

# Ahsanullah University of Science & Technology

Department of Computer Science and Engineering



CSE4204: Computer Graphics Lab

Project Title

National Intellectual Memorial of Bangladesh

Submitted By:

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# 1 National Intellectual Memorial of Bangladesh

A memorial built in memory of the martyred intellectuals of the Bangladesh Liberation War. The memorial is located at Rayerbazar, Mohammadpur Thana in Dhaka. The memorial was designed by architect Farid U Ahmed and Jami Al Shafi. The initial proposal for a memorial at Rayer Bazar was brought forward by Projonmo 71 (organisation of the children of the martyrs of liberation war), who also laid a temporary foundation stone in 1991.

## 1.1 Used Tools

1. Open-source cross-platform IDE : Codeblocks
2. A cross-language,cross-platform API : OpenGL
3. Language : C

## 1.2 Functions

- The Sky and the grass
  - 1. SkyGrass ()
- The wall around the monument
  - 1. brickWall ()
  - 2. PechonerWall ()
  - 3. ShamnerWall ()
- The Monument
  - 1. draw\_monument ()
- The National flag of Bangladesh
  - 1. draw\_flag ()
- The water flow
  - 1. draw\_water ()
- The grass within the small boundary
  - 1. grass\_square ()
- Stairs
  - 1. Stair1 ()
- The floor in front of the monument
  - 1. Front.Floor1 ()
- The trees on the front floor
  - 1. makeTree ()

- Keyboard functionalities like,
  - key R or r : Rotation in clockwise meaning about y-axis.
  - Key u : Roation about x-axis in clockwise.
  - Key d : Roation about x-axis in anti clockwise.
  1. my\_keyboard ()
  2. special\_key ()
- The update functions used to show flow of water, flag and leaf.
  1. update () : For water flow.
  2. update2 () : For leaf flow.
  3. update3 () : For flag flow.
- The whole structural functions described above are included in this function.
  1. drawscene ()

```
%given code
void drawscene()
{
    GLUquadric *quadric;
    quadric = gluNewQuadric();

    glClear(GL_COLOR_BUFFER_BIT | GL_DEPTH_BUFFER_BIT); // clear before draw somethings
    glClearColor(R,G,B,1); // for background -- day night
    glMatrixMode(GL_MODELVIEW); //Switch to the drawing perspective
    glLoadIdentity();

    glTranslatef(.5,0,-20);

    GLfloat ambientColor[] = {i1,i2,i3,1};
    glLightModelfv(GL_LIGHT_MODEL_AMBIENT, ambientColor);

    // Light 0
    GLfloat lightColor0[] = {posL1, posL2, posL3, 1.0f};
    GLfloat lightPos0[] = {0.0f, 8.0f, -4.0f, 1.0f};
    glLightfv(GL_LIGHT0, GL_DIFFUSE, lightColor0);
    glLightfv(GL_LIGHT0, GL_POSITION, lightPos0);

    glRotatef (tipangle, 1,0,0);
    glRotatef(Rangle,0,1,0);
    glTranslatef(view_x,0,view_z);
    glRotatef(Rangle,0,1,0);
    glTranslatef(trans[0],trans[1],trans[2]);
    //.....SkyGrass.....
    SkyGrass(quadric);

    glPushMatrix();
    glTranslatef(15.0,2.0,-20);
    brickWall();
    glPopMatrix();

    glPushMatrix();
    glTranslatef(-15.0,2.0,-20);
    brickWall();
    glPopMatrix();
}
```

```

glPushMatrix();
glTranslatef(0.0,2.0,-30);
PechonerWall();
glPopMatrix();

glPushMatrix();
glTranslatef(0.0,2,-20);
ShammerWall();
glPopMatrix();

glPushMatrix();
glTranslatef(0.0,0,-15);
ShammerFloor1();
glPopMatrix();

glPushMatrix();
glTranslatef(10.0,0,-15);
ShammerFloor1_14th();
glPopMatrix();

glPushMatrix();
glTranslatef(-10.0,0,-15);
ShammerFloor1_14th();
glPopMatrix();

//..... square GRASS .....
glPushMatrix();
glTranslatef(8.0,0,-16);
grass_square();
glPopMatrix();

glPushMatrix();
glTranslatef(-8.0,0,-16);
grass_square();
glPopMatrix();

glPushMatrix();
glTranslatef(8.0,0,-10);
grass_square();
glPopMatrix();

glPushMatrix();
glTranslatef(-8.0,0,-10);
grass_square();
glPopMatrix();

glPushMatrix();
glTranslatef(13.5,0,-16);
grass_square();
glPopMatrix();

glPushMatrix();
glTranslatef(-13.5,0,-16);
grass_square();
glPopMatrix();

glPushMatrix();
glTranslatef(13.5,0,-10);
grass_square();
glPopMatrix();

