

LAB04

WORK UPDATE

FILE MANAGEMENT AND INFORMATION RELATED SYSTEM CALLS

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CREATE A NEW FILE:

```
[s2019103562@centos8-linux Mon Mar 08 10:34 AM lab04]$ vim open.c
[s2019103562@centos8-linux Mon Mar 08 10:35 AM lab04]$ gcc open.c -o open
[s2019103562@centos8-linux Mon Mar 08 10:35 AM lab04]$ ./open
Created a new file
[s2019103562@centos8-linux Mon Mar 08 10:35 AM lab04]$ cat open.c
#include<unistd.h>
#include<fcntl.h>
#include<sys/stat.h>
#include<sys/types.h>
#include<stdio.h>
void main()
{
    int fd;
    fd=creat("newfile.txt",S_IRWXU);
    if(fd>0){
        printf("Created a new file\n");
    }
    else{
        printf("Unsuccessful\n");
    }
}
[s2019103562@centos8-linux Mon Mar 08 10:35 AM lab04]$
```

OPEN AN EXISTING FILE:

```
[s2019103562@centos8-linux Mon Mar 08 10:38 AM lab04]$ gcc opene.c -o opene
[s2019103562@centos8-linux Mon Mar 08 10:38 AM lab04]$ ./opene
3Successfully opened!
[s2019103562@centos8-linux Mon Mar 08 10:38 AM lab04]$ cat opene.c
#include<stdio.h>
#include<fcntl.h>
void main(){
    int fd=open("newfile.txt",O_RDONLY | O_CREAT);
    printf("%d",fd);
    if(fd!=-1){
        printf("Successfully opened!\n");
    }
    if(fd==-1){
        printf("Error in opening the file\n");
    }
}
[s2019103562@centos8-linux Mon Mar 08 10:38 AM lab04]$
```

CLOSE A FILE:

```
[s2019103562@centos8-linux Mon Mar 08 10:42 AM lab04]$ vim close.c
[s2019103562@centos8-linux Mon Mar 08 10:43 AM lab04]$ gcc close.c -o close
[s2019103562@centos8-linux Mon Mar 08 10:43 AM lab04]$ ./close
opened at 3[s2019103562@centos8-linux Mon Mar 08 10:43 AM lab04]$ cat close.c
#include<stdio.h>
#include<fcntl.h>
int close(int fd);
void main(){
    int fd=open("newfile.txt",O_RDONLY);
    if(fd<0){
        printf("Error in opening the file\n");
    }
    printf("opened at %d",fd);
    if(close(fd)<0){
        printf("Closing unsuccessful\n");
    }
    else if(close(fd)>0)
        printf("Closed successfully!");
}
[s2019103562@centos8-linux Mon Mar 08 10:43 AM lab04]$
```

WRITE TO A FILE:

```
[s2019103562@centos8-linux Mon Mar 08 10:51 AM lab04]$ vim write.c
[s2019103562@centos8-linux Mon Mar 08 10:53 AM lab04]$ gcc write.c -o write
[s2019103562@centos8-linux Mon Mar 08 10:53 AM lab04]$ ./write
10 bytes were written in 3[s2019103562@centos8-linux Mon Mar 08 10:53 AM lab04]$ cat newfile.txt
Hello All
[s2019103562@centos8-linux Mon Mar 08 10:53 AM lab04]$ cat write.c
#include<stdio.h>
#include<fcntl.h>
#include<string.h>
int close(int fd);
size_t write(int fd,void* buf,size_t cnt);
void main(){
    int s;
    int fd=open("newfile.txt",O_WRONLY | O_CREAT | O_TRUNC,0644);
    if(fd<0){
        printf("error in opening\n");
    }
    s=write(fd, "Hello All\n",strlen("Hello All\n"));
    printf("%d bytes were written in %d",s,fd);
    close(fd);
}
[s2019103562@centos8-linux Mon Mar 08 10:53 AM lab04]$
```

