

Ex. No: 2

Date:

Installing C Complier on Guest OS

AIM

To install C Complier in the virtual machine created using a virtual box and execute Simple Programs.

PROCEDURAL STEPS

1. To download package information from all configured sources → \$ sudo apt-get update
2. To install C Compiler on Ubuntu 14.4 → \$ sudo apt-get install gcc
3. To install C++ Compiler on Ubuntu 14.4 → \$ sudo apt-get install g++

```
user@vmub-hadoop1:~  
Preparing to unpack .../libstdc++6_4.8.4-2ubuntu1-14.04.4_amd64.deb ...  
Unpacking libstdc++6:amd64 (4.8.4-2ubuntu1-14.04.4) over (4.8.4-2ubuntu1-14.04.3) ...  
Setting up libstdc++6:amd64 (4.8.4-2ubuntu1-14.04.4) ...  
Processing triggers for libc-bin (2.19-0ubuntu6.9) ...  
Selecting previously unselected package libstdc++4.8-dev:amd64.  
(Reading database ... 166759 files and directories currently installed.)  
Preparing to unpack .../libstdc++4.8-dev_4.8.4-2ubuntu1-14.04.4_amd64.deb ...  
Unpacking libstdc++4.8-dev:amd64 (4.8.4-2ubuntu1-14.04.4) ...  
Selecting previously unselected package g++-4.8.  
Preparing to unpack .../g++-4.8_4.8.4-2ubuntu1-14.04.4_amd64.deb ...  
Unpacking g++-4.8 (4.8.4-2ubuntu1-14.04.4) ...  
Selecting previously unselected package g++.  
Preparing to unpack .../g++_4.8_4.8.4-2ubuntu1-14.04.4_amd64.deb ...  
Unpacking g++ (4:4.8.4-2ubuntu6) ...  
Processing triggers for man-db (2.6.7.1-1ubuntu1) ...  
Setting up libitm1:amd64 (4.8.4-2ubuntu1-14.04.4) ...  
Setting up libomp1:amd64 (4.8.4-2ubuntu1-14.04.4) ...  
Setting up libatomic1:amd64 (4.8.4-2ubuntu1-14.04.4) ...  
Setting up libtsan0:amd64 (4.8.4-2ubuntu1-14.04.4) ...  
Setting up libquadmath0:amd64 (4.8.4-2ubuntu1-14.04.4) ...  
Setting up libgcc-4.8-dev:amd64 (4.8.4-2ubuntu1-14.04.4) ...  
Setting up cpp-4.8 (4.8.4-2ubuntu1-14.04.4) ...  
Setting up libstdc++4.8-dev:amd64 (4.8.4-2ubuntu1-14.04.4) ...  
Setting up g++-4.8 (4.8.4-2ubuntu1-14.04.4) ...  
Setting up g++ (4:4.8.4-2ubuntu6) ...  
update-alternatives: using /usr/bin/g++ to provide /usr/bin/c++ (c++) in auto mode  
Processing triggers for libc-bin (2.19-0ubuntu6.9) ...  
user@vmub-hadoop1:~$ sudo gedit add.c  
  
(gedit:3811): Gtk-WARNING **: Calling Inhibit failed: GDBus.Error:org.freedesktop.DBus.Error.ServiceUnknown: The name org.gnome.SessionManager was not provided by any .service files  
  
>_(gedit:3811): Gtk-WARNING **: Calling Inhibit failed: GDBus.Error:org.freedesktop.DBus.Error.ServiceUnknown: The name org.gnome.SessionManager was not provided by any .service files  
user@vmub-hadoop1:~$ gcc add.c  
user@vmub-hadoop1:~$ ./a.out  
Enter the values for a and b:  
10 10  
The result is: 20  
user@vmub-hadoop1:~$
```

