Operating system

Lab # 07

Submitted by:

Sawaira Saeed

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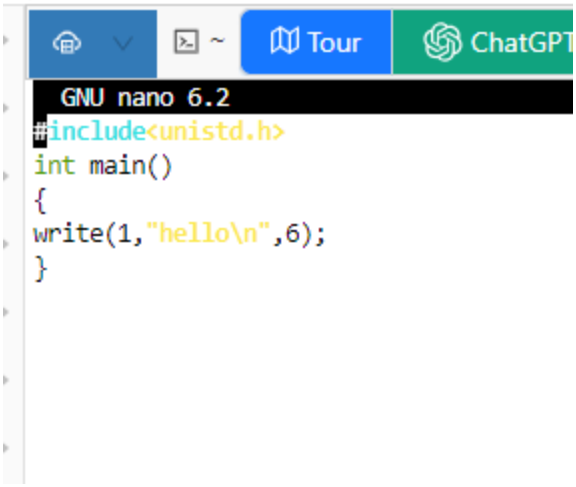
Submitted to:

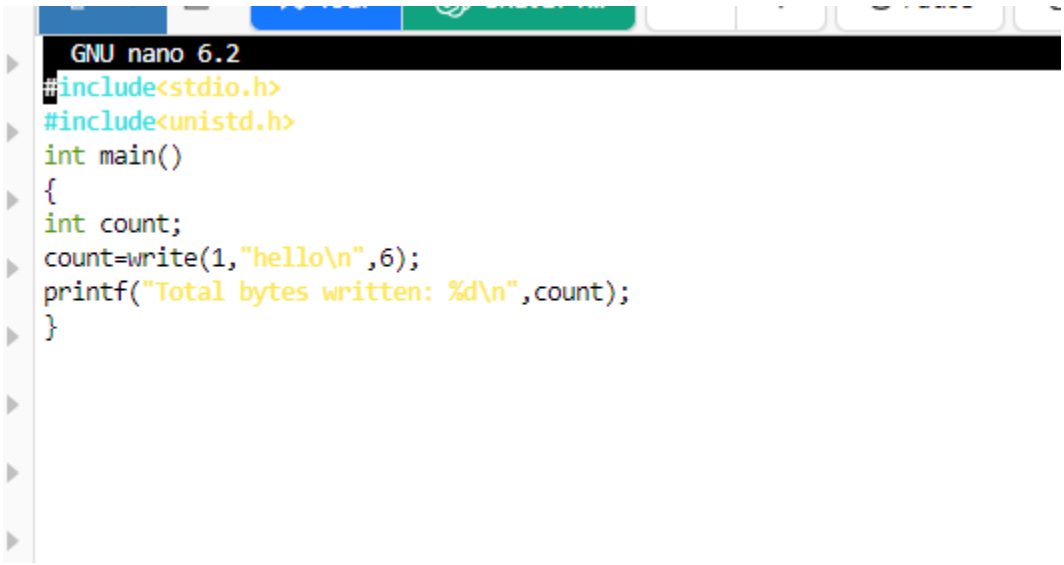
Sir Shahzad

Practice:

```
~$ touch sawaira.c
~$ nano sawaira.c
~$ touch lab7.c
~$ nano lab7.c
~$ gcc lab7.c
~$ ./a.out
hello
~$
```




```
~$ touch sawaira.c
~$ nano sawaira.c
~$ touch lab7.c
~$ nano lab7.c
~$ gcc lab7.c
~$ ./a.out
hello
~$ nano lab7.c
~$ touch prp.c
~$ nano prp.c
~$ gcc prp.c
~$ ./a.out
hello
Total bytes written: 6
~$
```



Error:

```
Total bytes written: 6
~$ nano prp.c
~$ touch err.c
~$ nano err.c
~$ gcc err.c
err.c: In function ‘main’:
err.c:5:1: error: ‘parameter’ undeclared (first use in this function)
    5 | parameter
      | ^~~~~~~~~
err.c:5:1: note: each undeclared identifier is reported only once for each function it appears in
err.c:5:10: error: expected ‘;’ before ‘}’ token
    5 | parameter
      |          ^
      |          ;
    6 | }
      | ~
~$
```


```
      |          ;
    6 | }
      | ~
~$ nano err1.c
~$ gcc err1.c
~$ ./a.out
hel~$
```

```
 GNU nano 6.2
#include<unistd.h>
int main()
{
write(1,"hello\n",3);
}
```

```
~$ nano err1.c
~$ gcc err1.c
~$ ./a.out
hel~$ nano err1.c
~$ touch err2.c
~$ nano err2.c
~$ gcc err2.c
~$ ./a.out
Total bytes written: -1
~$
```

```
 GNU nano 6.2
#include<unistd.h>
#include<stdio.h>

int main()
{
int count;
count=write(3,"hello\n",6);
printf("Total bytes written: %d\n",count);
}
```

