# Light Navigator

*A simple Arduino project using a 5-position switch sensor and an 8x8 LED display.*

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# Introduction

(Author: Marisa Smith)

Using an 8x8 LED display (MAX 7219) and a 5-position switch sensor (basically a simple joystick) controlled by an Arduino, we plan to create a simple game. Ultimately, we would like to use the joystick to direct the “player character” (PC) represented by a blinking LED around a maze displayed on the 8x8 board. The PC will be able to move in 4 directions. There are a few steps along the way:

1. get the 8x8 display working [done]
2. create a level [done]
3. be able to move the PC in the level [done]
4. use input from joystick [done]
5. failure states [done]
6. win screen
7. more levels

Depending on how well this project is scoped and how hard each step is, we might have to scale back.

## The Microcontroller Platform

(Author: Ryan Hardy)

Explain the Arduino here

[Describe the microcontroller board you are using. This description should indicate where such boards can be obtained, and lay out the basic architecture of the board. You can paste screen captures of diagrams from any documentation you find online. You should describe the basic capabilities of the actual processor on the board. Show a block diagram of the device indicating any special features you find that are interesting and useful in conducting your experiment.]

## The Test Device

(Author: Nicholas Warren)

Explain the components here

[Each project uses some kind of device that ends up being controlled by the microcontroller. Describe that device and give an overview of what it might be used for. Basically, describe what is involved in interacting with the device. Again, use screen captures of diagrams from documentation is you can.]

## Development tools

(Author: Nicholas Warren)

Explain the Arduino IDE and LED library here

[Detail the tools you needed to obtain to work with the microcontroller and the device. You also need to identify any additional software you needed to interact with your test device.]

## The Experiment

(Author: Marisa Smith)

Explain what you picked to do, why you picked it, and how you did it here, along with wiring from Arduino to devices

[Describe the experiment you set up. What led you to pick this particular experiment (hopefully it was not because it was easy!) Be sure to show how your experiment was set up. Show how the device is connected to the microcontroller.]

## Conclusions

(Author: Marisa Smith)

Other ideas that have stemmed from this project include:

- an Arduino board that fetches a weather report and displays a corresponding graphic on the 8x8 display
- adding teleports to the game
- finding a board that has multicolored LEDs and using the different colors to represent different things in the game

[What did you learn about hardware control from this project? Did you get any ideas for other projects you might try in the future?]

## Contributions

Joystick Controls - Ryan & Nicholas
Project Manager - Marisa
Level Designer - Marisa
Documentation Formatting - Marisa
Game Code - Marisa & Nicholas
Wiring - Nicholas
Requirements - Roie Black

## Project code

[Include a listing of the code you used for this project.]

## Sources

https://www.parallax.com/sites/default/files/downloads/27801-5-Position-Switch-v1.1.pdf