# 1 - 6 Points

* Shapes
  + Most of the shapes are covered in position.
  + But I used a moving cube for the simulated animation.
  + I used cubes for the walls
  + Rectangles for the finish line and bleachers
  + The sun is a sphere
  + The coins are semi-translucent spheres
  + The boxes for the question marks are cubes.
  + The boxes and coins disappear when touched.
  + When the black light is turned on the sun and skybox disappear
* Position, Rotation, Scaling
  + The blocks were created using one function.
  + This function had parameters (startColor,startPosition,endPosition,constPosition,constAxis)
  + With this, all the surrounding walls were created.
  + All the boxes were scaled, and positioned around the track.
  + The bleachers were made using custom shaped that were scaled, rotated, and positioned in the right places.
  + Also the people had to be rotated and positioned to be in the correct spots.
  + The finish line had to be put in place and the banners with text were rotated.
* Materials
  + When black lights are turned on, many of the colors are switched from diffuse colors to a different emissive color
  + The colors materials were pre-defined and used for many of the objects in the scene
  + All the surrounding boxes, bleachers, and finish line used the same materials
  + SkyBox material
  + Gound Material
  + Kart color
  + Question box material
  + Material had to be rotated for each face to look good on the box.
  + The banners had to be plastered on and rotated to look good.
  + They also turn emissive when the black light is turned on
  + Colors are all pre-defined and are used to make invisible emissive lights and make things black
* Cameras
  + There are 3 main cameras.
  + There is a universal camera with no control over the canvas. This is pointed at the buttons and is automatically on when the program starts
  + There is a follow camera for the simulated race.
  + This camera follows the cube at a certain max speed and acceleration. It is also rotated to be behind the mesh.
  + When it gets to the finish line it rotates around to the front/top of the mesh
  + The last camera is a follow camera for driving the kart.
  + This camera is always pointed a certain direction on the kart and stays the same distance away.
  + It is custom scaled for a certain distance from the kart
  + Complex quaternion rotation was used for driving kart
  + Transform coordinates were used for driving kart
* Lights
  + There are two main lights, the ambient and point light
  + When put in black light mode, the point light is turned off.
  + The ambient light is dimmed and a new ambient light is turned on to slightly light the ground
* Animation
  + A few animations used.
  + The question boxes use complex animation to move up and down
  + They also are rotating using complex animations
  + The Simulated race was done using simple animations.
  + All the keys had to be calculated using the different positions, which were calculated for speed
  + It’s not a lot of animation, but the sun disappears when the black lights come on
* Collisions
  + Both the animated and non-animated karts are using collision detection.
  + Collisions with walls were turned on for each block using custom eval statements.
  + Had to make small bounding box for kart to fit through the shortcut.
  + Collisions had to be enabled on many different objects (all boxes, bleachers, finish line)
* Sprites
  + All the trees,
  + Mapped randomly
  + Input function gives diagonal points to put between
  + The crowd, plastered onto the side of the box
  + Took a very long time
  + Edited jumping speed
* Particles
  + On the coins, there is a particle generator with coin sprites
  + The particles have a lot of different properties
  + Are stopped using eval function when touched by kart
* Environment
  + SkyBox
  + Different prosperities were set
  + No infinite distance
  + Very large
* Shadows
  + Basic shadow generator
  + Shadows are mapped onto the ground from the sun
  + Shadows only come from kart

# 2 – 10 Points

* GUI and Events
  + The Home place is a 3D sphere panel.
  + To get it to face the correct direction the panel had to be carefully rotated (which wasn’t easy)
  + The buttons were coded to be the holographic buttons.
  + There are a ton of events in this code
  + Action managers were used
    - Collecting user kart
    - To make coins bye
    - To make boxes bye
  + Different kinds of action managers were used
  + Some render observables were used for the animated kart
  + Also for the driven kart
  + When you are done driving the kart. Press ‘q’ to quit and go back to main screen
* Sound and Music
  + There is music that is looped in the background while you play the game
* Blender
  + I downloaded a kart from the internet
  + I had to remove some aspects from the scene
  + Then get the color paths to work.
  + Then I exported the object. And added it to my scene

# 1 – 10 Points

* The “WOW” Factor