

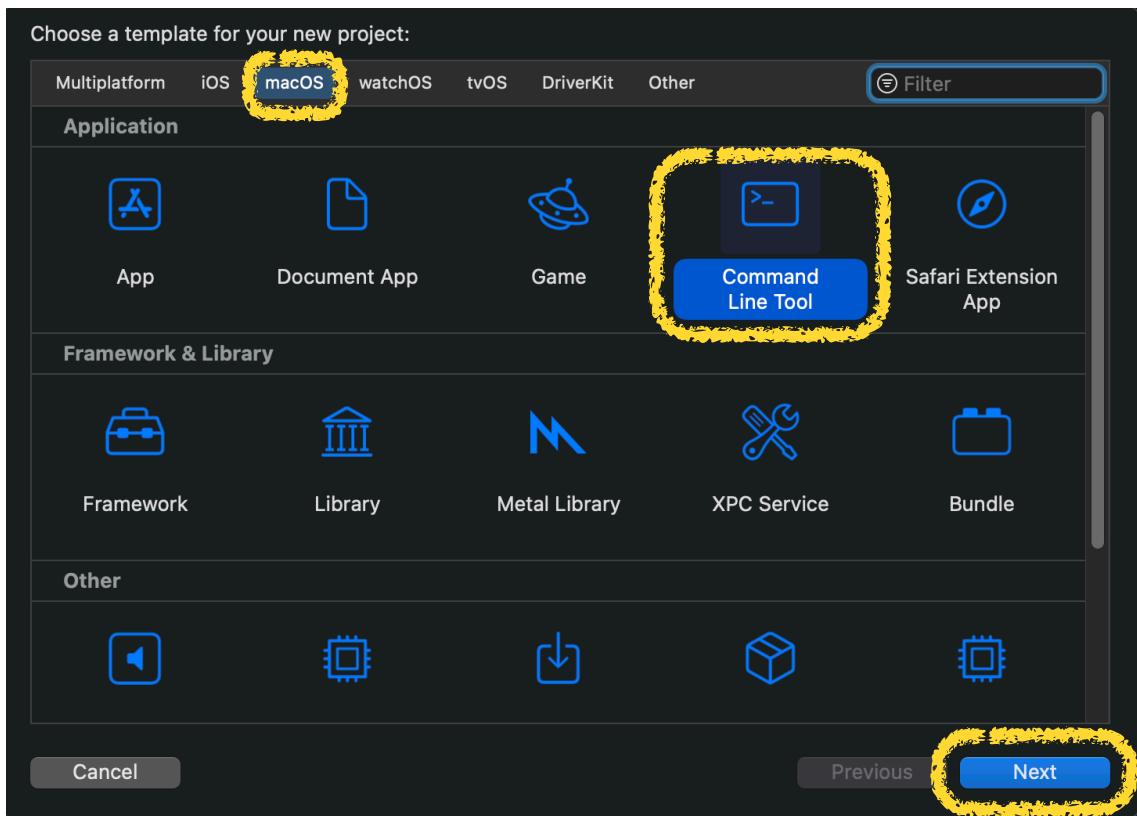
# OpenGL setup on macOS

## Xcode Setup:

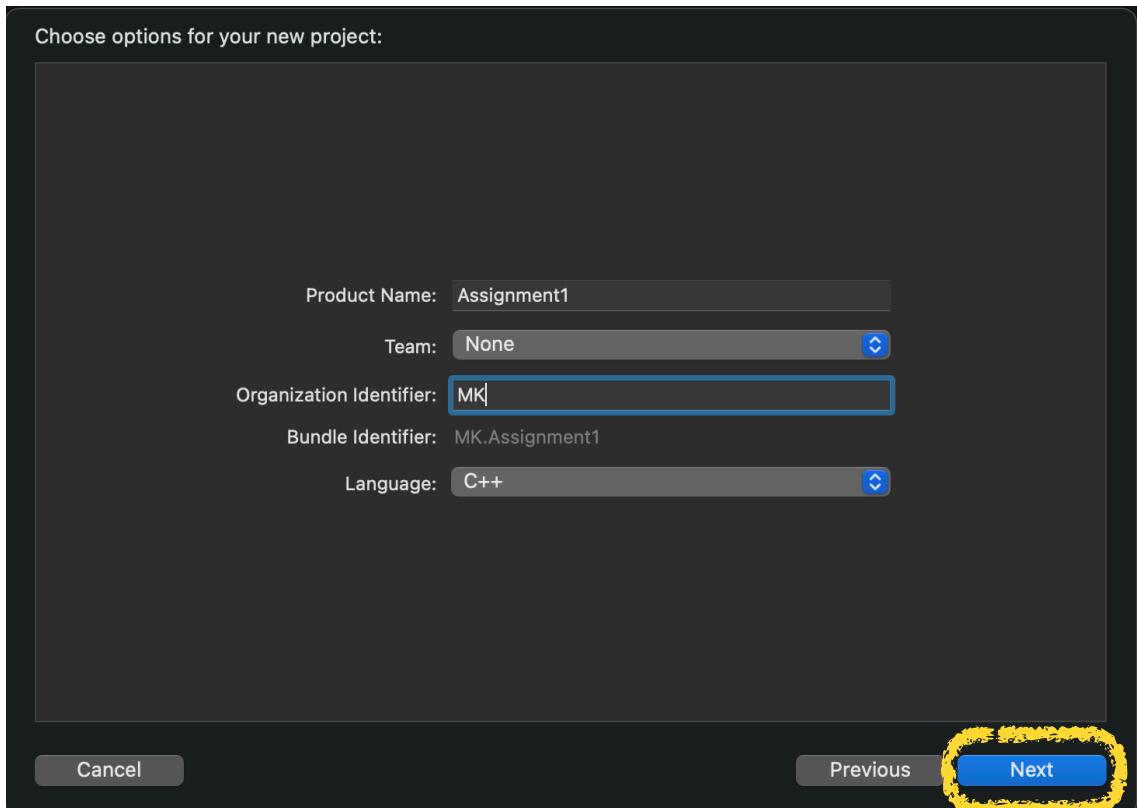
1. Update Xcode
