Lab-4 OS

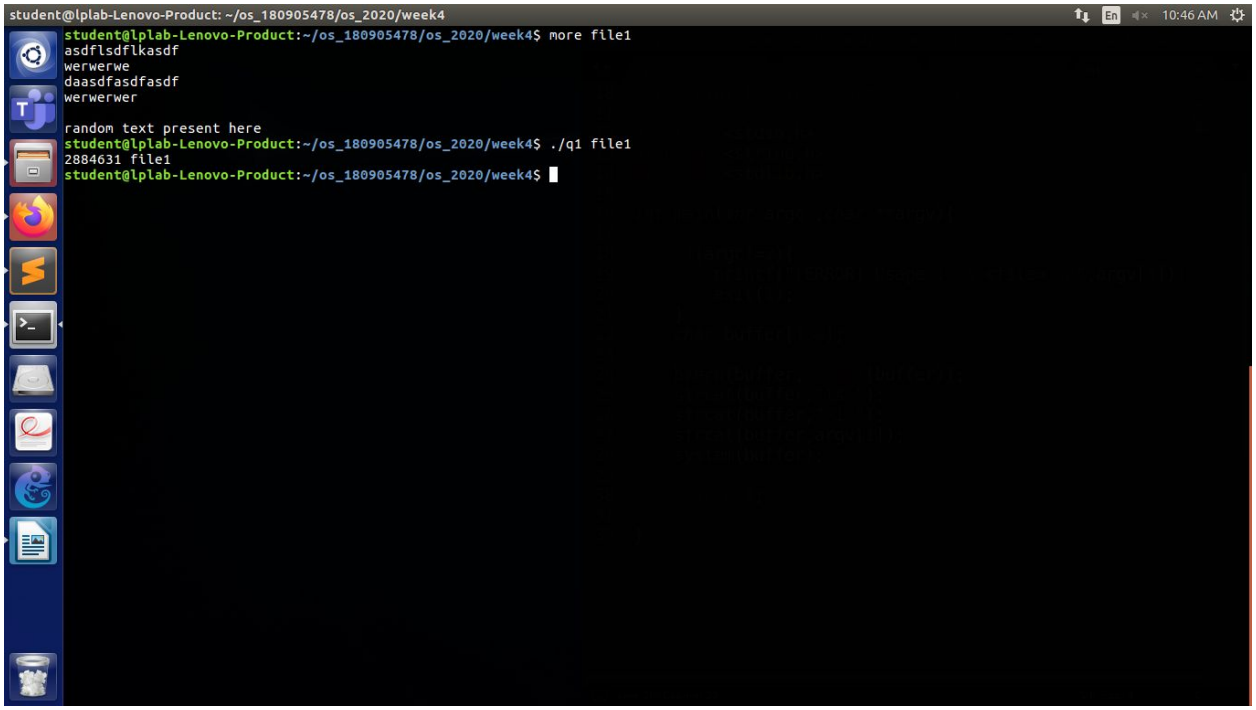
Name :Sagnik Chatterjee
Sec :B
SEM:5
RollNo :61
Reg :180905478

Q1
Write a program to find the inode number of an existing file in a directory. Take the input as a filename and print the inode number of the file
Code :

```
/*

AUTHOR :SAGNIK CHATTERJEE
DATE : 11 DEC,2020
USAGE : ./q1 q1file
where q1file is the input file

*/

//to print the inode number of the file

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

int main(int argc ,char **argv){

    if(argc!=2){
       printf("[ERROR] Usage : %s <file> \n",argv[0]);
       exit(1);
    }
    char buffer[100];

    bzero(buffer,sizeof(buffer));
    strcat(buffer,"ls ");
    strcat(buffer,"-i ");
```

```
    strcat(buffer,argv[1]);
    system(buffer);

    return 0;

}
```

Screenshot :



Q2

Write a program to print out the complete stat structure of a file.

