FLAPPY DERP

We are developing a tribute to the classic game where the client has a single control to flap the wings of a very fishy-looking bird to navigate through a series of pipes. The pipes are to be stored in a custom data structure called a MyQueue:

public class MyQueue<anyType> implements Queueable<anyType>, Iterable<anyType>

The game logic, controls and assets are all complete, and we are just waiting for the data-structure to be plugged in. Your task is to build the data-structure MyQueue which exhibits First-In-First-Out behavior and implements two interfaces:

Queueable<anyType> is provided in the lab folder with java-docs for your convenience.

Iterable<anyType> is an interface from *java.lang* that will allow our MyQueue to be traversed with an enhanced for-loop. The game logic that is already complete will do just that, so we need to satisfy the interface so that our data-structure fits the project. Do a little research here: look-up the Iterable interface to see what it is all about and how it can be easily implemented.

Once the data-structure is complete, verify that it works by running *queueTest.java* and compare your output to the comments in the main function.

Once verified, try out the game in *FlappyDriver.java* to make sure it plays properly:

Player 1 controls: mouse-button click or UP-arrow

Player 2 controls: space-bar

Player 3 controls: enter-key

(P) will pause the game.

(S) will toggle the sound on or off.

(D) will change the difficulty levels.

Use your control button to flap the bird's wings to keep it in the air. Navigate through the pipes for points. Every 10 pipes passed will throw a 50% chance of starting a powerup stage, of which there are 4 rules that can be applied:

POWERUP FOR POINTS: collecting a powerup that is the correct color will give 1 point, where hitting a powerup that is the wrong color will subtract 1 point.

POWERUP FOR SPACE: collecting a powerup that is the correct color will increase the vertical distance between pipes. Hitting the wrong color will subtract 1 point.

Get your color: a powerup that is the same color as your bird will gain the bonus.

Avoid your color: a powerup that is a different color as your bird will gain the bonus.

If you collect every powerup you should according to the rules and avoid hitting the wrong powerups, you will be granted a Perfect-Run bonus of 5 points.

Your bird is not just limited to navigating the pipe-strewn countryside. Flying above the screen limits will take you to the sky realm: avoid the smoke rising from the pipes. But other birds might bump into you, costing you one point from your score. Playing on the normal or hard difficulty will give chance for an alpha-bird to spawn: striking the alpha will subtract 5 points. The alpha-bird will cast an unmistakable pulsing glow to warn you of its presence. If you want to return to the default realm, just drop your bird into the clouds as long as there isn't a pipe there.

On occasion in the default realm, a larger pipe will appear that will give you a pathway to the water realm. Drop down the pipe where you must flap to fight buoyancy and stay under water. Like the air realm, there are other inhabitants that can drop your score if you bump into them. Return to the default realm by allowing your bird's buoyancy to lift it to the top, so long as there isn't a pipe there.

Transitioning to different realms will give any additional players a chance to respawn if they got knocked out in the previous realm.

Easy: the vertical and horizontal distance between pipes will decrease very slowly, and no alpha-variant enemies will spawn.

Medium: the vertical and horizontal distance between pipes will decrease gradually, and there is a medium chance and alpha-variant will spawn in the air and water realms.

Hard: the vertical and horizontal distances between pipes will decrease quickly, and there is a higher chance an alpha-variant will spawn in the air and water realms.