CS225 Homework 2

Hare and Hound: Requirements and Test Cases

Time Estimate: 2 – 3 hours.

Deliverables: You will deliver a single file containing requirements and test cases as described below.

Only electronic documents submitted via Canvas are acceptable. Handwritten and scanned documents are not acceptable. Do not submit a hard copy of your assignment. Do not email your assignment to the course instructor or grader. Late assignments will not be graded.

Problem Description: You are to provide functional software requirements and test cases for the software application described below. Note: There is no GUI required for the software. Requirements and test case related to a GUI will not be graded.

A Hare and Hound race is any race in which one player (the Hound) chases another player (the Hare). In this case, we’ll create a game that simulates the Hare and Hound game played by hot air balloons. For purposes of this assignment, assume the following for the Hare and Hound game:

1. The game environment is simply a rectangle with a single horizontal line dividing the environment into two sections, sky and ground. The sky is anyplace above the horizontal line. The ground is anyplace at or below the horizontal line. (Sometimes, simple environments like this are called “Flatworld.”)
2. The Hound and Hare are both simulations of hot air balloons.
3. Hare is controlled by the computer. The Hare enters the game from the left-hand side of the environment at a random height and an initially velocity horizontal to the ground. The Hare follows ballistic motion rules with constant horizontal velocity until it lands on the ground. The Hare cannot move once it lands.
4. The Hound is controlled by the player. The Hound enters the game from a fixed height (height not yet determined but is the same every game) with an initial velocity parallel to the ground. The Hound also follows ballistic motion with constant horizontal velocity, with the exception that the player can “burn fuel” to provide a temporary upward vertical velocity to the Hound balloon. After each “burn” the Hound resumes ballistic motion. The Hound never runs out of fuel. Once the Hound hits the horizontal line representing the ground, the Hound has landed and can no longer move.
5. The game is over when the Hound and Hare have both landed. The player wins the game if within TBD distance of the Hare when the game ends.
6. If the Hound exits the screen on the right-hand side, the game is over and the player has lost.
7. Anything not specified above is left to the programmer as a design choice.

Instructions: Provide the following for the Hound and Hare problem:

1. Three requirements. Notes: These are not user stories, but atomic and testable requirements. Do not provide requirements relating to a GUI or display.
2. Three test cases per requirement. Use the format provided below.

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| --- | --- | --- | --- | --- | --- |
| Requirement | Test Case  Identifier | Input | Expected Behavior | Actual  Behavior | Pass? |
| Requirement  being  tested. | Numeric or alphanumeric identifier. | Specific values for input. | Specific output value or program actions. | Blank until test is complete. | Blank until test is complete. |

Rubric: Per that grading rubric below.

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| **Deliverable** | **Points** | **Awarded** |
| 3 Requirements | 5 |  |
| 9 Test Cases (3 per requirement) | 15 |  |
| Totals | 20 |  |