

**E00568827 - Nicholas Sells**

**E00631771 - Christian Crawford**

**CC 1.a - The solution must initiate a missile launch when the user clicks the right mouse button.**

Precondition: The game is running

Action: Click with the right mouse button

Postcondition: The missile is launched

**CC 1.b - The solution must initiate a missile launch when the user clicks the space bar.**

Precondition: The game is running

Action: Click with the space bar

Postcondition: The missile is launched

**CC 1.c - The solution must limit the number of active missiles on the screen to no more than five (5) at any given time. (an "active missile" is any missile currently being displayed on the screen)**

Precondition: Have 1 active missile displayed on the screen

Action: Add missiles to the game until you exceed the limit

Postcondition: Missiles should stop being added once 5 missiles appear on screen

**CC 1.d - The solution must remove the missile from being active if it goes off the screen.**

Precondition: Game should be active

Action: Launch 5 missiles and wait for one to go off screen, attempt to add another missile

Postcondition: Missile should deactivate as soon as it passes the border; Missile should be added after attempting to add a missile once the first one leaves the screen

**CC 1.e - The solution must maintain the same constant speed for all missiles**

Precondition: Missiles should be active on the screen

Action: Observe the speed of each missile by comparing them between each other

Postcondition: All missiles should be moving at the same speed

**CC 1.f - The solution must launch missiles from the center of the bottom of the screen when a launch is initiated**

Precondition: Game should be running with no active missiles

Action: Launch missiles and observe where they launch from

Postcondition: Missiles should launch from the center of the bottom of the screen

**CC 1.g - The solution must maintain the same constant direction for all missiles to be vertically straight up from the launched position.**

Precondition: Game should be running with no active missiles

Action: Launch multiple missiles and observe the direction they're going in

Postcondition: All missiles should move in the same direction

**CC 1.h - The solution must detect when a missile “hits” a ship**

Precondition: Game should be running with no active missiles

Action: Launch a missile and make it hit a ship

Postcondition: Missile should make an indication that the ship was hit

**CC 1.i - The solution must display an explosion at the point where a missile “hits” a ship**

Precondition: Game should be running with no active missiles

Action: Launch a missile and make it hit a ship

Postcondition: An explosion should appear at the point where the ship was hit

**CC 1.j - The solution must remove the missile and ship after the missile “hits” the ship**

Precondition: Game should be running with no active missiles

Action: Launch a missile and make it hit a ship

Postcondition: Following the explosion, the ship and missile should both be removed

**CC 1.k - The solution must keep a count of all “hits”**

Precondition: Game should be running with no active missiles

Action: Launch multiple missiles and make them hit ships and keep up with the number of ships you come into contact with

Postcondition: The hit counter should be the same as the number of ships you counted coming into contact with

**NS 2.a - The solution must initiate a ship launch when the system detects there are no active ships.**

Precondition: There are no active ships.

Action: Launch a new ship.

Postcondition: A new ship was launched. There is now one ship.

**NS 2.b - The solution must support multiple types of ships based on a configurable value.**

Precondition: The configurable value is set to some value.

Action: Launch one of each ship type, up to that many.

Postcondition: One of each type of ship is now displayed on-screen.

**NS 2.c - The solution must display the appropriate image based on the type of ship when the ship is active**

Precondition: There are no ships on-screen.

Action: Launch one of each ship type.

Postcondition: Each one displays the proper image for its type.

**NS 2.d.i. - The solution must randomly choose from available ship types when a launch is initiated, giving all types equal chance of being launched.**

Precondition: There are no ships on-screen.

Action: Launch as many ships as possible. Count the number of each type present.

Postcondition: The number of ships of each type are approximately equal.

**NS 2.d.ii. - The solution must limit the number of active ships on the screen to no more than ten (10) at any given time. (an “active ship ” is any ship currently being displayed on the screen)**

Precondition: There are no ships on-screen.

Action: Attempt to launch 11 ships.

Postcondition: Only 10 ships launch. The last attempt fails.

**NS 2.d.iii.1. - The system must randomly choose to launch the ship from the left side of the screen or the right side of the screen**

Precondition: There are no ships on-screen.

Action: Launch as many ships as possible. Count the number of ones that launched from the left and from the right.

Postcondition: The number launched from the left and the number launched from the right should be approximately equal.

**NS 2.d.iii.2. - The system must randomly choose a row in the top two-thirds of the screen to launch the ship from**

Precondition: There are no ships on-screen.

Action: Launch as many ships as possible. Note the positions where each of them launched from.

Postcondition: Each of those positions was in the top two-thirds of the screen.

**NS 2.d.iii.3. - The system must assign the speed of the ship based on the type of the ship being initiated**

Precondition: Each ship type has it's own predefined speed. There are no ships on-screen.

Action: Launch one of each type of ship.

Postcondition: Each ship's moves at the speed that corresponds to its type.

**NS 2.d.iii.4 - The system must assign the direction of the ship based on which side of the screen it is being launched from (if from the left, direction goes left to right; if from the right, direction goes right to left)**

Precondition: There are no ships on-screen.

Action: Launch as many ships as possible.

Postcondition: The ships that launched from the left are traveling right, and the ships that launched from the right are traveling left.

**NS 2.e. - The solution must remove the ship from being active if it goes off the screen.**

Precondition: There are no ships on-screen.

Action: Launch as many ships as possible. Observe as they reach the edges of the screen.

Postcondition: Any ship that reached an edge of the screen was deactivated.

**CC 3. - The solution must end the game when the “hit” count has reached ten (10)**

Precondition: Game should be running

Action: Launch missiles and count each ship you hit until you hit 10, or keep track of the hit counter if it is working properly

Postcondition: The game should end after 10 ships are hit

**CC 4. - The solution must end the game when the user clicks the left mouse button**

Precondition: Game should be running

Action: Click with left mouse button

Postcondition: Game should end

**NS 5 - The solution must end the game when the user clicks the esc button**

Precondition: The game is running.

Action: The user hits the escape key.

Postcondition: The game exits.

**NS 6 - The solution must end the game if the user has not initiated a missile launch in the last 5 minutes.**

Precondition: The game is running.

Action: Do not initiate a missile launch for five minutes.

Postcondition: The game exits upon reaching five minutes with no missile launches.