

21BCE6061
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OS Lab – 3

Code -

```
//Used for basic input/output stream
#include <stdio.h>
//Used for handling directory files
#include <dirent.h>
//For EXIT codes and error handling
#include <errno.h>
#include <stdlib.h>

void _ls(const char *dir,int op_a,int op_l)
{
    //Here we will list the directory
    struct dirent *d;
    DIR *dh = opendir(dir);
    if (!dh)
    {
        if (errno = ENOENT)
        {
            //If the directory is not found
            perror("Directory doesn't exist");
        }
        else
        {
            //If the directory is not readable then throw error and exit
            perror("Unable to read directory");
        }
        exit(EXIT_FAILURE);
    }
    //While the next entry is not readable we will print directory files
    while ((d = readdir(dh)) != NULL)
    {
        //If hidden files are found we continue
        if (!op_a && d->d_name[0] == '.')
            continue;
        printf("%s ", d->d_name);
        if(op_l) printf("\n");
    }
    if(!op_l)
        printf("\n");
}

int main(int argc, const char *argv[])
{
    if (argc == 1)
    {
        _ls(".",0,0);
    }
    else if (argc == 2)
```

```

{
    if (argv[1][0] == '-')
    {
        //Checking if option is passed
        //Options supporting: a, l
        int op_a = 0, op_l = 0;
        char *p = (char*)(argv[1] + 1);
        while(*p){
            if(*p == 'a') op_a = 1;
            else if(*p == 'l') op_l = 1;
            else{
                perror("Option not available");
                exit(EXIT_FAILURE);
            }
            p++;
        }
        _ls(".",op_a,op_l);
    }
}
return 0;
}

```

Output

```

ex2@ilab-HP-Desktop-Pro-G2: ~/Desktop
File Edit View Search Terminal Help
compilation terminated.
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ gcc -o lc.out lc.c
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ ./lc.out
21BRS1166 21BCE1658 os 21BCE6061 insertion sort lc.c namaladir Desktop Merge Sort
21BAI1917 a namala7 Os Lab 2 - 5 May - 23 namala1 21brs127 lc.out usr namaladir2
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ ls
21BAI1917 21BRS1166 Desktop lc.out namala7 os
21BCE1658 21brs127 'insertion sort' 'Merge Sort' namaladir 'Os Lab 2 - 5 May - 23
'
21BCE6061 a lc.c namala1 namaladir2 usr
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ gcc -o lc.out lc.c
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ ./lc.out
21BRS1166 21BCE1658 os 21BCE6061 insertion sort lc.c namaladir Desktop Merge Sort
21BAI1917 a namala7 Os Lab 2 - 5 May - 23 namala1 21brs127 lc.out usr namaladir2
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ ./lc -l
bash: ./lc: No such file or directory
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ gcc lc.c -o hi
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ ./hi
21BRS1166 21BCE1658 os hi 21BCE6061 insertion sort lc.c namaladir Desktop Merge So
rt 21BAI1917 a namala7 Os Lab 2 - 5 May - 23 namala1 21brs127 lc.out usr namaladir
2
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$

```

Q – 2

Cat command

code -

```
#include <sys/types.h>
```

```
#include <sys/stat.h>
```

```
#include <stdio.h>
```

```
#include <fcntl.h>
```

```
#include <unistd.h>

int main(int argc, char *argv[])
{
    int fd, i;
    char buf[2];

    if (argc != 2) {
        printf("Usage: %s <filename>\n", argv[0]);
        return 1;
    }

    fd = open(argv[1], O_RDONLY);

    if (fd == -1) {
        perror("open");
        return 1;
    }

    while ((i = read(fd, buf, 1)) > 0) {
        printf("%c", buf[0]);
    }

    close(fd);

    return 0;
}
```

Output -

```
ex2@ilab-HP-Desktop-Pro-G2: ~/Desktop
File Edit View Search Terminal Help
cat.c:20:1: warning: implicit declaration of function 'close'; did you mean 'pclose'? [-Wimplicit-function-declaration]
 20 |   close(fd);
    |   ^~~~~
    |   pclose
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ gcc cat.c -o why
cat.c: In function 'main':
cat.c:23:17: warning: implicit declaration of function 'read'; did you mean 'fread'? [-Wimplicit-function-declaration]
 23 |     while ((i = read(fd, buf, 1)) > 0) {
    |                   ^~~~~
    |                   fread
cat.c:27:5: warning: implicit declaration of function 'close'; did you mean 'pclose'? [-Wimplicit-function-declaration]
 27 |     close(fd);
    |     ^~~~~
    |     pclose
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ gcc cat.c -o why
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ ./why
Usage: ./why <filename>
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ ./why hehe
VIT is the best
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$
```

Question – 3

code -

```
#include <stdio.h>
#include <string.h>

#define MAX_FILENAME_LENGTH 100
#define MAX_PATTERN_LENGTH 100
#define MAX_LINE_LENGTH 200

int main() {
    char filename[MAX_FILENAME_LENGTH], pattern[MAX_PATTERN_LENGTH],
line[MAX_LINE_LENGTH];
    FILE *fp;

    printf("Enter file name: ");
    scanf("%s", filename);

    printf("Enter the pattern to search: ");
    scanf("%s", pattern);

    fp = fopen(filename, "r");

    if (fp == NULL) {
        printf("Error: Unable to open file.\n");
        return 1;
    }

    while (fgets(line, sizeof(line), fp)) {
        if (strstr(line, pattern)) {
```

