Ahsanullah University of Science and Technology

Hatirjheel Bridge

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Introduction : Our project name is Hatirjheel bridge. It is a 3D view that is developed by using OpenGL. Here we can see 360' view of hatirjheel bridge where the view will keep rotating continuously.

Tools Used:
API : OpenGL
Programming Language : C++
IDE : CodeBlocks

Significant Functions of the code:
1.drawPiller()
2.drawBase()
3.drawSky()
4.drawSlope()
5.drawRoad()
6.drawWater()
7.drawWall()
8.handleKeyPress(unsigned char key,int x,int y)
9.handleResize(int w,int h)
10.initialize()
11.initRendering()
12.main(int argc,char** argv)
13.buildingCode()
14.upperRoad()
15.SpecialInput(int key,int x,int y)
16.update(int value)
17.load_Texture()

Code Segments:

```
//Draws the 3D scene
void drawScene() {
```

```
//waterside grass code starts

    //1st part
    //right part

    glEnable(GL_TEXTURE_2D);
    glBindTexture(GL_TEXTURE_2D, _textureId2);

    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MIN_FILTER,
GL_NEAREST);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MAG_FILTER,
GL_NEAREST);

    glColor3f(1.0f, 1.0f, 1.0f);
    glBegin(GL_QUADS);

    glNormal3f(1.0, 0.0f, 0.0f);
    glTexCoord2f(0.0f, 0.0f);
    glVertex3f(-5.21f, -0.551f, 35.5f);
    glTexCoord2f(10.0f, 0.0f);
    glVertex3f(-4.8f, -2.5f, 35.5f);
    glTexCoord2f(10.0f, 10.0f);
    glVertex3f(-4.8f, -2.5f, -35.5f);
    glTexCoord2f(0.0f, 10.0f);
    glVertex3f(-5.21f, -0.551f, -35.5f);

    glEnd();



//upper slope part 1

    glEnable(GL_TEXTURE_2D);
    glBindTexture(GL_TEXTURE_2D, _textureId2);

    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MIN_FILTER,
GL_NEAREST);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MAG_FILTER,
GL_NEAREST);
```

```
    glColor3f(1.0f, 1.0f, 1.0f);
    glBegin(GL_QUADS);

    glNormal3f(1.0, 0.0f, 0.0f);
    glTexCoord2f(0.0f, 0.0f);
    glVertex3f(-6.0f, -0.551f, 35.0f);
    glTexCoord2f(5.0f, 0.0f);
    glVertex3f(-6.0f, -0.551f, 5.0f);
    glTexCoord2f(5.0f, 5.0f);
    glVertex3f(-8.5f, 3.4f, 5.0f);
    glTexCoord2f(0.0f, 5.0f);
    glVertex3f(-8.5f, 3.4f, 35.0f);

    glEnd();



    //upper slope part 2

    glEnable(GL_TEXTURE_2D);
    glBindTexture(GL_TEXTURE_2D, _textureId2);

    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MIN_FILTER,
GL_NEAREST);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MAG_FILTER,
GL_NEAREST);

    glColor3f(1.0f, 1.0f, 1.0f);
    glBegin(GL_QUADS);

    glNormal3f(1.0, 0.0f, 0.0f);
    glTexCoord2f(0.0f, 0.0f);
    glVertex3f(-6.0f, -0.551f, -4.5f);
    glTexCoord2f(5.0f, 0.0f);
    glVertex3f(-6.0f, -0.551f, -35.0f);
    glTexCoord2f(5.0f, 5.0f);
    glVertex3f(-8.5f, 3.4f, -35.0f);
    glTexCoord2f(0.0f, 5.0f);
    glVertex3f(-8.5f, 3.4f, -4.5f);

    glEnd();
```

```
    //upper slope part 1 updated

    glEnable(GL_TEXTURE_2D);
    glBindTexture(GL_TEXTURE_2D, _textureId2);

    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MIN_FILTER,
GL_NEAREST);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MAG_FILTER,
GL_NEAREST);

    glColor3f(1.0f, 1.0f, 1.0f);
    glBegin(GL_QUADS);

    glNormal3f(1.0, 0.0f, 0.0f);
    glTexCoord2f(0.0f, 0.0f);
    glVertex3f(-14.0f, -0.551f, 35.0f);
    glTexCoord2f(5.0f, 0.0f);
    glVertex3f(-14.0f, -0.551f, 5.0f);
    glTexCoord2f(5.0f, 5.0f);
    glVertex3f(-10.5f, 3.4f, 5.0f);
    glTexCoord2f(0.0f, 5.0f);
    glVertex3f(-10.5f, 3.4f, 35.0f);

    glEnd();



//uppersky
    glEnable(GL_TEXTURE_2D);
    glBindTexture(GL_TEXTURE_2D, _textureId1);

    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MIN_FILTER,
GL_NEAREST);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MAG_FILTER,
GL_NEAREST);

    glColor3f(1.0f, 1.0f, 1.0f);
    glBegin(GL_QUADS);
```

```
    glNormal3f(0.0, 1.0f, 0.0f);
    glTexCoord2f(0.0f, 0.0f);
    glVertex3f(-35.2f, 35.0f, 35.5f);
    glTexCoord2f(1.0f, 0.0f);
    glVertex3f(36.1f, 35.0f, 35.5f);
    glTexCoord2f(1.0f, 1.0f);
    glVertex3f(36.1f, 35.0f, -30.5f);
    glTexCoord2f(0.0f, 1.0f);
    glVertex3f(-35.2f, 35.0f, -30.5f);

    glEnd();

    //leftsky
    glEnable(GL_TEXTURE_2D);
    glBindTexture(GL_TEXTURE_2D, _textureId1);

    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MIN_FILTER,
GL_NEAREST);
    glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MAG_FILTER,
GL_NEAREST);

    glColor3f(1.0f, 1.0f, 1.0f);
    glBegin(GL_QUADS);

    glNormal3f(1.0, 0.0f, 0.0f);
    glTexCoord2f(0.0f, 0.0f);
    glVertex3f(-35.2f, 55.0f, 65.5f);
    glTexCoord2f(1.0f, 0.0f);
    glVertex3f(-35.2f, -35.0f, 65.5f);
    glTexCoord2f(1.0f, 1.0f);
    glVertex3f(-35.2f, -35.0f, -60.5f);
    glTexCoord2f(0.0f, 1.0f);
    glVertex3f(-35.2f, 55.0f, -60.5f);

    glEnd();
```

Project Functionalities:

1. It will keep rotating 360” that will help to show different angles.
2. Light ambient function has used that gives shaded color from different sides.
3. Texture has been used vastly in this project.

Special Features of the Game:

1.360 auto rotation

2. Slope grass

3. Base piller

4. Designed piller

5. Upper bridge road

These features are activated over the view.