```

```

glPushMatrix();
glTranslatef(-13.5,0,-10);
grass_square();
glPopMatrix();
//..... FLAG.....
glPushMatrix();
glTranslatef(5.5,2.5,-20);
draw_flag();
glPopMatrix();
//..... water .....
glPushMatrix();
glTranslatef(0.0,1.0,-20);
draw_water();
glPopMatrix();
//..... monument .....
glPushMatrix();
glTranslatef(5.0,2.0,-25);
draw_monument();
glPopMatrix();

//.....STAIRS.....
glPushMatrix();
glTranslatef(-8.0,0.0,-15);
Stair1();
glPopMatrix();

glPushMatrix();
glTranslatef(-13.0,-1.0,-15);
Stair1();
glPopMatrix();

glPushMatrix();
glTranslatef(8.0,0.0,-16);
glRotatef(180,0.0,1.0,0.0);
Stair1();
glPopMatrix();

glPushMatrix();
glTranslatef(13.0,-1.0,-16);
glRotatef(180,0.0,1.0,0.0);
Stair1();
glPopMatrix();

glPushMatrix();
glTranslatef(-2.0,0.0,-12);
glRotatef(90,0.0,1.0,0.0);
Stair1();
glPopMatrix();

glPushMatrix();
glTranslatef(4.0,0.0,-12);
glRotatef(90,0.0,1.0,0.0);
Stair1();
glPopMatrix();

glPushMatrix();
glTranslatef(11.0,0.0,-10);
glScalef(.5,.5,.5);

```

```

glRotatef(90,0.0,1.0,0.0);
Stair1();
glPopMatrix();

glPushMatrix();
glTranslatef(-11.0,0.0,-10);
glScalef(.5,.5,.5);
glRotatef(90,0.0,1.0,0.0);
Stair1();
glPopMatrix();

//..... front floor1.....
glPushMatrix();
glTranslatef(0.0,0.0,0.0);
Front_Floor1();
glPopMatrix();

glPushMatrix();
glTranslatef(0.0,0.0,1.0);
glScalef(1,2,1);
Front_Floor1();
glPopMatrix();

glPushMatrix();
glTranslatef(-10.0,0.0,3.0);
glScalef(1,0.2,1);
grass_square();
glPopMatrix();

glPushMatrix();
glTranslatef(0.0,0.0,3.0);
glScalef(1,0.2,1);
grass_square();
glPopMatrix();

glPushMatrix();
glTranslatef(10.0,0.0,3.0);
glScalef(1,0.2,1);
grass_square();
glPopMatrix();

//..... TREE.....
glPushMatrix();

glTranslatef(10.0,0.0,3.0);
glScalef(.2,0.2,.2);
glColor3f(0.0,1.0,0.0);
glRotatef(-30,0.0,1.0,0.0);
glCallList(makeaTree);

glPopMatrix();
glPushMatrix();

glTranslatef(10.0,0.0,3.0);
glScalef(.2,0.2,.2);
glColor3f(0.0,1.0,0.0);
glRotatef(-5,0.0,1.0,0.0);
glCallList(makeaTree);

glPopMatrix();

```

```

glPushMatrix();

glTranslatef(10.0,0.0,3.0);
glScalef(.2,.2,.2);
glColor3f(0.0,1.0,0.0);
glRotatef(25,0.0,1.0,0.0);
glCallList(makeaTree);

glPopMatrix();
glPushMatrix();

glTranslatef(10.0,0.0,3.0);
glScalef(.2,.2,.2);
glColor3f(0.0,1.0,0.0);
glRotatef(65,0.0,1.0,0.0);
glCallList(makeaTree);

glPopMatrix();

glutSwapBuffers();
}