2. Launch Xcode
3. Create a ‘new Xcode Project’



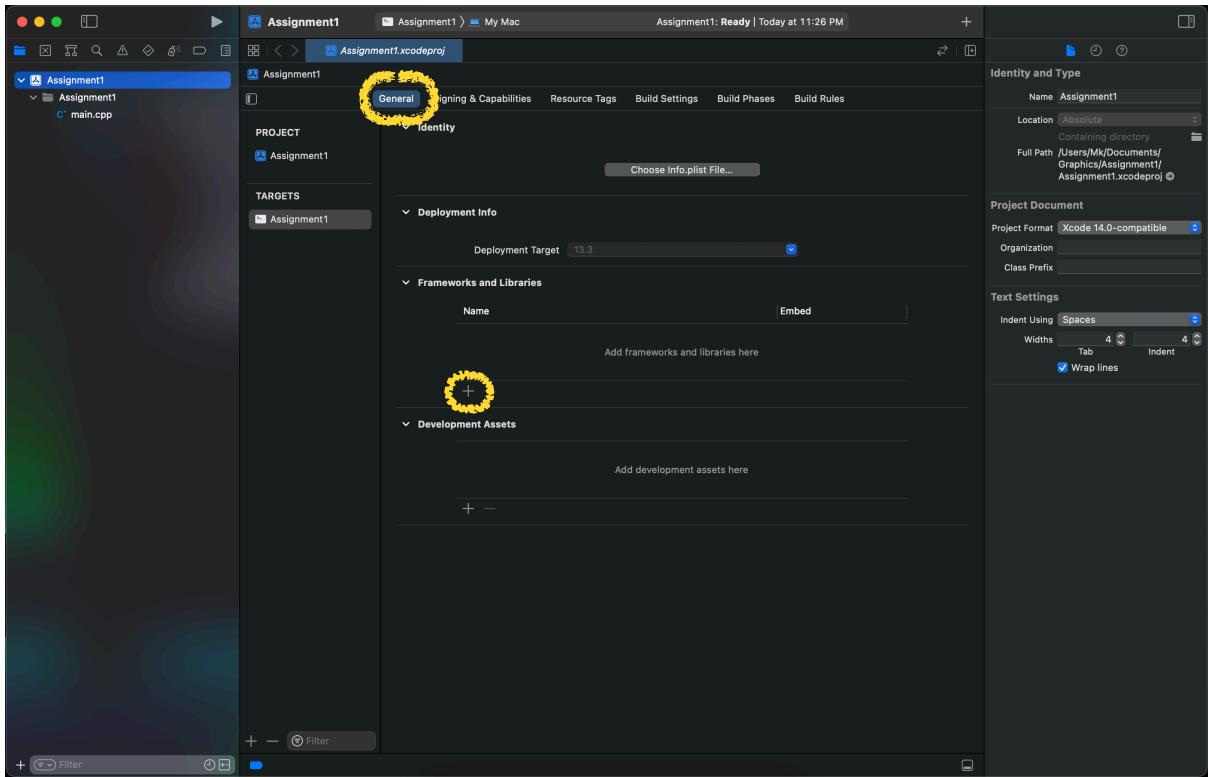
4. Choose the ‘macOS’ platform and select ‘Command Line Tool’



