

# Lab Manual for Programming Laboratory SE Computer Engineering

## ***A) Installing graphics.h in Linux Ubuntu***

### STEP- 1

Make sure you have the basic compilers installed.

You need the build-essential package. For this, run the command:

```
> sudo apt-get install build-essential
```

```
> sudo apt-get install g++
```

### STEP- 2

First we need to install a hand full of packages. You can simply run the following command and get it all done.

```
> sudo apt-get install libsdl-image1.2
```

```
> libsdl-image1.2-dev
```

```
> guile-1.8
```

```
> guile-1.8-dev
```

```
> libsdl1.2debian-all
```

```
> libart-2.0-dev
```

```
> libaudiofile-dev
```

```
> libesd0-dev
```

```
> libdirectfb-dev
```

```
> libdirectfb-extra
> libfreetype6-dev
> libxext-dev
> x11proto-xext-dev
> libfreetype6
> libaa1
> libaa1-dev
> libslang2-dev
> libasound2
> libasound2-dev
```

### STEP- 3

Now, download libgraph.

Copy the file libgraph-1.0.2.tar.gz to our home folder. Right click on the file and select Extract here.

Open a terminal and run the following commands, one by one.

```
> cd libgraph-1.0.2
> ./configure
> sudo make
> sudo make install
> sudo cp /usr/local/lib/libgraph.* /usr/lib
```

### STEP- 4

Now you're ready to compile your C++ program!

```
$ g++ program-name.cpp -o program-name -lgraph
```

```
$ ./program-name
```

.....

### ***B) Installing eclipse in Linux Ubuntu***

First of all, you need to check whether you have java installed on your system. You can check by using the command:

```
java -version
```

If java is not installed, then you should install it by doing

```
sudo apt-get install default-jre
```

Afterwards, download Eclipse from the download section of the official website (<http://www.eclipse.org/downloads/>). Remember to choose the correct package for your architecture (32bit or 64 bit). The package will have the name:

```
eclipse-standard-kepler-SR1-linux-gtk-x86_32.tar.gz
```

or

```
eclipse-standard-kepler-SR1-linux-gtk-x86_64.tar.gz
```

After you have downloaded the correct package, extract the eclipse.XX.YY.tar.gz using

```
tar -zxvf eclipse.XX.YY.tar.gz
```

switch to root user:

```
sudo -i
```

Copy the extracted folder to /opt

```
cp -r eclipse.XX.YY /opt
```

Create a desktop file and install it:

```
gedit eclipse.desktop
```

Copy the following to the eclipse.desktop file.

```
[Desktop Entry]
Name=Eclipse
Type=Application
Exec=eclipse
Terminal=false
Icon=eclipse
Comment=Integrated Development Environment
NoDisplay=false
Categories=Development;IDE;
Name[en]=Eclipse
```

Run the following command to automatically install it in the unity:

```
desktop-file-install eclipse.desktop
```

Create a symlink in /usr/local/bin using

```
cd /usr/local/bin
ln -s /opt/eclipse/eclipse
```

For an eclipse icon to be displayed in dash, eclipse icon can be added as

```
cp /opt/eclipse/icon.xpm /usr/share/pixmaps/eclipse.xpm
```

.....

### **C) How to Install OpenGL/Glut libraries in Ubuntu 12.04**

<http://xyzmind.blogspot.in/2012/08/setup-eclipse-c-and-opengl-support-on.html>

We usually use [Glut](#), [FreeGlut](#) and [Mesa](#) for developing OpenGL in Linux system. We need to get update from Ubuntu repository before installing OpenGL development resource and then second step install the OpenGL library.

```
sudo apt-get update
```

```
sudo apt-get install libglu1-mesa-dev freeglut3-dev mesa-common-dev
```

**\$ Compile: `g++ program_name.cpp -o program_name -lGL -lglut`**

**\$ Run: `./program_name`**

How to install and use Eclipse CDT for C/C++ programming

Follow the link....