```

---

National Intellectual Memorial of Bangladesh



Figure 1: Intellectual Memorial

**Front view**



Figure 2: Intellectual Memorial front view

**Top view**

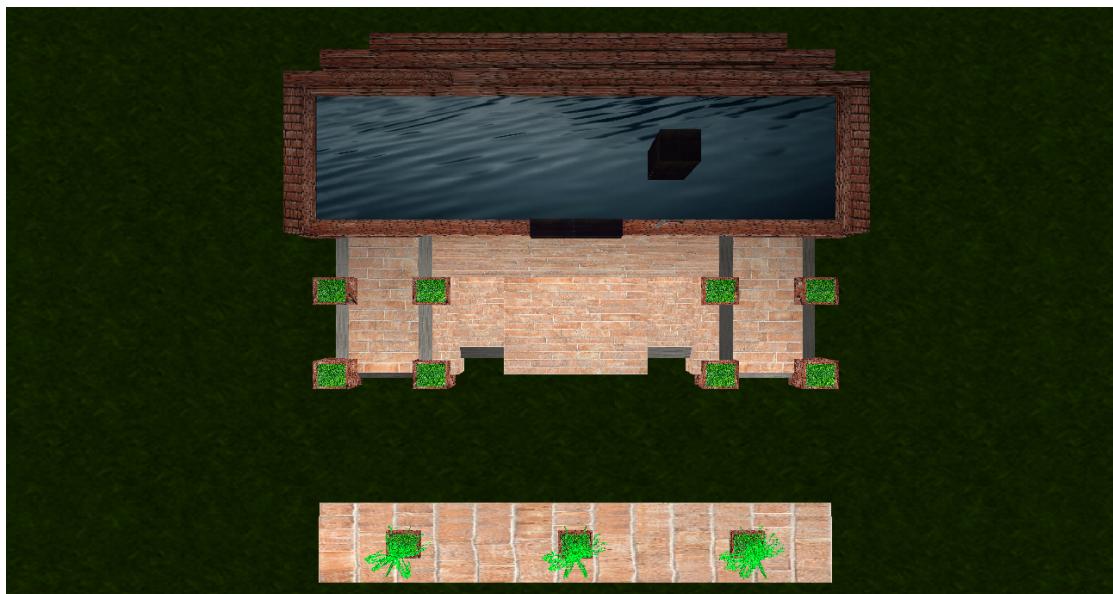


Figure 3: Intellectual Memorial top view

---

```
void my_keyboard(unsigned char key, int x, int y)
{
    switch (key)
    {

        case 'D':
        case 'd':
            tipangle-=5;
            if(tipangle<5)
                tipangle=5;
            break;
        case 'u':
        case 'U':
            tipangle+=5;
            if(tipangle>90)
                tipangle=90;
            break;

        case 'a' :
            trans[0] = 0.1,trans[1] = 0.1,trans[2] = 0.1;
            viewangle = 0,tipangle = 5;
            view_x=0,view_z=-5;
            break;
        case 'r':
        case 'R':
            Rangle += 2.5f;
            if (Rangle > 360)
            {
                Rangle -= 360;
            }
            break;

    }
    glutPostRedisplay();
}
```

---

```
void special_key(int key,int x,int y)
{
    switch (key)
    {
        case GLUT_KEY_LEFT :
            view_x += .3;
            break;
        case GLUT_KEY_RIGHT:
            view_x -= .3;
            break;
        case GLUT_KEY_UP :
            view_z += .3;
            break;
        case GLUT_KEY_DOWN :
            view_z -= .3;
            break;
    }
    glutPostRedisplay();
}
```

---

**Corner Left view**



Figure 4: Intellectual Memorial Corner Left view

**Left view**

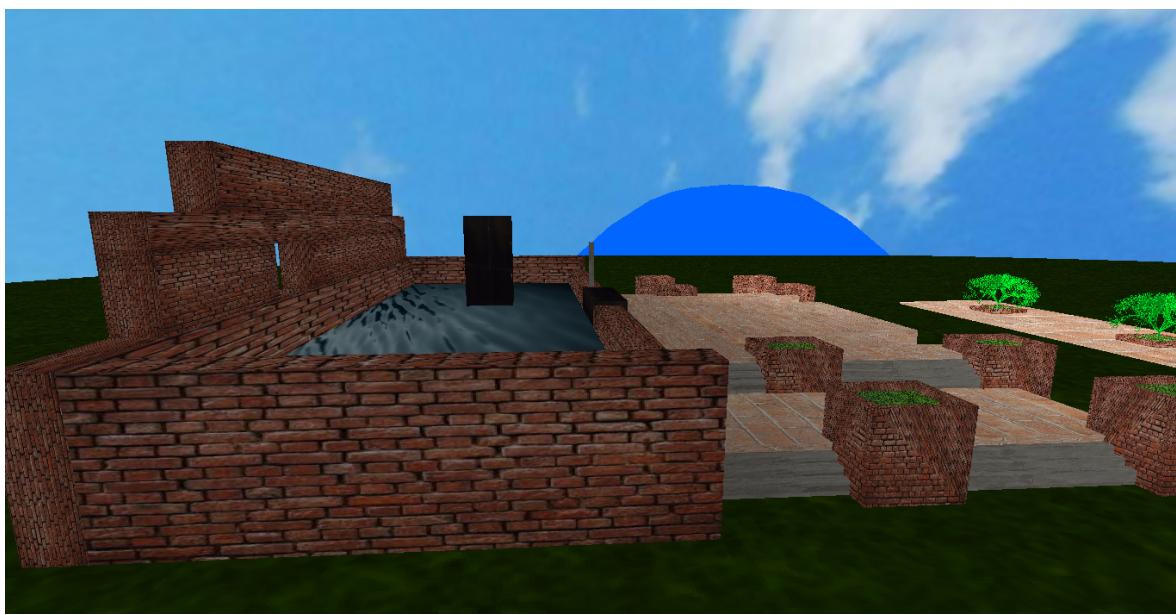


Figure 5: Intellectual Memorial left view