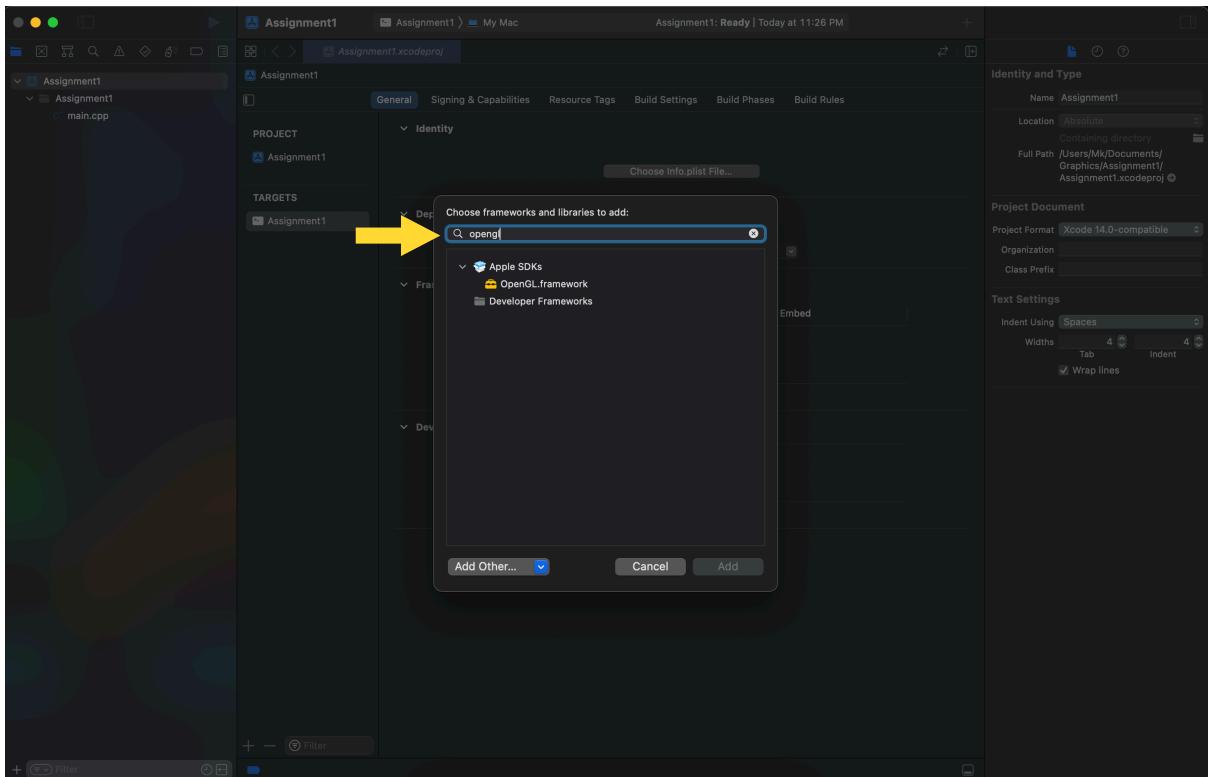
5. Fill-in the information for your new project



