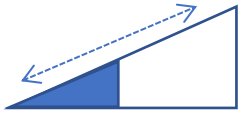
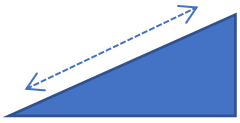
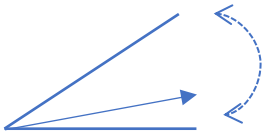
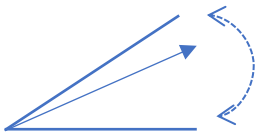
Tamara Jennings
CSC 480
Spring 2020
Assignment 4

1. **Give an outline of your final planned sketch in terms of functionality you will add and/or performance goals.**

   The sketch will be an interactive game of corn hole. A user will be able to select the power, direction, and angle of the toss using moving scales for each item. The goal of the game is to reach 15 points without going over.

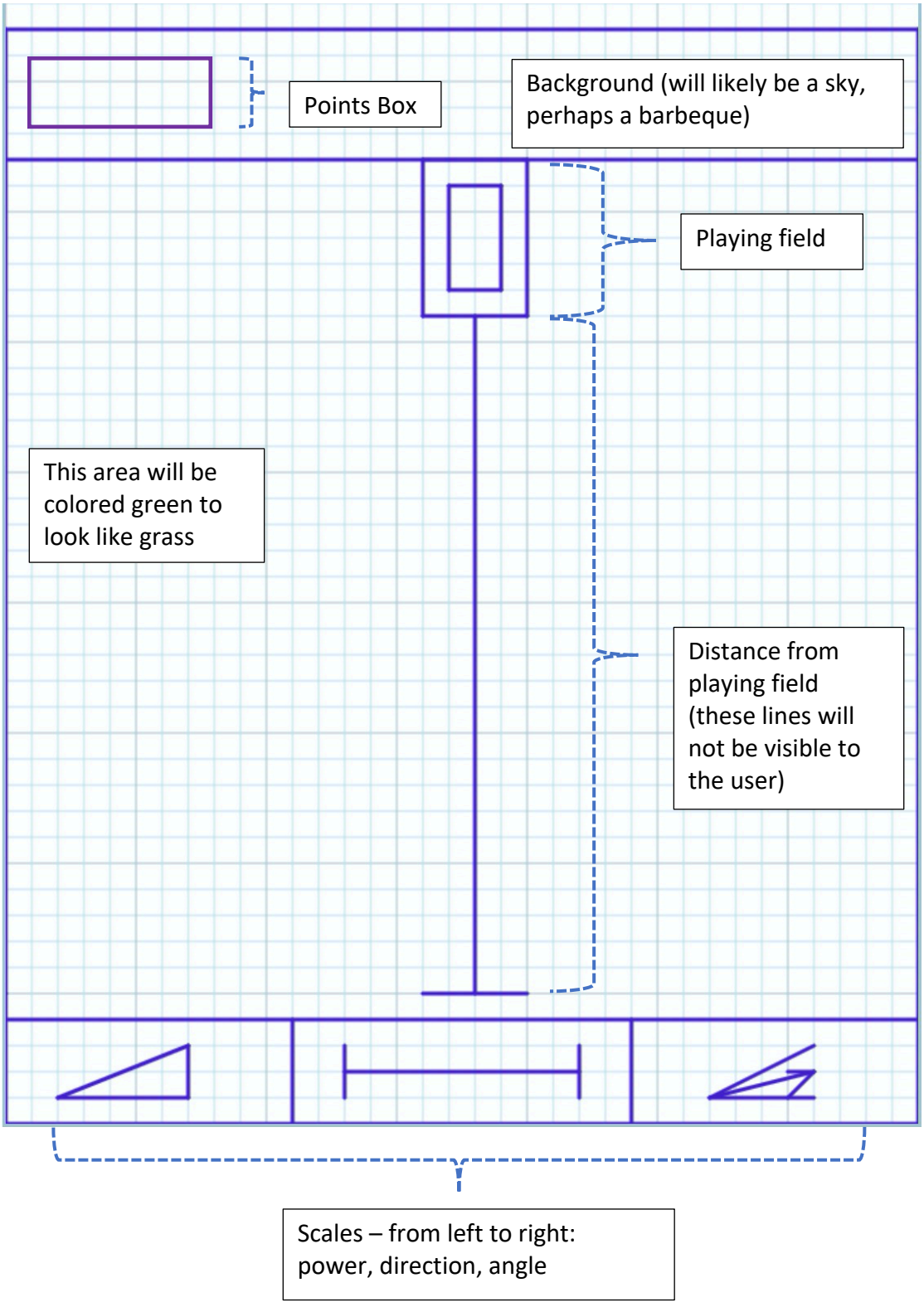
   Below is a table with the basic anticipated design of the scales and how the design represents the scale.

