

EX: NO: 2

DATE:

Install a C compiler in the virtual machine created using a virtual box and execute Simple Programs.

AIM:

To Install a C compiler in the virtual machine created using virtual box and execute Simple Programs

INTRODUCTION:

Open source software is distributed in source code form. In case of popular software Linux distributions will often have the software packaged in their repositories. If the package is not in the repository the user has to compile the software from source. To do this the user has to understand about the build system used in the project.

The **GNU build system**, also known as the **Autotools**, is a suite of programming tools designed to assist in making source-code packages portable to many Unix-like systems. It can be difficult to make a software program portable: the C compiler differs from system to system; certain library functions are missing on some systems; header files may have different names. One way to handle this is write conditional code, with code blocks selected by means of preprocessor directives (`#ifdef`); but because of the wide variety of build environments this approach quickly becomes unmanageable. The GNU build system is designed to address this problem more manageably.

Tools included in the GNU build system

The GNU build system comprises the GNU utility programs Autoconf, Automake, and Libtool. Other related tools frequently used with the GNU build system are GNU's make program, GNU gettext, pkg-config, and the GNU Compiler Collection, also called GCC.

PROCEDURE - STEPS TO DOWNLOAD AND INSTALL GCC COMPILER

The default Ubuntu repositories include a meta-package named "build-essential" that features the GNU compiler assortment, GNU debugger, and different growth libraries and instruments required for compiling software program.

Run the command as root or user with sudo privileges:

sudo apt update

sudo apt install build-essential

The command installs plenty of packages, together with gcc, g++ and make.

Set up the handbook pages about utilizing GNU/Linux for growth:

sudo apt-get install manpages-dev

Confirm that the GCC compiler is efficiently put in by working the next command that prints the GCC model:

gcc --version

Ubuntu 20.04 repositories provide GCC version 9.3.0:

gcc (Ubuntu 9.3.0-10ubuntu2) 9.3.0

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That's it. GCC tools and libraries have been installed on your Ubuntu system.

We will be using a simple program written in C and write a makefile to compile the program.

- > mkdir gnumake
- > cd gnumake
- > gedit squareroot.c

PROGRAM - COMPILING A HELLO WORLD EXAMPLE

Compiling a C Program utilizing GCC compiler. Open your text editor and create the next file:

hello.c

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
    printf("Hello, world!\n");
```