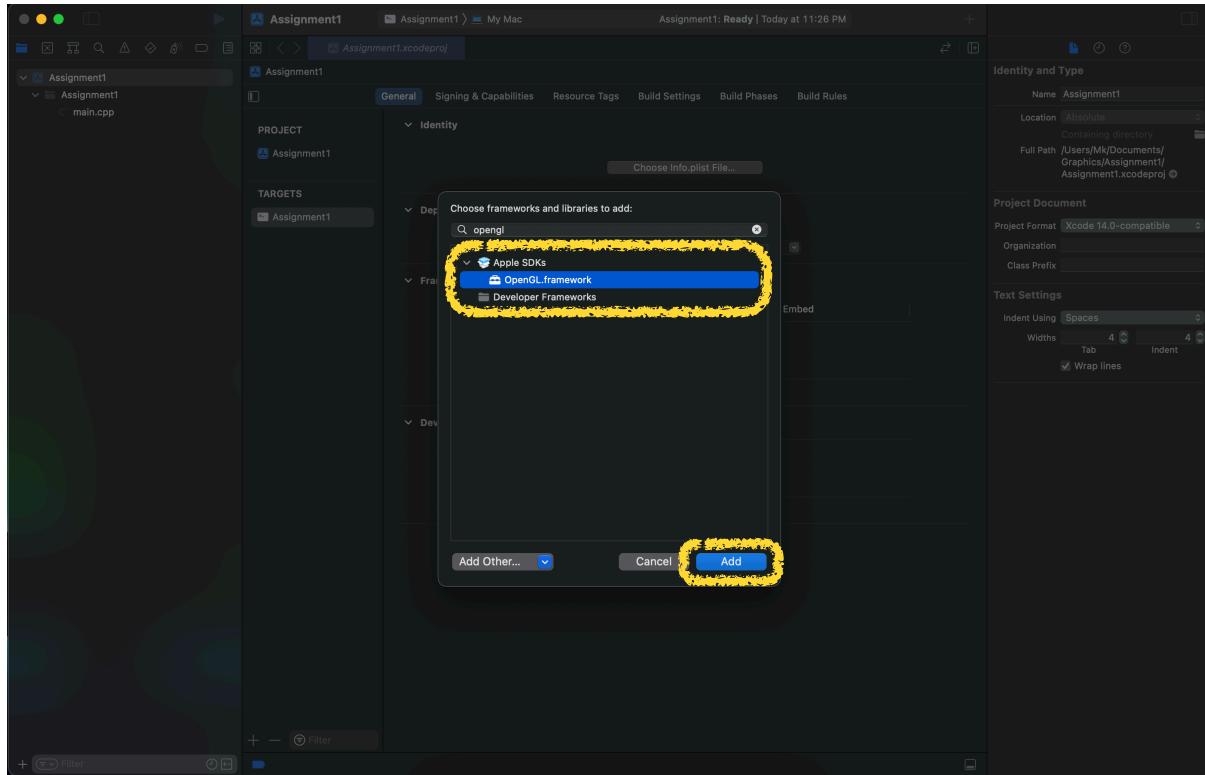
6. Choose the project directory and create the project.
7. Once you launch the project, add the dependency libraries



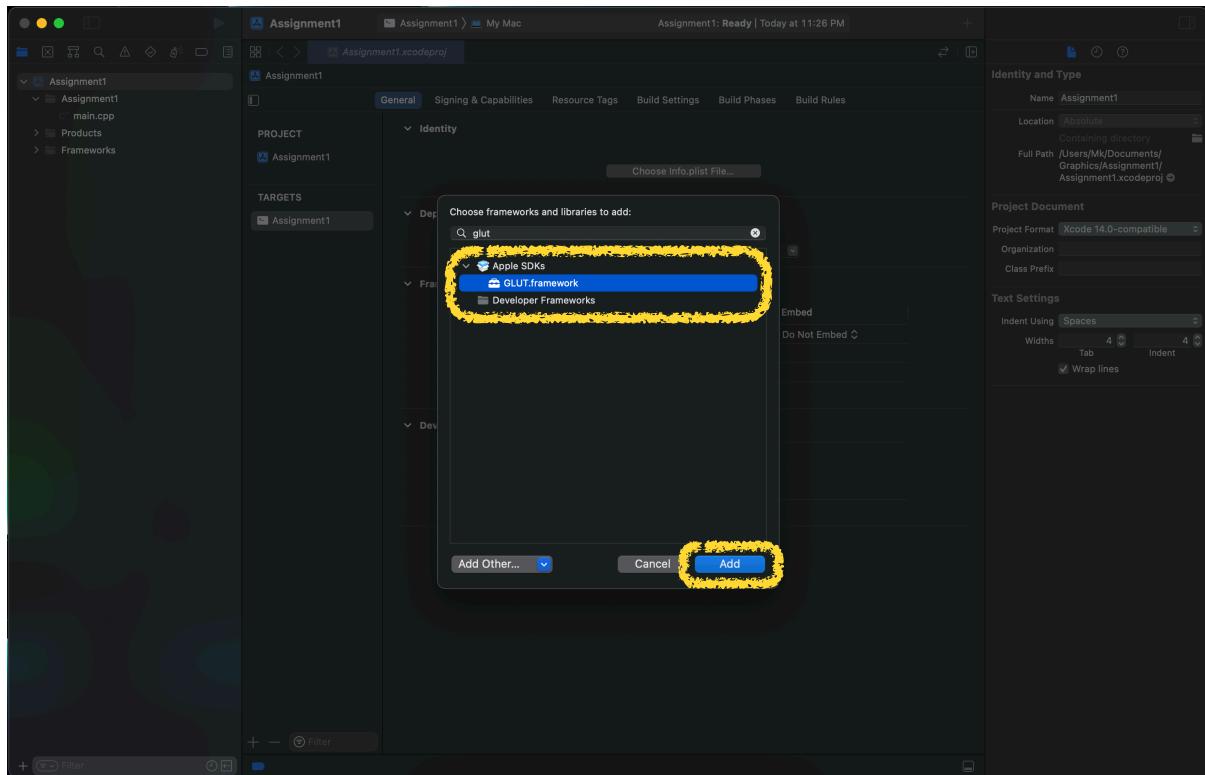
8. Search for 'OpenGL'



