

B I T M 3 2 1 3

INTERACTIVE COMPUTER GRAPHICS

H A M Z A H A S Y R A N I S U L A I M A N

IG: <https://www.instagram.com/hamzahasyranisulaiman/>
Tiktok: <https://www.tiktok.com/@hamzahasyranisulaiman>
Youtube: Hamzah Asyrani (<https://www.youtube.com/c/razordous>)

#1 SOURCES



#2



**ALL TASKS IN ULEARN
ARE COMPULSORY
AND MUST BE
COMPLETED BY THE
GIVEN DEADLINE**

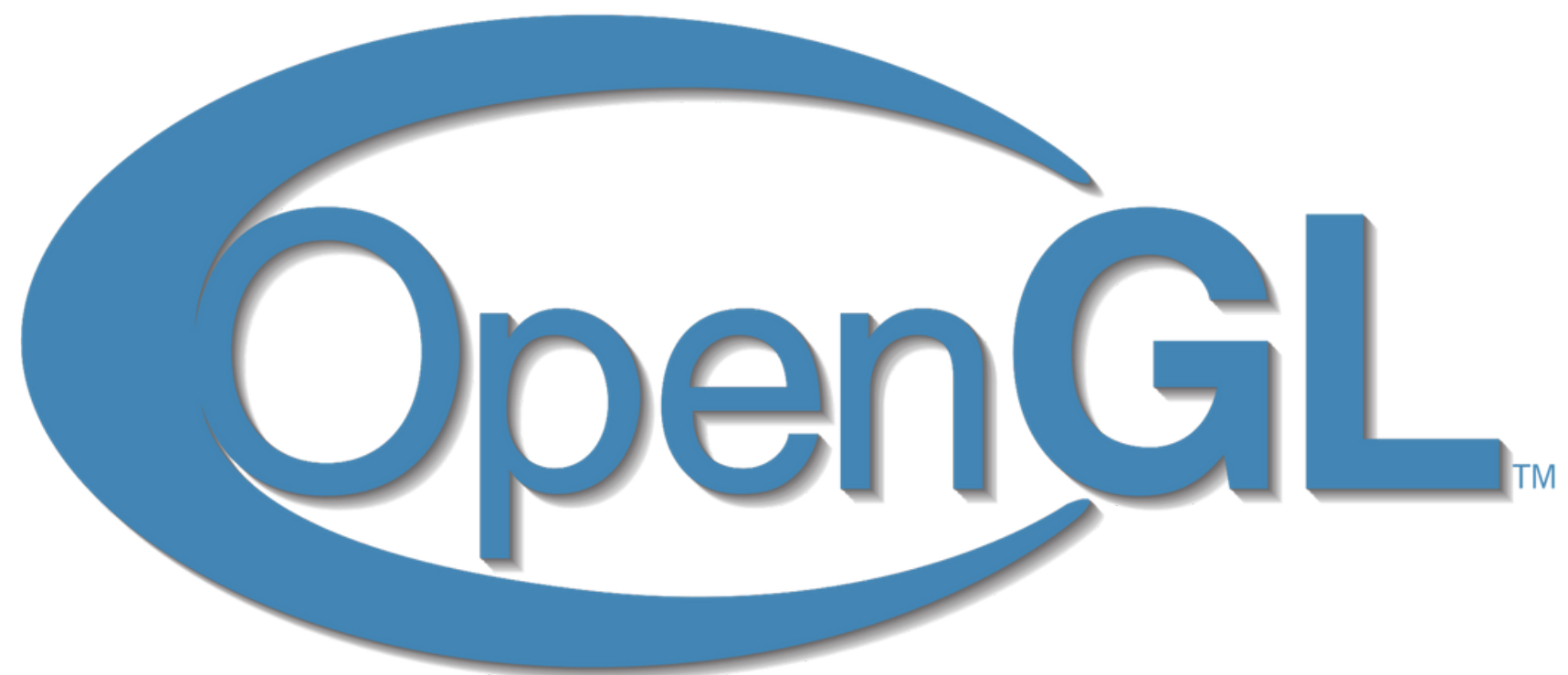
#3



JOIN WHATSAPP AND
MSTEAMS GROUP



WHAT WILL YOU LEARN?



test4 - Microsoft Visual Studio Express 2012 for Windows Desktop

FILE EDIT VIEW PROJECT BUILD DEBUG TEAM TOOLS TEST WINDOW HELP

Local Windows Debugger - Debug - Win32

test4.cpp

```
(Global Scope)
- main(int argc, char ** argv)

#include <windows.h>
#include <stdlib.h>
#include <gl/gl.h> // For MS Windows
#include <gl/glu.h> // GLUT, includes glu.h and gl.h
#include <gl/glut.h>

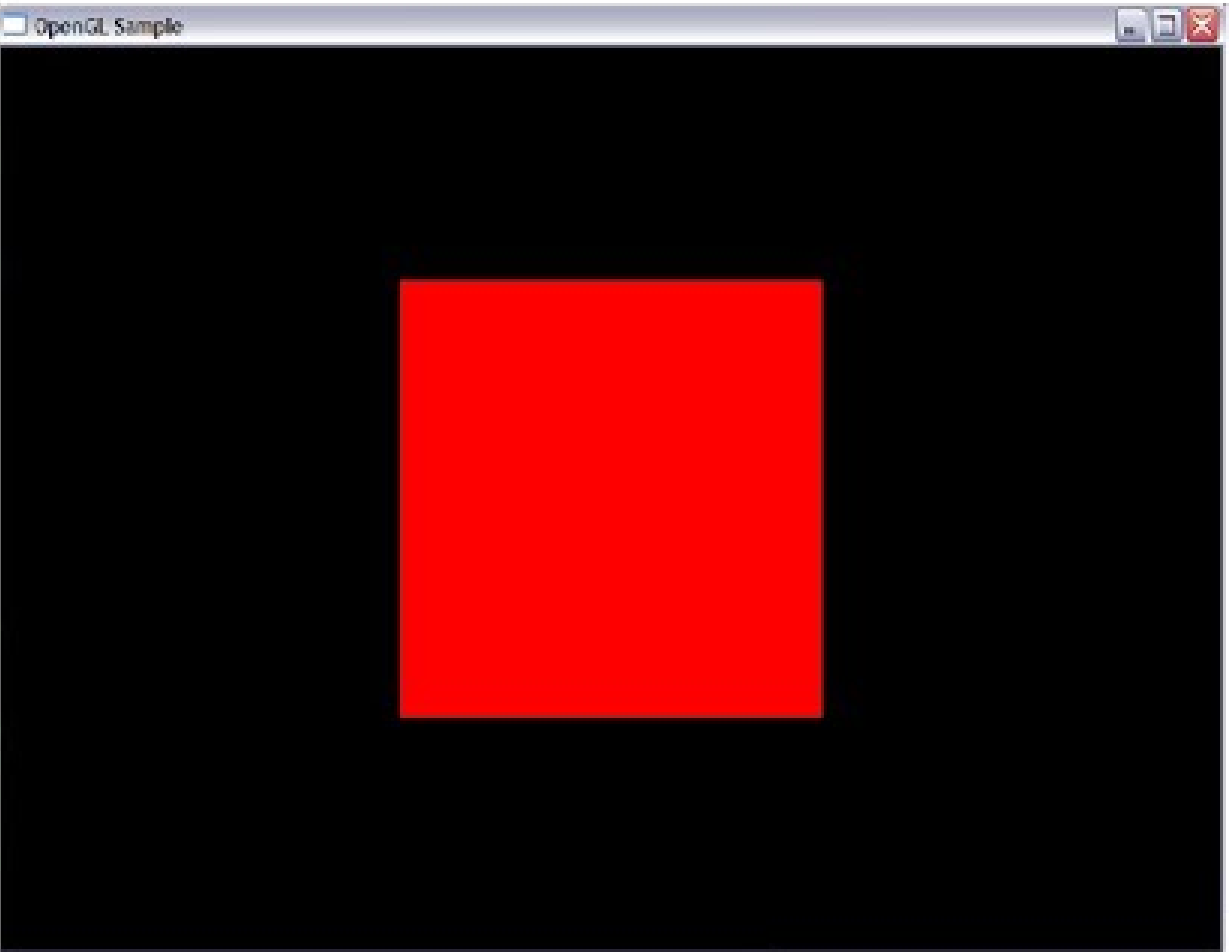
/* Handler for window-repaint event. Call back when the
   whenever the window needs to be re-painted. */
void display() {
    glClearColor(0.0f, 0.0f, 0.0f, 1.0f); // Set background color to black
    glClear(GL_COLOR_BUFFER_BIT); // Clear the color buffer

    // Draw a Red 1x1 Square centered at origin
    glBegin(GL_QUADS); // Each set of 4 vertices
        glColor3f(1.0f, 0.0f, 0.0f); // Red
        glVertex2f(-0.5f, -0.5f); // x, y
        glVertex2f( 0.5f, -0.5f);
        glVertex2f( 0.5f,  0.5f);
        glVertex2f(-0.5f,  0.5f);
    glEnd();

    glFlush(); // Render now
}

/* Main function: GLUT runs as a console application starting at main()
int main(int argc, char** argv) {
    glutInit(&argc, argv); // Initialize GLUT
    glutCreateWindow("OpenGL Setup Test"); // Create a window
    glutInitWindowSize(320, 320); // Set the window's initial size
    glutInitWindowPosition(50, 50); // Position the window
    glutDisplayFunc(display); // Register display callback function
    glutMainLoop(); // Enter the infinitely event driven processing loop
    return 0;
}
```