```
    return 0;
```

```
}
```

Save the file and compile it into an executable:

\$ gcc hello.c -o hello

This creates a binary file named hello in the same directory where you run the command.

Execute the hello program with:

\$./hello.out

OUTPUT:

The program should print:

Hello World!

SQUARE ROOT OF A NUMBER

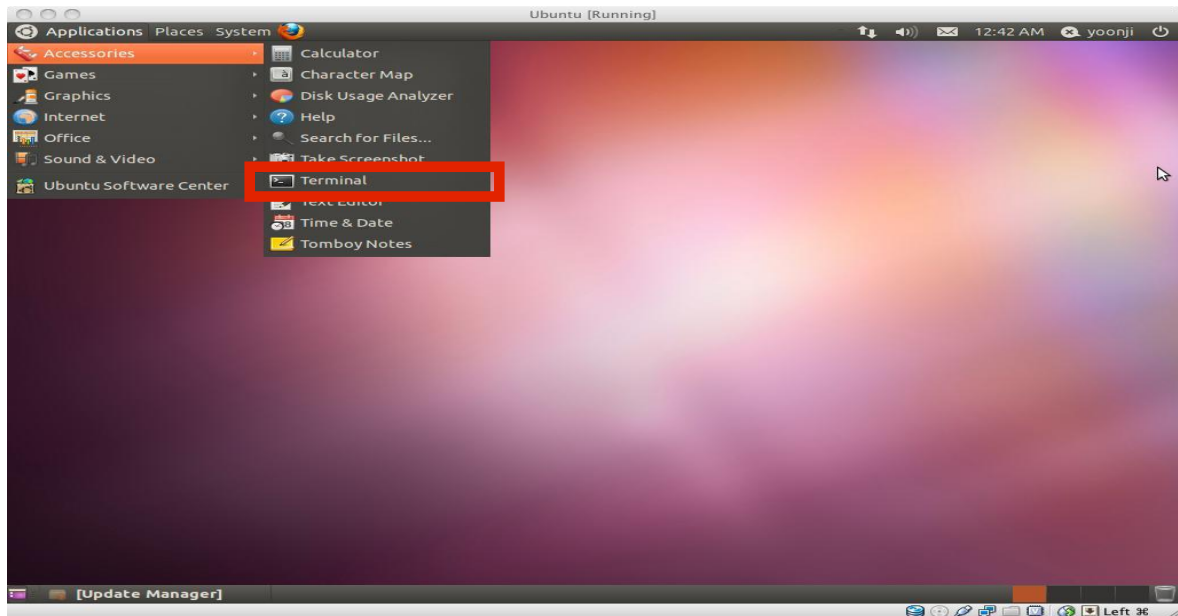
```
// A simple program that computes the square root of a number#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main (int argc, char *argv[])
{
if (argc <2)
{
fprintf(stdout,"Usage: %s number\n",argv[0]);    return 1;
}
