JKarel Project: He Shoots He Scores!

By: Anirudh Mantha, Rohan Ramprasad

Description

In this project, we made a lab where the goal is to have an Athlete shoot a three pointer in 2 different directions; Right for the right hand shooters (Curry), and Left for the left handed shooter (Harden). The Athlete will hollow the arc of the shot picking up the beepers on the way, and at the end drop all of the beepers in the corner of the basket. This will require usage of Abstract Classes; Abstract Methods; Concrete Methods etc. There are 6 maps that we made for this project. They are a 10 ft right side hoop, a 9 ft right side hoop, and a 7 foot right side hoop. For the left side we have the same thing, there is a 10ft left side hoop, a 9 ft left side hoop, and finally a 7 ft left side hoop. Each hoop has 6 vertical lines as a common trait to help the athlete guide itself into the hoop.

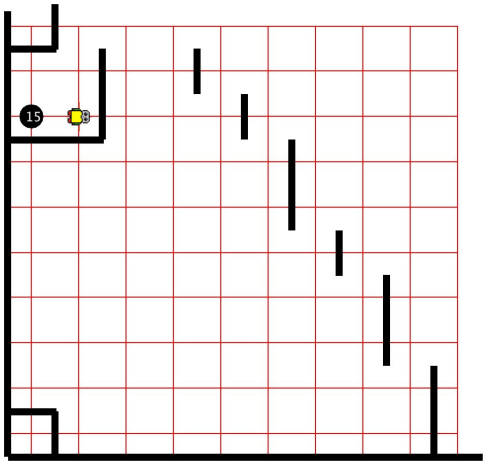
Planning:

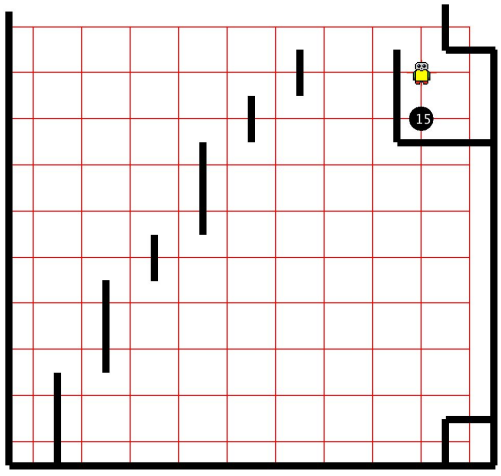
Similar Lab

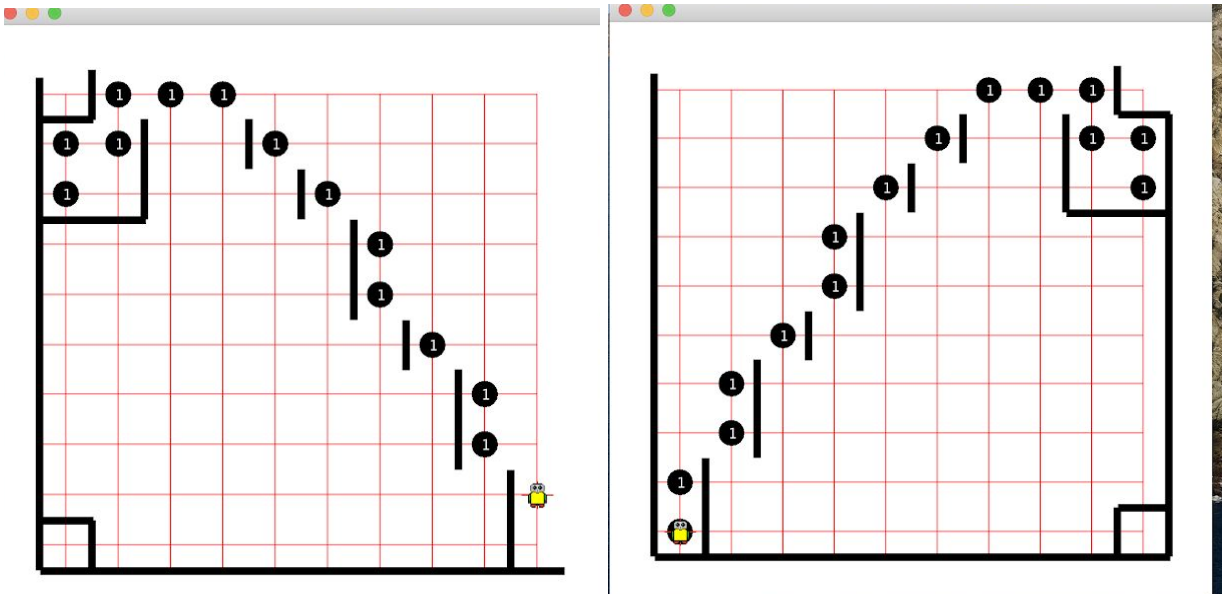
The most similar lab to the one we created is Lab 15, because there it consists of an abstract class, and two seperate classes within it, that contain the concrete code for the abstract class. We had to solve that problem by thinking out on how our abstract classes will work. Once we figure that out, we should apply the same concepts to this problem that we have come up with.

