# The Hidden Library of 20th Century Art

By Lucas Redding

## The Scene

The scene consists of an art gallery room. The floor is tiled with cream and mocha shades which is surrounded on all sides by tall, imposing, cobbled stone walls showing that this gallery is old and difficult to get to. Inside the room are three pedestals, each with a piece of art placed on top. At one end of the room is the pedestal with an Ames window floating on top as if by magic. The Ames window is spinning about its y-axis giving the illusion, when looked at straight on, that it is not spinning but oscillating back and forth. At another end of the room is the pedestal with a scanimation playing on top. This scanimation from the 1920s depicts a man on a horse wielding a spear chasing after a scared young boy and a vicious snake, however it is unclear which is the target of the spear. Directly across the room from the scanimation is the last pedestal which is holding a translucent fish tank. The fish tank is almost filled with water which you can see making waves on the surface. Inside the fish tank is a bobbing submarine that is navigating the tank, searching the seabed with a spotlight for signs of life. Circling above the entire room is a big light to help see the objects in the gallery under different angles of light.

## The Extra Features

- There is a spotlight on the front of the moving submarine in the fish tank which is pointing down to light up the bottom of the tank.
- There is a standing lamp pointed at the pedestal holding the Ames window casting a shadow on the floor
- There are two paintings hanging on the left and right of the Ames window containing static optical illusions
- The standing lamp is powered by a perpetual motion machine attached to its stand that uses gravitational physics
- Hanging above the Ames window is a piece of hanging cloth made from a texture mapped quad strip
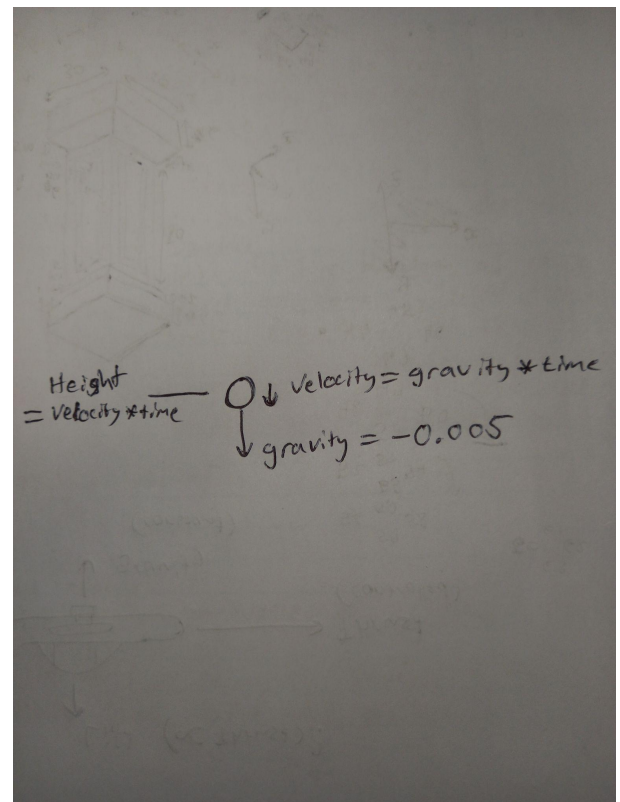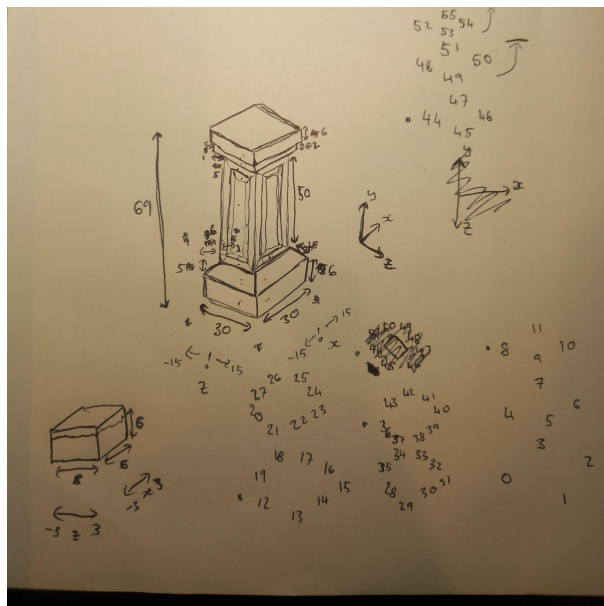
# Screenshots
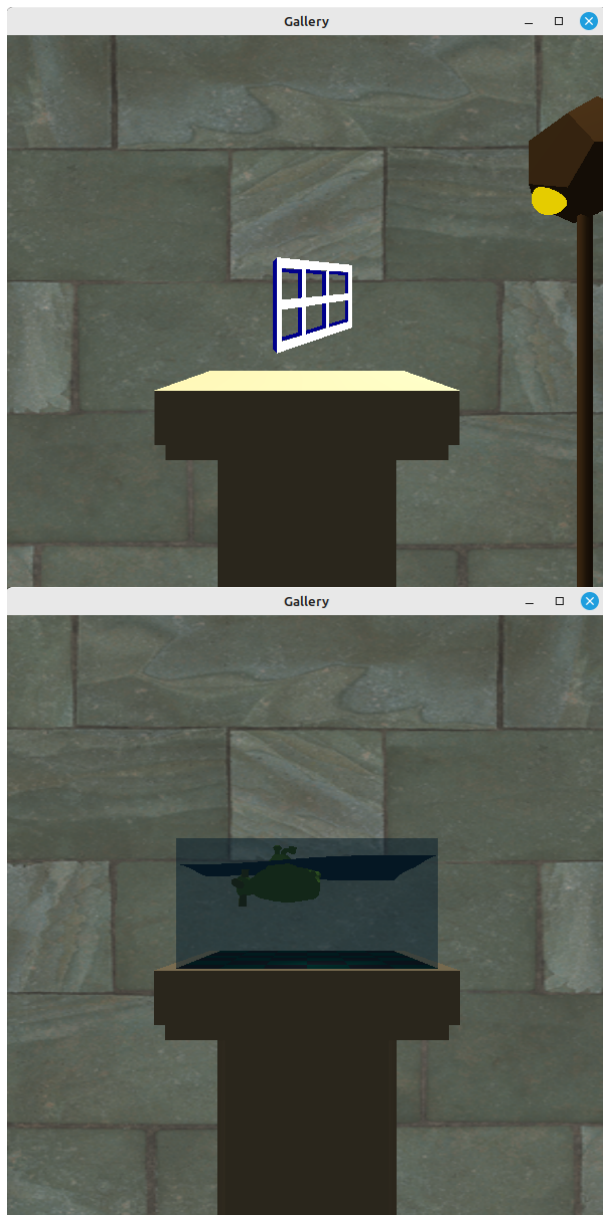


