

# Project Railgun

## Manual

## Objective

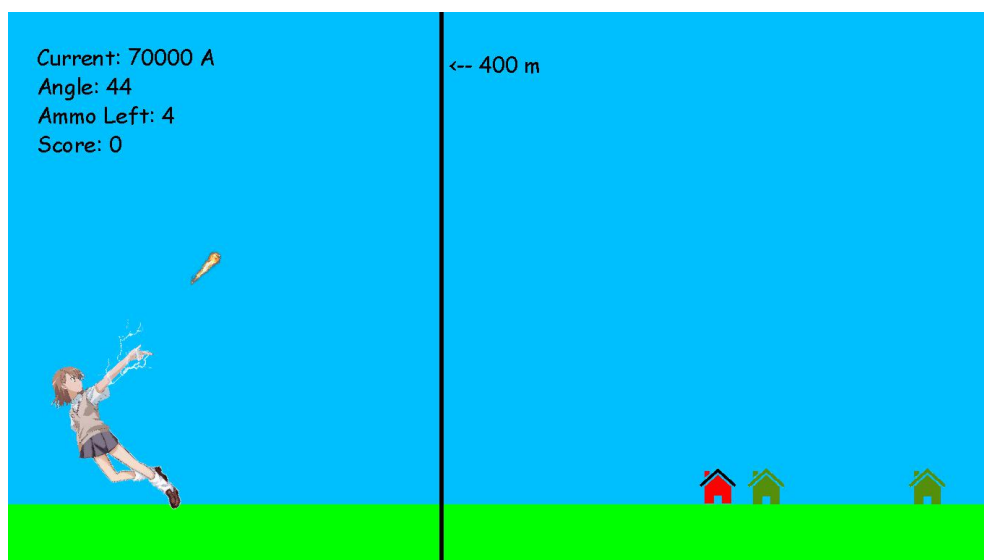
The objective of this game is to score the most points by clearing the most levels. To clear a level, the player must operate a railgun by adjusting its firing angle and the current used to power it, then hit the target red house. New levels will be constantly generated as long as the player does not lose.

## Beginning the Game



To begin the game, the player must input their name into the text box, then press one of the one of the buttons below to choose what character they would like to play as. Leaving the name blank will result in the player being unable to select their character and start the game. In the upper left corner, there is a help button. Pressing it will open this manual. If at any time the player wishes to exit the game, press escape. Note that unless the game is finished, the player's score and progress will not be saved.

## Playing the game



The player will operate the railgun by adjusting the current and firing angle. These, along with other useful information, is at the top left of the screen. The left arrow key increases the firing angle, and the right arrow key decreases the firing angle. This angle is measured in degrees from the horizontal. The angle may not exceed 90 degrees, or be less than 0. This ensures that the projectile will actually fly forward. The up arrow key is used to increase the current. The down arrow key is used to decrease the current, which cannot be less than 0 A. The space bar is used to fire the projectile, and the key “p” can be pressed to pause the game. While the game is paused, the game can be minimized by pressing “m”. Note that the angle and current cannot be changed, and projectiles cannot be fired when paused. One can resume anytime by opening the window from the taskbar. The black line going down the screen denotes where 600 meters has been omitted.

### How the game is won or lost

The goal of the player is to hit the red house with the projectile. This will allow the player to clear the level, and a new level with different house positions will be generated. The player will receive two additional projectiles when continuing to the new level. This will keep repeating until the player loses the game, which then their score will be saved.

There are several conditions that cause the player to lose the game. If the player hits a green house, they will lose automatically. If the player fails to hit the target with their last shot, and the ammo counter is at zero, then the player will lose.

### Ending

you ran out of ammo!	Score: 2
Highscores:	
1 yousa 4	<input type="button" value="Restart"/>
2 marblue 3	
3 bob 2	<input type="button" value="Quit"/>
4 ----	
5 ----	

The player will have their score stored under the name that they entered at the beginning. The ending screen displays the score of the player, along with the top five highscores, in order. If the player is among the top five, the name and score will be displayed. The restart button allows the player to replay the game. The player’s name will be saved so that the player will not have to re-type it, but they may change it if desired. Note that playing with the same name will not overwrite the previous attempts, and thus it is possible to fill the leaderboards with only one player’s name. If there are less than five players on the leaderboards, the remaining spaces will display “----”. The quit button simply allows the player to exit the game.

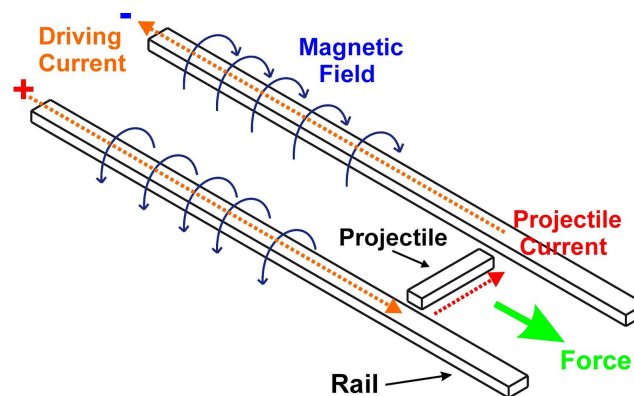
## Frequently Asked Questions

### 1. Why can't I input my name into the box?

Check that the keyboard is connected and functional. Make sure that the language input is set to English.

### 2. What is a railgun? How does it work?

A railgun is a military weapon that uses electromagnetic forces to launch a projectile (usually solid metal) at a target. Since electric current flowing through a conductor creates a magnetic field, this field is harnessed by the railgun by allowing current to flow through two parallel rails and a projectile as follows:



The resulting force (called a Lorentz force) causes the projectile to be launched with very high speeds. The U.S. Navy's railgun, which is under development, has been measured to achieve muzzle velocities of 2500 m/s.

### 3. Who is Misaka Mikoto?

Misaka Mikoto is the protagonist of "A Certain Scientific Railgun". She is capable of controlling electricity, and thus by extension, magnetism. One of her signature moves is launching a metal projectile using electromagnetism, which led to her being referred to as "Tokiwadai's Railgun" (Tokiwadai is the school that she goes to).

### 4. What is the background music?

The music in the background is the first opening theme (OP) to "A Certain Scientific Railgun". This song, called "Only My Railgun", is originally performed by fripSide. The version in the game is an instrumental performed on the erhu by an enthusiast on Bilibili (the specific video is av42844650).