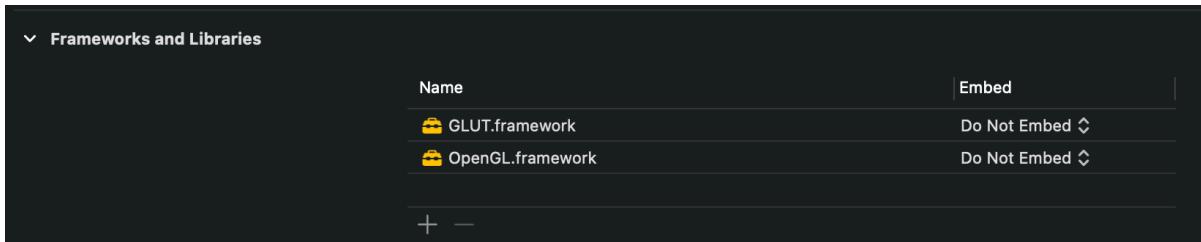
9. Select ‘OpenGL.framework’ and ‘Add’.



10. Search ‘GLUT’. Select ‘GLUT.framework’ and ‘Add’.

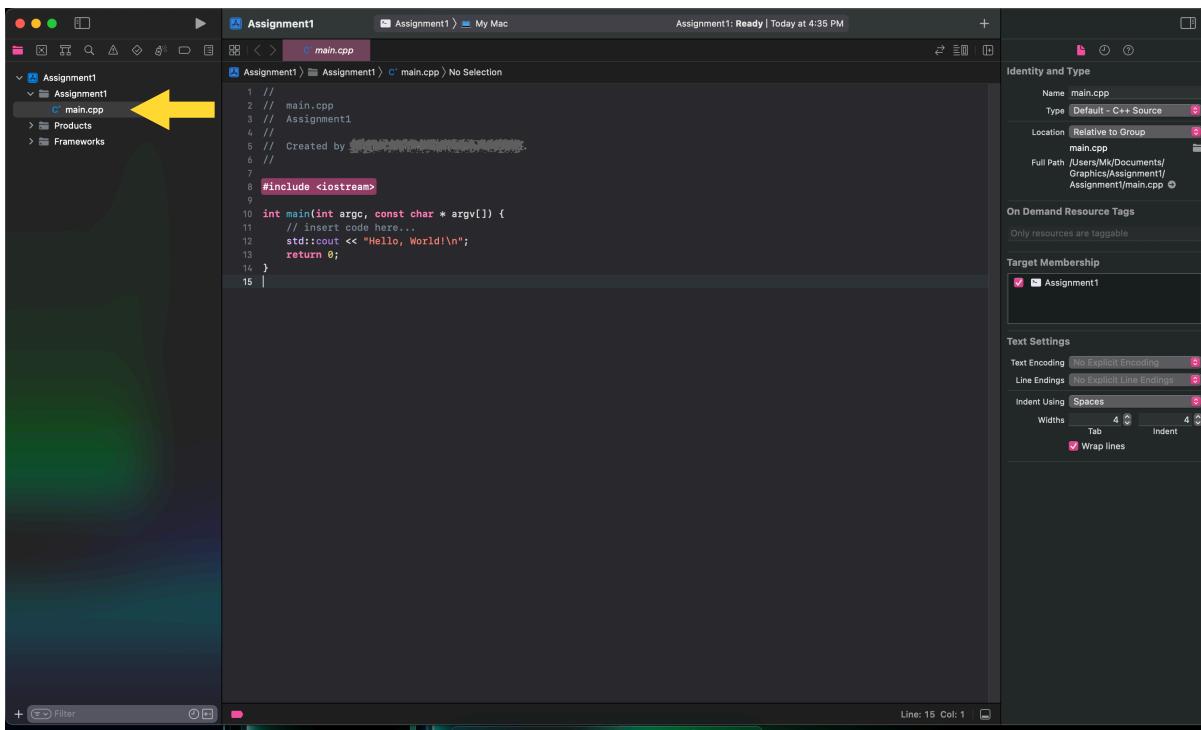


11. Your ‘Frameworks and Libraries’ should look like this.



## Running the OpenGL Project

1. Download the source code you need. For example, ‘opengl2Dtemplate’ on the CMS.
2. Extract the downloaded file.
3. Copy the c++ code from the project.



**4. Paste the code to the main.cpp file.**

The screenshot shows the Xcode interface with the project 'Assignment1' open. The main editor window displays the 'main.cpp' file. The code includes OpenGL initialization, vertex definitions for a triangle, and a glutMainLoop call. A build error message '7 @ 'glut.h' file not found' is visible at the bottom of the code area. The right sidebar shows the file's properties: Name is 'main.cpp', Type is 'Default - C++ Source', and Location is 'Relative to Group'. The 'Text Settings' section shows encoding as 'No Explicit Encoding', line endings as 'No Explicit Line Endings', and indent using 'Spaces' with width 4. The status bar at the bottom indicates 'Line: 33 Col: 1'.

```
#include <glut.h>
void Display() {
    glClear(GL_COLOR_BUFFER_BIT);
    glBegin(GL_TRIANGLES);
    glColor3f(1.0f, 0.0f, 0.0f);
    glVertex3f(150.0f, 200.0f, 0.0f);
    glColor3f(1.0f, 1.0f, 0.0f);
    glVertex3f(100.0f, 100.0f, 0.0f);
    glColor3f(0.0f, 0.0f, 1.0f);
    glVertex3f(200.0f, 100.0f, 0.0f);
    glEnd();
    glFlush();
}
void main(int argc, char** argv) {
    glutInit(&argc, argv);
    glutInitWindowSize(300, 300);
    glutInitWindowPosition(150, 150);