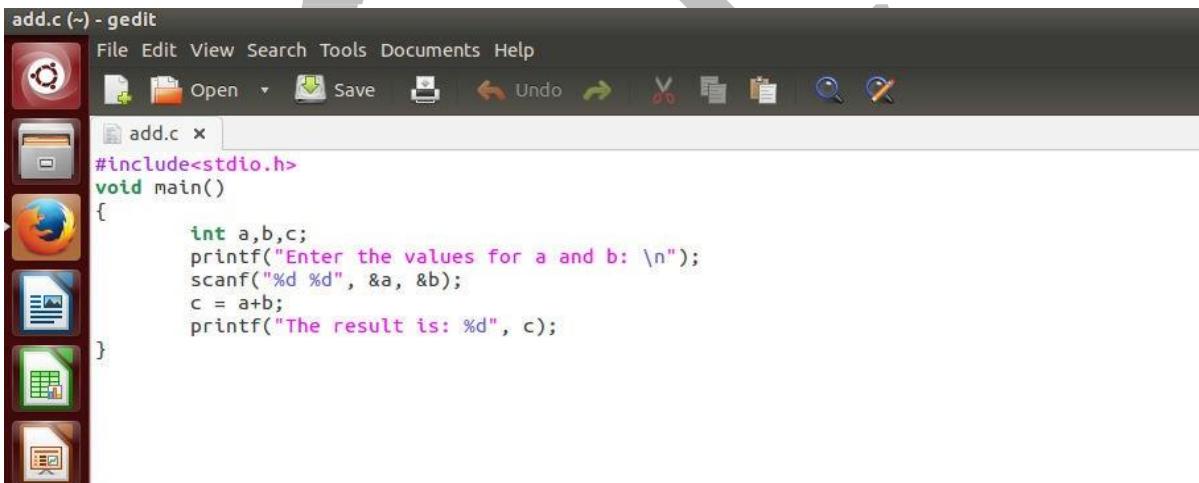
```
user@vmub-hadoop1:~  
Ign http://in.archive.ubuntu.com trusty/restricted Translation-en_IN  
Ign http://in.archive.ubuntu.com trusty/universe Translation-en_IN  
Reading package lists... Done  
user@vmub-hadoop1:~$ sudo apt-get install g++  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following extra packages will be installed:  
  cpp-4.8 g++-4.8 gcc-4.8-base libasan0 libatomic1 libgcc-4.8-dev  
  libomp1 libitm1 libquadmath0 libstdc++4.8-dev libstdc++6 libtsan0  
Suggested packages:  
  gcc-4.8-locales g++-multilib g++-4.8-multilib gcc-4.8-doc libstdc++-dev  
  libgcc-4.8-multilib libgcc1-dbg libomp1-dbg libitm1-dbg libatomic1-dbg  
  libasan0-dbg libtsan0-dbg libquadmath0-dbg libstdc++-4.8-doc  
The following NEW packages will be installed:  
  g++ g++-4.8 libstdc++4.8-dev  
The following packages will be upgraded:  
  cpp-4.8 gcc-4.8 g++-4.8-base libasan0 libatomic1 libgcc-4.8-dev libomp1  
  libitm1 libquadmath0 libstdc++6 libtsan0  
11 upgraded, 3 newly installed, 0 to remove and 445 not upgraded.  
Need to get 30.9 MB/30.9 MB of archives.  
After this operation, 40.1 MB of additional disk space will be used.  
Do you want to continue? [Y/n] y  
Get:1 http://in.archive.ubuntu.com/ubuntu/ trusty-updates/main libitm1 amd64 4.8.4-2ubuntu1-14.04.4 [28.6 kB]  
Get:2 http://in.archive.ubuntu.com/ubuntu/ trusty-updates/main libomp1 amd64 4.8.4-2ubuntu1-14.04.4 [23.1 kB]  
Get:3 http://in.archive.ubuntu.com/ubuntu/ trusty-updates/main libasan0 amd64 4.8.4-2ubuntu1-14.04.4 [63.1 kB]  
Get:4 http://in.archive.ubuntu.com/ubuntu/ trusty-updates/main libatomic1 amd64 4.8.4-2ubuntu1-14.04.4 [8,630 B]  
Get:5 http://in.archive.ubuntu.com/ubuntu/ trusty-updates/main libtsan0 amd64 4.8.4-2ubuntu1-14.04.4 [94.8 kB]  
Get:6 http://in.archive.ubuntu.com/ubuntu/ trusty-updates/main libquadmath0 amd64 4.8.4-2ubuntu1-14.04.4 [126 kB]  
Get:7 http://in.archive.ubuntu.com/ubuntu/ trusty-updates/main libgcc-4.8-dev amd64 4.8.4-2ubuntu1-14.04.4 [1,688 kB]  
Get:8 http://in.archive.ubuntu.com/ubuntu/ trusty-updates/main gcc-4.8 amd64 4.8.4-2ubuntu1-14.04.4 [5,040 kB]  
Get:9 http://in.archive.ubuntu.com/ubuntu/ trusty-updates/main cpp-4.8 amd64 4.8.4-2ubuntu1-14.04.4 [4,452 kB]  
Get:10 http://in.archive.ubuntu.com/ubuntu/ trusty-updates/main libgcc-4.8-base amd64 4.8.4-2ubuntu1-14.04.4 [16.7 kB]  
Get:11 http://in.archive.ubuntu.com/ubuntu/ trusty-updates/main libstdc++4.8-dev amd64 4.8.4-2ubuntu1-14.04.4 [260 kB]  
Get:12 http://in.archive.ubuntu.com/ubuntu/ trusty-updates/main libstdc++4.8-dev amd64 4.8.4-2ubuntu1-14.04.4 [1,051 kB]  
Get:13 http://in.archive.ubuntu.com/ubuntu/ trusty-updates/main g++-4.8 amd64 4.8.4-2ubuntu1-14.04.4 [18.0 MB]  
Fetched 30.9 MB (927 kB)  
(Reading database ... 166759 files and directories currently installed.)  
Preparing to unpack .../libitm1_4.8.4-2ubuntu1-14.04.4_amd64.deb ...  
Unpacking libitm1:amd64 (4.8.4-2ubuntu1-14.04.4) over (4.8.4-2ubuntu1-14.04.3) ...  
Preparing to unpack .../libomp1_4.8.4-2ubuntu1-14.04.4_amd64.deb ...
```

```
user@vmub-hadoop1:~$ sudo apt-get install gcc
[sudo] password for user:
Reading package lists... Done
Building dependency tree
Reading state information... Done
gcc is already the newest version.
0 upgraded, 0 newly installed, 0 to remove and 296 not upgraded.
user@vmub-hadoop1:~$ sudo apt install g++
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  g++-4.8 libstdc++-4.8-dev
Suggested packages:
  g++-multilib g++-4.8-multilib gcc-4.8-doc libstdc++6-4.8-dbg
  libstdc++-4.8-doc
The following NEW packages will be installed:
  g++ g++-4.8 libstdc++-4.8-dev
0 upgraded, 3 newly installed, 0 to remove and 296 not upgraded.
Need to get 19.2 MB of archives.
After this operation, 40.0 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

4. Create a file to write C program → \$ sudo gedit <<file_name>>.c

To compile C program → \$ gcc <<file_name>>.c

To run C program → \$./a.out



