**Software Development for Games**

**Project 1 Step 4**

**Authors: Ben Mohan, Brian Kalvoda**

**Specification:**

* Story: You are a tank, you kill the enemy tanks
* Scene: You are on a battlefield; you are ready to kill enemy tanks
* Players: Red tank, Green tank
* Objects: The tanks, the tank shells in flight, the ground
* Physics: Gravity on shell, velocity on shell, player tank stuck to ground, ground disappears when exploded
* Events: Player fires shell, player changes firing angle, player changes map position, player changes firing velocity, player gets hit by explosion, player dies
* Audio: Firing sound, impact sound, death music
* Rules: None, shoot at the enemy tank
* Objectives: kill the enemy tank before they kill you
* Platform: Web browser, mouse, keyboard if desired

**Description:**

Our game begins with two tanks on a procedurally generated battlefield. Each tank is designed to be controlled by one person. Each player must adjust firing angle, position, and power to fire a shot that will impact the enemy tank. Players take turns doing this until one remains standing. Currently our game features block based terrain that can be destroyed. Other tank games also often have a single player fighting NPC enemies rather than player versus player in our game.

**Design Notes:**

* Bitmaps
  + Both tank chassis are image files put into bitmap objects which are then manipulated in game
* Shapes
  + The ground objects and the tank objects, as well as all of the user controls are created from createJS shape objects and their graphics objects
* Animation
  + The tank shell shape is tweened through the sky and back down into the ground where it explodes by scaling up
* Mouse Input
  + All of the user controls are controllable through clicking on the on canvas shape buttons
* Keyboard Input
  + The firing angle is adjustable through the left and right arrow keys
* Containers
  + Each Tank is a container which contains a chassis and barrel which are then moved together throughout the playing field
* Sprites
  + A smoke sprite appears at the end of the barrel when a player fires
* Sprite Animation
  + The tank sprite cycles through the end of its animations simulating barrel smoke

**Final Project Achievements:**

Our final iteration does omit some of the goals we had originally set at the beginning of the project but meets most of them. Our tank game is turn based and allows two players to move and shoot around the field. The terrain located around where your ammunition explodes also disappears, drastically changing the battlefield. We had planned on having multiple ammunition types with various characteristics such as damage and firing arc, but we were unable to implement this in the final project due to time constraints. We ran out of time before we were able to do this as well. We had also considered adding more than two players, but decided against it as we were still trying to make both tanks function properly late into the project. Overall though the core image of the game was achieved.

**Credits:**

* Add tank movement function that allows tanks to move (Brian and Ben)
* Add turn based combat, so that only one player can use their tank at a time (Brian and Ben)
* Add tank sprites (Brian)
* Add tank and barrel movement (Ben)
* Add tank controls to allow user input (Ben)
* Add missile function that creates a parabolic arc for the shell (Brian)
* Create terrain generation function (Ben and Brian)
* Add smoke sprites (Ben)
* Add terrain destruction (Brian)