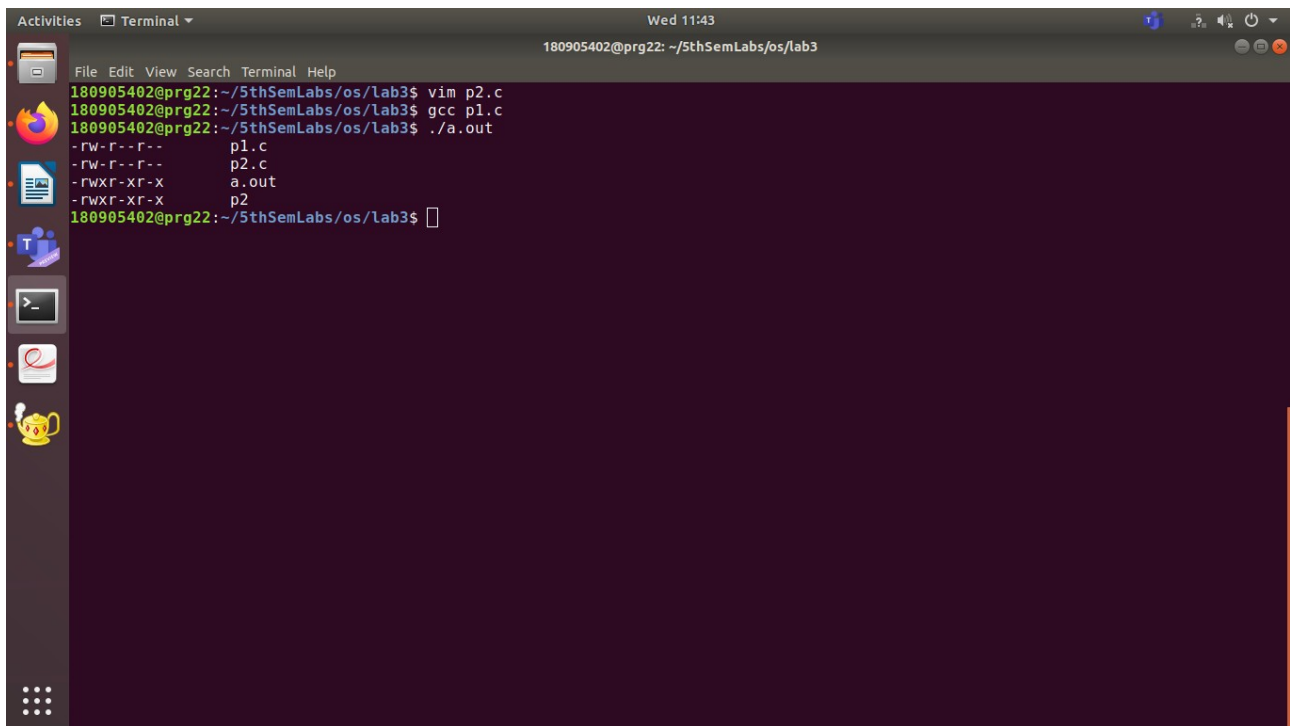


## OS LAB 2

q1. print all files and access privileges for the current directory

```
#include <unistd.h>
#include <stdio.h>
#include <sys/stat.h>
#include <sys/types.h>
#include <dirent.h>
#include <stdlib.h>
int main()
{
    DIR* dp;
    struct dirent* entry;
    struct stat statbuf;
    if((dp = opendir(".")) == NULL)
    {
        printf("Cannot open directory \n");
        return 0;
    }
    chdir(".");
    while((entry = readdir(dp)) != NULL)
    {
        lstat(entry->d_name,&statbuf);
        if(!S_ISDIR(statbuf.st_mode))
        {
            //printf("%s \t ",entry->d_name);
            printf( (S_ISDIR(statbuf.st_mode)) ? "d" : "-");
            printf( (statbuf.st_mode & S_IRUSR) ? "r" : "-");
            printf( (statbuf.st_mode & S_IWUSR) ? "w" : "-");
            printf( (statbuf.st_mode & S_IXUSR) ? "x" : "-");
            printf( (statbuf.st_mode & S_IRGRP) ? "r" : "-");
            printf( (statbuf.st_mode & S_IWGRP) ? "w" : "-");
            printf( (statbuf.st_mode & S_IXGRP) ? "x" : "-");
            printf( (statbuf.st_mode & S_IROTH) ? "r" : "-");
            printf( (statbuf.st_mode & S_IWOTH) ? "w" : "-");
            printf( (statbuf.st_mode & S_IXOTH) ? "x" : "-");
            printf("\t %s \t ", entry->d_name);
            printf("\n");
        }
    }
}
```