OpenGL Sample



100 %

Error List

2 Errors 0 Warnings 0 Messages

	Description	File	Line	Column	Project
1	error LNK2019: unresolved external symbol _WinMain@16 referenced in function __tmainCRTStartup	MSVCRTD.lib(crtexew.			test4
2	error LNK1120: 1 unresolved externals	test4.exe			test4

Source: <https://www.youtube.com/watch?v=8p76pJsUP44>

Properties

main VCodeFunction

C++

(Name)

File

FullName

IsInjected

IsInline

IsOverloaded

IsSealed

IsTemplate

TypeString

(Name)

Sets/returns the name of

Ready

Ln 35 Col 2

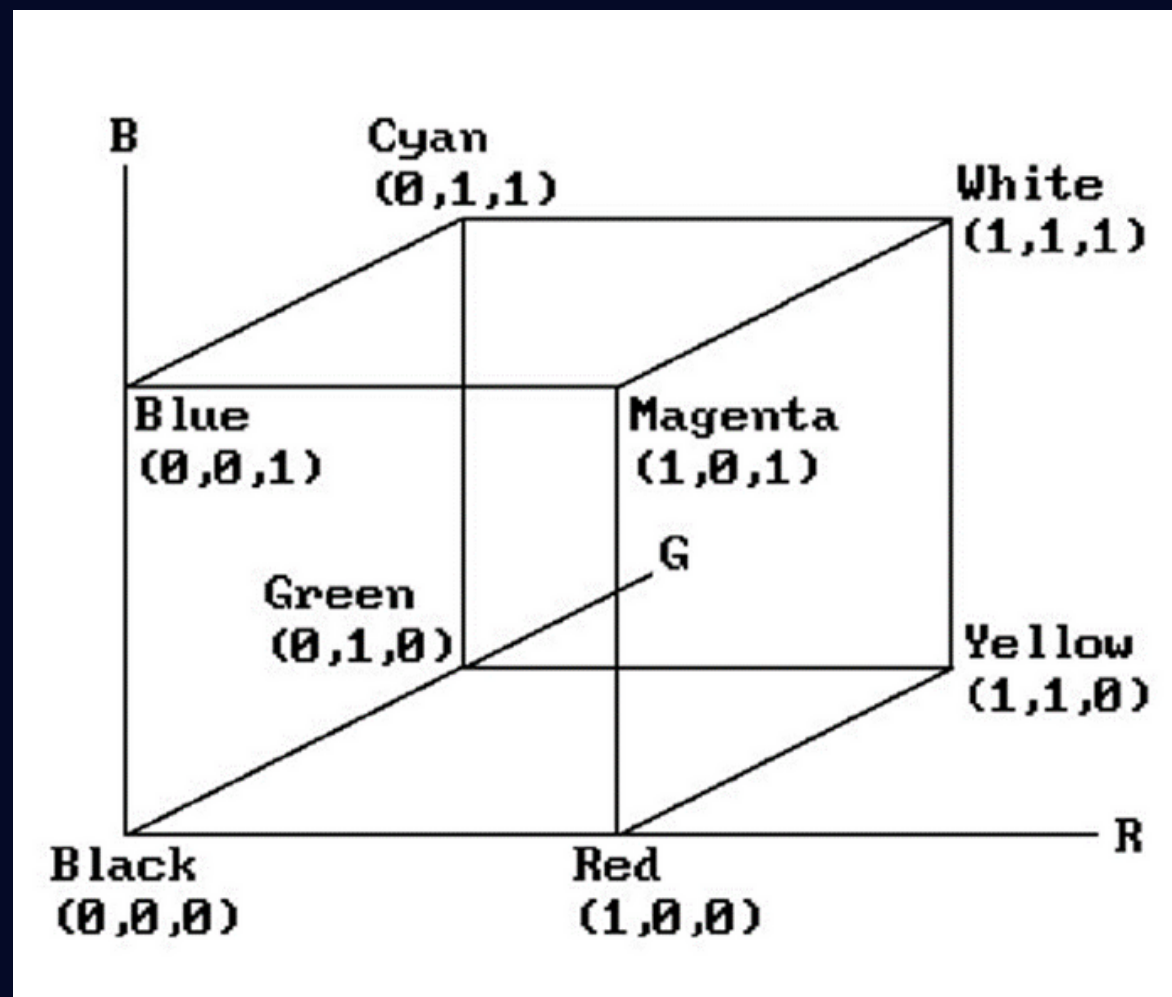
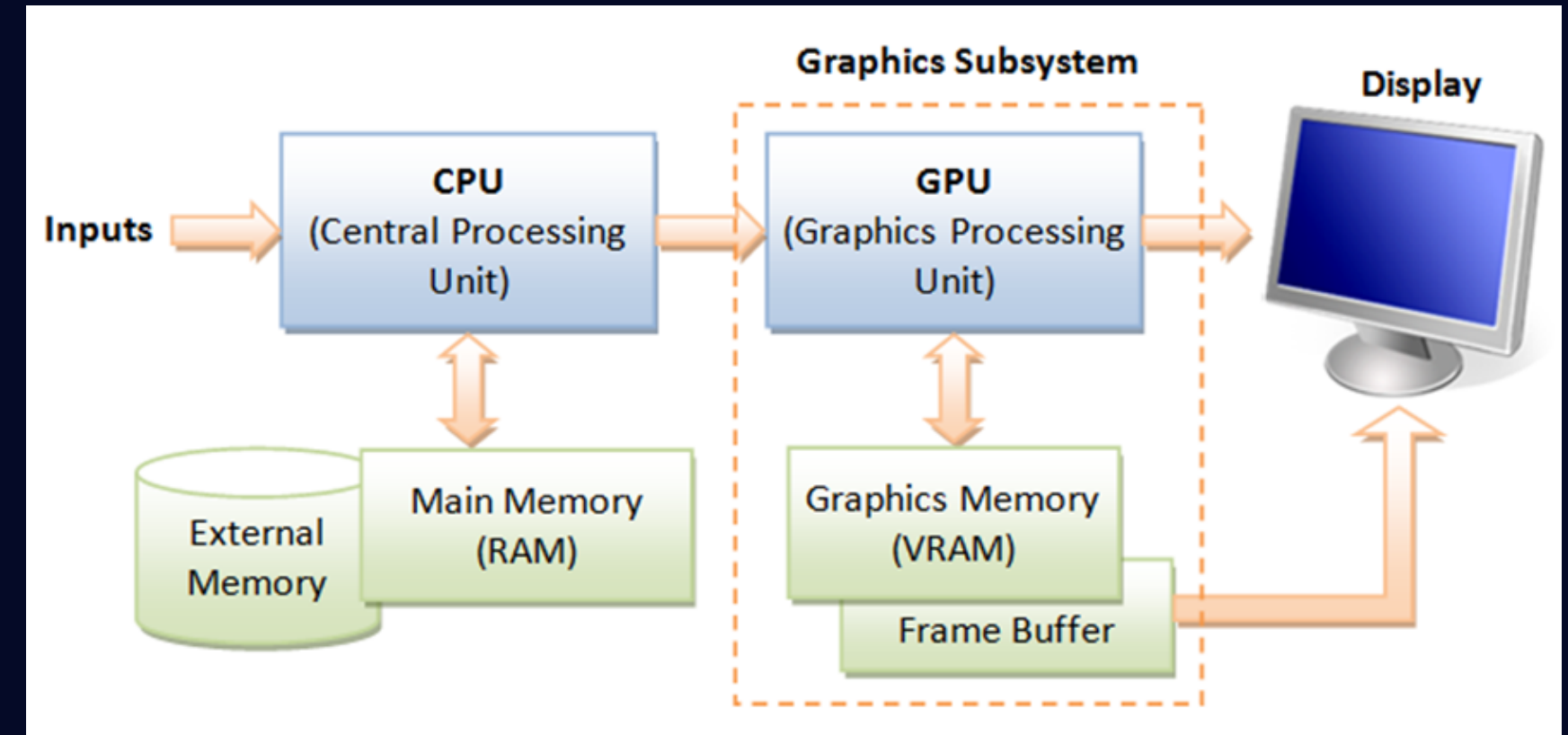