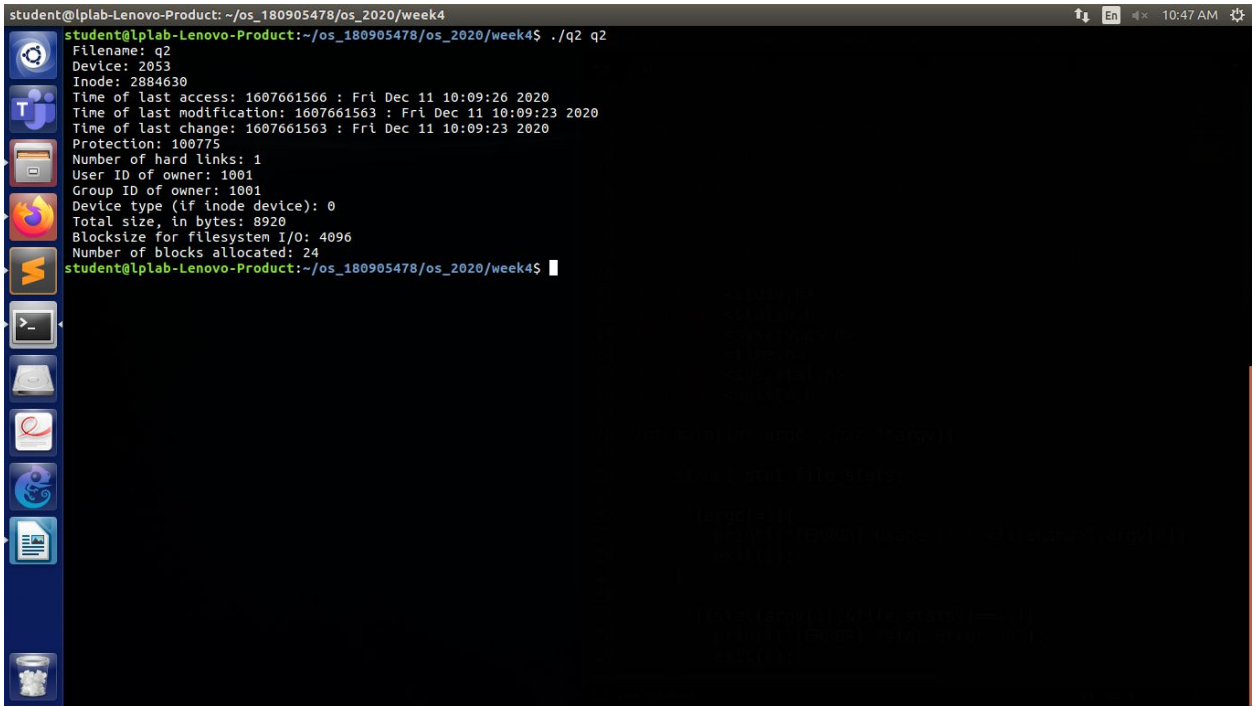
Code :

```
/*

AUTHOR :SAGNIK CHATTERJEE
DATE : 11 DEC,2020
USAGE : ./q2 file
where file is the input file

*/
//to print the complete stat structure of the file

#include <stdio.h>
```

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

int main(int argc ,char **argv){

    struct stat file_stats;

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

    if((stat(argv[1],&file_stats))==-1){
      printf("[ERROR] fstat error \n");
      exit(1);
    }
    print("[STATUS] File Reports :\n");
    printf(" Filename: %s\n", argv[1]);
    printf(" Device: %lld\n", file_stats.st_dev);
    printf(" Inode: %ld\n", file_stats.st_ino);
    printf(" Time of last access: %ld : %s", file_stats.st_atime,
ctime(&file_stats.st_atime));
    printf(" Time of last modification: %ld : %s",
file_stats.st_mtime, ctime(&file_stats.st_mtime));
    printf(" Time of last change: %ld : %s", file_stats.st_ctime,
ctime(&file_stats.st_ctime));
    printf(" Protection: %o\n", file_stats.st_mode);
    printf(" Number of hard links: %d\n", file_stats.st_nlink);
    printf(" User ID of owner: %d\n", file_stats.st_uid);
    printf(" Group ID of owner: %d\n", file_stats.st_gid);
    printf(" Device type (if inode device): %lld\n",
file_stats.st_rdev);
    printf(" Total size, in bytes: %ld\n", file_stats.st_size);
    printf(" Blocksize for filesystem I/O: %ld\n",
file_stats.st_blksize);
```

```
    printf(" Number of blocks allocated: %ld\n",
file_stats.st_blocks);

    return 0;
}
```

Screenshot :



Q3

Write a program to create a new hard link to an existing file and unlink the same. Accept the old path as input and print the newpath.

Code:

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

```
int main(int argv, char *argc[]) {

      char command[50] = "ls -il";
      printf("old path -> %s\n", argc[1]);
      link(argc[1], "link");
      system(command);
      printf("\n");
      unlink(argc[1]);
      system(command);