COPY THE CONTENTS OF ONE FILE TO ANOTHER:

```
[s2019103562@centos8-linux Mon Mar 08 11:50 AM lab04]$ vim Sample.txt
[s2019103562@centos8-linux Mon Mar 08 11:50 AM lab04]$ ./test Sample.txt Hello.txt
[s2019103562@centos8-linux Mon Mar 08 11:50 AM lab04]$ cat Hello.txt
Hi All
[s2019103562@centos8-linux Mon Mar 08 11:50 AM lab04]$ cat test.c
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<fcntl.h>
int close(int fd);
void main(int argc,char* argv[]){
    int fd1,fd2;
    char buf[1000];
    long int n;
    if(((fd1=open(argv[1],O_RDONLY))===-1) || ((fd2=open(argv[2],O_CREAT | O_WRONLY | O_TRUNC,0700))===-1)){
        printf("Error\n");
    }
    while((n=read(fd1,buf,1000))>0){
        if(write(fd2,buf,n)!=n){
            printf("Writing problem");
        }
    }
    close(fd1);
    close(fd2);
}
[s2019103562@centos8-linux Mon Mar 08 11:51 AM lab04]$ cat Sample.txt
Hi All
[s2019103562@centos8-linux Mon Mar 08 11:51 AM lab04]$
```

READ FROM A FILE:

```
[s2019103562@centos8-linux Mon Mar 08 10:57 AM lab04]$ vim read.c
[s2019103562@centos8-linux Mon Mar 08 10:58 AM lab04]$ gcc read.c -o read
[s2019103562@centos8-linux Mon Mar 08 10:58 AM lab04]$ ./read
10 bytes read from 3Read bytes:Hello All
[s2019103562@centos8-linux Mon Mar 08 10:58 AM lab04]$ cat read.c
#include<stdio.h>
#include<fcntl.h>
#include<stdlib.h>
int close(int fd);
size_t read(int fd,void* buf,size_t cnt);
void main(){
    int fd,s;
    char* c=(char*) malloc(100*sizeof(char));
    fd=open("newfile.txt",O_RDONLY);
    if(fd<0){
        printf("Error in opening the file\n");
    }
    s=read(fd,c,100);
    printf("%d bytes read from %d",s,fd);
    printf("Read bytes:%s",c);
    close(fd);
}
[s2019103562@centos8-linux Mon Mar 08 10:58 AM lab04]$
```

CREATE,WRITE:

```
[s2019103562@centos8-linux Mon Mar 08 10:25 AM lab04]$ vim open.c
[s2019103562@centos8-linux Mon Mar 08 10:25 AM lab04]$ gcc open.c -o open
[s2019103562@centos8-linux Mon Mar 08 10:25 AM lab04]$ ./open
Enter text to write to the file
Hello all
Hello all
[s2019103562@centos8-linux Mon Mar 08 10:25 AM lab04]$ cat file
Hello all
[s2019103562@centos8-linux Mon Mar 08 10:25 AM lab04]$ cat open.c
#include<unistd.h>
#include<fcntl.h>
#include<sys/stat.h>
#include<sys/types.h>
#include<stdio.h>
void main(){
    char buff[50];
    int n,fd;
    printf("Enter text to write to the file\n");
    n=read(0,buff,50);
    fd=open("file",O_CREAT | O_RDWR,0777);
    write(fd,buff,n);
    write(1,buff,n);
    int close(int fd);
}
[s2019103562@centos8-linux Mon Mar 08 10:26 AM lab04]$
```

REMOVE A FILE:

```
[s2019103562@centos8-linux Mon Mar 08 11:00 AM lab04]$ vim rmv.c
[s2019103562@centos8-linux Mon Mar 08 11:01 AM lab04]$ gcc rmv.c -o rmv
[s2019103562@centos8-linux Mon Mar 08 11:01 AM lab04]$ ./rmv
File deleted successfully
[s2019103562@centos8-linux Mon Mar 08 11:01 AM lab04]$ cat rmv.c
#include<stdio.h>
#include<fcntl.h>
int unlink(const char* pathname);
void main(){
    if(unlink("newfile.txt")==0){
        printf("File deleted successfully\n");
    }
    else
        printf("Error occured\n");
}
[s2019103562@centos8-linux Mon Mar 08 11:01 AM lab04]$
```