A terminal window titled 'Terminal' with a dark background. The window shows the following commands and output:

```
180905402@prg22: ~/5thSemLabs/os/lab3$ vim p2.c
180905402@prg22: ~/5thSemLabs/os/lab3$ gcc p1.c
180905402@prg22: ~/5thSemLabs/os/lab3$ ./a.out
-rw-r--r--  p1.c
-rw-r--r--  p2.c
-rwxr-xr-x  a.out
-rwxr-xr-x  p2
180905402@prg22: ~/5thSemLabs/os/lab3$
```

q2. List all the directories and the subdirectories

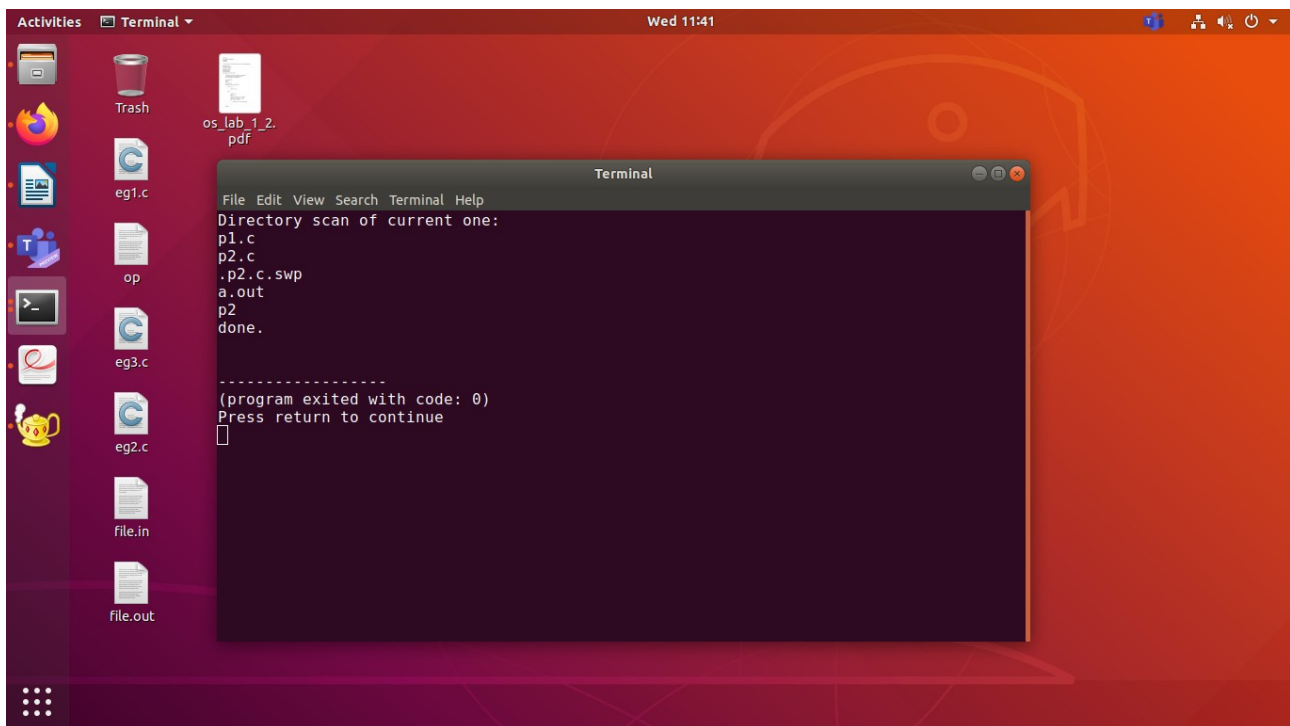
```
#include <unistd.h>
#include <stdio.h>
#include <dirent.h>
#include <string.h>
#include <sys/stat.h>
#include <stdlib.h>
void printdir(char *dir, int depth)
{
    DIR* dp;
    struct dirent* entry;
    struct stat statbuf;
    if((dp = opendir(dir)) == NULL)
    {
        fprintf(stderr,"cannot open directory: %s\n", dir);
        return;
    }
    chdir(dir);
    while((entry = readdir(dp)) != NULL)
    {
        lstat(entry->d_name,&statbuf);
        if(S_ISDIR(statbuf.st_mode))
        {
            /* Found a directory, but ignore . and .. */
            if(strcmp(".",entry->d_name) == 0 ||
strcmp("../",entry->d_name) == 0)
            {
                continue;
            }
            printf("%*s%s/\n",depth,"",entry->d_name);
```

```

        /* Recurse at a new indent level */
        printdir(entry->d_name,depth+4);
    }
    else
    {
        printf("%*s%s\n",depth,"",entry->d_name);
    }
}
chdir("../");
closedir(dp);
}

int main()
{
    printf("Directory scan of current one:\n");
    printdir(".",0);
    printf("done.\n");
    exit(0);
}

