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Operating Systems Lab 1 Roll number 59

Sample Program

```
#include <stdio.h>

#include <stdlib.h>

#include <sys/stat.h>

#include <fcntl.h>

#include <stdlib.h>

#include <unistd.h>


int main(){

    char c;

    int in, out;

    char buffer[128];

    int nread;

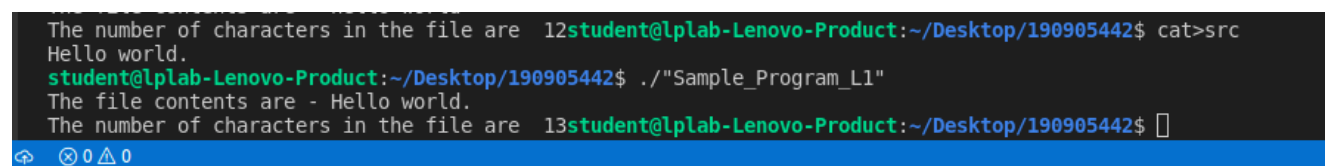
    in=open("src",O_RDWR);

    nread=read(in,buffer,128);

    printf("The file contents are - %sThe number of characters in the file are %d", buffer,nread);

    exit(0);

}
```

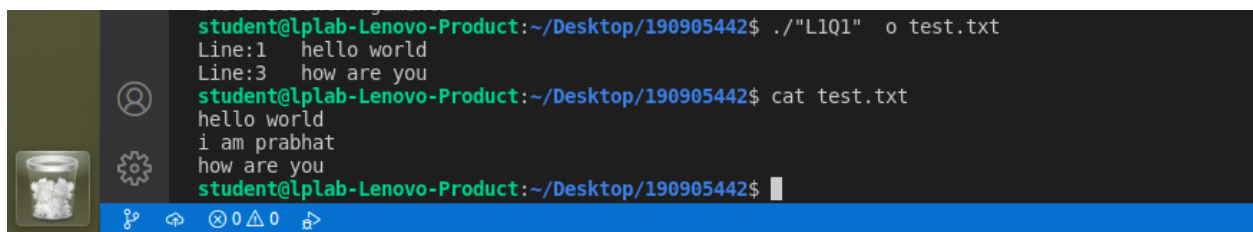
A terminal window with a dark background and a blue status bar at the bottom. The status bar shows icons for a terminal, a search icon, and a refresh icon, followed by the text "0 0 0". The terminal output shows the execution of the program. The first line is "The number of characters in the file are 12", followed by the prompt "student@lplab-Lenovo-Product:~/Desktop/190905442\$ cat>src". The second line is "Hello world.", followed by the prompt "student@lplab-Lenovo-Product:~/Desktop/190905442\$./\"Sample_Program_L1\"". The third line is "The file contents are - Hello world.", followed by the prompt "student@lplab-Lenovo-Product:~/Desktop/190905442\$". The fourth line is "The number of characters in the file are 13", followed by the prompt "student@lplab-Lenovo-Product:~/Desktop/190905442\$". The prompt is followed by a cursor icon.

```
The number of characters in the file are 12student@lplab-Lenovo-Product:~/Desktop/190905442$ cat>src
Hello world.
student@lplab-Lenovo-Product:~/Desktop/190905442$ ./\"Sample_Program_L1\"
The file contents are - Hello world.
The number of characters in the file are 13student@lplab-Lenovo-Product:~/Desktop/190905442$
```


Q1.

```
#include <stdio.h>
#include <unistd.h>
#include <sys/stat.h>
#include <fcntl.h>
#include <stdlib.h>
#include <string.h>
int main(int argc, char *argv[])
{
    int sfd, i = 0, lineNo = 0;
    char ch[100], chr;
    if(argc != 3){
        printf("Insufficient Arguments\n");
        exit(1);
    }
    if((sfd=open(argv[2],O_RDONLY)) == -1){
        printf("File not found\n");
        exit(1);
    }
    while((read(sfd,&chr,1)) > 0)
    {
        if(chr != '\n'){
            ch[i]=chr;
            i++;
        }
        else{
            lineNo++;
        }
    }
}
```

```
ch[i]='\0';  
  
i=0;  
  
if(strstr(ch,argv[1]) != NULL)  
    printf("Line:%d \t %s \n", lineNo, ch);  
  
}  
  
}  
  
exit(0);  
  
}
```

