George Salsa - 100780225 - Explanation of the concepts and how to implement
Alexander Broersma - 100805938 - Implementation in Blender
Jingyao Zhang - 100697498 - programming

- The game that we chose is Adventure (1980 video game). The playable character in the game that we are using in the monkey, there is going to be one obstacle that the player has to avoid, while there also being an object that the player needs to reach in order to win the game. The lose condition is if the player touches the first obstacle, which is the leaf object. The win condition is if the player reaches the second object.

- The sum of the last digit of each member's student number is odd.

Explanation of the concepts:

- For the obstacle that we are using, the leaf object is the main “enemy”. In the graphics pipeline, there are 5 main steps that need to be added and completed in order to achieve our desired outcome. In the vertex processing, we can set and define the vertex arrays that make our leaf block. The second step is the vertex post-processing, where all of the information from our leaf block is taken and sent to a different location where things like transform feedback can happen. The third step is scan conversion and primitive parameter interpolation, here our leaf block gets fragments generated. The fourth step is where the fragment shader processes each fragment and sets the fragments into a set of colors and a single depth value. The last step of the graphics pipeline is the per-sample processing. This step includes, depth test, blending, stencil test, etc. So those steps are what we need to use in order to improve the visual in our game.

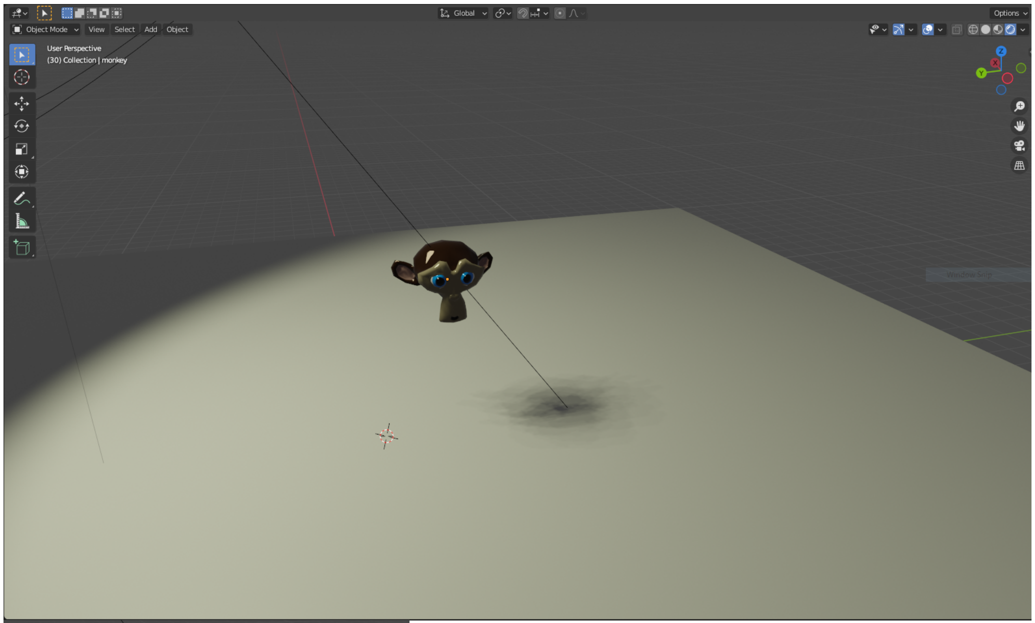
- The Phong lighting model allows us to create a plastic feel for objects in our game by combining 3 main components, ambient, diffuse and specular. Ambient is used for when there isn't a direct source of light coming at the object. The second one is the diffuse, which is used for simulating how much light is coming towards the object and how bright the object is going to be. Finally, the specular is used for simulating the reflective properties of the objects. When all three are combined we get the phong lighting model, which also gives a plastic feel to things in the game.

- The approach that allows us to create a dizziness feel using shaders is that we have to include and implement 2 main things, we need to make the screen blurry and darker, while also making the screen a little bit shaky. The first thing to do is making the player see the objects as if they were blurred out. Then we can make the screen shake slightly, to give the player the feeling that they are dizzy. That is the approach that we would take to create dizziness using shaders.

Explanation of how to implement:

- When the player gathers a power-up, the character receives a light ring around them which helps them run faster. When the power-up is active then the player will have increased vision to everything around them because of the light ring. This will also increase the shadows of all of the obstacles and the walls around the player. When the player comes closer to the obstacle, then the obstacle will be shiner and brighter than the rest of the objects and the walls around the character. The shadows will also be darker when the player is close or around the object.

- The shader that we used for this midterm is the glass feel for the monkey. This was achieved by changing the metallic, specular and roughness of the monkey in blender. The metallic levels were changed a little bit, while the specular levels were changed quite a bit. We also decreased the roughness to accommodate the shiny shader that we wanted to add.


Object Mode
View
Select
Add
Object
Global
Options
User Perspective
(30) Collection | monkey