**Top left:** Ames window with spotlight.
**Bottom Left:** Submarine in fish tank.

**Top Right:** Scanimation on pedestal.
**Bottom Right:** Full gallery scene

# Diagrams





**Left:** Diagram of pedestal vertices and fish tank.     **Right:** Force equations for falling ball.

## Control Functions

| Key | Action |
|---|---|
| 1 | Ames Window View |
| 2 | Scanimation View |
| 3 | Fish Tank View |
| 0 | Gallery View |
| ← | Camera Rotate Left |
| → | Camera Rotate Right |
| ↑ | Camera Move Forward |
| ↓ | Camera Move Backward |

# Build Instructions

- Open QtCreator (preinstalled on lab computers.)
- Go to File -> Open File or Project -> navigate to project file -> select CMakeLists.txt
- Select the Desktop kit ->Configure Project
- Click the monitor in the bottom left of QtCreator just above the green arrow
- Select Debug and then gallery.out
- Press the green arrow to build and run the project
- If there are errors in building and running then navigate to the projects tab on the left
- Then change the build directory to the source directory of the project
- Another solution is to move the .tga and .off files into the build directory

# References

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# Declaration

I declare that this assignment submission represents my own work (except for allowed material provided in the course), and that ideas or extracts from other sources are properly acknowledged in the report. I have not allowed anyone to copy my work with the intention of passing it off as their own work.
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