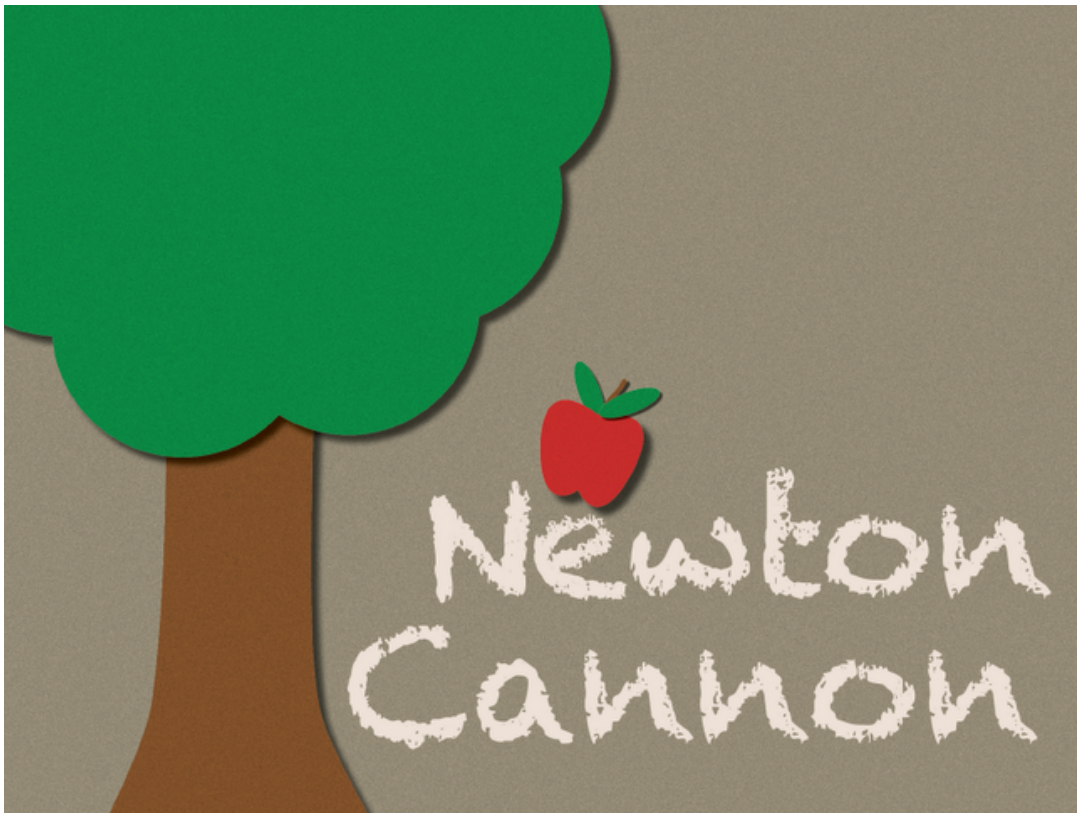


User's Guide

The Ohio State University
Department of Computer Science & Engineering
CSE694: Professor Rajiv Ramnath, PhD.

Team 6
Samual Bantner (bantner.2@osu.edu)
Jarrod Freeman (freeman.320@osu.edu)
Mike Zazon (zazon.1@osu.edu)

