

Computer Graphics

Lab 2

Instructions and Grading

- ✓ Lab Exercises must be done within Lab Timings on individual basis.
- ✓ You can submit lab work on the same day via e-mail before 9:00 PM.
- ✓ The folder to be submitted must be named by your name_SeatNO e.g. Asim_B0101105
- ✓ Later On Project/ Major Assignments will be assigned to group of maximum two members.
- ✓ All Major Assignments must be submitted in time
- ✓ Late Submissions for any reason have no credits.

Objectives

- ✓ Practicing OpenGL primitives.
- ✓ Generating the image of a complex object using only very simple primitives.

Compiling and running a simple OpenGL Program:

- Open MS Visual Studio .NET
- Select File->New->Project
- Expand Visual C++ Projects on the left-hand side
- Select the folder Win32
- On the right, select Win32 Console Project
- Set the location to save the project
- Give the project a name
- Click OK
- Click on 'Application Settings'
- Under additional options, select 'Empty Project'
- Click on Finish

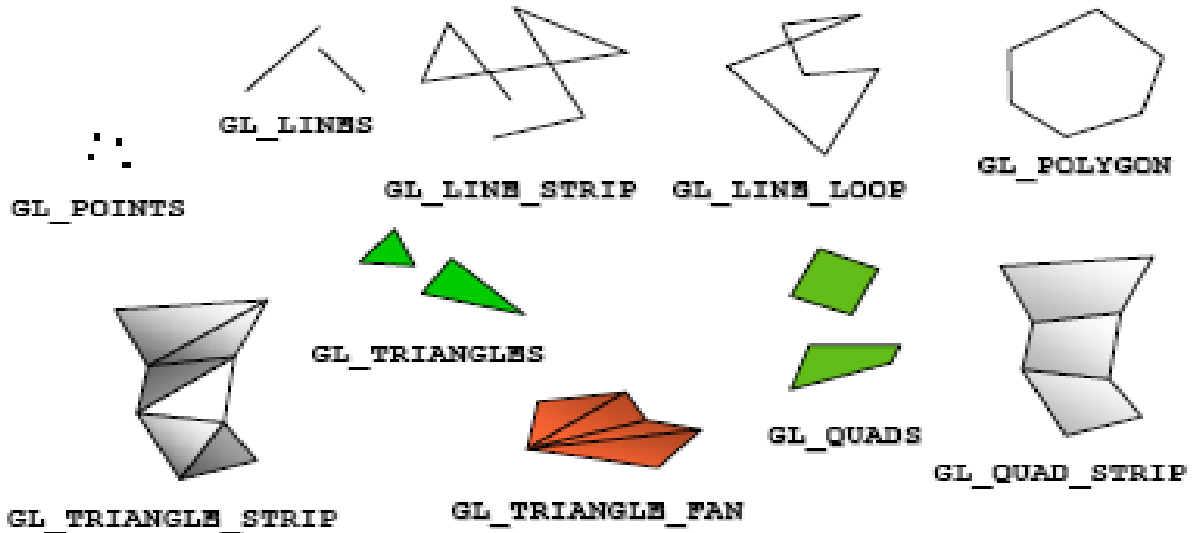
This creates the project environment without any files in it. There should be an empty workspace, and a window on the side labeled **Solution Explorer**. Follow the following steps to insert a new blank file.

- Right click on the folder 'Source Files'
- Select Add->Add New Item
- Select a C++ (.cpp) file
- Name the file
- Click on Open

