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# SE101 PROJECT PROPOSAL

## *What the Project Does*

The project we have in mind is, in its essence, a reaction time based game. It is not designed for any practical usage but rather for amusement purposes. How the game works is that it will incorporate a display screen that will tell the user what it would like them to do. For example, if the screen were to display a word like blue, then the user must press the button when the blue light comes on. If the screen says red, then the user must press the button when the red light comes on. Users would have a certain amount of time to complete each command and if the task is not completed in the set time or button is pressed when the incorrect light is on then they lose a life from a total of three lives. The number of tasks completed will be the individual's score and will be shown at the end of the game, after all three lives have been lost.

Once the basic program has been written the following abilities can be added: use of button and joy stick to determine the difficulty level of the game. Use of buzzer to sound and indicate whenever a life is lost, use of other modules, like a joy stick, for other tasks the user is to complete.

## *Major Software Components*

A) Function used to determine what command the user is to execute
B) Function used to call another function to display and execute the command
C) Function used to display the command
D) Function used to track the time the user is allowed and their lives
E) Function used to execute the command (ei. Light up lights)
F) Function used to register human interaction (ei. Press button, move joystick)

## *Prototype Plan*

For this project, an evolutionary and horizontal prototype model will be adopted. The original prototype will be built upon to become the final project, the code will not be scrapped and rewritten. Since this not a safety-critical software, but a user-interactive game and where the general idea of the project but the specific requirements are unclear, an evolutionary prototype will best serve our purposes. Furthermore, since we are a group of two, integration of the two different parts will be key and thus also supporting the use of horizontal and evolutionary prototypes.

## *Hardware Needed*

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| - Elegoo UNO R3 Controller Board<br>- LCD 1602 Module (display)<br>- Power Supply Module<br>- Joystick Module<br>- Active Buzzer | - 830 Tie-Points Breadboard<br>- Button<br>- Red, Yellow, Blue, Green, RGB LED lights |

## *Anticipated Challenges*

1) The primary anticipated challenge would be the integration of parts written by two different programmers as well as the sending of information back and forth between the functions themselves. Not only would each programmer need to be aware of what all the code does, they must work at the same time on parts that the other needs. This can be combatted through effective planning and pair programming. A plan would describe the passed and return parameters for each method and hard code could be in place to first ensure everything does work and connect. The pair programming not only allows one to discuss the logic of the program but keeps one another on the same page as to what the program does.
2) The second challenge would be to familiarize ourselves with and use Arduino as this is something neither of us have used or encountered before. It is the first time either of us have connect software to hardware function. This can be overcome only through using and familiarizing oneself with Arduino.