Ken Tjie

Mrs. Heyes

ICS4UP

4 January 2016

Major Project Proposal

Context

The game that I want to make is sort of like a vertical shooter game. It's going to involve two characters, one that the user controls to attack the other character that will move and attack automatically (the boss). There will be multiple levels in order to beat the game, hopefully giving special attacks to the boss as the levels progress.

Skills and Concepts

Data types – I’ll be writing several classes to be used as data types like Character class and a GameFrame class, as well as the other ones programmed into Java already like int for health bars, double for speed of projectiles, Strings for names, etc.

Arrays – The array will contain the bosses for each level. The bosses will be randomly selected from several images and text files to get their statistics and placed into said array. The index position of the array will increase by 1 every time a player successfully completes a level.

Repetition and Selection – My program will include collision detection, hopefully, and accelerate the projectile using loops to make it go faster as time passes. Selection statements will check whether or not there is a collision between a projectile and the boss or character.

Classes and Methods – Separate classes will contain several different things: the character/player, the boss, the frame for the game. Then, all of these classes with have their own methods that update their health, update the physics, and checking for collision, etc.

Polymorphism – In order to achieve polymorphism, I’ll be using inheritance of different classes, mainly between the boss and the player because they will share several methods, like updating health, collision detection, and attacking. Since they may share the same instance fields as well, I may create an abstract class for them to inherit.

File IO – File input and output will be mostly used for importing and updating the leaderboards as well as importing the stats of the bosses into the game.

Sort and Search – Sorting will be used to update the leaderboards in order to sort them in ascending order according to the amount of time taken to complete the entire game. The search will be used to look for a name if anyone wants to search for one on the leader board to see where they are.

Additional Topic

I will also be including event handling in my program to check for commands given by the user through the keyboard. The arrow keys will be used to move the player. The space bar will be used to launch the projectile.

Additional Information

For this project, I’ll have to research how to import pictures into the program that the user can control. I’ll have to learn how to do some graphics such as draw and include a small physics engine as well. I can get the information for collision detection and physics engine from examples we did in Computer Science Club and everything else will have to be learned on the Internet/books.

Back-up Plan

If this proposal is rejected or I’m having trouble implementing this idea, then I think I may do a recreation and improvement on one of my Khan Academy projects from Grade 10, *Sudden Death Pokémon Battle*.