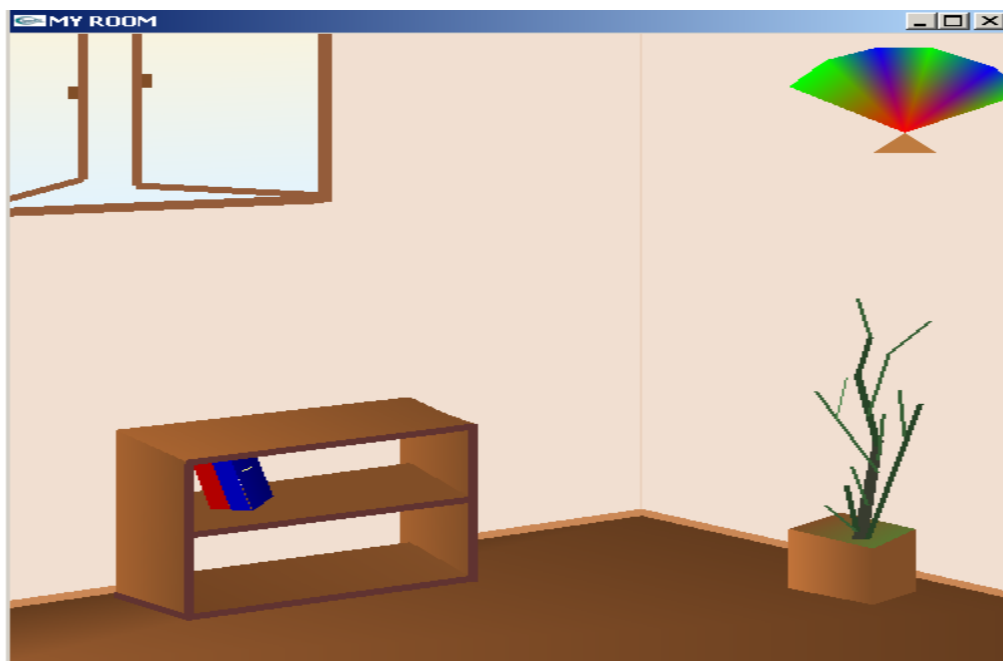
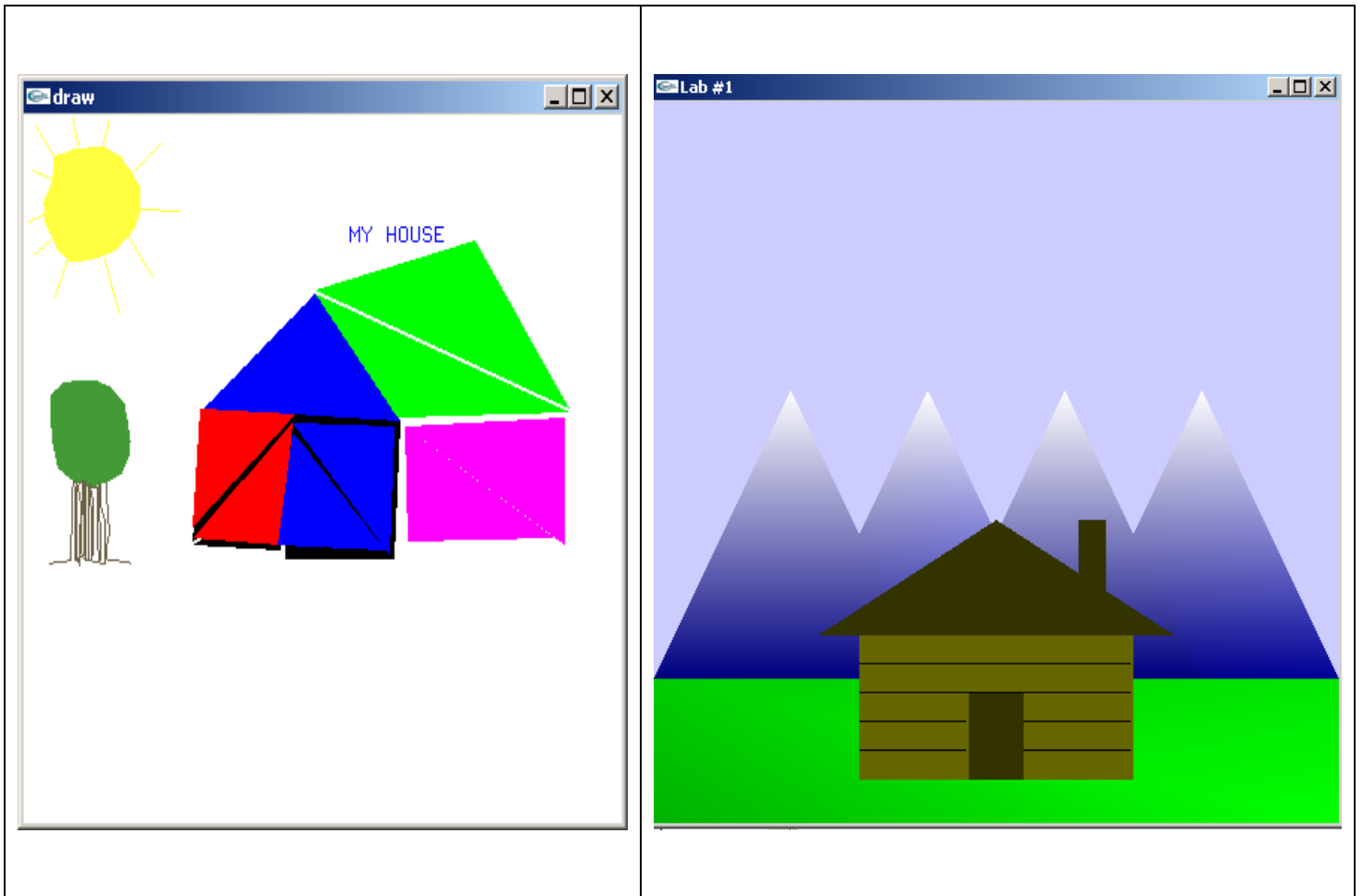
An icon should appear in the solution explorer indicating this new file, which should also be opened in the main part of the window. At this point you have finished setting up MS Visual Studio .NET.

OpenGL Geometric Primitives

- These are all the **geometric primitives** of OpenGL:



In this lab, we were to create a static image using Open GL. We were required to make use of GL_LINE_STRIP, GL_POLYGON, and GL_TRIANGLE_FAN. Below are screen shot of the result of some experiments with Open GL .



Left Scene Description

As you can see, I am not an artist.

- I used GL_POLYGONs to create the 'house'.
- I used GL_TRIANGLE_FANs to create the sun and the foliage.
- I used GL_LINE_STRIP to create the sun rays, and the trunk of my tree.

Right Scene Description

The attached output uses several Open GL primitives to the screen in a variety of colors.

- A field of grass is composed of 1 QUAD primitive,
- 4 Mountains are composed of 1 TRIANGLE primitive apiece and
- a log cabin is composed of 3 QUAD primitives, a TRIANGLE PRIMITIVE and 6 LINE primitives .

Lab Activity 1: Design your virtual World onto graph paper**Lab Activity 2: Use Open GL built in primitives to show your virtual world****Home Practice**

Reading Assignment: (pg No. 37 – 47)

Programming Practice Examples from book:

- 2.2.1 The Big Dipper (Figure 2.11)
- 2.2.2 The Sierpinski Gasket (Figure 2.12)
- 2.2.3 Simple Dot Plots (Figure 2.15)
- 2.3.3 Hard wired House (Figure 2.23)