TIME:

CTIME()

```
[s2019103562@centos8-linux Mon Mar 08 11:01 AM lab04]$ vim time.c
[s2019103562@centos8-linux Mon Mar 08 11:04 AM lab04]$ gcc time.c -o time
[s2019103562@centos8-linux Mon Mar 08 11:04 AM lab04]$ ./time
Mon Mar  8 11:04:53 2021
[s2019103562@centos8-linux Mon Mar 08 11:04 AM lab04]$ cat time.c
#include<stdio.h>
#include<time.h>
void main(){
    time_t mytime;
    mytime=time(NULL);
    printf(ctime(&mytime));
}
[s2019103562@centos8-linux Mon Mar 08 11:04 AM lab04]$
```

SET DATE AND TIME:

```
[s2019103562@centos8-linux Mon Mar 08 12:42 PM lab04]$ cat settime.c
#include<stdio.h>
#include<time.h>
void main(){
    struct tm str_t;
    time_t timeofday;
    str_t.tm_year=2021-1900;
    str_t.tm_mon=02;
    str_t.tm_mday=8;
    str_t.tm_hour=11;
    str_t.tm_min=10;
    str_t.tm_sec=5;
    str_t.tm_isdst=0;
    timeofday=mktime(&str_t);
    printf("Date and time is:\n");
    printf(ctime(&timeofday));
}
[s2019103562@centos8-linux Mon Mar 08 12:42 PM lab04]$ ./settime
Date and time is:
Mon Mar  8 11:10:05 2021
[s2019103562@centos8-linux Mon Mar 08 12:43 PM lab04]$
```

DIFFTIME:

```
[s2019103562@centos8-linux Mon Mar 08 11:09 AM lab04]$ vim difftime.c
[s2019103562@centos8-linux Mon Mar 08 11:11 AM lab04]$ gcc difftime.c -o difftime
[s2019103562@centos8-linux Mon Mar 08 11:11 AM lab04]$ vim difftime.c
[s2019103562@centos8-linux Mon Mar 08 11:11 AM lab04]$ gcc difftime.c -o difftime
[s2019103562@centos8-linux Mon Mar 08 11:11 AM lab04]$ ./difftime
Amount of time used by the program snippet is 1615182121 seconds
[s2019103562@centos8-linux Mon Mar 08 11:12 AM lab04]$ cat difftime.c
#include<stdio.h>
#include<time.h>
void main(){
    time_t st,end;
    st=time(NULL);
    int n;
    for(int i=0;i<100000;i++){
        n=n*i;
    }
    end=time(NULL);
    printf("Amount of time used by the program snippet is %ld seconds\n",difftime(st,end));
}
[s2019103562@centos8-linux Mon Mar 08 11:12 AM lab04]$
```

WAIT:

```
[s2019103562@centos8-linux Mon Mar 08 11:14 AM lab04]$ vim wait.c
[s2019103562@centos8-linux Mon Mar 08 11:14 AM lab04]$ gcc wait.c -o wait
[s2019103562@centos8-linux Mon Mar 08 11:14 AM lab04]$ ./wait
Start the wait
End the wait[s2019103562@centos8-linux Mon Mar 08 11:14 AM lab04]$ cat wait.c
#include<stdio.h>
#include<time.h>
#define CLK_TICK 10
void wait(int sec){
    clock_t end_wait;
    end_wait=clock()+sec*CLK_TICK;
    while(clock(<end_wait){
    }
}
void main(){
    printf("Start the wait\n");
    wait(10);
    printf("End the wait");
}
[s2019103562@centos8-linux Mon Mar 08 11:14 AM lab04]$
```