Section 1: Installation
Section 2: How to Play
- Splash Screen and Main Screen
- Cannon View
- Ball Flight
- Objectives
  - Shoot at least 50 meters
  - Shoot between 50 and 100 meters
  - Shoot between 150 and 350 meters
  - Shoot at least 100 meters
  - Shoot between 200 and 300 meters
  - Shoot between 200 and 400 meters
  - Shoot between 200 and 450 meters
  - Shoot at least 150 meters
  - Shoot between 150 and 200 meters
  - Shoot between 400 and 600 meters
  - Shoot at least 200 meters
  - Shoot between 50 and 200 meters
  - Shoot at least 250 meters
  - Shoot between 400 and 550 meters
  - Shoot between 300 and 400 meters
  - Shoot at least 300 meters
  - Shoot between 50 and 150 meters
  - Shoot between 350 and 500 meters
  - Shoot at least 350 meters
  - Shoot between 100 and 200 meters
  - Shoot between 350 and 550 meters
  - Shoot at least 400 meters
  - Shoot between 100 and 150 meters
  - Shoot between 250 and 400 meters
  - Shoot at least 450 meters
  - Shoot between 50 and 250 meters
  - Shoot between 100 and 250 meters
  - Shoot between 200 and 350 meters
  - Shoot at least 500 meters
  - Shoot between 150 and 300 meters
  - Shoot between 400 and 500 meters
  - Shoot between 350 and 400 meters
  - Shoot at least 550 meters
  - Shoot between 100 and 300 meters
  - Shoot between 150 and 250 meters
  - Shoot at least 600 meters
  - Shoot between 250 and 450 meters
  - Shoot between 200 and 250 meters
  - Shoot at least 650 meters
  - Shoot between 300 and 450 meters
  - Shoot between 350 and 450 meters
  - Shoot between 250 and 300 meters
  - Shoot between 250 and 350 meters
  - Shoot at least 700 meters

Shoot between 300 and 500 meters
Shoot between 300 and 350 meters

Section 0: What is Newton Cannon?

Newton Cannon is designed to teach students the effect of gravity and other physical world properties on a projectile. Students may be familiar with the gameplay as many popular games in the mobile application markets and stores have a similar design. The goal was to create a fun way to teach the effect of different physical properties on a ball that is launched from a Cannon. Newton Cannon is targeted towards K-12 students, but anyone will enjoy the 3D visuals and gameplay that this application provides.

Within the application, gravity can be manipulated by the user according to which planet the user selects to fire the cannon on. For simplicity, gravity is presented as a percentage relative to earth's gravity. The planets available to the user and their associated gravity levels are:

Earth (1.0)
Mercury (0.3)
Venus (0.9)
Undiscovered (0.7)
Mars (0.3)
Jupiter (2.3)
Saturn (1.0)
Uranus (0.8)
Neptune (1.1)
Undiscovered (0.6)

Section 1: Installation

In order to build and install the application the user must first have Xcode installed on their machine. Then simply follow these steps:

1. Download the application project from dropbox here: https://www.dropbox.com/sh/ufsvph3e6tes05f/akqk_QVX7s

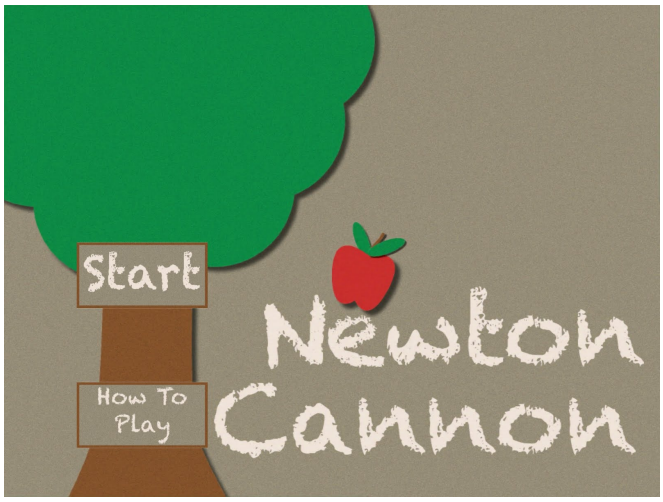
2. Open the project repository and then open the file “Unity-iPhone.xcodeproj” within Xcode

3. Click the “Play” button to deploy the application to selected device in dropdown

Section 2: How to Play

Splash Screen and Main Screen

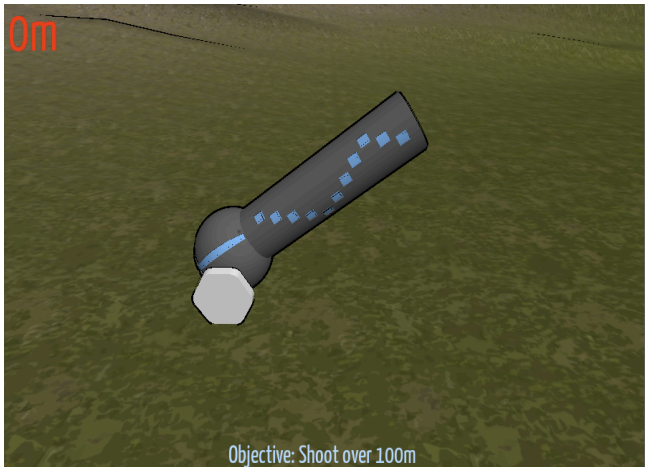
The gameplay of the Ball Game is very simple. Once the application loads, the user is presented with a splash screen and two options: “Start Game” and “How To Play”.