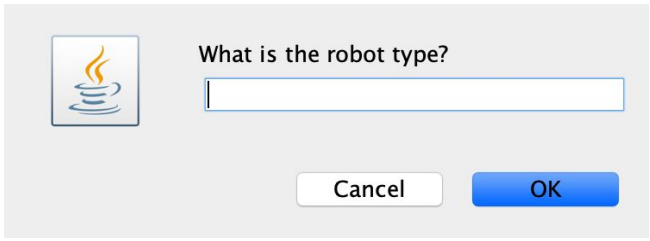
User Will See

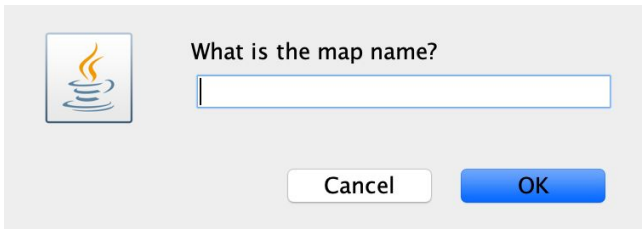
The screenshots below will show what the end results of the program will be. The screenshots in the middle will show how each lab will start off. The screen shots at the bottom is what the user will be asked for what type of robot and what map size.







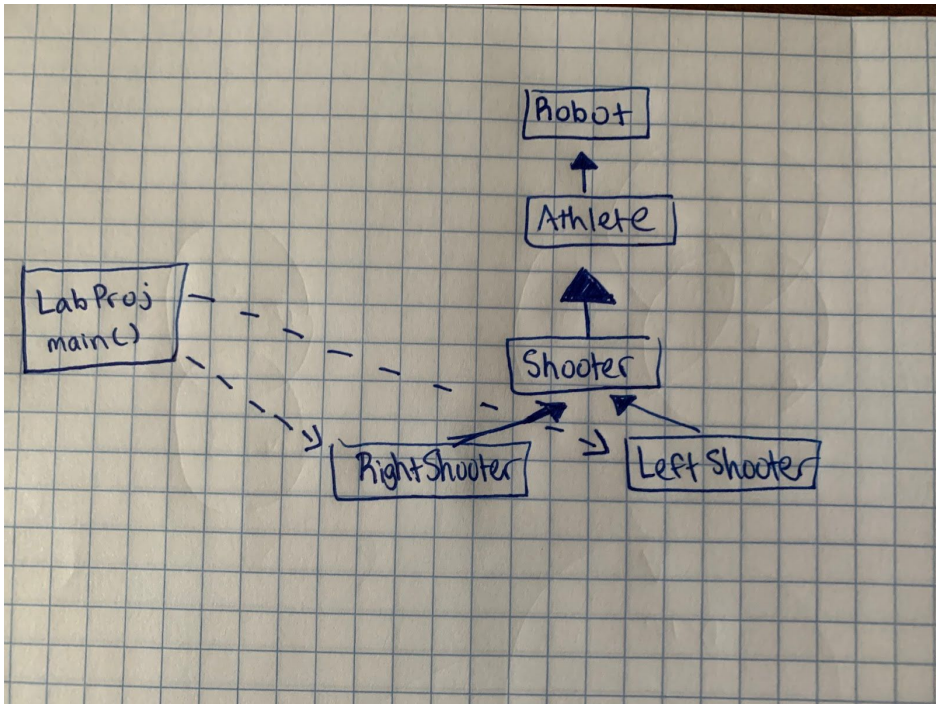




Who is doing what?

LeftShooter.java - Anirudh
RightShooter.java-Rohan
Right Hoop Maps - Rohan
Left Hoop Maps - Anirudh
LabProj.java - Anirudh and Rohan (we both wrote it and saw which way was more effective, we sent messages with errors and then called and figured out how to debug)
Shooter.java - Anirudh and Rohan (we both wrote it and saw which way was more effective, we sent messages with errors and then called and figured out how to debug)
Doc with everything - Anirudh and Rohan

UML Diagram:



Organization of Classes

We have a driver class **LabProj.java**

- This class imports JOptionPane to ask what map to pull up
-This class asks what type of shooter to use, RightShooter or LeftShooter
- It is the driver class that will call on the specific sets of code that it needs to use

We have an Abstract Class **Shooter.java**

- This class extends Athlete
- This class has the abstract methods of shootRight and shootLeft
-It also contains the basic constructor for a Shooter

We have two other classes which are **RightShooter.java, and LeftShooter.java**

- These two classes extend the abstract class Shooter, and give more specific commands for the two different scenarios, which in this case are either the basketball hoop is on the left side or the right side. This is where we define the abstract methods.

-RightShooter.java will be called upon and applied when the shooter is to the left of the hoop, and has to move to the right to put all the beepers in the hoop.

-LeftShooter.java will be called upon and applied when the shooter is to the right of the hoop, and has to move to the left to put all the beepers in the hoop.

What Methods will be used

Our two abstract methods are shootRight() and shootLeft()

We define and write the code for this in the Concrete Classes inside LeftShooter and RightShooter

- This code guides the athlete through the intended arc of the ball, picking up beepers on the way to the hoop

-**We know that there will be 6 vertical lines in each map, so that will be helpful for the code**

- This code will be a series of if statements, for loops, and while loops.

Shooters ----> (Athletes ---> Robots)

We will have two athletes, Harden and Curry. Curry will be a right-handed shooter and Harden will be a left-handed shooter. In our code, this translates into, whenever the athlete is to the left of the hoop, we will need a right-handed shooter, which would be Curry. Whenever the athlete is to the right of the hoop, we will need a left-handed shooter, which would be Harden.