double inputValue = atof(argv[1]);
double outputValue = sqrt(inputValue);
fprintf(stdout,"The square root of %g is %g\n",inputValue, outputValue);
return 0;
}
```

Test it by compiling it once:

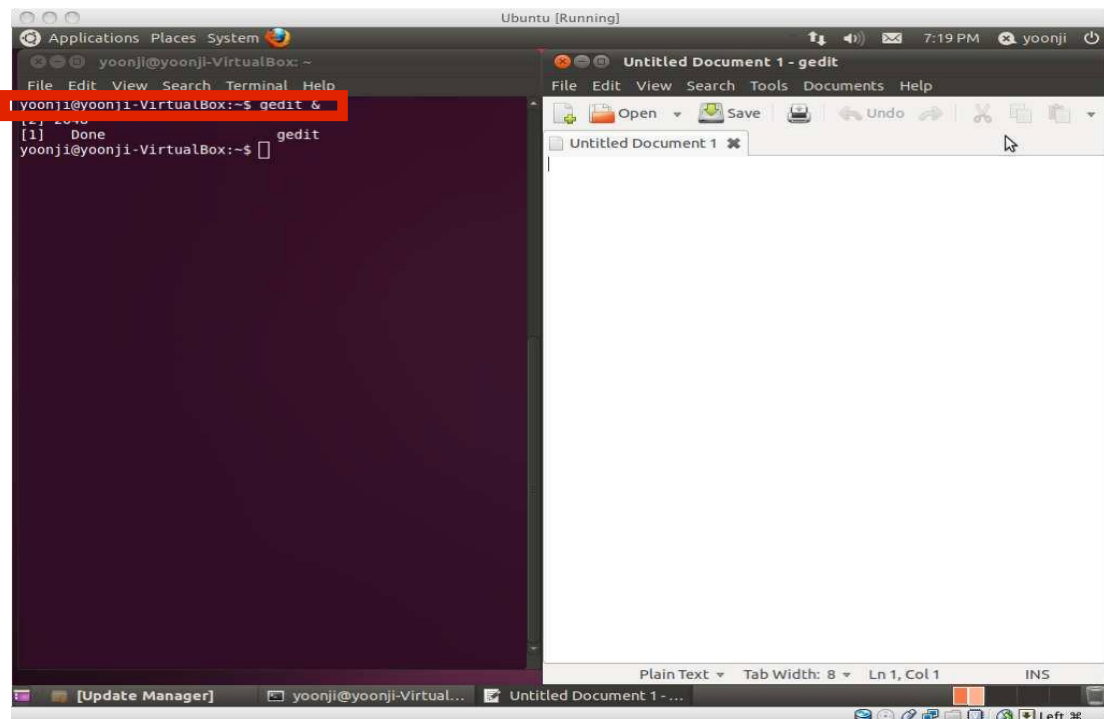
```
> gcc squareroot.c -o squareroot -lm
> ./squareroot 49
> The square root of 49 is 7
```

C Programming on Linux - Installing GCC on Ubuntu 20.04

1. Open Terminal(Applications-Accessories-Terminal)



2. Open gedit by typing “gedit &” on terminal



3. Type the following on gedit (or any other text editor)

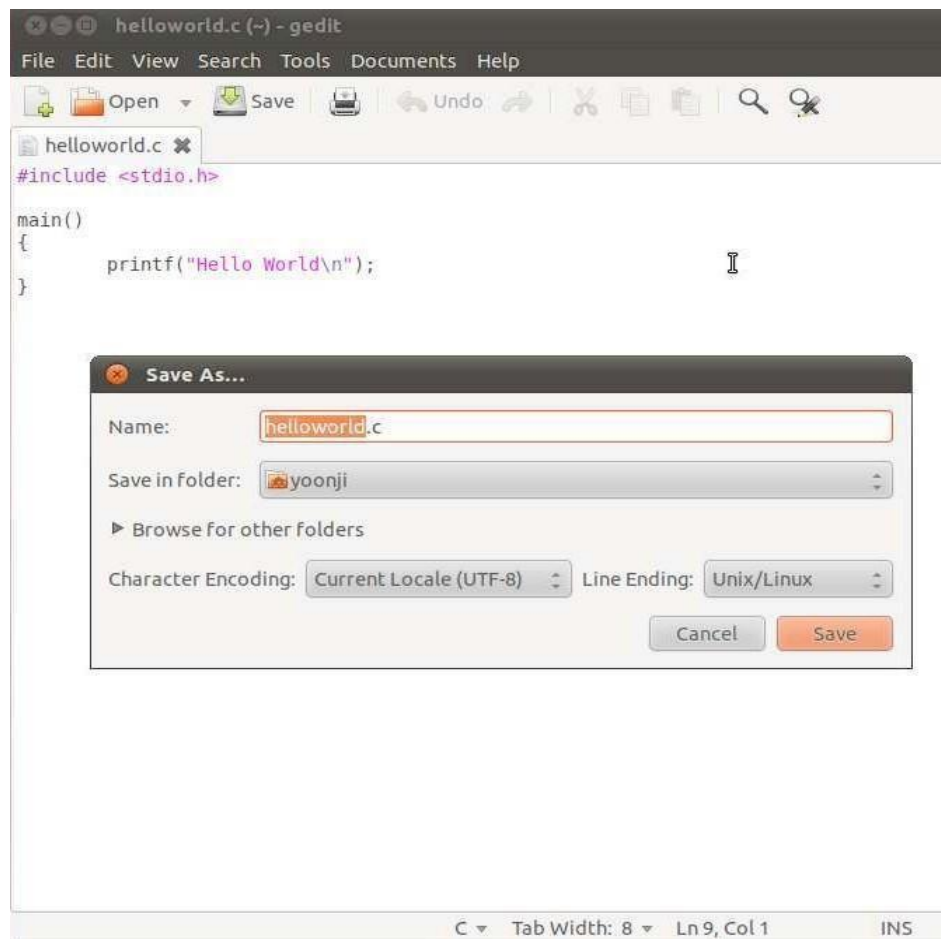
```
#include<stdio.h>
```

