Project topic:

Robot and Bouncing Ball

Project goals:

1. Detecting collision between walls and spherical ball and the robot.
2. Bouncing of spheres off each other in proper direction by laws of collision.
3. User should be able control robot by the arrow keys.
4. If a ball touches any part of the robot, it should bounce back with the appropriate velocity.
5. Screen should display count of collisions between balls and robot.

Project outcomes:

1. The final project should look like a basic game where robot can move its hands and push the balls. The robot should be able to move its both arms, forearms and head tilt.
2. The robot should not go beyond the bounds of the plane below.
3. Ball should detect collision between wall or with the robot itself.
4. If a ball bounces onto robot, the robot should not move by the impact.
5. The robot should be able to traverse in 3D space. I wish to use basic robot I created in the previous assignment.
6. This project would be a starter step for a simple table tennis/football game.
7. This project can be further developed into a complete game where there could be several robots as multiplayers.

Learning:

1. Collision detection.
2. Implementing physics laws of collision.
3. Impact detection.
4. Using Object Oriented programming concepts coupled with OpenGL.
5. Rules of basic game engine development using OpenGL.

References:

1. https://learnopengl.com/In-Practice/2D-Game/Collisions/Ball
2. https://www.youtube.com/user/TheChernoProject