TOPICS

- MODULE 1 : Introduction to Computer Graphics(CG)
- MODULE 2 : Graphics Programming.
- MODULE 3 : Input and Interaction
- MODULE 4 : Geometric Objects and Transformations
- MODULE 5 : Viewing
- MODULE 6 : Lighting and Shading.
- MODULE 7 : Hierarchical and Object-Oriented Graphics.

MODULE 1: INTRODUCTION TO COMPUTER GRAPHICS(CG)

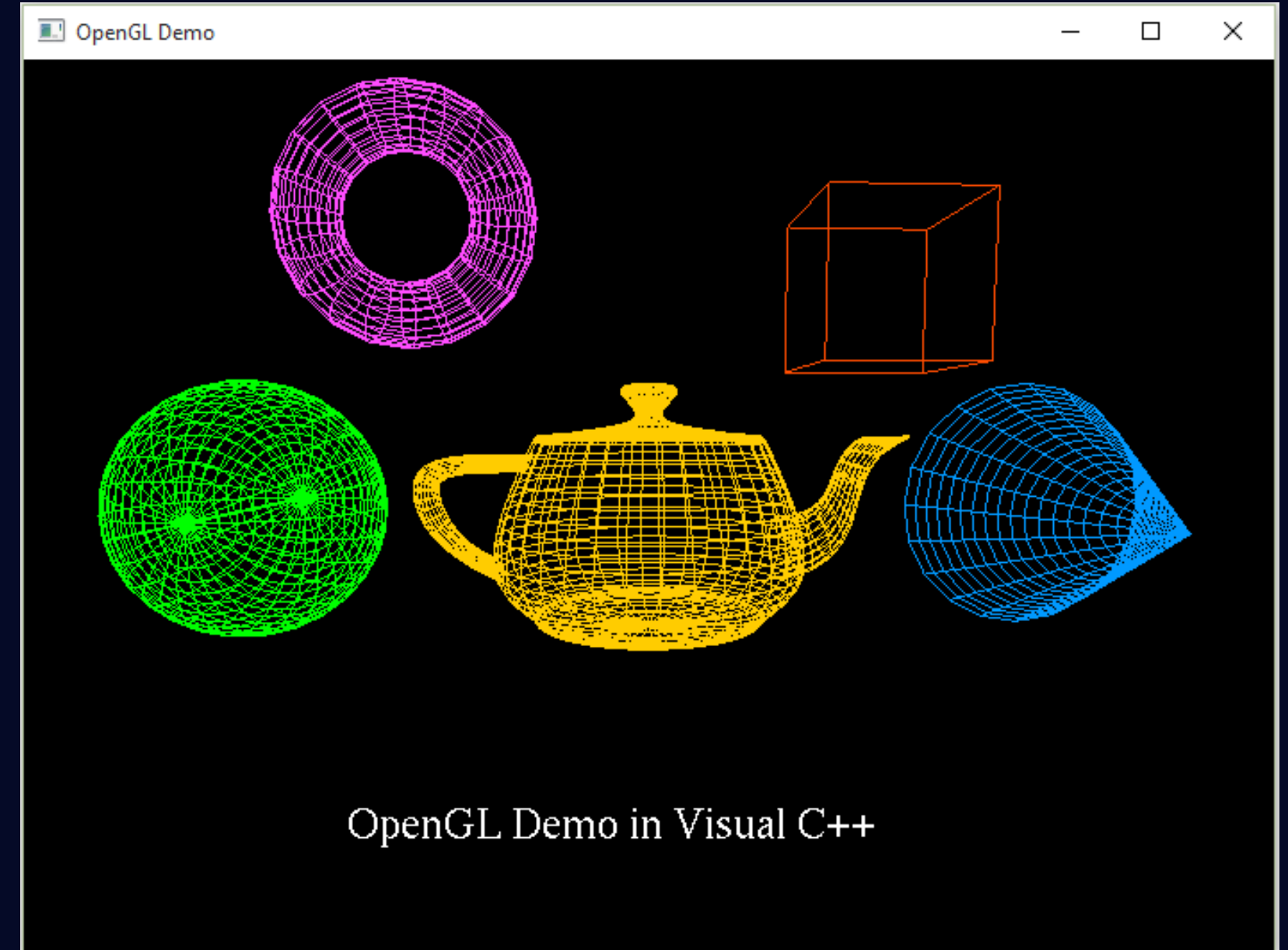


MODULE 2 : GRAPHICS PROGRAMMING.

```
VOID INIT()
{
    GLClearColor (0.0, 0.0, 0.0, 1.0);

    GLColor3F(1.0, 1.0, 1.0);

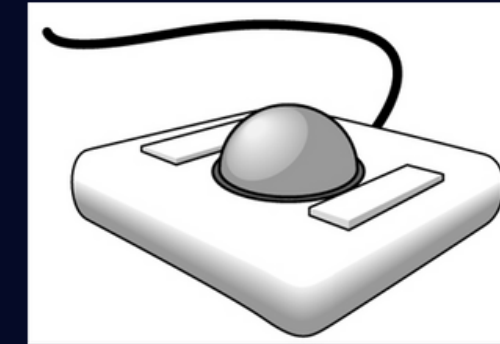
    GLMatrixMode (GL_PROJECTION);
    GLLoadIdentity ();
    GLOrtho(-1.0, 1.0, -1.0, 1.0, -1.0, 1.0);
}
```



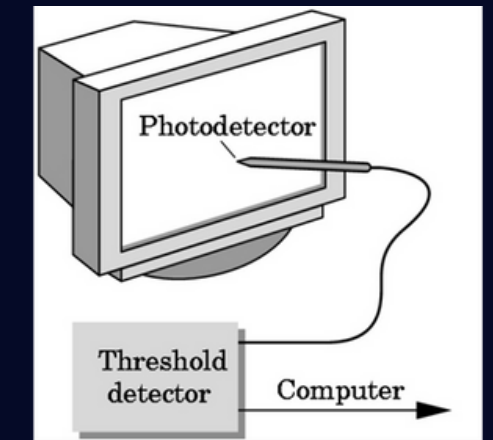
MODULE 3 : INPUT AND INTERACTION



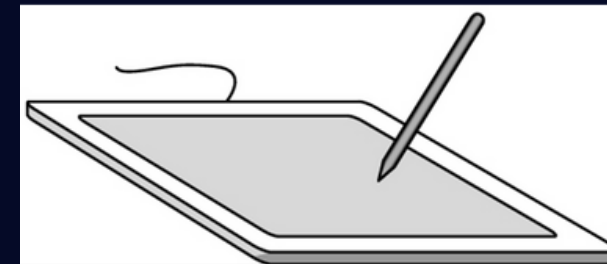
mouse



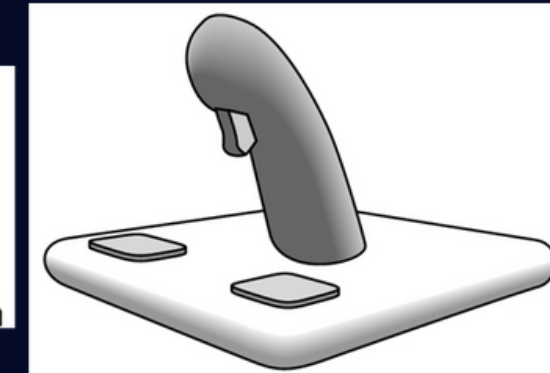
trackball



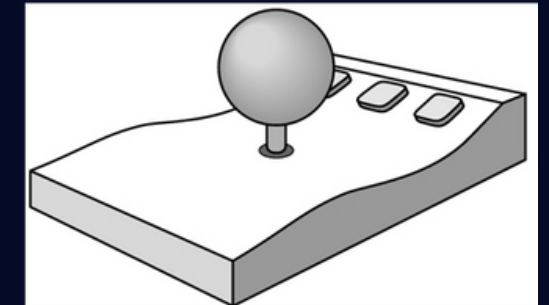
light pen



data tablet

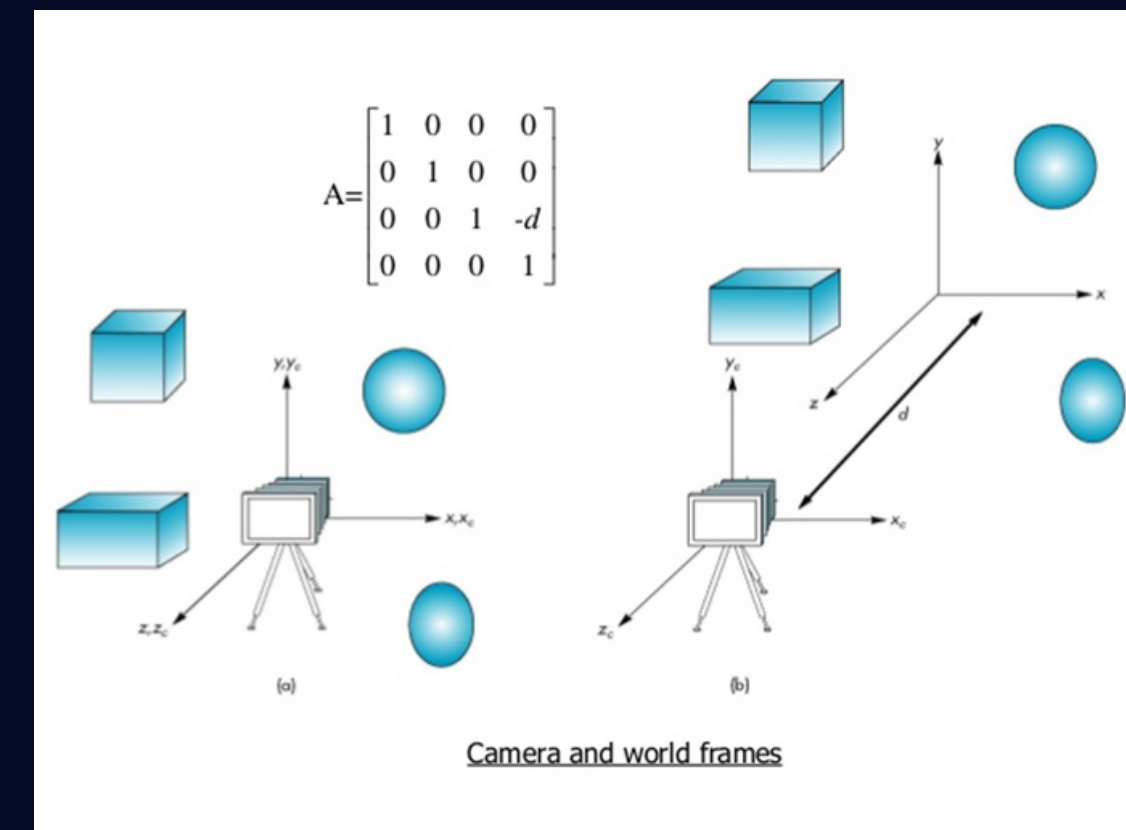
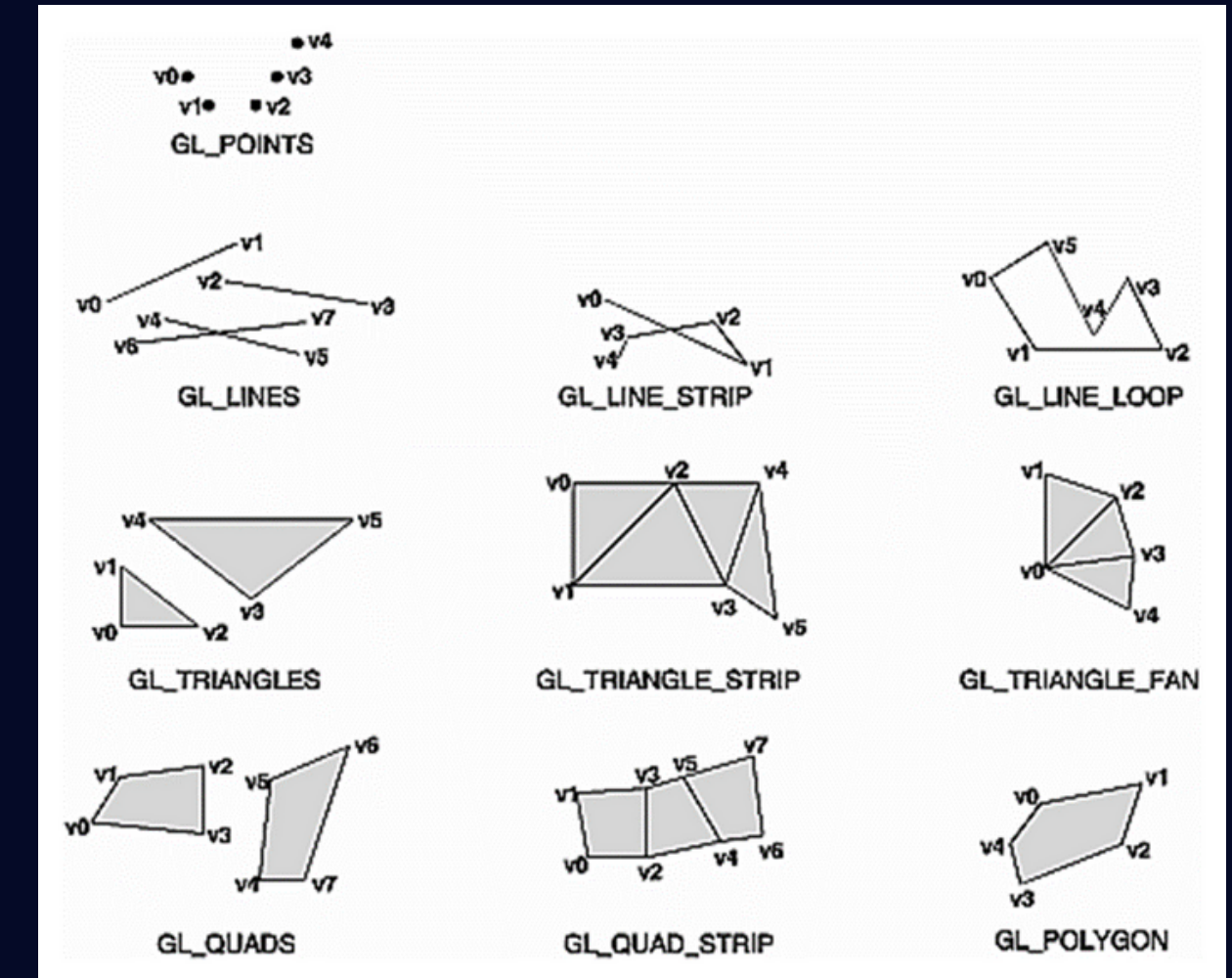