[http://www3.ntu.edu.sg/home/ehchua/programming/howto/EclipseCpp\\_HowTo.html](http://www3.ntu.edu.sg/home/ehchua/programming/howto/EclipseCpp_HowTo.html)

OR

#### **Step 1: Install Eclipse C/C++ Development Tool (CDT)**

1. Two ways to install CDT, depending on whether you have previously installed an Eclipse:

If you have already installed "Eclipse for Java Developers" or other Eclipse packages, you could install the CDT plug-in as follows:

Launch Eclipse ⇒ Help ⇒ Install New Software ⇒ In "Work with" field, pull down the drop-down menu and select "Kepler - <http://download.eclipse.org/releases/kepler>" (or juno for Eclipse 4.2; or helios for Eclipse 3.7). In "Name" box, expand "Programming Language" node ⇒ Check "C/C++ Development Tools" ⇒ "Next" ⇒ ... ⇒ "Finish".

2. If you have not install any Eclipse package, you could download "Eclipse IDE for C/C++ Developers" from <http://www.eclipse.org/downloads>, and unzip the downloaded file into a directory of your choice.

#### Step 2: Configuration

You do NOT need to do any configuration, as long as the Cygwin or MinGW binaries are included in the PATH environment variable. CDT searches the PATH to discover the C/C++ compilers.

Writing your First C/C++ Program in Eclipse

#### Step 0: Launch Eclipse

Start Eclipse by running "eclipse.exe" in the Eclipse installed directory.

Choose an appropriate directory for your workspace (i.e., where you would like to save your works).

If the "welcome" screen shows up, close it by clicking the "close" button.

### Step 1: Create a new C++ Project

For each C++ application, you need to create a project to keep all the source codes, object files, executable files, and relevant resources.

To create a new C++ project:

Choose "File" menu ⇒ "New" ⇒ Project... ⇒ C/C++ ⇒ C++ project.

The "C++ Project" dialog pops up.

In "Project name" field, enter "FirstProject".

In "Project Types" box, select "Executable" ⇒ "Empty Project".

In "Toolchains" box, choose your compiler, e.g., "Cygwin GCC" or "MinGW GCC" ⇒ Next.

The "Select Configurations" dialog appears. Select both "Debug" and "Release" ⇒ Finish.

### Step 2: Write a Hello-world C++ Program

In the "Project Explorer" (leftmost panel) ⇒ Right-click on "FirstProject" (or use the "File" menu) ⇒ New ⇒ Source File.

The "New Source File" dialog pops up.

In "Source file" field, enter "Hello.cpp".

Click "Finish".

The source file "Hello.cpp" opens on the editor panel (double-click on "test.cpp" to open if necessary). Enter the following codes:

```
#include <iostream>
using namespace std;
int main() {
    cout << "Hello, world!" << endl;
    return 0;
}
```

### Step 3: Compile/Build

Right-click on the "FirstProject" (or use the "Project" menu) ⇒ choose "Build Project" to compile and link the program.

### Step 4: Run

To run the program, right-click on the "FirstProject" (or anywhere on the source "test.cpp", or select the "Run" menu) ⇒ Run As ⇒ Local C/C++ Application ⇒ (If ask, choose Cygwin's gdb debugger) ⇒ The output "Hello, world!" appears on the "Console" panel.

NOTE: You need to create a new C++ project for EACH of your programming problems. This is messy for writing toy programs!

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**Assignment no: 07**

**//Write a program in Java/ Python to draw a line with line style (Thick, Thin, Dotted).**

**for Java Installation type:**

`$ sudo apt-get install openjdk-7-jdk`  
.....

.....  
**Assignment no: 10**

**//Aim:Write a program in Python to draw a concave polygon.**

**For TKinter Package Installation:**

```
sudo apt-get install python-tk
sudo rm /var/lib/apt/lists/* -vf
sudo apt-get update
sudo apt-get -f install
```

**To Execute Python program Type:**

```
$ python program_name.py
```

.....  
.....

