

Memo to: Mr. Cory Mettler
From: Julian Rechsteiner
Date: May 5, 2021
Regarding: Final-Project Proposal

Disclaimer: I have reviewed project guidelines as presented in Lecture 5b, item #3: *JR*

Academic Dishonesty Commitment: I understand the course academic dishonesty policies and commit:

- 1) I will be working alone on this project: *JR*
- 2) This project will not be used in another course work: *JR*

Summary:

I plan to build a social party game for my final project. The game will consist of two players where each player will start with 2 cups. Each turn, a player will try to hit a cup using some object (nerf gun, ping pong ball). Once a player is able to knock out both of the opponent's cups off the platform, they are considered the winner of the game. An LED and LCD will be used to determine the current score of both players, and they will both have a winner state to show the winner of the game. A keypad button will allow the user to restart the game. See Figure 1 for a holistic view of the project.

Setup:

This project will require a keypad to change the state of the game, as well as an LED and LCD to display the current score of the game. Additionally, in Figure 2, 4 photocells are required where each player has 2 sensors, and each sensor displays the number of lives of that player.

Methodology:

To count the number of cups a player still has on their side of the platform, I will be utilizing photocell sensors to sense the current lighting. Each cup will have a sensor underneath it; if a sensor determines that there is very little light, that signifies that the player still has a cup, meaning that they still have a point. Once both sensors on a team senses light, that means that both cups of that player were knocked off of the platform, determining their defeat.

In Figure 3, the master device will send the current score to both slave devices. It will send the player 1 score and player 2 score, where each score is a byte of data. The slave devices will decipher that data and will display it using their output devices (LED and LCD). The slave devices will check whether the data sent is a 0. If it is, they will display their respective 'game over' state.

Basic Guideline Fulfillment:

The inputs to the system are:

1. Keypad
2. Photocell sensors

The Master will be responsible for:

1. Receiving input from the keypad and photocell sensors and sending the current game score to the slave devices.

The Slave(s) will be responsible for:

1. Both slave devices are responsible for displaying the current score of the game in different ways. The LED bars will display how many lives each player still has, and the LCD display will show the current score using ASCII characters. Both will have a winner state, where the LCD will display the winner and the LED will blink a winner pattern.

The outputs of the system will be:

1. LED Bar
2. LCD Display

Desired Prescale level: 88%

Argument for Desired Prescale:

Originally, my desired prescale was set as an 82% because I believed it fit in between 82% and 92%. After rewriting this proposal to explain the structure, rules, and logic of my game in a better manner, I believe you will have a better understanding of its functionality. Additionally, as mentioned in the previous draft, I am using photocell sensors to obtain data in a way that has not been done in EELE 371 or EELE 465. However, I am still using a keypad, LED, and LCD as inputs/outputs which has been previously done in labs. The LED and LCD are just two different ways to display the current score, although they will both have their respective game over states.

Finally, because I will be building this game, I would consider this system having a real-life objective. Due to these reasons, I believe this project deserves a prescale value of 88%.

Appendix A – Figures

