

COMP 471

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Assignment 4

How to Compile, Build and Run the program:

1. In the Windows environment, open the file called submarine.sln using Microsoft Visual Studio .NET 2003.
2. To build the program, select Build > Build Solution.
3. To run, press F5
4. Control the camera, submersible and environment using the buttons described in the Usage section.
5. To exit the program, press the ESC key.

Usage:

Key	Functionality
Right	Rotates the camera right
Left	Rotates the camera left
Up	Rotates the camera up
Down	Rotates the camera down
Home	Rotates the camera around itself
Esc	Exits the program
F1	Toggles the submersible's white spotlight on/off
F2	Toggles the camera to submersible red spotlight on/off
F3	Toggles the submersible's yellow spotlight on/off
F10	Toggles the environment ambient lighting on/off
1	Sets the current camera view as first person
3	Sets the current camera view as third person
a	To start/stop movement of the left arm
A	To start/stop movement of the right arm
c/C	Resets the camera view to the initial setting. The camera remains in either the 1 st person or 3 rd person
d/D	Moves the submersible downwards
f	Moves the camera forward
F	Moves the camera backward
h	Widens cutoff angle of white spotlight
H	Narrows cutoff angle of white spotlight
i	Widens cutoff angle of yellow spotlight
I	Narrows cutoff angle of yellow spotlight
j	Widens cutoff angle of red spotlight
J	Narrows cutoff angle of red spotlight
l	Moves yellow light closer to submersible
L	Moves yellow light away to submersible
m/M	Toggles between metallic shine and rusty matte
p	Increments the submersible pitch
P	Decrements the submersible pitch
r	Rotates the submersible clockwise
R	Rotates the submersible counter-clockwise
s	Increments the propeller speed until maximum

S	Decrements the propeller speed until the stop position
t/T	Toggles the fish and jellyfish movement on/off
u/U	Moves the submersible upwards
v/V	Toggles between the perspective and orthographic views
w/W	Toggles between wire frame and solid-shaded models
y	Increments the submersible yaw
Y	Decrements the submersible yaw
z	Controls camera zoom inwards
Z	Controls camera zoom outwards

Discussion of Implementation:

This section includes a text description of some of the features that were required in the implementation of this deliverable.

Functionality	Implementation
Light	Lights were implemented according to the requirements, parameters for many light attributes such as: <ul style="list-style-type: none"> - GL_SPECULAR - GL_DIFFUSE - GL_AMBIENT - GL_POSITION - GL_SPOT_DIRECTION - GL_SPOT_CUTOFF - GL_SPOT_EXPONENT - GL_LINEAR_ATTENUATION were specified.
Water	Water effects were implemented by enabling GL_FOG. Special care was made to include variations of water effects by varying the parameters of GL_FOG_START, GL_FOG_END, and GL_FOG_DENSITY.
Textures	The submarine components contain two metallic textures while a third texture is used for the fish in the environment.
Window properties	The submersible's window is composed of two translucent spheres.
Metallic shine/ rusty matte properties	Specular lighting is used to distinguish between a rusty texture and a shiny texture.

Special Features:

This deliverable includes many special features. The environment has been even further improved with the addition of animated jellyfish. Some additional keyboard functionality such as an additional light and controls are included.

As for the submersible itself, upwards and downwards motion has been incorporated. The camera moves up and down with the submersible.

Screenshots:



