Game Risk assessment

FEATURE	DIFFICULTY X = easy XXXXX = hard	PARTICULARS
Menu System	X X X X	Just technically another level state, which means its controlled by the enum that switches between levels. The problem is getting the options menu to access change major features of the game. Essentially, the initial options will be pulled from a file, and the options that are used for the game will be pulled from wherever the option menu stores them.
Score System	X	We both have already implemented something like this, so it shouldn't be too hard. That hotline miami style that adds up all the bonuses at the end shouldn't be too hard either if the scores are stored in there own class.
Player Movement	X X	Basic 8 directional movement shouldn't take too long to tackle.
Player Attack	X X	Essentially we do 8 directional again, but it pre-decides the direction of the bullet. The bullets only shoot when direction is inputted, so we don't have to worry about what direction we last left off when we stop inputting shooting direction
Item Shop	X X X	Having the item shop be that transition in between levels is going to be a bit difficult. Also giving the players options, and having player interaction with the item shop that abides by the players wallet my be a significant obstacle as well.
Enemy Movement	X X X X X	We have to take in attack patterns from a file, have it choose randomly which pattern it will do, have it realise when one pattern is over and when to switch it to the next, all while colliding with bullets incoming and shooting directly upwards. This is going to cause some issues. Making sure nothing

		goes off the screen that's not supposed to and making sure that a pattern ends when the enemy unit is destroyed are small hidden pains.
Enemy Attacks	X X X X	See above
Tumbleweeds	X X	All the tumbleweeds have to do is spawn at random intervals, move across the screen and be able to be shot. They aren't locked to bounds so that makes them easy to just “move and forget”.
Save System	X X X X X	We currently don't have a clue on how to do this. How to save everything into a file, and reboot to that state is impeccable. Saving a bullet while its flying through mid air is going to be a challenge.
Powerups	X	Ben has already done a power up system for snake, so we should be able to reuse the basic spawns for that. We can also used the boundedZone concept from my centipede code to create a new area.

Other Risk Assessment

FEATURE	DIFFICULTY	PARTICULARS
Graphics System Transition to SFML	X X X X X	We are in no doubt going to encounter a lot of incongruencies between Allegro and SFML. Fixes for this will include changing function calls throughout the entire program to fit the SFML formats. Inputs may be different as well as outputs.

- ❖ Player Features
  - ➢ Movement:
    - ■ 8 directional movement
      - ● Have it be event based
        - ◆ Up and down arrow keys trigger “move by Y” functions
        - ◆ Left and Right arrow keys trigger “move by X” functions

                - Combinations of the two will do diagonals (or cancel movement if you do left and right at the same time)
            - The player will shoot in the last direction faced
    - Shooting:
        - Creates bullet objects
            - [opt] use an Object pool method by creating a certain amount
    - Power Ups:
        - Ability to collide with randomly spawned power ups for immediate use
        - Power up random spawning throughout a bounded box area
    - Shop:
        - Buy Item
            - Its own special key to choose which the player wants
            - The player will physically stand over there shop choice selection, then press designated buy key.
            - Coins
                - First checks if player has enough money to buy the item they want
                    - If not, give a message on bottom of the screen that the item cannot be purchased
                - Subtracted when item is bought
        - Leave shop
            - Proceeds to next level when shop exit button is activated upon player placement and selection
                - This will activate load-next-level state
- NPC Features
    - Enemy Shooter
        - **Health Meter**: trackable health meter displayed to the player, given a health bar for visual
            - Health bar is a graphics buffer, that then is cut down with every hit
            - When shot the enemy's health bar will go down
        - **Attack Patterns:** takes in from a file input, stating the distance of travel in ratio to screen size (double) , the direction they are going (Enum Value), and whether or not they should be shooting/resting/reloading (Enum Value)
            - **Enemy movements:** we can have this be randomized while the enemy shooter is reting behind cover, then choose a enum value that will pull from the data file for attack patterns
                - Horizontal locked from center start/ cover
                - [opt] Vertical locked from bottom start
            - **Enemy Timing between movement:** this is the time set between movements where the NPC will be idle. One of these is done between each firing sequence
                - Waiting behind cover

                - Reloading in the open
            - **Enemy firing guns:**
                - [opt] multiple gun types
                - Shot Speed
                - Shot Damage
    - Shopkeeper
        - Movement
            - Has to move in from the top, and stop at a certain point in the map that's not going to collide with a wall
            - After player has exited the shop keeper will have to move back from the direction he came in from
        - Player Shop Interaction
            - Create shop buy menu
                - Creates 3 purchasable upgrades that can be collided with by the player and one exit item as well
                - For level to proceed player must stand on and hit the designated buy button on the exit item
- Score Features
    - Score collection
        - Score adders: Shooting tumbleweeds, killing bosses, time to complete
            - Time to complete will be (1 / timeSpentInGame) * huge_number
- Menu Features
    - Main Menu
        - What was listed in Project Description
    - Options
        - Speed
            - Speeds up both the player and the enemies
            - Speeds up just the enemies
            - Slows down (difficult)/ speeds up (easy) player
    - Final score menu
        - Gather from score system, calculate, and print out final results
        - Button to restart, exit, or go to main menu