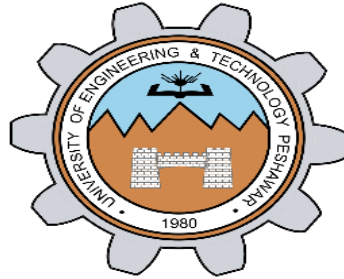


Lab report no 9



Fall 2022

Computer System Programming Lab

Submitted By

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Title: - “Depth-first and breadth-first traverse of directories and files”

Task no 1: -

In this task we implement Depth-first traverse of some directories and files from the root a directory as ‘sp’ as shown in the terminal.

Code: -

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

void listdir( char *name, int level)
{
    DIR *dir;
    struct dirent *entry;

    if (!(dir = opendir(name)))
        return;
    if (!(entry = readdir(dir)))
        return;

    do {
        if (entry->d_type == DT_DIR)
        {
            char path[1024];
            int len = snprintf(path, sizeof(path)-1, "%s/%s", name, entry->d_name);
            path[len] = 0;

            if (strcmp(entry->d_name, ".") == 0 || strcmp(entry->d_name, "..") == 0)
                continue;

            printf("%*s%s\n", level*2, "", entry->d_name);
            listdir(path, level + 1);
        }

        else{
            printf("%*s- %s\n", level*2, "", entry->d_name);
        }

    } while (entry = readdir(dir));
    closedir(dir);
}
```

```

}

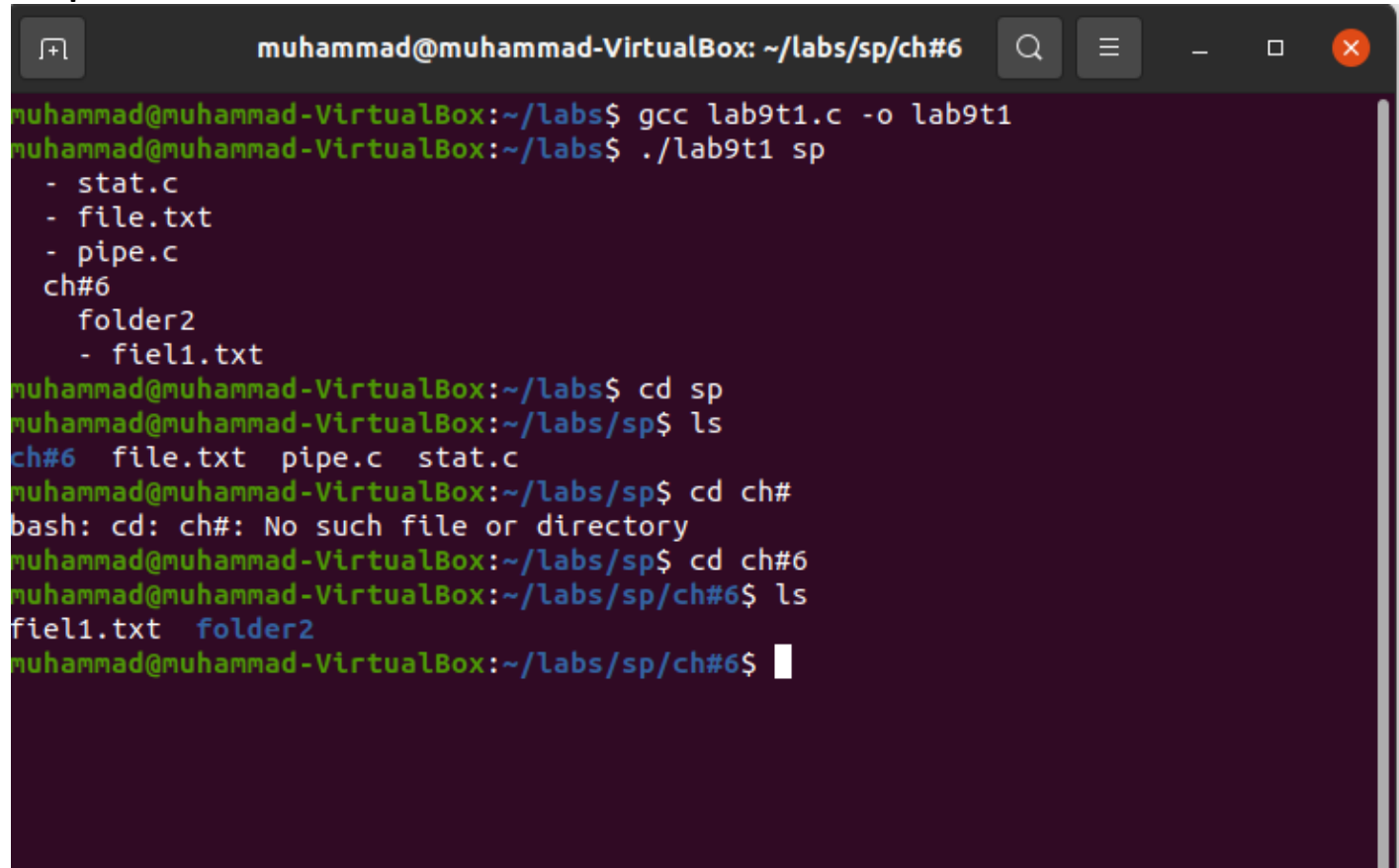
int main(int ar,char *v[] ){
    int a=1; //levels