joy stick

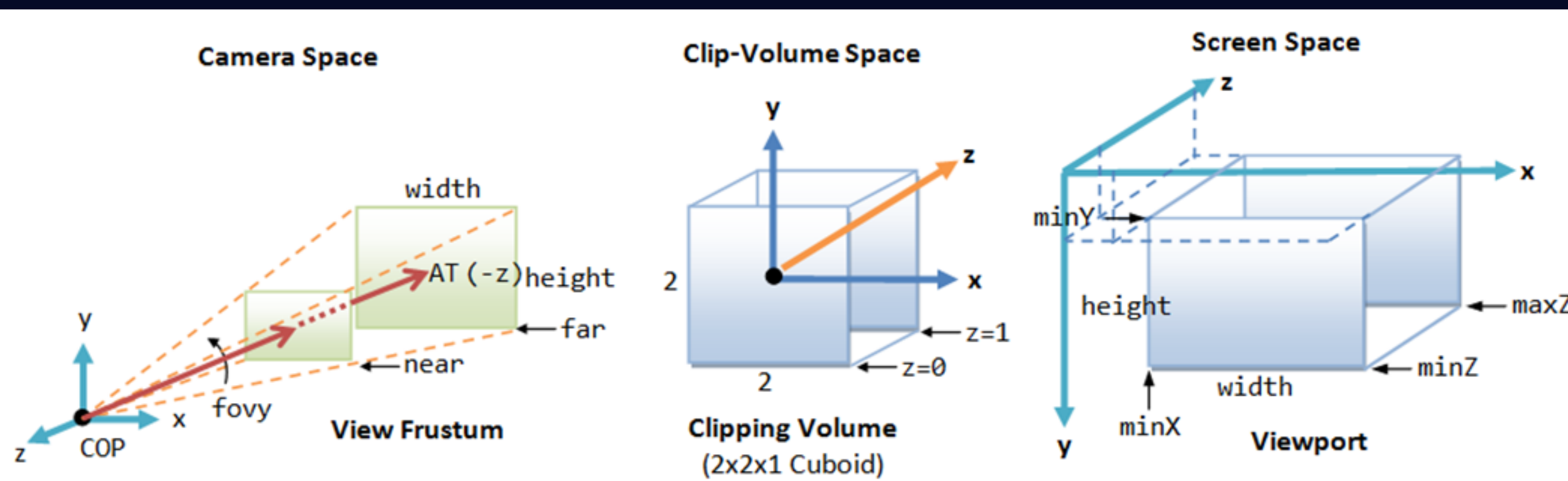
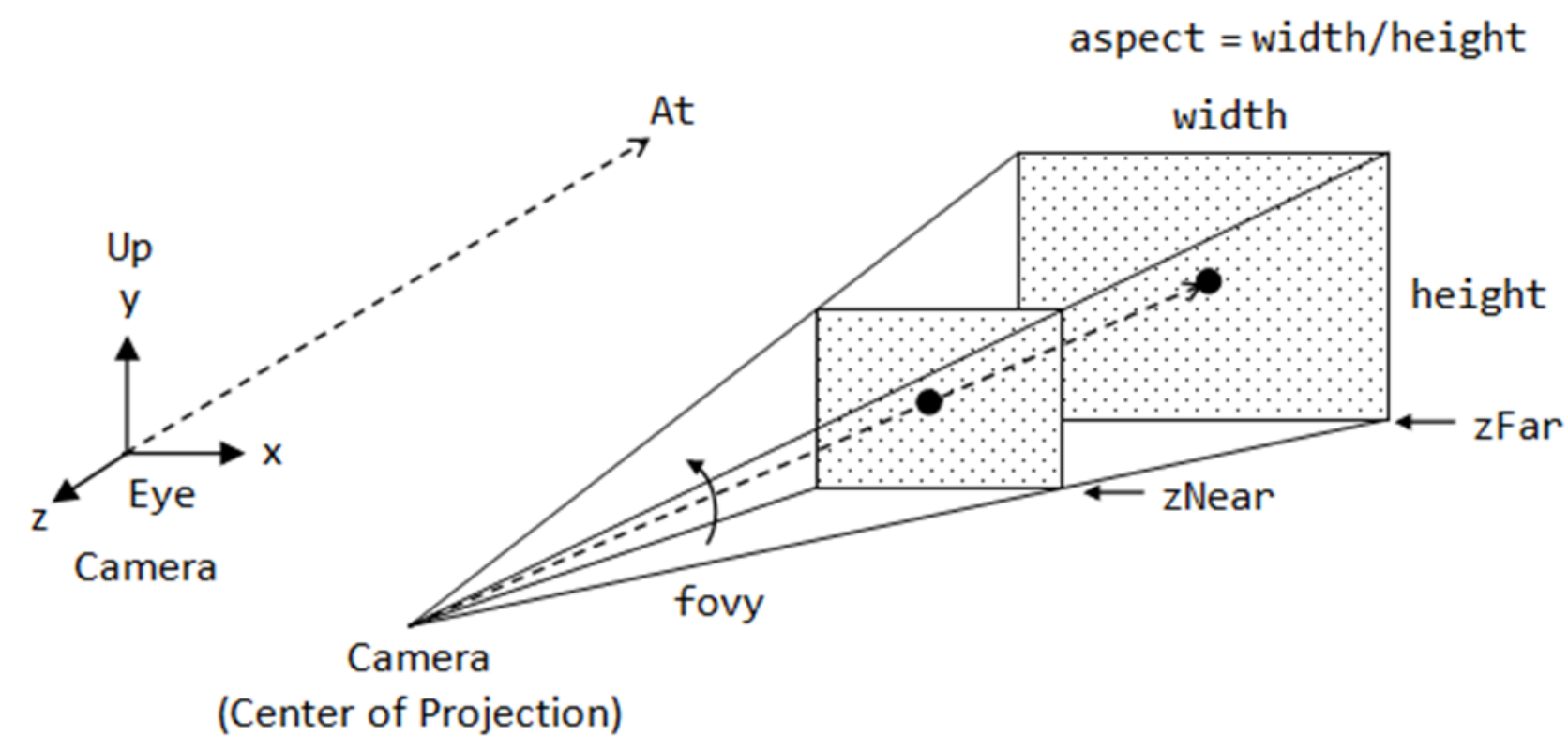