    glutCreateWindow("OpenGL - 2D Template");
    glutDisplayFunc(Display);
    glutInitDisplayMode(GLUT_SINGLE | GLUT_RGB);
    glColor3f(0.0f, 0.0f, 0.0f);
    gluOrtho2D(0.0, 300, 0.0, 300);
    glutMainLoop();
}

```

**5. Amend the c++ code as shown**

The screenshot shows the Xcode interface with the project 'Assignment1' open. The main editor window displays the 'main.cpp' file. The code has been modified to include '#define GL\_SILENCE\_DEPRECATION' at the top and 'return 0;' at the end of the main function. The code area is highlighted with yellow boxes around the '#define' statement, the 'int main' declaration, and the final 'return 0;' statement. The right sidebar shows the file's properties and the status bar at the bottom indicates 'Line: 36 Col: 1'.

```
#define GL_SILENCE_DEPRECATION
#include <GLUT/glut.h>
void Display() {
    glClear(GL_COLOR_BUFFER_BIT);
    glBegin(GL_TRIANGLES);
    glColor3f(1.0f, 0.0f, 0.0f);
    glVertex3f(150.0f, 200.0f, 0.0f);
    glColor3f(1.0f, 1.0f, 0.0f);
    glVertex3f(100.0f, 100.0f, 0.0f);
    glColor3f(0.0f, 0.0f, 1.0f);
    glVertex3f(200.0f, 100.0f, 0.0f);
    glEnd();
    glFlush();
}
int main(int argc, char** argv) {
    glutInit(&argc, argv);
    glutInitWindowSize(300, 300);
    glutInitWindowPosition(150, 150);
    glutCreateWindow("OpenGL - 2D Template");
    glutDisplayFunc(Display);
    glutInitDisplayMode(GLUT_SINGLE | GLUT_RGB);
    glColor3f(0.0f, 0.0f, 0.0f);
    gluOrtho2D(0.0, 300, 0.0, 300);
    glutMainLoop();
    return 0;
}
```

- 6. Build your project or (command+b).**
- 7. The project should build successfully now!**
- 8. Start editing your code.**