COSC363: Computer Graphics Assignment 1
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Description: You come home to your farm-house within Area 51 only to discover it has been taken over by aliens! Inside your house, your possessions are levitating and your guard dog alert of a few aliens; a martian who is trying to abduction things and a pink alien who looks suspiciously like kirby.
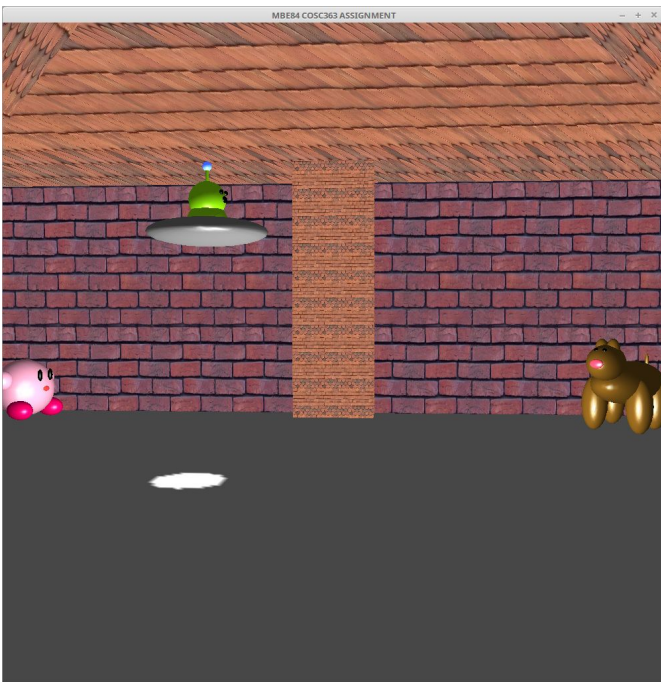

Figure A: The initial view of the farm house.
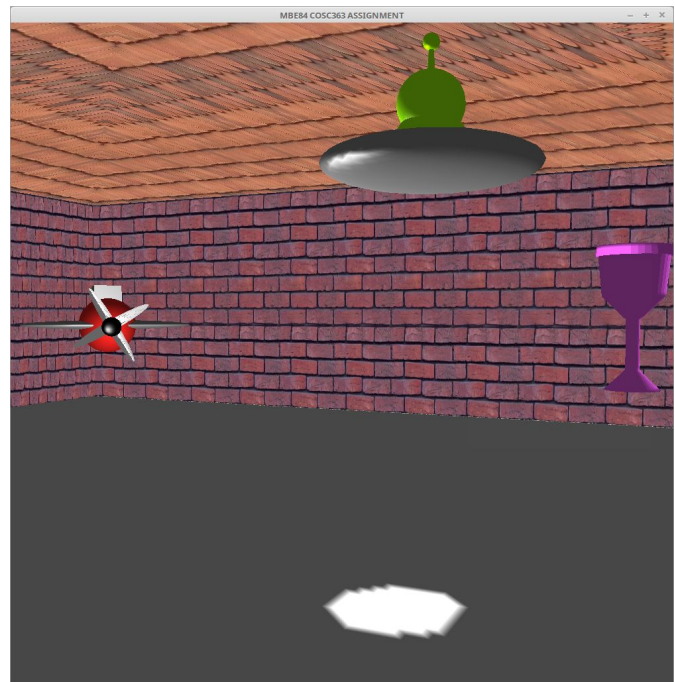

Figure B: The right interior of the house

Figure C: The left interior of the house

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Extra Features:
- A spotlight on a moving/rotating object: One of the light sources is coming from the martians' UFO as he is trying to make abductions.
- Two camera modes: When F1 is pressed, the camera goes into the perspective of the floating airplane. When F1 is pressed again it goes back to the original cameras position.
- Particle systems: I have generated smoke-like particles that are coming out of the chimney. This would be best seen from the initial view (as in Figure A, top right).
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Models:
- UFO Martian: which is flying around the room (along the x and y axis) and has an antenna that glows blue every cycle, consisting of 8 glutSolidSpheres. Centre of Figure B and Figure C.
- Pink Alien: which is celebrating the invasion, waving his arms along the y axis. This alien is consisting of 8 glutSolidSpheres. Left side of Figure B.
- Anxious Guard Dog: consisting of 12 glutSolidSpheres. The dogs legs are moving along the X-Axis so he appears to be walking. Right side of Figure B.
- Chalice: this object was generated as a surface of revolution, it is levitating along the Y axis due to the UFO's electromagnetism. Right side of Figure C.
- AirPlane: which has rotating propellers and is also levitating along the Y axis, this consists of 5 glutSolidSpheres and 1 glutSolidCube. Left side of Figure C.

Challenges
- I struggled with the animation of the characters and objects initially; they all started static. Though I followed the template of the humanoid.cpp file that we used in labs to generate movement and that seemed to fix it.
- My Kirby-like pink alien was initially intended to have a tga texture attached to it, this was a challenge as I'm not sure how to texture map a texture to a circle as it doesn't have any points. To overcome this, I changed my model design to stick to what I knew.

Control Functions
- Forward Arrow: move the camera forward 1 unit.
- Back Arrow: move the camera back 1 unit.
- Left Arrow: turn the camera left.
- Right Arrow: turn the camera right.
- F1: to enter point of view of the air plane inside the house (Press F1 again to leave this view.

References
- Help with particles: http://www.opengl-tutorial.org/intermediate-tutorials/billboards-particles/particles-instancing/
- Coloring: https://openglcolor.mpeters.me/