GLUTDISPLAYFUNC
GLUTMOUSEFUNC
GLUTRESHAPEFUNC
GLUTKEYBOARDFUNC
GLUTIDLEFUNC
GLUTMOTIONFUNC,
GLUTPASSIVEMOTIONFUNC

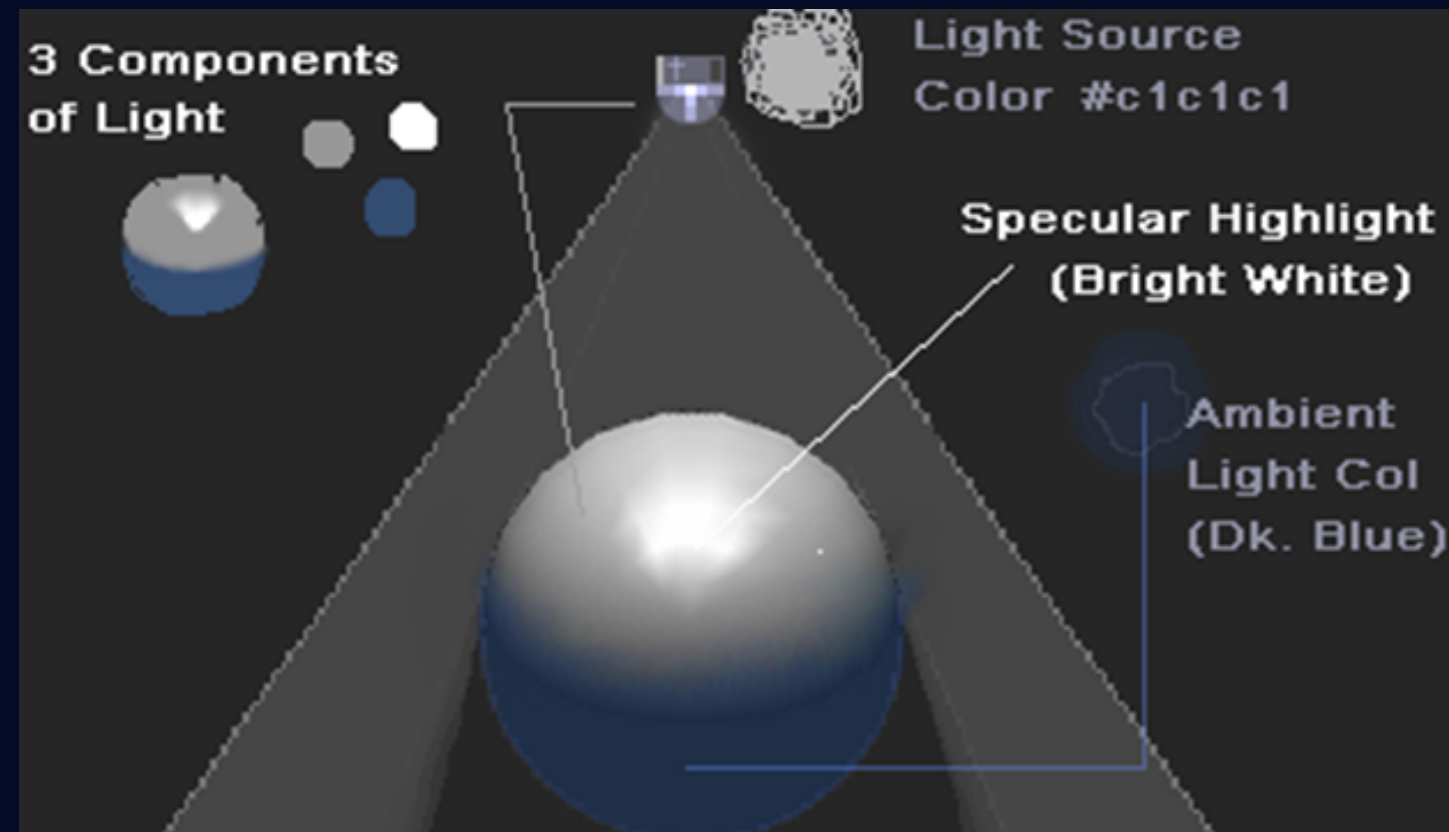
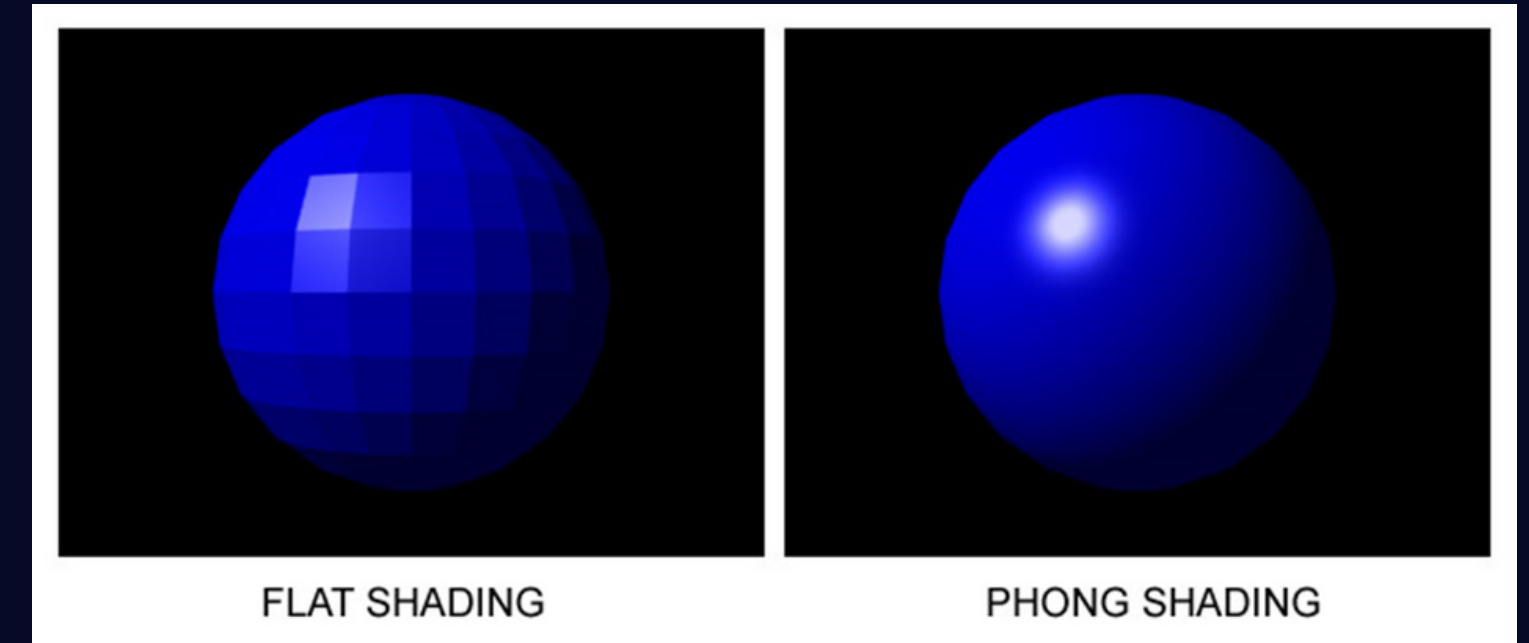
MODULE 4 : GEOMETRIC OBJECTS AND TRANSFORMATIONS