```
user@vmub-hadoop1:~$ sudo gedit add.c
(gedit:3811): Gtk-WARNING **: Calling Inhibit failed: GDBus.Error:org.free
was not provided by any .service files

(gedit:3811): Gtk-WARNING **: Calling Inhibit failed: GDBus.Error:org.free
was not provided by any .service files
user@vmub-hadoop1:~$ gcc add.c
user@vmub-hadoop1:~$ ./a.out
Enter the values for a and b:
10 10
The result is: 20user@vmub-hadoop1:~$
```

arm.c (~) - gedit

The screenshot shows a Linux desktop environment with a Gedit window open. The window title is "arm.c (~) - gedit". The file path is "~". The code in the editor is:

```
#include<stdio.h>

int main()
{
    int n,r,sum=0,temp;
    printf("enter the number = ");
    scanf("%d",&n);
    temp=n;
    while(n>0)
    {
        r=n%10;
        sum=sum+(r*r*r);
        n=n/10;
    }
    if(temp==sum)
        printf("armstrong number \n");
    else
        printf("not armstrong number \n");
    return 0;
}
```

The desktop interface includes a vertical dock on the left with icons for the terminal, file manager, browser, and other applications.

user@vmub-hadoop1: ~

The screenshot shows a terminal window with the prompt "user@vmub-hadoop1: ~". The user has run the following commands:

```
user@vmub-hadoop1:~$ gcc arm.c
user@vmub-hadoop1:~$ ./a.out
enter the number = 153
armstrong number
user@vmub-hadoop1:~$ ./a.out
enter the number = 150
not armstrong number
user@vmub-hadoop1:~$
```

odd.c (~) - gedit



Open Save Undo Redo Find Replace

arm.c x odd.c x

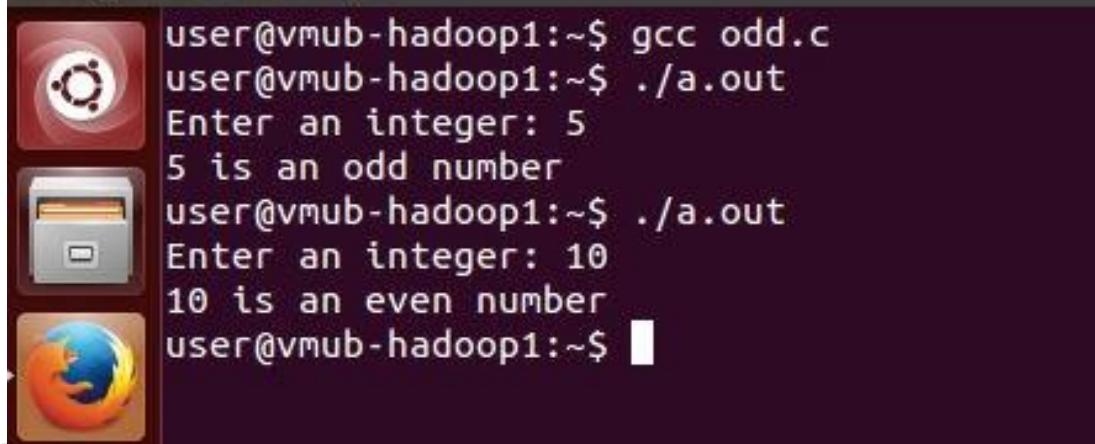
```
#include<stdio.h>
int main()
{
    int num;

    printf("Enter an integer: ");
    scanf("%d",&num);

    if ( num%2 == 0 )
        printf("%d is an even number \n", num);
    else
        printf("%d is an odd number \n", num);

    return 0;
}
```

user@vmub-hadoop1: ~



```
user@vmub-hadoop1:~$ gcc odd.c
user@vmub-hadoop1:~$ ./a.out
Enter an integer: 5
5 is an odd number
user@vmub-hadoop1:~$ ./a.out
Enter an integer: 10
10 is an even number
user@vmub-hadoop1:~$ █
```

VIVA QUESTIONS

1. What is Parallel Computing?

2. What is Distributed System?