ESCAPE Y2K - An Integrated Escape Room

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***Abstract*—"ESCAPE Y2K" is an interactive escape room experience that relies on computer engineering as its main control source. The escape room is built to be an autonomous, immersive, sci-fi, horror experience. A variety of sensors will be used to accomplish this including a sonar range finder, noise sensor, pressure and heat sensors, nfc/rfid, and movement sensors. Other technology to be implemented includes image/audio processing, bluetooth, and digital/analog circuit design. A stretch goal for this project is to make this room modular and portable, allowing it to be set up in any place and with any size of room.**

One of the major themes of the escape room is time travel. The experience will run on a clock that ticks between 1:00 PM and 12:00 (midnight) where certain events are dependent on the time. This can include cabinets opening during a specific time interval or locks having different passcode combinations depending on the hour hand. Players in the room are able to rewind or forward the time however they wish based on the minimum and maximum the time can go. Past 8:00, the game will transition to a nighttime mode where fake windows in the room will shine a light to simulate a creature looking inside. If a player is caught in this light, the room enters a danger state and the team will incur a penalty to the amount of time they have to escape. This penalty will also occur if the clock reaches 12:00. The game will conclude either when the players all exit the room safely, or the game clock expires.

The maximum amount of time players will have to escape will be 30 minutes, however, this may lessen if the player clock reaches midnight or if any of the players are seen by the monster. Each puzzle will take between 3 and 5 minutes to solve, allowing for a maximum of 7 or 8 (maybe) puzzles. Another stretch goal is to create a pool of puzzles from which the room can draw, giving each group that comes into the room a unique escape experience. These puzzles will be hard, but will still be easy enough to actually allow players to enjoy the experience and not be frustrated by the difficulty level of the puzzles.

***Index Terms*—Analog, Embedded Systems, Escape Room, Horror, Interactive, Networking, Science Fiction**

I. Introduction

In general, innovation in the escape room industry is minimal; if you've been to one or two you've seen how pretty much any of them are going to work. The level of difficulty from room to room may vary, and some of the puzzles could be interesting, but there haven't been any groundbreaking changes made to the scene since its inception. Our goal is to THIS ISNT DONE YET, JAKE STARTED IT BUT YOU CAN TOTALLY DO WHATEVER YOU WANT WITH IT.

II. Our Vision

Our vision for this project is to take a unique spin on the formula that is most commonly used in escape rooms. Instead of using a large amount of analog puzzles and a "host" that is in charge of controlling which parts of the room are locked and unlocked when players complete certain actions, the room will adapt and progress on its own as players advance through the various puzzles.

What is an escape room?

If you arent very familiar with escape rooms, the basic idea is to provide people with an interactive and exciting puzzle experience. Players start by being "locked" in a room (you're never actually locked in, for safety reasons) with a set of instructions that lead them through a series of puzzles. Some of these puzzles are more traditional, such as solving a cypher or figuring out a combination for a lock, while others make the players think a little bit deeper. Many of these puzzles are on the simple size in an attempt to have a good balance of fun and difficulty. And, many of these rooms attempt to fit their puzzles within a certain theme, such as escaping from an Egyptian tomb or trying to escape from the zombie apcalypse.

There are a variety of escape rooms all throughout Utah and in other parts of the US as well.

Our motive behind the project

Why did we even decide to do this as our senior project?

III. What makes our escape room unique?

Because this escape room is being developed as a comuter engineering senior project, it will have a distinct emphasis on puzzles that involve imbedded computing, giving our room a deeper sense of connection between the separate parts. This means that we will be using technology as a central theme throughout the room to help convey the emotions that we are hoping the players will feel and also make the puzzles more interesting.

How horror plays a role

In life, horror is an incredibly good motivator. Imagine you are being hunted by some alien creature that is here to destroy the world and the only way to escape is so solve a collection of puzzles; you would gladly partipate! In our escape room, this exact situation is something that we will be utilizing to push players to solve the puzzles as fast as possible.

IV. Puzzles in our Escape Room

This section contains a list of all of the puzzles that our escape room will feature, as well as the solution to each of them. If you haven't already experienced the escape room, be warned that this section does contain spoilers and will prevent you from experiencing the joy of solving the puzzles on your own.

This section will be greatly expanded on as we decide what other puzzles we want to incorporate and how they will function. A goal we have is to have a pool of around 10-15 puzzles that can be randomly selected, so that each time a player is in the room the experience will be different from the last. More may be added, depending on time contstraints and how many ideas we have, but this is the idea for now.

A. Chess Board Puzzle

One of the main puzzles that our room will be centered on is a chess board in the center of the room. This puzzle will be one of the first things that players see, but also the last puzzle that they will solve. Throughout the room and after solving various puzzles, players will receive chess pieces that, when arranged in the correct format, will open the door that is keeping players in the room and stop the catastrophic end of the world due to Y2K.

B. Bust

C. Puzzle 3

D. Tape Player

V. Materials Needed

This section will detail all of the materials that we are using to build this escape room and how they fit in with the project. Sensors that we will be using will be outlined here,

VI.

VII. Conclusion

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