

ETGG1801 – Game Programming Foundations 1

Lab 5 – Functions

Due on 11/30/2015

Overview

In this lab, you will be creating a game where the player controls a cannon that is placed in the center of the window. The player will be able to rotate and fire the cannon, using it to keep trolls from reaching its shield.

Tasks

**Note: All tasks must be completed to receive credit on this lab.*

1. Create a new python module called **cannon** (the file will be called **cannon.py**)
 - a. The cannon module will contain functions/variables for working with the cannon and its bullets
 - b. You must include at least the following functions:
 - i. **CreateCannon** – create a list representing a cannon
 - ii. **UpdateCannon** – update all bullets fired from cannon
 - iii. **DrawCannon** – render cannon and all of its bullets to the screen
 - iv. **RotateCannonCW** – rotate cannon clock-wise
 - v. **RotateCannonCCW** – rotate cannon counter clock-wise
 - vi. **FireCannon** – fire a bullet
 - vii. **CreateBullet** – create a list representing a bullet
 - viii. **UpdateBullet** – move bullet
 - ix. **DrawBullet** – draw bullet to the screen
2. Create a new python module called **troll**
 - a. The troll module will contain all functions/variables for working with trolls
 - b. You must include at least the following functions:
 - i. **CreateIceTroll** – create a sprite list representing an ice troll
 - ii. **CreateLavaTroll** – create a sprite list representing a lava troll
 - iii. **UpdateTroll** – update the troll sprite, move it and set its direction
 - c. Be sure to use **DuplicateSprite** when generating new ice or lava trolls.
3. Create a new python module called **collision**
 - a. This module will contain functions for handling collision:
 - i. **Distance** – calculate the distance between two points
 - ii. **CircleToCircle** – return True if two circles are touching, False if not.
 - iii. **TrollsToBullets** – check if any trolls are colliding with a bullet
4. The game should allow the player to rotate and fire the cannon using the arrow and space keys, respectively.
 - a. The cannon should only be able to fire if less than three bullets are visible on the screen.
 - b. Bullets should travel in the direction the cannon's barrel is facing.
5. A new troll should be generated randomly. Trolls will walk towards the cannon, damaging the cannon's shield when they get too close. Each time the shield is damaged, decrease its health and change the image to reflect this. When the shield has been damaged by three trolls, end the game and display how long the player lasted (in seconds).
6. The game should play identically to the one in this video: <https://youtu.be/c8aMJpSJ2X0>