```



q3.

command to list all installed programs:

`dpkg -l`

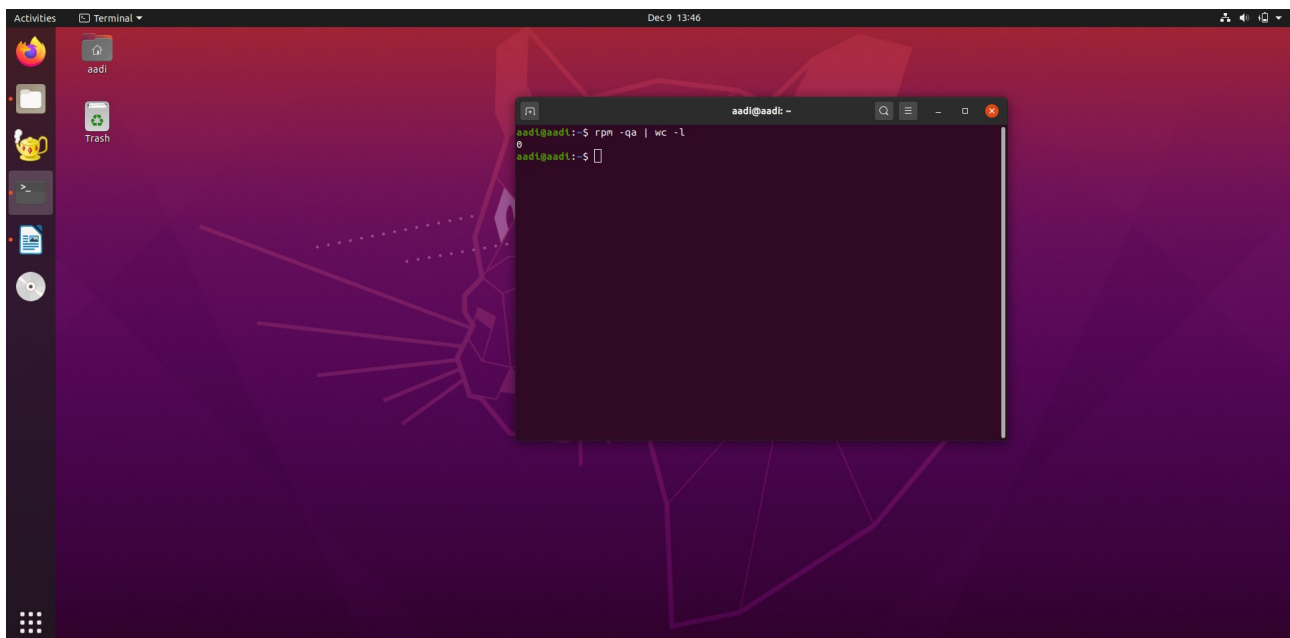
dpkg is used to install, remove, and provide information about . deb packages. It is a low level tool. To install a new package, we use: `dpkg -i <file name>`

```
Activities Terminal Wed 11:46
180905402@prg22: ~/5thSemLabs/os/lab3
File Edit View Search Terminal Help
-rw-r--r-- p2.c
-rwxr-xr-x a.out
-rwxr-xr-x p2
180905402@prg22:~/5thSemLabs/os/lab3$ dpkg -l
Desired=Unknown/Install/Remove/Purge/Hold
| Status=Not/Inst/Conf-files/Unpacked/halF-conf/Half-inst/trig-aWait/Trig-pend
|/ Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
||/ Name Version Architecture Description
+++-+-----+-----+-----+-----+
ii ally-profile-manager-indic 0.1.11-0ubuntu4 amd64 Accessibility Profile Manager - Unity desktop indicator
rc account-plugin-flickr 0.12+16.04.2016012 all GNOME Control Center account plugin for single signon - f
rc account-plugin-google 0.12+16.04.2016012 all GNOME Control Center account plugin for single signon
ii accountsservice 0.6.45-1ubuntu1.3 amd64 query and manipulate user account information
ii acl 2.2.52-3build1 amd64 Access control list utilities
ii acpi-support 0.142 amd64 scripts for handling many ACPI events
ii acpid 1:2.0.28-1ubuntu1 amd64 Advanced Configuration and Power Interface event daemon
ii activity-log-manager 0.9.7-0ubuntu26 amd64 blacklist configuration user interface for Zeitgeist
ii adduser 3.116ubuntu1 all add and remove users and groups