```
main()
```

```
{
```

```
printf("Hello World\n");
```

```
}
```



2. Save this file as “helloworld.c”

3. Type “ls” on Terminal to see all files under current folder

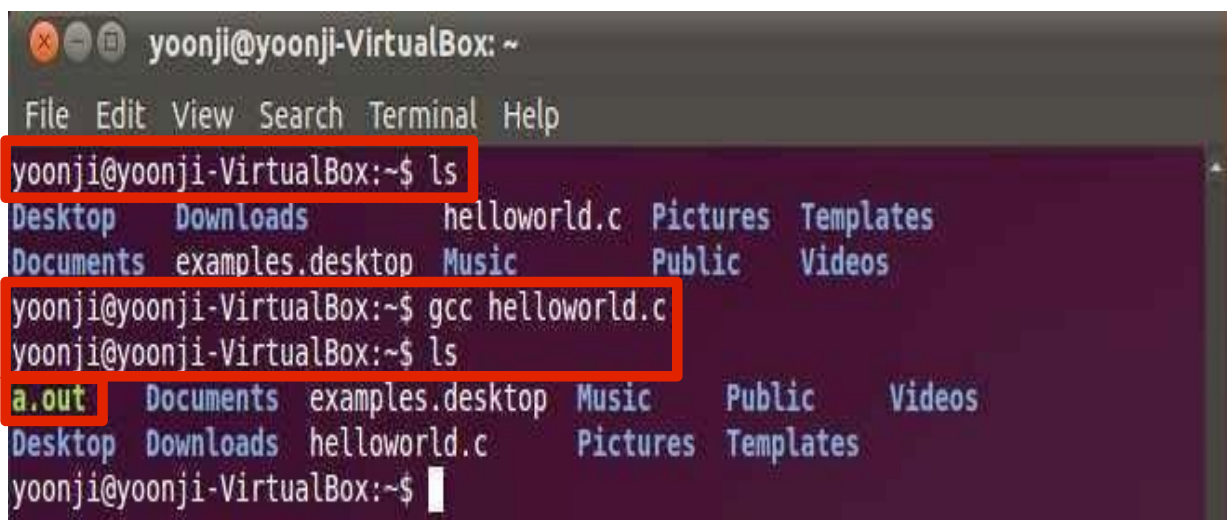
4. Confirm that “helloworld.c” is in the current directory. If not, type `cd DIRECTORY_PATH` to

go to the directory that has “helloworld.c”

5. Type “gcc helloworld.c” to compile, and type “ls” to confirm that a new executable file “a.out” is created
6. Type “./a.out” on Terminal to run the program
7. If you see “Hello World” on the next line,

you just successfully ran your first C program!

OUTPUT:



```
yoonji@yoonji-VirtualBox: ~  
File Edit View Search Terminal Help  
yoonji@yoonji-VirtualBox:~$ ls  
Desktop Downloads helloworld.c Pictures Templates  
Documents examples.desktop Music Public Videos  
yoonji@yoonji-VirtualBox:~$ gcc helloworld.c  
yoonji@yoonji-VirtualBox:~$ ls  
a.out Documents examples.desktop Music Public Videos  
Desktop Downloads helloworld.c Pictures Templates  
yoonji@yoonji-VirtualBox:~$
```

RESULT:

Thus the GCC Compiler in the virtual machine is installed using virtual box and simple C-
programs are compiled and executed successfully

EX: NO: 3

DATE:

Install Google App Engine. Create a hello world app and other simple web applications using python/java.

AIM

To Install and Run the Google App Engine on Windows.

PROCEDURE

The App Engine SDK allows you to run Google App Engine Applications on your local computer. It simulates the run-time environment of the Google App Engine infrastructure.

Download and Install Python 2.5.4 from:

<http://www.python.org/download/releases/2.5.4/>

Download and Install Google App Engine SDK

You can download the Google App Engine SDK by going to:

<http://code.google.com/appengine/downloads.html>

and download the appropriate install package.

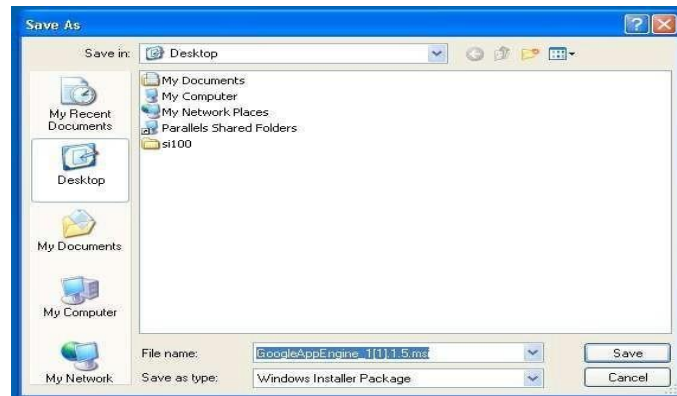
Download the Google App Engine SDK

Before downloading, please read the [Terms](#) that govern your use of the App Engine SDK.

Please note: The App Engine SDK is under **active development**, please keep this in mind as you explore its capabilities. See the [SDK Release Notes](#) for the information on the most recent changes to the App Engine SDK. If you discover any issues, please feel free to notify us via our [Issue Tracker](#).

Platform	Version	Package	Size	SHA1 Checksum
Windows	1.1.5 - 10/03/08	GoogleAppEngine 1.1.5.msi	2.5 MB	e974312b4aefc0b3873ff0d93eb4c525d5e88c30
Mac OS X	1.1.5 - 10/03/08	GoogleAppEngineLauncher-1.1.5.dmg	3.6 MB	f62208ac01c1b3e39796e58100d5f1b2f052d3e7
Linux/Other Platforms	1.1.5 - 10/03/08	google_appengine 1.1.5.zip	2.6 MB	cbb9ce817bdabf1c4f181d9544864e55ee253de1

Download the Windows installer—to download it to Desktop



Double Click on the GoogleApplicationEngine installer.



Click through the installation wizard, and it should install the App Engine.

If you do not have Python 2.5, it will install Python 2.5 as well.

Once the install is complete you can discard the downloaded installer



Making your First Application

Create a simple application. Use the “+” option to have the launcher make us an application
Make a folder for your Google App Engine applications. Make the Folder on Desktop called
“apps” – the path to this folder is:

C:\Documents and Settings\csev\Desktop\apps

And then make a sub-folder in within apps called “trivial” – the path to this folder would be:

C:\Documents and Settings\csev\Desktop\apps\trivial

Using a text editor such as JEdit (www.jedit.org), create a file called app.yaml in the trivial folder with the following contents:

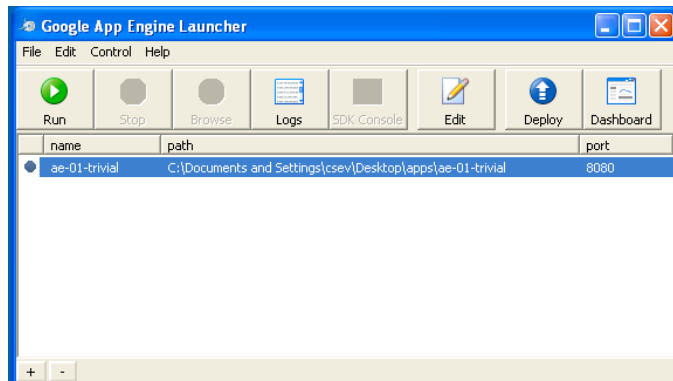
```
application: ae-01-trivial
version: 1
runtime: python
api_version: 1
handlers:-
  url: /.*
```

script: index.py

Then create a file in the trivial folder called index.py with three lines in it:

```
print 'Content-Type: text/plain'
print ''
print 'Hello there Chuck'
```

Then start the GoogleAppEngineLauncher program that can be found under Applications.



Once you have selected your application and press Run. After a few moments your application will start and the launcher will show a little green icon next to your application. Then press Browse to open a browser pointing at your application which is running at <http://localhost:8080/>