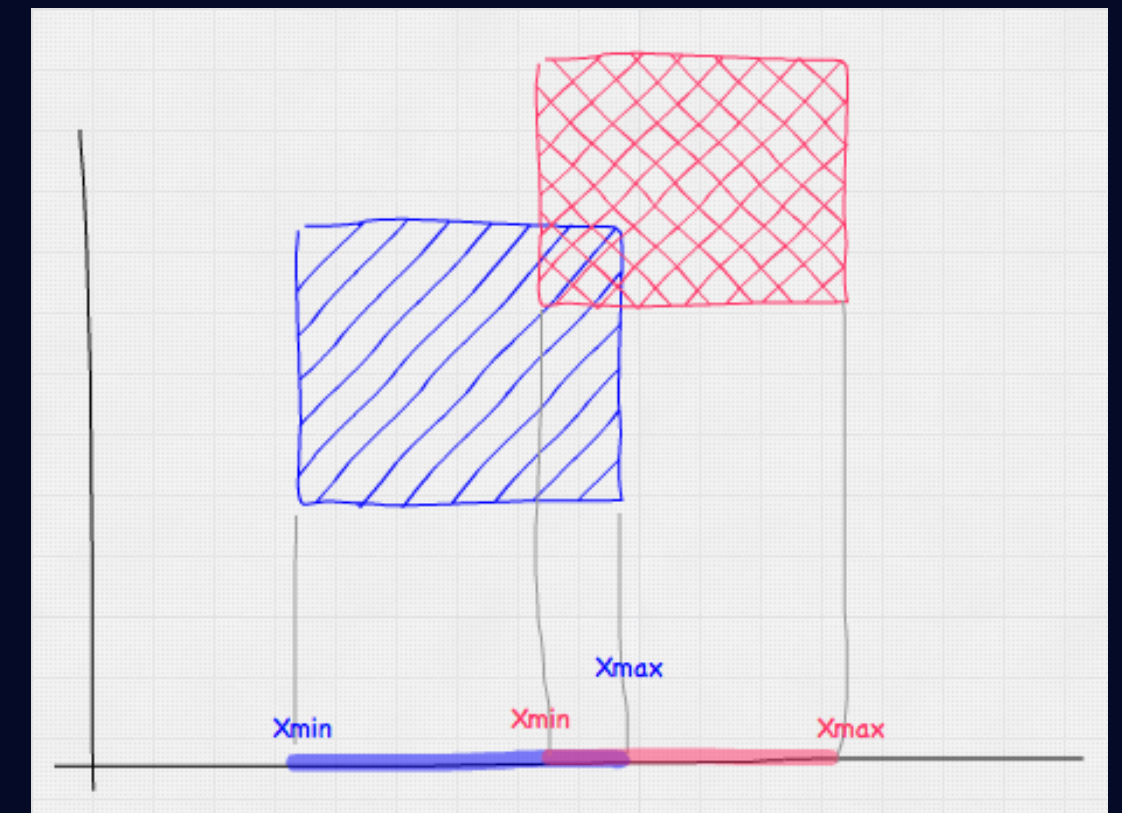
MODULE 5 : VIEWING



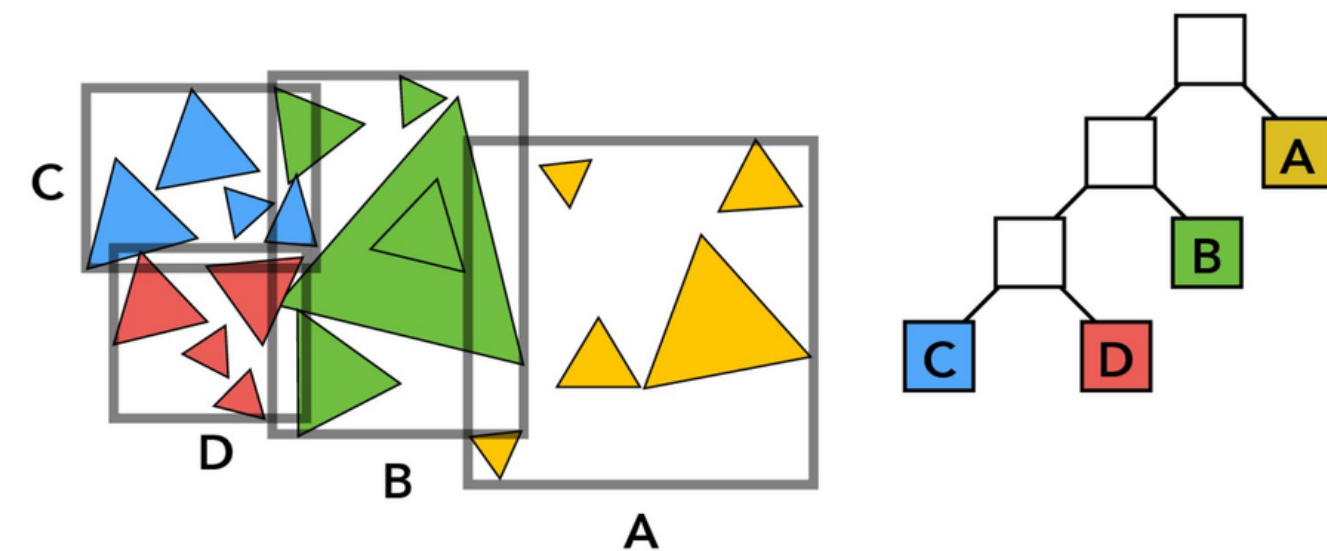
MODULE 6 : LIGHTING AND SHADING.