    if (ar!=2){
        printf("error: no appropriate arguments...");
        return -1;
    }

    else{
        listdir(v[1],a);
    }
    return 0;
}

```

Output 1: -



```

muhammad@muhammad-VirtualBox: ~/labs/sp/ch#6
muhammad@muhammad-VirtualBox:~/labs$ gcc lab9t1.c -o lab9t1
muhammad@muhammad-VirtualBox:~/labs$ ./lab9t1 sp
- stat.c
- file.txt
- pipe.c
ch#6
  folder2
- fiel1.txt
muhammad@muhammad-VirtualBox:~/labs$ cd sp
muhammad@muhammad-VirtualBox:~/labs/sp$ ls
ch#6  file.txt  pipe.c  stat.c
muhammad@muhammad-VirtualBox:~/labs/sp$ cd ch#
bash: cd: ch#: No such file or directory
muhammad@muhammad-VirtualBox:~/labs/sp$ cd ch#6
muhammad@muhammad-VirtualBox:~/labs/sp/ch#6$ ls
fiel1.txt  folder2
muhammad@muhammad-VirtualBox:~/labs/sp/ch#6$

```

Task no 2: -

Here we implement breadth-first traversing in the loop which is visited on basis of different levels.

Code: -

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

void breadthfirst(char *dirname){

    struct dirent *ds;
    DIR *dr;
    struct stat buf;

    dr=opendir(dirname);

    if(dr==NULL)
    {
        printf("%s\n",dirname);
        perror("Failed to open dir\n");
    }
    chdir(dirname);

    while ((ds=readdir(dr))!=NULL){

        printf(" %s ",ds->d_name);

    }
    rewinddir(dr);
    while ((ds=readdir(dr))!=NULL)
    {
        printf("%s\n",ds->d_name);
        stat (ds->d_name,&buf);

        if(S_ISDIR(buf.st_mode)){
            if (ds->d_name[0]!='.'){
                breadthfirst(ds->d_name);
                chdir("../");
            }
        }
    }
}
```

```

}

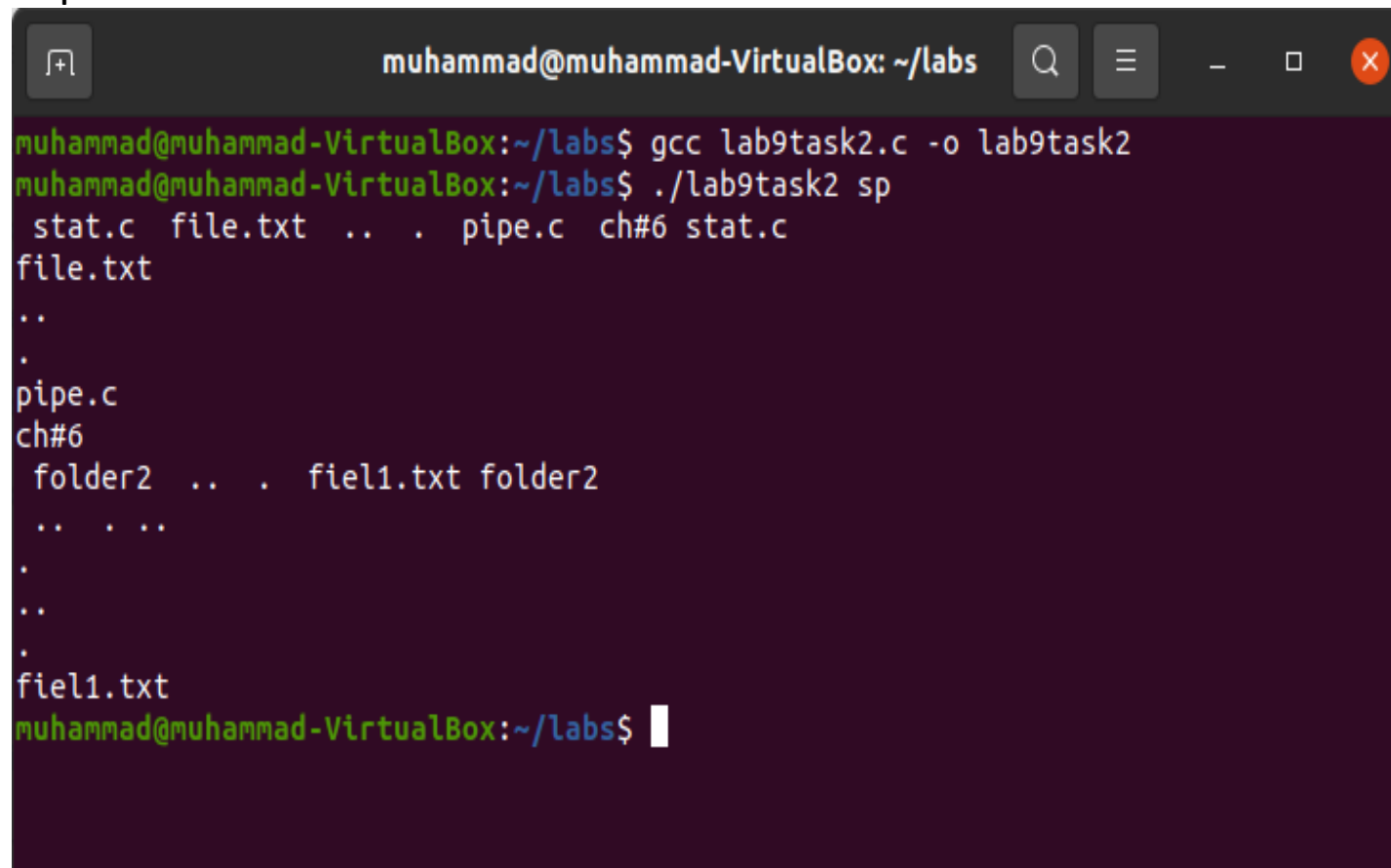
int main(int ar, char * v[]){

    if (ar!=2){
        printf("error: no appropriate arguments...");
        return -1;
    }

    else{
        breadthfirst(v[1]);
    }
    return 0;
}

