on teaching CS concepts are either instructional or simulation based. These games are generating little interest and awareness in CS due to how they’re perceived.

**Solution**

Alchemist Escape is an *escape the room* themed video game designed to increase CS interest and awareness. Players learn about basic CS concepts by solving CS oriented puzzles which are disguised as simple tasks. This allows any player who has a misconception of CS to play the game, since no previous CS knowledge is required.

**Implementation**

- **Unreal Engine 4 (UE4):** Used to design and build the Alchemist Escape game. Blueprints and C++ were used to implement the logic for the game.
- **Visual Studio:** IDE used for UE4 to write C++ scripts.
- **CSV and JSON:** Used to store the data captured from the player metrics.
- **Blender:** Used to create 3D models.
- **Photoshop:** Used to create textures and images for the game.

**Object Design**

- **User Interface:** Designed with focus on intuitive navigation.
- **Game Logic:** Involves complex algorithms for puzzle solving.
- **Data Structures:** Utilizes efficient storage for gameplay data.

**Requirements**

- My contributions for Alchemist Escape: Data Capture for Player Metrics
- Export Data to JSON and CSV files
- Logic for Calculating Weight on Scale
- Logic for Scale Animation
- Logic for Puzzle Completion
- Logic for Interactive Button
- Logic for Box Collisions
- Puzzle Environment Creation
- Testing and Debugging

**System Design**

- **User Interface:** Intuitive and user-friendly.
- **Game Logic:** Involves complex algorithms for puzzle solving.
- **Data Structures:** Utilizes efficient storage for gameplay data.

**Summary**

The purpose of Alchemist Escape is to offer an entertaining game that increases CS interest and awareness. Players can learn about CS concepts through gameplay, without the need of having any CS knowledge.

Future work will include:

- The addition of new rooms that would cover more complex CS concepts
- Porting the game to mobile devices and other platforms to make the game more accessible to every demographic, in hopes of decreasing the diversity gap in CS

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