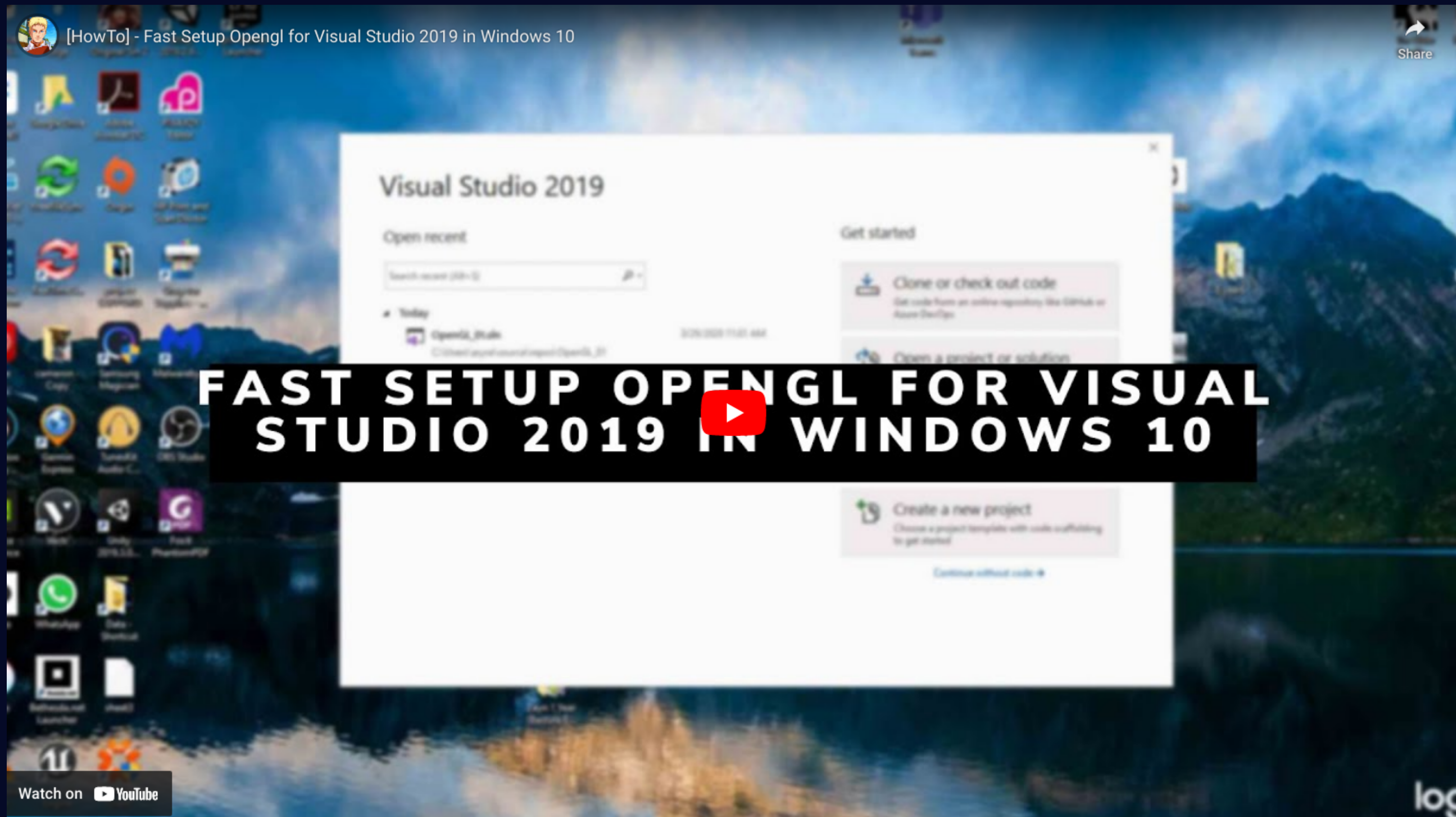


MODULE 7 : HIERARCHICAL AND OBJECT-ORIENTED GRAPHICS.



Bounding Volume Hierarchy (BVH)





Setup your Microsoft Windows



Setup your MAC

XCODE

Xcode is an integrated development environment (IDE), which allows you to write, test, and debug your code. [Xcode](#) is available for free for computers running Mac OS X.

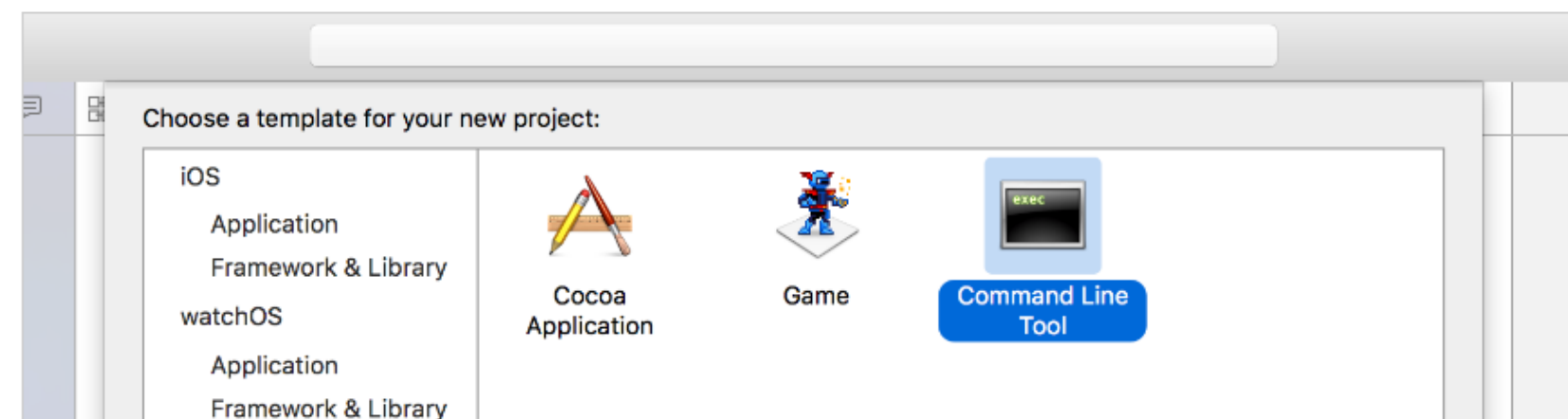
Configuring Xcode for OpenGL Development

First, make sure have [Xcode](#) installed on your computer.

Create an Empty C++ Project

Xcode has a lot of options and project types. Follow these steps to create an empty C++ project:

1. From the File menu, hover over New, then select Project.
2. In the New Project window, navigate to the Mac OS X / Application section. Select the Command Line Tool project type and click Next.



[OR IF STILL DIDNT WORK] Still....Setup your MAC

HAMZAH ASYRANI SULAIMAN

**JABATAN MEDIA
INTERAKTIF, FTMK,
UTEM**

Ketua Jabatan (2020 – kini)
Pensyarah Kanan

Pendidikan
PhD in Mathematics (Computer
Graphics) UTM

0137771180
asyrani@utem.edu.my



*Thank
You*

IG: <https://www.instagram.com/hamzahasyranisulaiman/>

FB: <https://www.facebook.com/hamzahasyrani/>

Tiktok: <https://www.tiktok.com/@hamzahasyranisulaiman>

Youtube: Hamzah Asyrani (<https://www.youtube.com/c/razordous>)