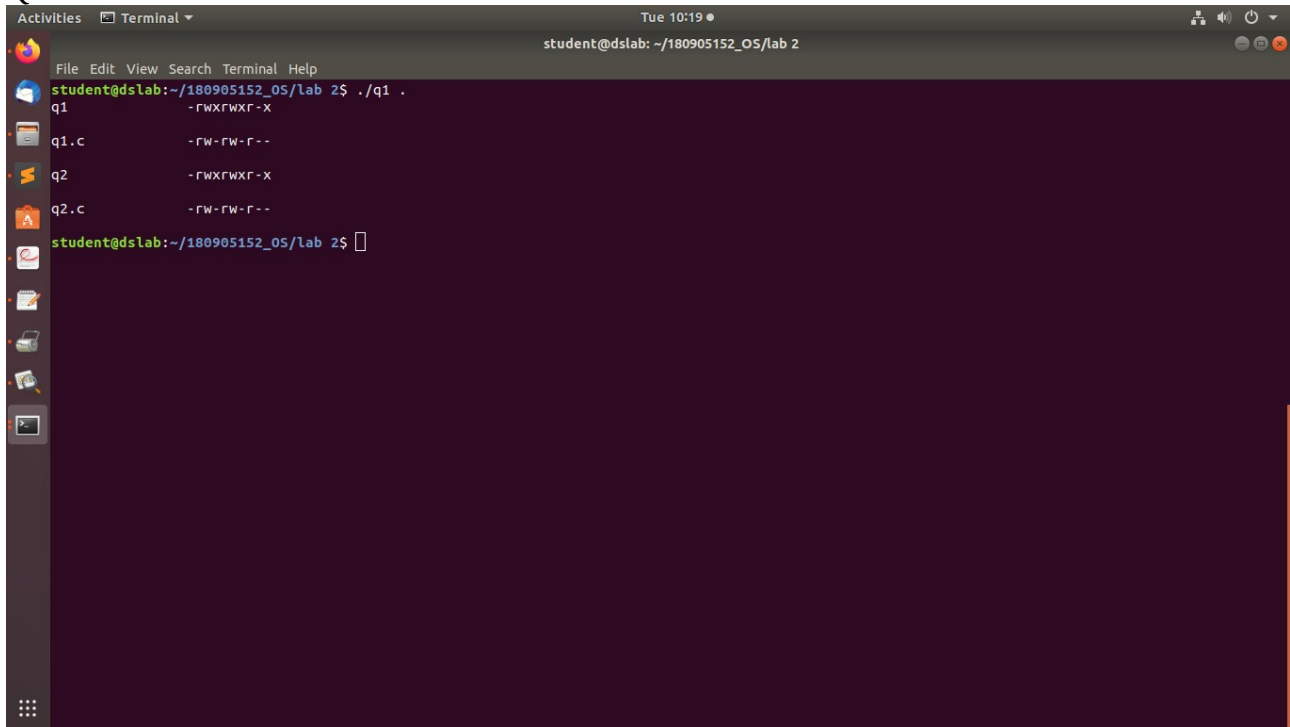


# Lab 2

Q1



```
student@dslab: ~/180905152_OS/lab 2$ ./q1 .
q1      - ΓWXΓWXΓ-X
q1.c    - ΓW-ΓW-Γ--
q2      - ΓWXΓWXΓ-X
q2.c    - ΓW-ΓW-Γ--
student@dslab: ~/180905152_OS/lab 2$
```

Code:

```
#include <unistd.h>
#include <stdio.h>
#include <sys/stat.h>
#include <sys/types.h>
#include <dirent.h>
#include <stdlib.h>

int main(int argc, char** argv)
{
    if(argc<2){
        printf("Error!");
        exit(0);
    }
    DIR * dp;
    struct dirent * entry;
    struct stat statbuf;
    if((dp = opendir(argv[1])) == NULL) {
        printf("Cannot open directory \n");
        return 0;
    }
    chdir(argv[1]);
    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("\n\n");
}
}
}

