

Sharon's UNITY Roll-a-ball project description

Overall game goal: capture the monster in the center walls by collecting all power cubes and avoiding contact with the damage cubes.

Part 1:

- Spacebar functionality:
 - o My ball will jump when the player presses spacebar.
 - o To prevent the ball from jumping over the walls, I limit the jumping ability of the ball to only work when the ball is in contact with some surface. I add a tag to the ground and the inner planes, make them colliders, and create a Boolean that will only be true when the ball is in contact with the surfaces. Only when the Boolean is true can the ball jump.
 - o This prevents the ball from continuing to jump even in midair which will cause complications since the ball can easily jump higher than the outer walls.
- Tracking data output
 - o The data I chose to track and output is the cubes the player collects. I did this by tagging the yellow (power) cubes and the red (damage) cubes and making them as triggers. I update power count by 1 when the ball collides with the yellow cube and update damage count by 1 when the ball collides with the red cube.
 - o While doing this, I update my data to a separate text file named "OutputData.txt" and I also display the data in the virtual game world via UI text on the top left corner.

Part 2:

- Analysis metric
 - o I analyzed the data directly from my "OutputData.txt" file and perform a metric.
 - o I applied power count, damage count, and whether the player encounters the monster or not into an analysis metric to decide the final game outcome. In my metric, there is one way to win and two ways to lose.
 - o To win: the player collects all 20 yellow cubes and less than 4 red cubes before arriving in the center walls and eat the monster
 - o To lose: the player collects more than 3 red cubes OR the player arrives in the center walls and attempts to eat the monster before collecting all 20 yellow cubes
- Metric display
 - o I chose to display my analysis results via two ways: UI text in the virtual game environment and text in the "DataOutput.txt" file.
 - o For both UI text and the text file, I designed three different text messages that will appear at the end of the game according to the final game outcome. The winning message is "You win!" and the losing message is "You died of self damage!" and "The monster ate you!", respective to how the player dies.
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*I did not use the Roll-a-ball asset from the Unity store. I created my entire game world.

References:

<https://learn.unity.com/project/roll-a-ball>

<https://docs.microsoft.com/en-us/dotnet/api/system.io.streamwriter?view=net-5.0>

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<https://docs.unity3d.com/ScriptReference/Collider.OnTriggerEnter.html>

<https://docs.unity3d.com/ScriptReference/Collider.OnCollisionEnter.html>

<https://docs.unity3d.com/Manual/UIElements.html>