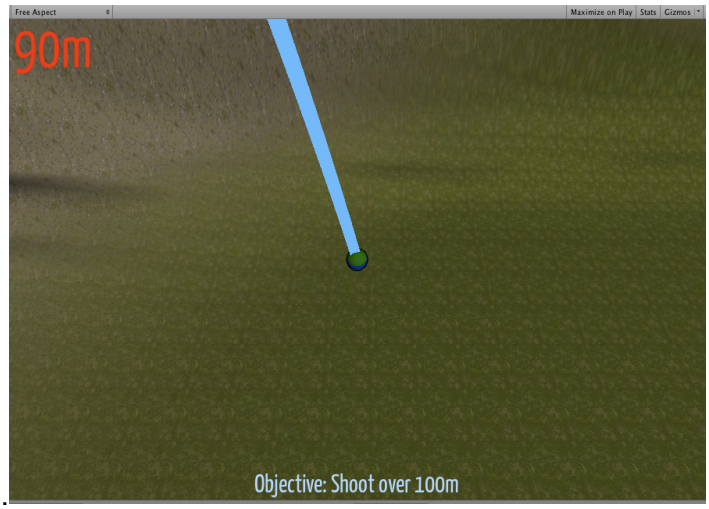
Clicking “How to Play” will provide the user with instructions how to play the game. As well as a description of the objectives that need to be completed.

Cannon View

If the user presses Play Game, they are presented with the first objective along the bottom of the screen and the cannon view.



Once the screen is tapped (when the desired height of the cannon is reached), the ball will launch and the distance will be constantly updated in real time (in meters) at the top left corner of the screen



Ball Flight

During the flight of the Ball, the camera tracks progress and the user can watch the ball until it slows down and comes to a stop on the ground. The game will then report if the objective has been met.

Objectives

After a completed objective, the next objective (if available) will load and the user will be presented with the cannon view. If the user fails an objective, they will have the option to adjust the gravity of the world to make the objective more attainable. The objectives implemented in the application are:

Shoot at least 50 meters

Shoot between 50 and 100 meters

Shoot between 150 and 350 meters

Shoot at least 100 meters

Shoot between 200 and 300 meters

Shoot between 200 and 400 meters

Shoot between 200 and 450 meters

Shoot at least 150 meters

Shoot between 150 and 200 meters

Shoot between 400 and 600 meters

Shoot at least 200 meters

Shoot between 50 and 200 meters

Shoot at least 250 meters

Shoot between 400 and 550 meters

Shoot between 300 and 400 meters

Shoot at least 300 meters

Shoot between 50 and 150 meters

Shoot between 350 and 500 meters

Shoot at least 350 meters

Shoot between 100 and 200 meters

Shoot between 350 and 550 meters

Shoot at least 400 meters

Shoot between 100 and 150 meters

Shoot between 250 and 400 meters

Shoot at least 450 meters

Shoot between 50 and 250 meters

Shoot between 100 and 250 meters

Shoot between 200 and 350 meters

Shoot at least 500 meters

Shoot between 150 and 300 meters

Shoot between 400 and 500 meters

Shoot between 350 and 400 meters

Shoot at least 550 meters

Shoot between 100 and 300 meters

Shoot between 150 and 250 meters

Shoot at least 600 meters

Shoot between 250 and 450 meters

Shoot between 200 and 250 meters

Shoot at least 650 meters

Shoot between 300 and 450 meters

Shoot between 350 and 450 meters

Shoot between 250 and 300 meters

Shoot between 250 and 350 meters

Shoot at least 700 meters

Shoot between 300 and 500 meters

Shoot between 300 and 350 meters