```

Output 2: -



```

muhammad@muhammad-VirtualBox: ~/labs
muhammad@muhammad-VirtualBox:~/labs$ gcc lab9task2.c -o lab9task2
muhammad@muhammad-VirtualBox:~/labs$ ./lab9task2 sp
stat.c file.txt .. . pipe.c ch#6 stat.c
file.txt
..
.
pipe.c
ch#6
folder2 .. . fiel1.txt folder2
.. . .
.
..
.
fiel1.txt
muhammad@muhammad-VirtualBox:~/labs$

```

Task no 3: -

In this task we are searching a file during traversing (pfind command implementation).

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

```
void depthfirst(char *dirname,char * filename){

    struct dirent *ds;
    DIR *dr;
    struct stat buf;

    dr=opendir(dirname);

    if (dr==NULL){
        perror("failed to open: ");
    }
    chdir(dirname);

    while ((ds=readdir(dr))!=NULL){

        stat (ds->d_name,&buf);
        if (!strcmp(ds->d_name,filename)){
            printf(" file '%s' is available in given directry..\n",filename);
            exit(0);
        }

        if(S_ISDIR(buf.st_mode)){
            if (ds->d_name[0]!='.'){
                depthfirst(ds->d_name,filename);
                chdir("..");
            }
        }
    }
}
```

```

        closedir(dr);
    }

    int main(int ar, char * v[]){

        if (ar!=3){
            printf("program required two argument...");
        }

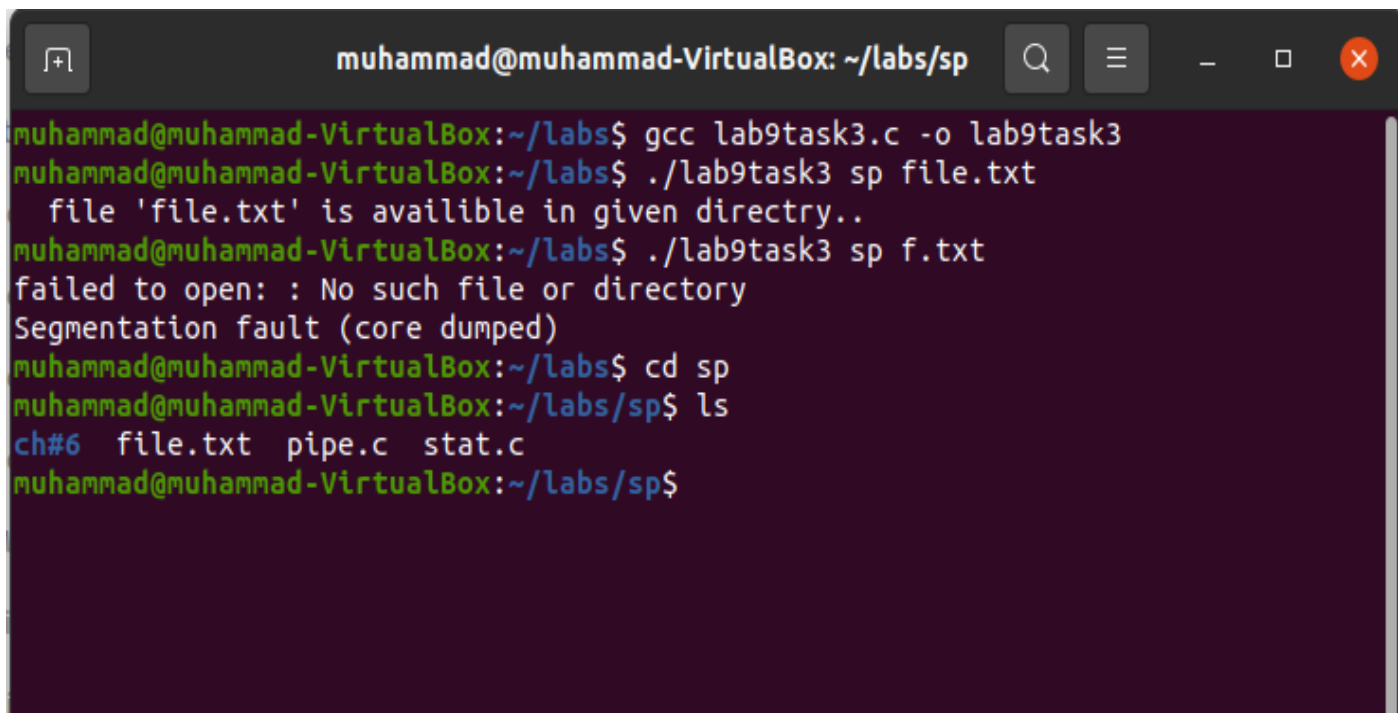
        else
        {
            depthfirst(v[1],v[2]);
        }

        depthfirst(v[1],v[2]);
        return 0;

    }

```

Output 3: -



```

muhammad@muhammad-VirtualBox: ~/labs/sp
muhammad@muhammad-VirtualBox:~/labs$ gcc lab9task3.c -o lab9task3
muhammad@muhammad-VirtualBox:~/labs$ ./lab9task3 sp file.txt
file 'file.txt' is available in given directry..
muhammad@muhammad-VirtualBox:~/labs$ ./lab9task3 sp f.txt
failed to open: : No such file or directory
Segmentation fault (core dumped)
muhammad@muhammad-VirtualBox:~/labs$ cd sp
muhammad@muhammad-VirtualBox:~/labs/sp$ ls
ch#6 file.txt pipe.c stat.c
muhammad@muhammad-VirtualBox:~/labs/sp$

```