STRFTIME,ASCTIME,LOCALTIME:

```
[s2019103562@centos8-linux Mon Mar 08 11:20 AM lab04]$ vim time2.c
[s2019103562@centos8-linux Mon Mar 08 11:20 AM lab04]$ ./time2
Mon Mar 8 11:20:55 2021

Today is Monday,Mar,08
Time is 11:20:am
[s2019103562@centos8-linux Mon Mar 08 11:20 AM lab04]$ cat time2.c
#include<stdio.h>
#include<time.h>
#define LEN 150
char buf[LEN];
void main(){
    struct tm* localtimeans;
    time_t curtime;
    curtime=time(NULL);
    localtimeans=localtime(&curtime);
    printf("%s\n",asctime(localtimeans));
    strftime(buf,LEN,"Today is %A,%b,%d\n",localtimeans);
    fputs(buf,stdout);
    strftime(buf,LEN,"Time is %I:%M:%P\n",localtimeans);
    fputs(buf,stdout);
}
[s2019103562@centos8-linux Mon Mar 08 11:21 AM lab04]$
```

FORK:

```
[s2019103562@centos8-linux Mon Mar 08 02:52 PM ~]$ vim fork.c
[s2019103562@centos8-linux Mon Mar 08 02:53 PM ~]$ gcc fork.c -o fork
[s2019103562@centos8-linux Mon Mar 08 02:54 PM ~]$ ./fork
My id is 1760665:
I am the parent
Outside
My id is 1760666:
I am the parent
Outside
My id is 1760664:
I am the parent
My id is 1760667:
I am the parent
Hello
Outside
Hello
Outside
Hello
Outside
Hello
Outside
Hello
Outside
```

```
[s2019103562@centos8-linux Mon Mar 08 02:54 PM ~]$ cat fork.c
#include<stdio.h>
#include<stdlib.h>
#include<sys/types.h>
#include<unistd.h>
void main(){
    pid_t p=fork();
    fork();
    printf("My id is %d:\n",getpid());
    if(getpid(>0)
        printf("I am the parent\n");
    else if(getpid()==0)
        printf("I am the child\n");
    else
        printf("Error\n");
    if(p>0){
        fork();
        printf("Hello\n");
    }
    printf("Outside\n");
}
[s2019103562@centos8-linux Mon Mar 08 02:54 PM ~]$
```

ALARM:

```
[s2019103562@centos8-linux Mon Mar 08 02:59 PM ~]$ vim alarm.c
[s2019103562@centos8-linux Mon Mar 08 02:59 PM ~]$ gcc alarm.c -o alarm
[s2019103562@centos8-linux Mon Mar 08 02:59 PM ~]$ ./alarm
Inside main function
Inside main function
Inside handler function
Inside main function
Inside main function
Inside main function
```

```
[s2019103562@centos8-linux Mon Mar 08 03:00 PM ~]$ cat alarm.c
#include<stdio.h>
#include<unistd.h>
#include<signal.h>
void sig_handler(int signum){
    printf("Inside handler function\n");
}
void main(){
    signal(SIGALRM,sig_handler);
    alarm(2);
    for(int i=1;i<=5;i++){
        printf("Inside main function\n");
        sleep(1);
    }
}

[s2019103562@centos8-linux Mon Mar 08 03:00 PM ~]$
```

```
[s2019103562@centos8-linux Mon Mar 08 03:00 PM ~]$ vim snooze.c
[s2019103562@centos8-linux Mon Mar 08 03:05 PM ~]$ gcc snooze.c -o snooze
[s2019103562@centos8-linux Mon Mar 08 03:05 PM ~]$ ./snooze
Inside main function
Inside handler function
Inside main function
Inside handler function
Inside main function
Inside handler function
Inside main function
Inside handler function
Inside main function
Inside handler function
[s2019103562@centos8-linux Mon Mar 08 03:05 PM ~]$ cat snooze.c
#include<stdio.h>
#include<unistd.h>
#include<signal.h>
void sig_handler(int signum){
    if(signum==SIGALRM){
        printf("Inside handler function\n");
        alarm(2);
    }
    if(signum==SIGINT){
        printf("Snoozing for 5 seconds..\n");
        alarm(5);
    }
}
void main(){
    signal(SIGALRM,sig_handler);
    signal(SIGINT,sig_handler);
    alarm(2);
    for(int i=1;i<=5;i++){
        printf("Inside main function\n");
        pause();
    }
}

[s2019103562@centos8-linux Mon Mar 08 03:05 PM ~]$
```