ii adium-theme-ubuntu 0.3.4-0ubuntu4 all Adium message style for Ubuntu
ii adwaita-icon-theme 3.28.0-1ubuntu1 all default icon theme of GNOME (small subset)
ii aglfn 1.7-3 all Adobe Glyph List For New Fonts
ii aisleriot 1:3.22.5-1 amd64 GNOME solitaire card game collection
ii alsa-base 1.0.25+dfsg-0ubuntu1 all ALSA driver configuration files
ii alsa-utils 1.1.3-1ubuntu1 amd64 Utilities for configuring and using ALSA
ii amd64-microcode 3.20191021.1+reall amd64 Processor microcode firmware for AMD CPUs
ii anacron 2.3-24 amd64 cron-like program that doesn't go by time
ii ant 1.10.5-3-18.04 all Java based build tool like make
ii ant-optional 1.10.5-3-18.04 all Java based build tool like make - optional libraries
ii app 2.2.3.dfsg.1-5 amd64 Automated Password Generator - Standalone version
ii app-install-data-partner 16.04 all Application Installer (data files for partner application
ii apparmor 2.12-4ubuntu5.1 amd64 user-space parser utility for AppArmor
ii appmenu-qt:amd64 0.2.7+14.04.201403 amd64 application menu for Qt
rc appmenu-qt5 0.3.0+16.04.201702 amd64 application menu for Qt5
ii apport 2.20.9-0ubuntu7.20 all automatically generate crash reports for debugging
ii apport-gtk 2.20.9-0ubuntu7.20 all GTK+ frontend for the apport crash report system
ii apport-symptoms 0.20 all symptom scripts for apport
```

q4. List the rpm packages.

Rpm -qa

RPM stands for red-hat package manager. It is a free and open source package management tool.



(My ubuntu 20.04 LTS does not have any rp based packages)