

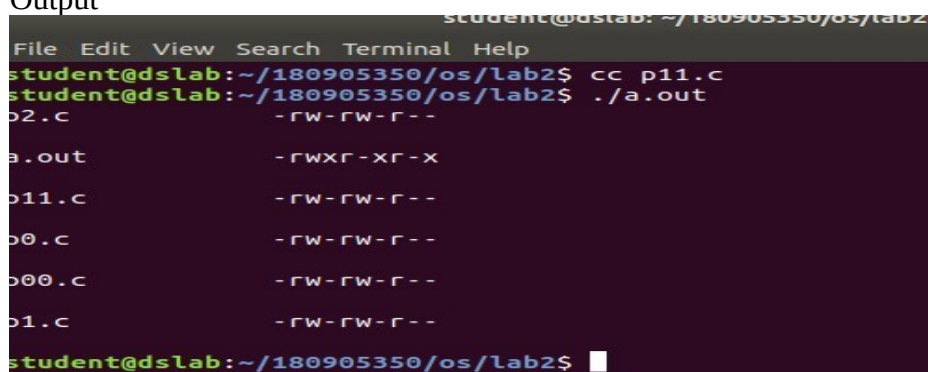
## Lab2

### Q1

code

```
#include <unistd.h>
#include <stdio.h>
#include <sys/stat.h>
#include <sys/types.h>
#include <dirent.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 \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");
        }
    }
}
```

### Output



```
student@ds1ab: ~/180905350/os/lab2
File Edit View Search Terminal Help
student@ds1ab:~/180905350/os/lab2$ cc p11.c
student@ds1ab:~/180905350/os/lab2$ ./a.out
p2.c          -rw-rw-r--
a.out         -rwxr-xr-x
p11.c         -rw-rw-r--
p0.c          -rw-rw-r--
p00.c         -rw-rw-r--
p1.c          -rw-rw-r--
student@ds1ab:~/180905350/os/lab2$
```


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)) {
            /* 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);
}
```

## Output

A terminal window titled 'student@dslab: ~/180905350' with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal shows a series of commands and their outputs. The user runs 'cc p0.c', then 'cd ..', then 'cd ..', and finally './os/lab2/a.out'. The output of the last command is a directory scan of the current directory, showing a tree structure of files and directories. The scan starts with 'os/' and lists 'lab2/' and 'lab1/' with their respective contents. The files listed are: p2.c, a.out, p11.c, p0.c, p00.c, p1.c under lab2/; and p2.c, abc.txt, lab1.pdf, a.out, xyz.txt, lab1.docx, p11.c, p0.c, p1.c under lab1/.

```
student@dslab:~/180905350/os/lab2$ cc p0.c
student@dslab:~/180905350/os/lab2$ cd ..
student@dslab:~/180905350/os$ cd ..
student@dslab:~/180905350$ ./os/lab2/a.out
Directory scan of current one:
os/
  lab2/
    p2.c
    a.out
    p11.c
    p0.c
    p00.c
    p1.c
  lab1/
    p2.c
    abc.txt
    lab1.pdf
    a.out
    xyz.txt
    lab1.docx
    p11.c
    p0.c
    p1.c
```

Q3)  
dpkg -l  
or  
apt list

```
student@dslab: ~/180905350
File Edit View Search Terminal Help
znc-dev/bionic-updates,bionic-security 1.6.6-1ubuntu0.2 amd64
znc-perl/bionic-updates,bionic-security 1.6.6-1ubuntu0.2 amd64
znc-python/bionic-updates,bionic-security 1.6.6-1ubuntu0.2 amd64
znc-tcl/bionic-updates,bionic-security 1.6.6-1ubuntu0.2 amd64
zoem/bionic 11-166-1.2 amd64
zomg/bionic 0.8-2ubuntu2 amd64
zonecheck/bionic,bionic 3.0.5-3 all
zonecheck-cgi/bionic,bionic 3.0.5-3 all
zonemaster-cli/bionic,bionic 1.0.5-1 all
zookeeper/bionic,bionic 3.4.10-3 all
zookeeper-bin/bionic 3.4.10-3 amd64
zookeeperd/bionic,bionic 3.4.10-3 all
zoom-player/bionic 1.1.5~dfsg-4 amd64
zope-common/bionic,bionic 0.5.54 all
zope-debhelper/bionic,bionic 0.3.16 all
zope2.13/bionic 2.13.22-1ubuntu1 amd64
zope2.13-sandbox/bionic,bionic 2.13.22-1ubuntu1 all
zopfli/bionic 1.0.1+git160527-1 amd64
zoph/bionic,bionic 0.9.4-4 all
zpaq/bionic 1.10-3 amd64
zplug/bionic,bionic 2.4.2-1 all
zpspell/bionic 0.4.3-4.1build1 amd64
zram-config/bionic,bionic 0.5 all
zsh/bionic-updates,bionic-security 5.4.2-3ubuntu3.1 amd64
```

Q4)rpm -qa | wc -l.