```

Q2

The screenshot shows a terminal window titled 'Terminal' with the following content:

```

student@dslab: ~/180905152_OS/lab 2
File Edit View Search Terminal Help
student@dslab:~/180905152_OS/lab 2$
student@dslab:~/180905152_OS/lab 2$
student@dslab:~/180905152_OS/lab 2$ ./q2 /home/180905152_OS
Directory scan of /home/180905152_OS
cannot open directory: /home/180905152_OS
Done.
student@dslab:~/180905152_OS/lab 2$ pwd
/home/student/180905152_OS/lab 2
student@dslab:~/180905152_OS/lab 2$ ./q2 /home/student/180905152_OS
Directory scan of /home/student/180905152_OS
lab1/
  q3_op.png
  text2.txt
  q2_op1.png
  q1
  q1.c
  q4_op2.png
  text1.txt
  q4_op3.png
  text.txt
  q4
  q4.c
  q3
  q4_op1.png
  q2
  q1_op.png
  q2_op2.png
  q3.c
  q2.c
lab 2/
  q1
  q1.c
  q2
  q2.c
Done.
student@dslab:~/180905152_OS/lab 2$

```

Code:

```

#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;

```

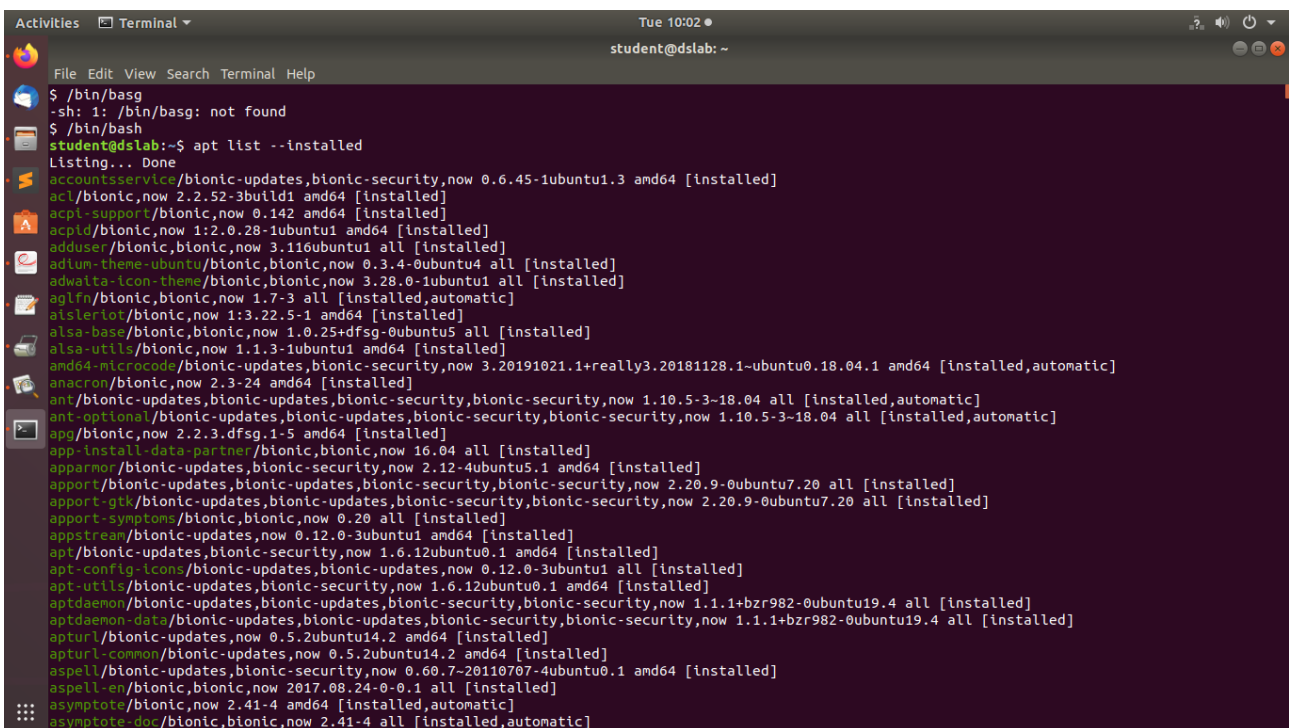
```

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))
    {
        if(strcmp(".",entry->d_name) == 0 || strcmp("..",entry->d_name) == 0)
            continue;
        printf("%s%s\n",depth,"",entry->d_name);
        printdir(entry->d_name,depth+4);
    }
    else
        printf("%s%s\n",depth,"",entry->d_name);
    }
    chdir("..");
    closedir(dp);
}
int main(int argc, char ** argv)
{
    if(argc<2){
        printf("Error!");
        exit(0);
    }

    printf("Directory scan of %s\n",argv[1]);
    printdir(argv[1],0);
    printf("\nDone.\n");
    exit(0);
}