Practice Programs on write()/read() system call

Q1. Write a program to read a maximum of 15 characters from the user and print them on the screen.

```
~$ touch tt.c
~$ nano tt.c
~$ gcc tt.c
~$ ./.aout
bash: ./.aout: No such file or directory
~$ ./a.out
qwertyuiopasddfgg
qwertyuiopasddf~$ gg
bash: gg: command not found
~$
```

Tour ChatGPT...

```
 GNU nano 6.2
#include<stdio.h>
#include<unistd.h>
int main()
{

int nread;
char buff[20];
nread=read(0,buff,15);
write(1,buff,nread);
}
```

Q2. Write a program to print the count of characters read by the read() system call.

```
~$ nano rr.c
~$ gcc rr.c
~$ ./a.out
hyjkiwbgthjklps
Total bytes written: 16
~$
```

```
 GNU nano 6.2
#include<unistd.h>
#include<stdio.h>
int main()
{
int count;
char buff[50];
count=read(0,buff,30);
printf("Total bytes written: %d\n",count);
}
```

Practice Program on open() system call

Q1. Write a program to read the contents of file F1 into file F2. The contents of file F2 should not get deleted or overwritten.

hint: use O_APPEND flag

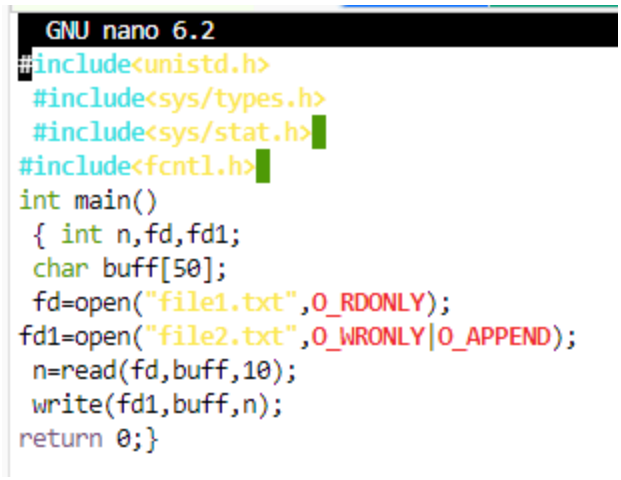
File1.txt:

```
 GNU nano 6.2
his is file1
```

File2.txt:

```
this is file2
```

File.c:




```
#include<unistd.h>
 #include<sys/types.h>
 #include<sys/stat.h>
#include<fcntl.h>
int main()
 { int n,fd,fd1;
 char buff[50];
 fd=open("file1.txt",O_RDONLY);
fd1=open("file2.txt",O_WRONLY|O_APPEND);
 n=read(fd,buff,10); write(fd1,buff,n);}
```

output:

```
~$ cat file1.txt
this is file1
~$ cat file2.txt
this is file2

~$ gcc file2.c
~$ ./a.out
~$ cat file2.txt
this is file2

~$ nano file2.c
~$ gcc file2.c
~$ ./a.out
~$ cat file2.txt
this is file2

this is fi~$
```

Q2. Write a program using open() system call to copy the contents of one file into another file.

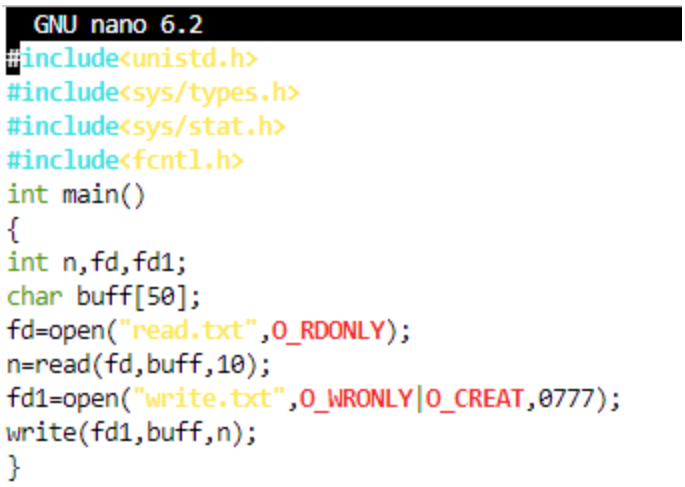
Read.txt:

```
  GNU nano 6.2
this is file read.txt
```