---

Assignment no: 13

//Aim: Draw a line using OpenGL

//DDA

For OpenGL Packages :

`sudo apt-get update`

`sudo apt-get install libglu1-mesa-dev freeglut3-dev mesa-common-dev`

***\$ Compile: g++ program\_name.cpp -o***

***program\_name -lGL -lglut***

***\$ Run: ./program\_name***

---

## Assignment no: 14

### //Aim: Advanced Graphics tool: Maya

#### HOW TO INSTALL MAYA2012X64BIT in Ubuntu

##### Step 1

Download Autodesk Maya 2012 Hotfix 4 from here.

or copy following link , paste in browser and press enter

<http://usa.autodesk.com/adsk/servlet/ps/dl/item?siteID=123112&id=17478798&linkID=9242259>

##### Step 2

We have to install required packages. Open Terminal and paste these codes:

```
sudo apt-get install csh tcsh libglw1-mesa libglw1-mesa-dev mesa-utils libaudiofile-dev libaudiofile0  
libaudiofile0-dbg elfutils gamin libxp6 libxpm4 libxt6 libxp6 libxmu6 libxau6 libxinerama1 libxprintapputil1  
libxprintutil1 xfs xfstt ttf-liberation ttf-mscorefonts-installer xfonts-100dpi xfonts-75dpi alien
```

##### Step 3

Copy the downloaded tar file (autodesk\_maya\_2012\_english\_linux\_64bit\_hf4.tgz) in  
/home/Username/Maya2012\_setup

##### Step 4

Go to terminal and type:

```
cd /home/username/maya2012_setup
```

##### Step 5

```
tar -zxvf utodesk_maya_2012_english_linux_64bit_hf4.tgz
```

##### Step 6

```
For i in *.rpm; do sudo alien -cv $i; done
```

##### Step 7

```
sudo dpkg -i adlmapps4_4.0.35-1_amd64.deb  
sudo dpkg -i adlmflexnetserver_4.0.35-1_amd64.deb  
sudo dpkg -i adlmflexnetclient_4.0.35-1_amd64.deb  
sudo dpkg -i maya2012-0-64_2012.0-327_amd64.deb
```

##### Step 8

Create a temporary folder for Maya:

```
sudo mkdir /usr/tmp  
sudo chmod 777 /usr/tmp
```



Step 9

```
$ sudo sh -c "echo 'setenv LC_ALL en_US.UTF-8' >> /usr/autodesk/maya2012-x64/bin/maya2012"
```

Step 10

```
$ /usr/autodesk/maya2012-x64/bin/licensechooser /usr/autodesk/maya2012-x64/ standalone unlimited
```

Step 11

Export a couple of variables

```
sudo -i
export MAYA_LOCATION=/usr/autodesk/maya2012-x64
export LD_LIBRARY_PATH=/opt/Autodesk/Adlm/R4/lib64/
```

Step 12

Pass the serial number and the product key to Maya

```
/usr/autodesk/maya2012-x64/bin/adlmreg -i S 657D1 657D1 2012.0.0.F serial_number
/var/opt/Autodesk/Adlm/Maya2012/MayaConfig.pit
```

Step 13

Navigate to our Maya2012\_setup folder

```
cd /home/Username/Maya2012_setup
```

Step 14

Create a file named mayaInstall.c in Maya2012\_setup. Open it with your text editor and paste this line:

```
int main (void) {return 0;}
```

Save and compile it with this command:

```
gcc mayainstall.c
```

Now you should have a file called a.out. Backup your /usr/bin/rpm with this command:

```
sudo mv /usr/bin/rpm /usr/bin/rpm_backup
```

and replace rpm with a.out:

```
sudo cp a.out /usr/bin/rpm
```

Step 15

Type following command:

```
./setup
```

This will start setup, deselect DMM, backburner and go next

Use these serial:

serial :666-42943644  
product key :657D1

Step 16

```
cd /usr/autodesk/maya2012-x64/lib/  
ln -s /usr/lib/x86_64-linux-gnu/libtiff.so.4.3.4 /usr/lib/libtiff.so.3  
ln -s /usr/lib/x86_64-linux-gnu/libssl.so.0.9.8 /usr/lib/libssl.so.6
```

Step 17

Open /usr/autodesk/maya2012-x64/bin/maya2012 with a text editor and add the command

```
setenv LC_ALL C
```

After this line

```
setenv LIBQUICKTIME_PLUGIN_DIR "$MAYA_LOCATION/lib"
```

Step 18

Go to terminal and type:

```
maya
```

Enjoy Maya and make cool effects and Animations.