```

Q3



The screenshot shows a terminal window titled "Terminal" with the user "student@dslab: ~". The user has entered the command `$ apt list --installed`, and the terminal displays a long list of installed packages and their versions. The output is as follows:

```

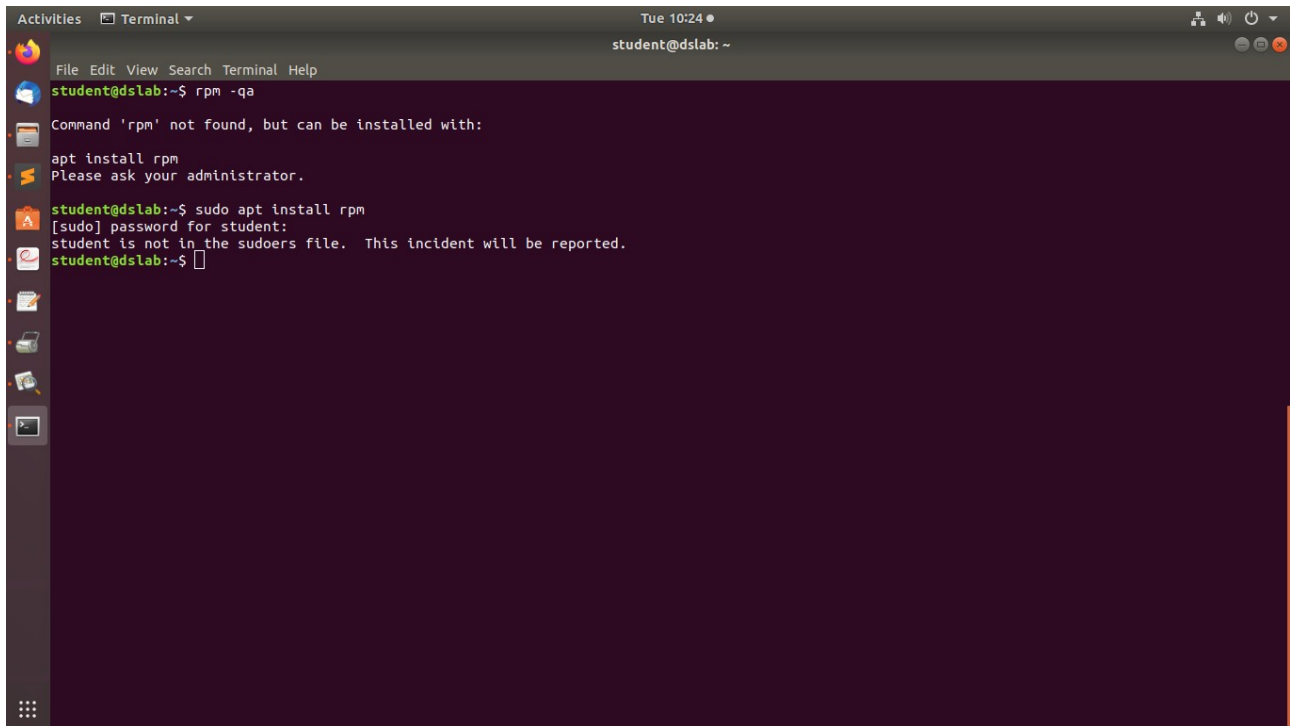
Listing... Done
accountsservice/bionic-updates,bionic-security,now 0.6.45-1ubuntu1.3 amd64 [installed]
acl/bionic,now 2.2.52-3build1 amd64 [installed]
acpi-support/bionic,now 0.142 amd64 [installed]
acpid/bionic,now 1:2.0.28-1ubuntu1 amd64 [installed]
adduser/bionic,bionic,now 3.116ubuntu1 all [installed]
adium-theme-ubuntu/bionic,bionic,now 0.3.4-0ubuntu4 all [installed]
adwaita-icon-theme/bionic,bionic,now 3.28.0-1ubuntu1 all [installed]
aglf/bionic,bionic,now 1.7-3 all [installed,automatic]
aisleriot/bionic,now 1:3.22.5-1 amd64 [installed]
alsa-base/bionic,bionic,now 1.0.25+dfsg-0ubuntu5 all [installed]
alsa-utils/bionic,now 1.1.3-1ubuntu1 amd64 [installed]
amd64-microcode/bionic-updates,bionic-security,now 3.20191021.1+really3.20181128.1-ubuntu0.18.04.1 amd64 [installed,automatic]
anacron/bionic,now 2.3-24 amd64 [installed]
ant/bionic-updates,bionic-updates,bionic-security,bionic-security,now 1.10.5-3-18.04 all [installed,automatic]
ant-optional/bionic-updates,bionic-updates,bionic-security,bionic-security,now 1.10.5-3-18.04 all [installed,automatic]
app/bionic,now 2.2.3.dfsg.1-5 amd64 [installed]
app-install-data-partner/bionic,bionic,now 16.04 all [installed]
apparmor/bionic-updates,bionic-security,now 2.12-4ubuntu5.1 amd64 [installed]
appport/bionic-updates,bionic-updates,bionic-security,bionic-security,now 2.20.9-0ubuntu7.20 all [installed]
appport-gtk/bionic-updates,bionic-updates,bionic-security,bionic-security,now 2.20.9-0ubuntu7.20 all [installed]
appport-symptoms/bionic,bionic,now 0.20 all [installed]
