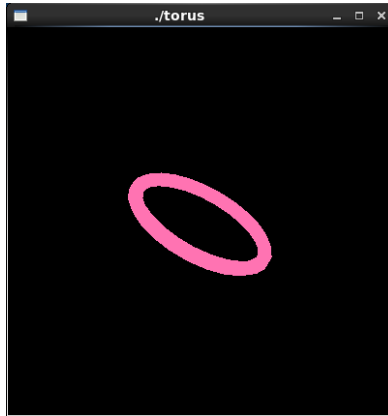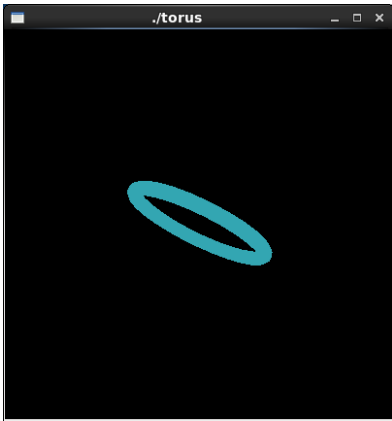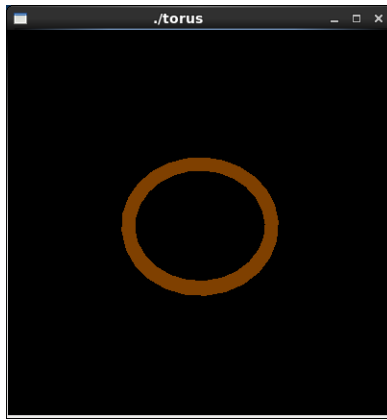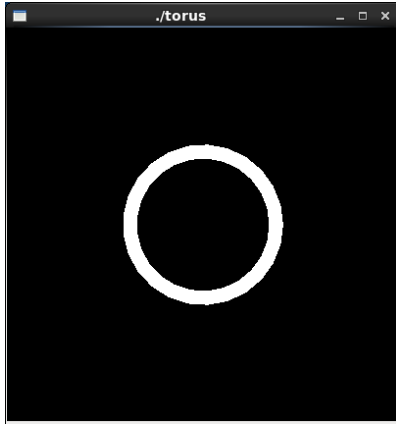Yazhuo Liu
Lab 18

Copy the program torus.cpp from the lecture notes. Compile and execute it. Press 'x' or 'y' to rotate the torus. Modify your program so that its color changes each time you rotate the torus.

...
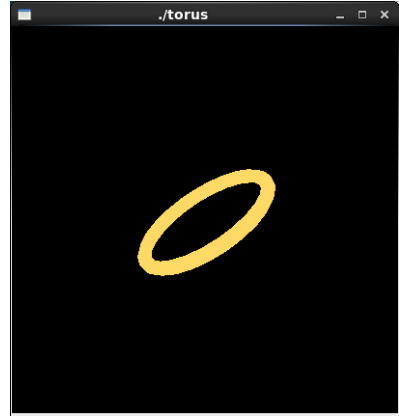
float r = 1.0, g = 1.0, b = 1.0;

```
void display(void)
{
  glClear(GL_COLOR_BUFFER_BIT);
  glColor3f (r, g, b);
  glCallList(theTorus);
  glFlush();
}
...
void keyboard(unsigned char key, int x, int y)
{
  switch (key) {
  case 'x':
  case 'X':
      if (r >= 0.0 && g >= 0.0 && b >= 0.0) {
        r -= 0.1; g -= 0.15; b -= 0.2; }
      if (r <= 0.0) r = 1.0;
```

```cpp
        if (g <= 0.0) g = 1.0;
        if (b <= 0.0) b = 1.0;
        glColor3f(r, g, b);
        glRotatef(30.,1.0,0.0,0.0);
        glutPostRedisplay();
        break;
    case 'y':
    case 'Y':
        if (r >= 0.0 && g >= 0.0 && b >= 0.0) {
            r -= 0.2; g -= 0.05; b -= 0.1; }
        if (r <= 0.0) r = 1.0;
        if (g <= 0.0) g = 1.0;
        if (b <= 0.0) b = 1.0;
        glColor3f(r, g, b);
        glRotatef(30.,0.0,1.0,0.0);
        glutPostRedisplay();
        break;
    case 'i':
    case 'I':
        r = 1.0, g = 1.0, b = 1.0;
        glLoadIdentity();
        gluLookAt(0, 0, 10, 0, 0, 0, 0, 1, 0);
        glColor3f(1.0, 1.0, 1.0);
        glutPostRedisplay();
        break;
    case 27:
        exit(0);
        break;
    }
}
```

Copy the program list.cpp from the lecture notes. Compile and run it. Modify the program so that it displays pentagons instead of triangles.

```
static void init (void)
{
  listName = glGenLists (1);
  glNewList (listName, GL_COMPILE);
    glColor3f (1.0, 0.0, 0.0);  /*  current color red  */
    glBegin(GL_POLYGON);
    glVertex2f (0.375, 0.0);
    glVertex2f (1.125, 0.0);
    glVertex2f (1.5, 0.6495);
    glVertex2f (0.75, 1.5);
    glVertex2f (0.0, 0.6495);
    glEnd();
    glTranslatef (1.5, 0.0, 0.0); /*  move position  */
  glEndList ();
  glShadeModel (GL_FLAT);
}
```

Report:

      For exercise 1, I think there is a more efficient solution to it, but what I did works just fine. I successfully completed this lab.