LSEEK:

```
[s2019103562@centos8-linux Mon Mar 08 03:20 PM ~]$ vim lseek.c
[s2019103562@centos8-linux Mon Mar 08 03:21 PM ~]$ gcc lseek.c -o lseek
[s2019103562@centos8-linux Mon Mar 08 03:21 PM ~]$ ./lseek
Hello All.I am Priyadharsini. I have created[s2019103562@centos8-linux Mon Mar 08 03:21 PM ~]$ cat lseek.c
#include<stdio.h>
#include<sys/types.h>
#include<unistd.h>
#include<fcntl.h>
void main(){
    int fd;
    char buff[100];
    fd=open("Sample.txt",O_RDWR);
    if(fd==-1)
        printf("Error in opening the file\n");
    read(fd,buff,20);
    write(1,buff,20);
    lseek(fd,5,SEEK_CUR);
    read(fd,buff,20);
    write(1,buff,20);
}

[s2019103562@centos8-linux Mon Mar 08 03:22 PM ~]$ cat Sample.txt
Hello All.I am Priyadharsini. I have created a sample file to display the working of lseek.
[s2019103562@centos8-linux Mon Mar 08 03:22 PM ~]$
```

STAT:

```
[s2019103562@centos8-linux Mon Mar 08 03:34 PM ~]$ vim stat.c
[s2019103562@centos8-linux Mon Mar 08 03:35 PM ~]$ gcc stat.c -o stat
[s2019103562@centos8-linux Mon Mar 08 03:35 PM ~]$ ./stat
Permissions:100644
Group id:1006
User id:1226
Recent modified time:1615195825
Recent accessed time:1615195840
Size of the file in bytes:258
Id of the device in which we have the file:64770
[s2019103562@centos8-linux Mon Mar 08 03:35 PM ~]$ cat stat.c
#include<stdio.h>
#include<sys/stat.h>
void main(){
    struct stat sfile;
    stat("alarm.c",&sfile);
    printf("Permissions:%o\n",sfile.st_mode);
    printf("Group id:%ld\n",sfile.st_gid);
    printf("User id:%ld\n",sfile.st_uid);
    printf("Recent modified time:%d\n",sfile.st_mtime);
    printf("Recent accessed time:%d\n",sfile.st_atime);
    printf("Size of the file in bytes:%d\n",sfile.st_size);
    printf("Id of the device in which we have the file:%d\n",sfile.st_dev);
}

[s2019103562@centos8-linux Mon Mar 08 03:35 PM ~]$ █
```

PIPE:

```
[s2019103562@centos8-linux Mon Mar 08 03:42 PM ~]$ vim pipe.c
[s2019103562@centos8-linux Mon Mar 08 03:42 PM ~]$ gcc pipe.c -o pipe
[s2019103562@centos8-linux Mon Mar 08 03:42 PM ~]$ ./pipe
Hello World #1
Hello World #2
Hello World #3
[s2019103562@centos8-linux Mon Mar 08 03:42 PM ~]$ cat pipe.c
#include<stdio.h>
#include<unistd.h>
#include<stdlib.h>
void main(){
    char buf[30];
    char* msg1="Hello World #1";
    char* msg2="Hello World #2";
    char* msg3="Hello World #3";
    int p[2],i;
    if(pipe(p)<0)
        exit(1);
    write(p[1],msg1,30);
    write(p[1],msg2,30);
    write(p[1],msg3,30);
    for(i=0;i<3;i++){
        read(p[0],buf,30);
        printf("%s\n",buf);
    }
}

[s2019103562@centos8-linux Mon Mar 08 03:42 PM ~]$
```