<table>
<tr><td colspan="2">Power
As triangle fills, power increases. As triangle empties, power decreases.</td></tr>
<tr><td>Low Power
  </td><td>Max Power
  </td></tr>
<tr><td colspan="2">Direction
The location of the ball on the line determines how left/right the projectile will go</td></tr>
<tr><td>Left
  </td><td>Right
  </td></tr>
<tr><td colspan="2">Angle
As arrow goes up, angle increases. As arrow goes down, angle decreases.
Max angle 45 degrees</td></tr>
<tr><td>Low Angle
  </td><td>High Angle
  </td></tr>
</table>

   The user will view the game as a scaled version of the live game. This means that they will see a background with the playing field (the corn hole board and grass around it that the bag could land on. The background will either be designed in processing or an image from the internet will be used. The playing field consists of the corn hole board

and the grass around it that the bag could land on. This grass area will be called “grass landing zone” from this point on.

Below is a diagram of the anticipated view, not including the scales. The scales will be featured below the game view.



When the user selects the values for the scales, the values will be used to find the trajectory of the bag. The user will see the bag travel from the starting point to the location in the playing field that is calculated from the scale values.

- At this time, given the anticipated difficulty of showing the path that the bag will travel, this will be demonstrated by moving the bag in a straight line along the z-axis from the starting point to the maximum height and from the height to the landing point.

2. **What code additions/changes do you have planned, in terms of functionality and packaging? Additions/changes could include functions, classes, image files, SVG files, custom PShape functions, custom PImage creation.**

A good amount of code will be used to design the view. It is likely that images will be used for the background including the grass and sky. The playing field will be designed using PShape, PImage, and other shape methods. The playing field will remain static throughout the game.

The scales will be designed using PShape and other shape methods. Each shape will require a method to move it depending on the design. Additionally, methods will need to be implemented to recognize the user's stopping point and the value of the scale at that point. Each scale will be selected one at a time- starting with power, then direction, and finally angle.

A method will be used to calculate the trajectory of the bag and find the coordinates of the maximum height and the landing point. This will involve physics and trigonometric calculations. The scales will produce values that have the bag landing only in the playing field; there will be no instances where the bag lands outside the playing field.

The score will be calculated using the coordinates of the landing point. If the landing point is within the area of the corn hole board, the user will earn 1 point, unless the point is within the area of the hole, which is worth 3 points. A landing point in the grass landing zone is worth no points. The score will be calculated after every throw and displayed in the points box. If the user earns exactly 15 points, they win. If they score more than 15 points, they lose. A dialog box will appear displaying the result of the game and the final score.

Finally, there will be a method to show the bag moving toward the playing field according to the values found during the trajectory calculations. The move() method from Assignment 3 is expected to me modified and used in this project.

3. **What is your sequence for developing this project? If a team of 2, what is the division of labor?**

First, the view will be created so that the dimensions can then be used to calculate the minimum and maximum values of the scales.

Once the scales are calculated, the trajectory calculation method will be determined.

Next, the scale functionality will be developed so that it responds to the user's selected stopping points. The scale values will then be used in the trajectory calculations. This part of the process includes implementing the moving scales so that the user can stop it.

Finally, using the trajectory calculations, the movement of the bag from the starting point to the landing point on the screen will be implemented. This will show the bag moving up and down the y-axis as it travels toward the playing field along the z-axis.

4. What are your final deliverables -- code, still frame images, video, audio recording, other?

Below is a list of the deliverables.

- Code
- Images used for the background