Exercise 2

Assignment 1.0: Preparation

Download the folder `Exercise2` into your `Applications` directory. In addition download the files `bunny.off` and `sphere.off` to the `Applications/Media` folder. Make sure, the program `Exercise2` compiles and runs onto your system. You should see a viewer window with two models inside. You should be able to rotate the model with the mouse and the right button down.

Now get familiar with the code changes in `main.cpp`. All changes are to be done here.

Assignment 1.1: Axis Aligned Bounding Boxes

In this assignment you should implement the method **`AABB::setFromVertices(…)`**. The parameter is a std::vector containing the vertex positions of an object. The method should now create an Axis Aligned Bounding Box for the given vertices as discussed in the lecture.

Assignment 1.2: Movement and Collision Detection

Now you have to implement the method **`RObject::collision(…)`**. As a parameter you give another rigid object. Test the two object's bounding boxes for collision and return true if they collide, otherwise false.

Next, you have to touch the function **`idle()`**. Each **`RObject`** has a velocity set in the **`initModels()`** method. First of all, move all objects in the scene. Then, test each RObject-RObject pair, if a collision occurs. In that case implement some reaction to make the result visible. Also reflect the velocity vector of a colliding object to resolve the intersection state.

Challenge (bonus points): Quasi-Dynamic movement

A possible movement of objects consist in a constant velocity movement. Now implement an acceleration scheme, where the velocity is changed from frame to frame. If a collision occurs the sphere should be bounced away by acceleration.

Good Luck!