Write.txt:

```
  GNU nano 6.2
this is file write.txt
```

Read.c:



GNU nano 6.2

read.c

```
#include<unistd.h>
#include<sys/types.h>
#include<sys/stat.h>
#include<fcntl.h>
int main()
{
int n,fd,fd1;
char buff[50];
fd=open("read.txt",O_RDONLY);
n=read(fd,buff,10);
fd1=open("write.txt",O_WRONLY|O_CREAT,0777);
write(fd1,buff,n);
}
```

Output:

```
~$ cat>>read.txt
this is file read.txt
~$ touch read.c
~$ nano read.c
~$ cat>>write.txt
this is file write.txt~$ gcc read.c
~$ ./a.out
~$ cat write.txt
this is file write.txt~$ nano read.txt
```

Practice Programs on lseek() system call:

Pre-requisite: Create a file “seeking” and write

“1234567890abcdefghijxxxxxxxxxx” into it.

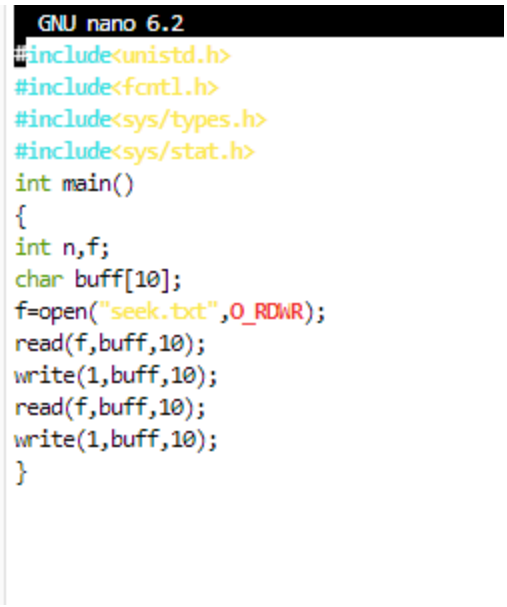
Program1: Program using lseek() system call that reads 10 characters from file “seeking” and print on screen. Again read 10 characters and write on screen.

Seek.txt :

```
  GNU nano 6.2
1
2
3
4
5
6
7
8
9
0
a
b
c
d
e
f
g
h
i
j

*
**
*
*
```

Seek.c:



include<unistd.h>

#include<fcntl.h>

#include<sys/types.h>

#include<sys/stat.h>

int main()

{

int n,f;

char buff[10];

f=open("seek.txt",O_RDWR);

read(f,buff,10);

write(1,buff,10);

read(f,buff,10);

write(1,buff,10);

}

Output:

```
*~$ touch seek.c
~$ nano seek.c
~$ gcc seek.c
~$ ./a.out
1
2
3
4
5
6
7
8
9
0
```

Program2: Program using lseek() system call that reads 10 characters from file "seeking" and print on screen. Skip next 5 characters and again read 10 characters and write on screen.

Seek.txt:

```
  GNU nano 6.2
1
2
3
4
5
6
7
8
9
0
a
b
c
d
e
f
g
h
i
j

*
**
*
*
```

Seek2.txt:

```
  GNU nano 6.2
#include<unistd.h>
#include<fcntl.h>
#include<sys/types.h>
#include<sys/stat.h>
int main()
{
int n,f;
char buff[10];
f=open("seek.txt",O_RDWR);
read(f,buff,10);
write(1,buff,10);
lseek(f,5,SEEK_CUR);//skips 5 characters from the current position
read(f,buff,10);
write(1,buff,10);
}
```

#include<unistd.h>

#include<fcntl.h>

#include<sys/types.h>

#include<sys/stat.h>

int main()

{

int n,f;

char buff[10];

f=open("seek.txt",O_RDWR);

read(f,buff,10);

write(1,buff,10);

lseek(f,5,SEEK_CUR);//skips 5 characters from the current position

read(f,buff,10);

```
write(1,buff,10);
}
```

Output:

```
~$ touch seek2.c
~$ nano seek2.c
~$ gcc seek2.c
~$ ./a.out
1
2
3
4
5

9
0
a
b
c~$ nano seek2.c
```