**ProjectBarb: Project2 Documentation**

**How to start the environment:**

To start the environment, download the zip from dropbox. Extract the contents of the zip to any folder you want. To open the environment, double click the ProjectBarb2.exe file.

**How to run A\***

To run A\*, hit the ‘Enter’ or ‘Return’ key on the keyboard. Pinky (the pink capsule in the environment) will calculate a path to you (the red character) using A\*. You can see the A\* path Pinky calculates because the nodes that map out the environment will turn blue if it is part of the path.

To see how A\* behaves, run around the map and hit enter when you want Pinky to use A\* to get to you.

Instructions on how to run A\* are also printed as GUI text in the environment.

**How to run flocking**

Flocking is always on. The blue capsule ‘flockers’ will always flock to Pinky. So, to run Flocking, simply run A\* to get Pinky moving around the environment. We felt this was the best way to implement flocking because there is an infinite amount of paths to test the flocking behavior on. Simply position the player where you would like to the see the flockers move to and hit ‘enter’.

**How to alter the flocking demonstration by changing parameters**

The controls to change flocking behavior are printed on the screen during runtime. Every time a key is pressed, the weight you have changed will change by a value of ONE. So, if you want to change the follow weight by 10, simply press the ‘U’ or ‘I’ key ten times. Holding the key down will change the weights drastically if you want to quickly test massive weight changes.

Here are the controls printed in the game:

Controls:

Z - toggle grid

Enter - activate aStar

+/- is the format for the following

U/I - follow weight

H/J - avoid obstacle weight

O/P - align weight

K/L - cohere weight

N/M - separate weight

**Bottleneck issues**

Bottleneck issues plagued us at first. However, with the default script settings, they are rare. You can test the bottlenecks by moving the player to the other side of one and hitting ‘enter’ to see Pinky and the flockers traverse a path through or under the bottleneck to your location. Every so often the last flocker in line might get hung up in the bottleneck but usually they come out fine.

Adding physics to the objects was the main issue with the bottlenecks. Before we added rigid bodies, Pinky and his gang would just float through any raised terrain or the tunnel roof. Of course, we wanted to have them have realistic movement while also following a path and flocking. By tweaking the max speeds, follow weights, rigid body masses, and many other variables, we achieved smooth bottleneck traversal.