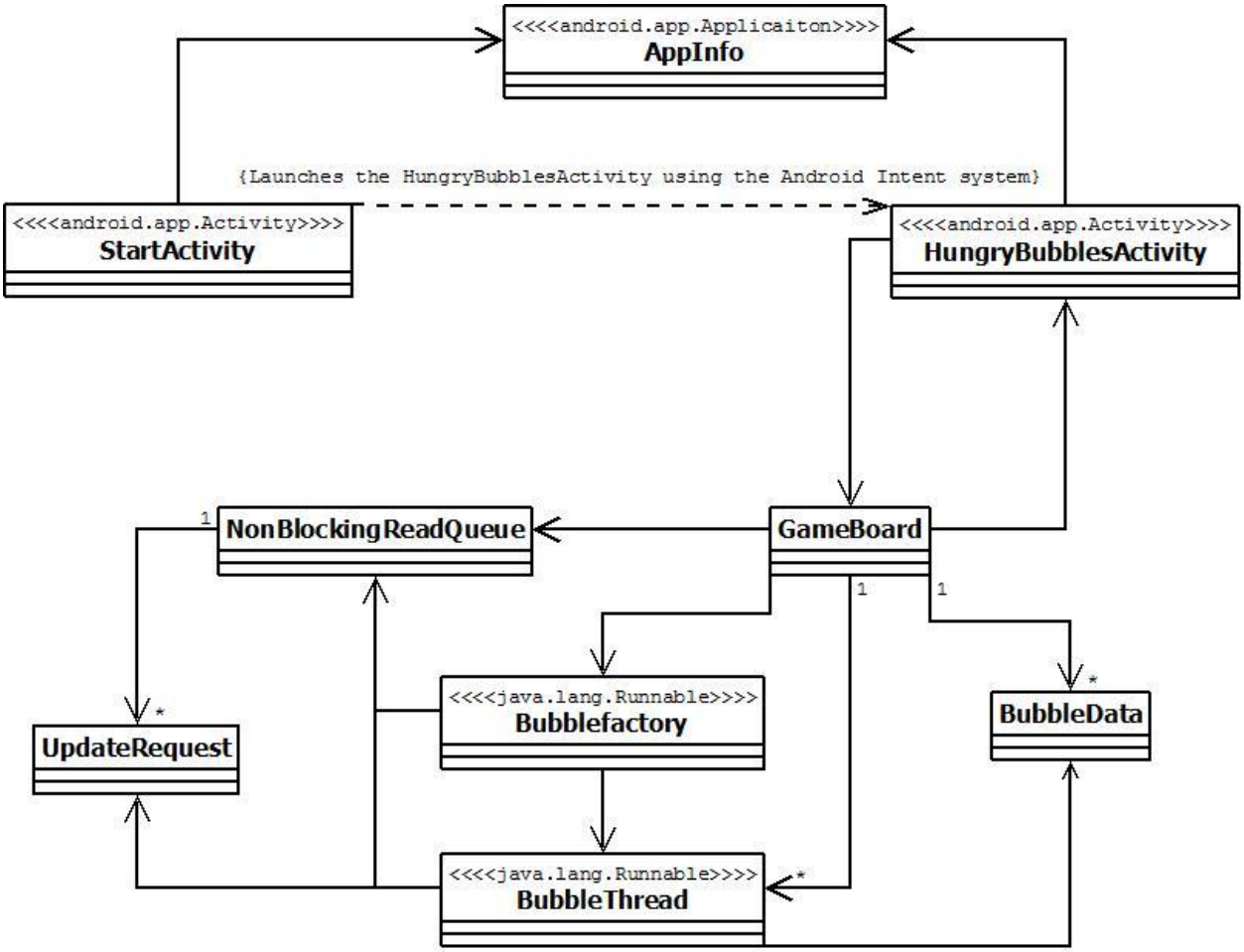
Hungry Bubbles Design

Basic Class Diagram:



Class Rationale:

StartActivity – The Android default starting activity to start the application, and the handler for all click events on the main menu.

AppInfo – This handles persisted data on startup and shutdown.

HungryBubblesActivity – Application UI, standard Android UI.

GameBoard – Maintains the positions of all of the bubbles using BubbleData Objects. Responsible for closing the game cleanly (hostActivity.quit()).

BubbleData – Tracks the Coordinates, color and type of BubbleThread(consumer, victim).

BubbleThread – Represents the life of a bubble by using the processor to create a moving bubble on the screen that has attributes defined by the Bubblefactory.

Bubblefactory – Creates random attributes and assigns them to a newly created bubble of a random type: Consumer or Victim.

UpdateRequest – Represents the position to be moved to and the bubble requesting to move there.

NonBlockingReadQueue – Handles a queue for Bubbles making moves to new coordinates.

Concurrency:

Thread Types –

Consumer – Tries to eat the Player bubble, any bubbles will disappear when sharing the same coordinate space.

Victim – Gets eaten by all other bubbles, this bubble will disappear anytime it tries to share a coordinate with another bubble.

Player – Thread that moves the Player Bubble when a touch event matches the coordinates of the Player Bubble (black).

Embedded Concurrency -

Our custom locking queue helps organize threads that are requesting to make a move and will properly release move requests in the order they were requested. To be sure that bubbles are consumed in the right order the BubbleThread is synchronized on itself when it is asked whether or not it was eaten. New threads are created when bubbles leave the screen and conversely, threads are destroyed when the corresponding bubble is consumed. When a computer controlled bubble consumes another bubble (concurrently enters a coordinate first) it will consume another bubble and grow in size up to a predefined maximum size.