Nicholas Jenkins
CS 250
Grid Racers: Test Specifications
December 6, 2013

Test Specification: Grid Racers

1. **Game Overview**
   - 1.1. Inputs
     - 1.1.1. Racer input is two integer values separated by a space that indicates the desired change in velocity. The two values represent the change in the *x* velocity and *y* velocity respectively. Only one of the values can be a non zero value and the values must fall within 1 and -1. The racer starts with a velocity of (0, 0). The maximum speed of the racer is 5, which is the sum of the absolute value of the *x* and *y* velocities ($Speed_{max} = |v_x| + |v_y|$). All inputs will be taken from the console via console printed instruction.
   - 1.2. Outputs
     - 1.2.1. The race track, current position of the racers, and the velocity of the player racer will be displayed. These outputs, including any error messages, will be written to the console.
2. **Test Data**
   - **2.1. Representative Input**
     - 2.1.1. Racer inputs a standard change in velocity as described in the requirements document
       - 2.1.1.1. track2_test0
     - 2.1.2. Racer inputs a series of inputs that completes an entire track
       - 2.1.2.1. track5_test0
   - **2.2. Functional Coverage**
     - 2.2.1. Racer changes velocity in the *x* direction
       - 2.2.1.1. track2_test0
     - 2.2.2. Racer changes velocity in the *y* direction
       - 2.2.2.1. track2_test0
     - 2.2.3. Racer does not change velocity
       - 2.2.3.1. track2_test0
     - 2.2.4. Racer bumps into another vehicle
       - 2.2.4.1. track1_test0
     - 2.2.5. Racer strikes the wall
       - 2.2.5.1. track1_test0
     - 2.2.6. Racer wins race
       - 2.2.6.1. track5_test0
     - 2.2.7. Racer loses race (computer wins race)
       - 2.2.7.1. track1_test0
     - 2.2.8. Invalid speed entered
       - 2.2.8.1. track2_test1

2.2.9. No legal computer moves
2.2.9.1. track6_test0

2.3. Boundary Values

2.3.1. Racer does not change velocity from zero for entire race
2.3.1.1. track2_test2
2.3.2. Racer reduces maximum velocity to minimum (1) by striking the wall repeatedly
2.3.2.1. track2_test3
2.3.3. Racer reaches maximum speed with positive integers
2.3.3.1. track3_test0
2.3.4. Racer reaches maximum speed with negative integers
2.3.4.1. track4_test0
2.3.5. Racer uses speed of one throughout entire race
2.3.5.1. track2_test2
2.3.6. Wall struck at maximum speed
2.3.6.1. track3_test0
2.3.7. Wall struck at minimum speed
2.3.7.1. track1_test0
2.3.8. Computer has 1 legal move
2.3.8.1. track7_test0
2.3.9. Computer players use tie-breaking algorithm
2.3.9.1. track7_test0
2.3.10. Computer has 5 legal moves
2.3.10.1. track8_test0

2.4. Special Values

2.4.1. Negative velocity change in *x* direction
2.4.1.1. track4_test0
2.4.2. Negative velocity change in *y* direction
2.4.2.1. track_test0
2.4.3. Zero change in velocity
2.4.3.1. track2_test2
2.4.4. Racer requests increase in speed after maximum velocity reached
2.4.4.1. track4_test1
2.4.5. Racer requests increase in speed after velocity penalties enforced
2.4.5.1. track4_test1