appstream/bionic-updates,now 0.12.0-3ubuntu1 amd64 [installed]
apt/bionic-updates,bionic-security,now 1.6.12ubuntu0.1 amd64 [installed]
apt-config-icons/bionic-updates,bionic-updates,now 0.12.0-3ubuntu1 all [installed]
apt-utils/bionic-updates,bionic-security,now 1.6.12ubuntu0.1 amd64 [installed]
aptdaemon/bionic-updates,bionic-updates,bionic-security,bionic-security,now 1.1.1+bzr982-0ubuntu19.4 all [installed]
aptdaemon-data/bionic-updates,bionic-updates,bionic-security,bionic-security,now 1.1.1+bzr982-0ubuntu19.4 all [installed]
apturl/bionic-updates,now 0.5.2ubuntu14.2 amd64 [installed]
apturl-common/bionic-updates,now 0.5.2ubuntu14.2 amd64 [installed]
aspell/bionic-updates,bionic-security,now 0.60.7-20110707-4ubuntu0.1 amd64 [installed]
aspell-en/bionic,bionic,now 2017.08.24-0-0.1 all [installed]
asymptote/bionic,now 2.41-4 amd64 [installed,automatic]
asymptote-doc/bionic,bionic,now 2.41-4 all [installed,automatic]

```

Command:

apt list --installed

Q4

A terminal window titled 'Terminal' with a dark background. The prompt is 'student@dslab: ~'. The user enters 'rpm -qa', and the terminal outputs 'Command 'rpm' not found, but can be installed with:'. The user then enters 'apt install rpm', and the terminal outputs 'apt install rpm' and 'Please ask your administrator.'. The user then enters 'sudo apt install rpm', and the terminal outputs '[sudo] password for student:', 'student is not in the sudoers file. This incident will be reported.', and then the prompt 'student@dslab:~\$' with a cursor.

```
student@dslab:~$ rpm -qa
Command 'rpm' not found, but can be installed with:
apt install rpm
Please ask your administrator.
student@dslab:~$ sudo apt install rpm
[sudo] password for student:
student is not in the sudoers file. This incident will be reported.
student@dslab:~$
```

Command:

rpm -qa