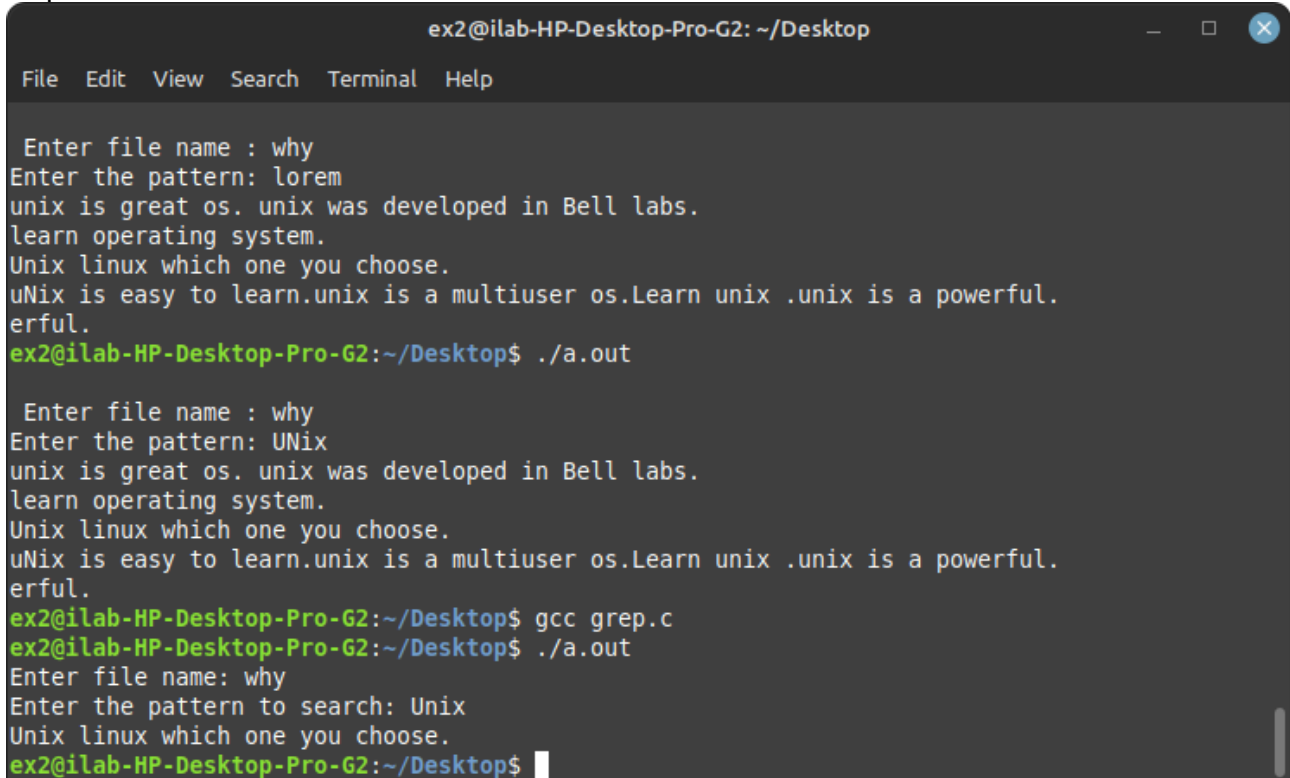
```

        printf("%s", line);
    }
}

fclose(fp);
return 0;
}

```

Ouput -



```

ex2@ilab-HP-Desktop-Pro-G2: ~/Desktop
File Edit View Search Terminal Help

Enter file name : why
Enter the pattern: lorem
unix is great os. unix was developed in Bell labs.
learn operating system.
Unix linux which one you choose.
uNix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
erful.
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ ./a.out

Enter file name : why
Enter the pattern: UNIX
unix is great os. unix was developed in Bell labs.
learn operating system.
Unix linux which one you choose.
uNix is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
erful.
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ gcc grep.c
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ ./a.out
Enter file name: why
Enter the pattern to search: Unix
Unix linux which one you choose.
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$

```

Question – 4

Code -

```
#include <stdio.h>
```

```

int main() {
    FILE *sourceFile, *targetFile;
    char sourcePath[100], targetPath[100];
    char buffer[1024];
    int numBytes;

    printf("Enter source file path: ");
    scanf("%s", sourcePath);

    printf("Enter target file path: ");
    scanf("%s", targetPath);

    // Open source file for reading
    sourceFile = fopen(sourcePath, "rb");
    if (sourceFile == NULL) {
        printf("Unable to open source file.\n");
        return 1;
    }
}

```

```

// Open target file for writing
targetFile = fopen(targetPath, "wb");
if (targetFile == NULL) {
    printf("Unable to create target file.\n");
    fclose(sourceFile);
    return 1;
}

// Copy contents from source to target file
while ((numBytes = fread(buffer, 1, sizeof(buffer), sourceFile)) > 0) {
    fwrite(buffer, 1, numBytes, targetFile);
}

// Close file pointers
fclose(sourceFile);
fclose(targetFile);

printf("File copied successfully.\n");

return 0;
}

```

Output -

```

ex2@ilab-HP-Desktop-Pro-G2: ~/Desktop
File Edit View Search Terminal Help
why/home/ex2/Desktop
Error: Unable to open source file. Press any key to exit...
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ gcc cp.c
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ ./a.out
Enter name of file to copy
home\ex2\Desktop\why
Error: Unable to open source file. Press any key to exit...
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ gcc cp.c
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ ./a.out
Enter name of file to copy
why.text
Error: Unable to open source file. Press any key to exit...
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ gcc cp.c
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ ./a.out
Enter source file path: hey
Enter target file path: why
File copied successfully.
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ gcc cp.c
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$ ./a.out
Enter source file path: why
Enter target file path: hey
File copied successfully.
ex2@ilab-HP-Desktop-Pro-G2:~/Desktop$

```