MKDIR:

```
[s2019103562@centos8-linux Mon Mar 08 03:49 PM ~]$ gcc mkdir.c -o mkdir
[s2019103562@centos8-linux Mon Mar 08 03:49 PM ~]$ .mkdir
bash: .mkdir: command not found...
Similar command is: 'mkdir'
[s2019103562@centos8-linux Mon Mar 08 03:49 PM ~]$ mv mkdir.c dir.c
[s2019103562@centos8-linux Mon Mar 08 03:49 PM ~]$ gcc dir.c -o dir
[s2019103562@centos8-linux Mon Mar 08 03:49 PM ~]$ ./dir
Directory created successfully!
[s2019103562@centos8-linux Mon Mar 08 03:49 PM ~]$ cat dir.c
#include<sys/stat.h>
#include<sys/types.h>
#include<stdio.h>
void main(){
    if(mkdir("Lab05",0777)==-1)
        printf("Error");
    else
        printf("Directory created successfully!\n");
}
[s2019103562@centos8-linux Mon Mar 08 03:49 PM ~]$ ls
alarm  dir  fork  lab01  lab03  Lab05  lseek.c  oradiag_s2019103562  pipe.c  snooze  stat
alarm.c  dir.c  fork.c  lab02  lab04  lseek  mkdir  pipe      Sample.txt  snooze.c  stat.c
[s2019103562@centos8-linux Mon Mar 08 03:49 PM ~]$
```

CHDIR:

```
[s2019103562@centos8-linux Mon Mar 08 03:56 PM lab04]$ vim mod.c
[s2019103562@centos8-linux Mon Mar 08 03:57 PM lab04]$ gcc mod.c -o mod
[s2019103562@centos8-linux Mon Mar 08 03:57 PM lab04]$ ./mod
/home/s2019103562/lab04
/home/s2019103562
[s2019103562@centos8-linux Mon Mar 08 03:57 PM lab04]$ cat mod.c
#include<sys/types.h>
#include<sys/stat.h>
#include<stdio.h>
#include<unistd.h>
void main(){
    char s[100];
    printf("%s\n",getcwd(s,100));
    chdir("..");
    printf("%s\n",getcwd(s,100));
}
[s2019103562@centos8-linux Mon Mar 08 03:57 PM lab04]$
```

ACCESS:

```
[s2019103562@centos8-linux Mon Mar 08 04:25 PM lab04]$ vim access.c
[s2019103562@centos8-linux Mon Mar 08 04:26 PM lab04]$ gcc access.c -o access
[s2019103562@centos8-linux Mon Mar 08 04:26 PM lab04]$ ./access
File exists
Readable file
Writable file
Executable file
```

```
[s2019103562@centos8-linux Mon Mar 08 04:26 PM lab04]$ cat access.c
#include<sys/types.h>
#include<sys/stat.h>
#include<stdio.h>
#include<unistd.h>
#include<fcntl.h>
void main(){
    int fd=access("difftime.c",F_OK);
    if(fd==-1){
        printf("Error:File does not exists\n");
    }
    else{
        printf("File exists\n");
    }
    int fd1=access("difftime.c",R_OK);
    if(fd1==-1){
        printf("Error:File is not a readable one\n");
    }
    else
        printf("Readable file\n");
    int fd2=access("difftime.c",W_OK);
    if(fd2==-1)
    {
        printf("Error:File is not a writable file\n");
    }
    else
        printf("Writable file\n");
    int fd3=access("difftime.c",X_OK);
    if(fd3==-1){
        printf("Error:File is not an executable file\n");
    }
    else
        printf("Executable file\n");
}
```

```
[s2019103562@centos8-linux Mon Mar 08 04:26 PM lab04]$
```