}
```

Screenshot:

Q4

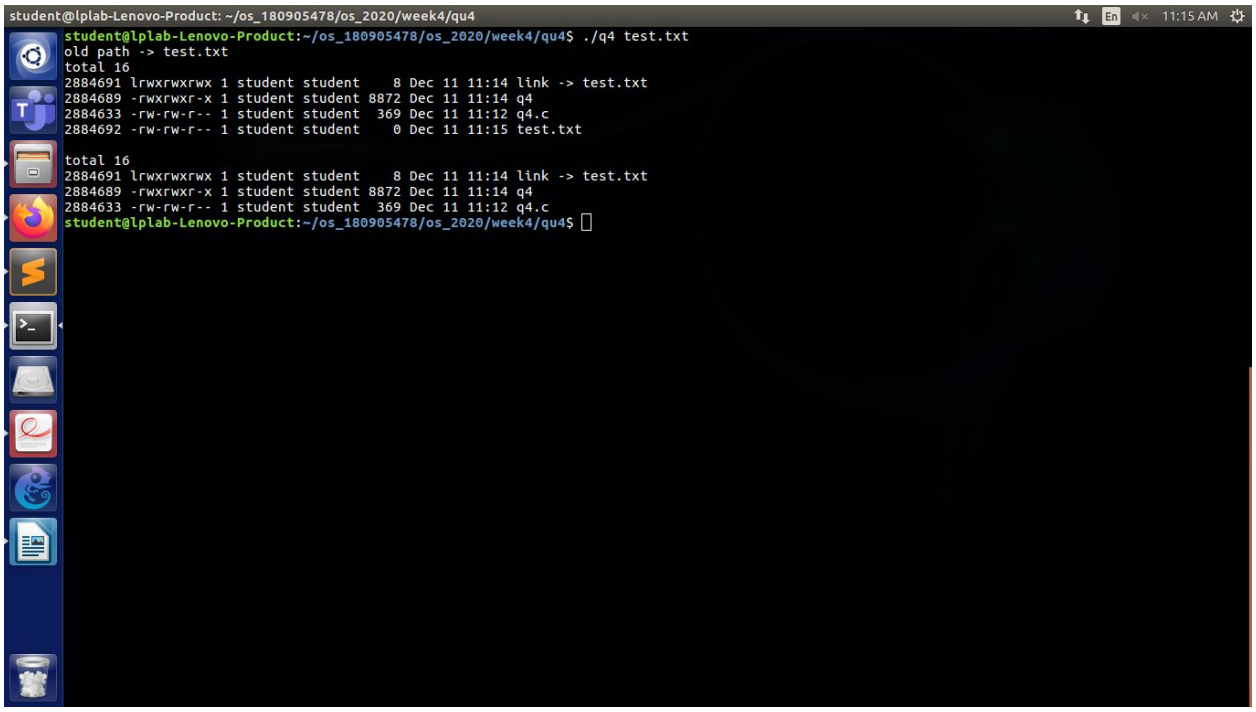
Write a program to create a new soft link to an existing file and unlink the same. Accept the old path as input and print the newpath.

Code:

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



int main(int argv, char *argc[]) {

      char command[50] = "ls -il";
      printf("old path -> %s\n", argc[1]);
      symlink(argc[1], "link");
      system(command);
   printf("\n");
      unlink(argc[1]);
      system(command);
```

}

Screenshot :


student@lplab-Lenovo-Product: ~/os_180905478/os_2020/week4/qu4
11:15 AM
student@lplab-Lenovo-Product:~/os_180905478/os_2020/week4/qu4$ ./q4 test.txt
old path -> test.txt
total 16
2884691 lrwxrwxrwx 1 student student 8 Dec 11 11:14 link -> test.txt
2884689 -rwxrwxr-x 1 student student 8872 Dec 11 11:14 q4
2884633 -rw-rw-r-- 1 student student 369 Dec 11 11:12 q4.c
2884692 -rw-rw-r-- 1 student student 0 Dec 11 11:15 test.txt
total 16
2884691 lrwxrwxrwx 1 student student 8 Dec 11 11:14 link -> test.txt
2884689 -rwxrwxr-x 1 student student 8872 Dec 11 11:14 q4
2884633 -rw-rw-r-- 1 student student 369 Dec 11 11:12 q4.c
student@lplab-Lenovo-Product:~/os_180905478/os_2020/week4/qu4$