A terminal window titled "student@lplab-Lenovo-Product" with a dark background. The prompt is "~/Desktop/190905442\$". The user enters the command `./"L1Q1" o test.txt`, and the output shows "Line:1 hello world" and "Line:3 how are you". The user then enters `cat test.txt`, and the output shows "hello world", "i am prabhat", and "how are you". The terminal has a blue status bar at the bottom with icons for search, back, forward, and other navigation controls.

```
student@lplab-Lenovo-Product:~/Desktop/190905442$ ./"L1Q1" o test.txt  
Line:1  hello world  
Line:3  how are you  
student@lplab-Lenovo-Product:~/Desktop/190905442$ cat test.txt  
hello world  
i am prabhat  
how are you  
student@lplab-Lenovo-Product:~/Desktop/190905442$
```

Q2

```
#include <stdio.h>

#include <unistd.h>

#include <sys/stat.h>

#include <fcntl.h>

#include <stdlib.h>

#include <string.h>

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

    int sfd,sfd2,i=0,k=0,p=0;

    char ch[100],ch2[100],chr;

    if(argc!=3){

        write(2,"Insufficient Arguments\n",24);

        exit(1);

    }

    if( (sfd=open(argv[1],O_RDONLY))==-1){

        write(2,"File not found\n",15);

        exit(1);

    }

    while((read(sfd,&chr,1))>0){

        if(chr!='\n'){

            ch[i]=chr;

            i++;

        }

        else{

            k++;

            p++;

            ch[i]='\0';

            i=0;

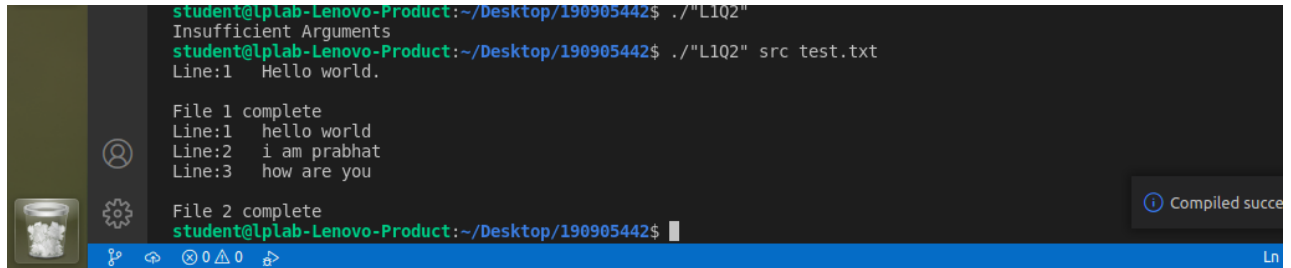
            printf("Line:%d \t %s \n", p,ch);
```

```

        if(k==20){
            fgetc(stdin);
            k=0;
        }
    }
}
write(2,"\nFile 1 complete\n",18);
close(sfd);
if( (sfd2=open(argv[2],O_RDONLY))==-1){
    write(2,"File not found\n",16);
    exit(1);
}
p=0;
while((read(sfd,&chr,1))>0){
    if(chr!='\n'){
        ch2[i]=chr;
        i++;
    }
    else{
        k++;
        p++;
        ch[i]='\0';
        i=0;
        printf("Line:%d \t %s \n", p,ch2);
        if(k==20){
            fgetc(stdin);
            k=0;
        }
    }
}

```

```
}  
  
write(2, "\nFile 2 complete\n", 18);  
  
exit(0);  
  
}
```

A terminal window with a dark background and green text. The prompt is 'student@lplab-Lenovo-Product:~/Desktop/190905442\$'. The first command './"L1Q2"' results in an error 'Insufficient Arguments'. The second command './"L1Q2" src test.txt' runs successfully, outputting 'Line:1 Hello world.' followed by a blank line, then 'File 1 complete', and then the contents of 'src test.txt': 'Line:1 hello world', 'Line:2 i am prabhat', and 'Line:3 how are you'. This is followed by another blank line, then 'File 2 complete', and finally the prompt again. A notification bubble on the right says 'Compiled succe'. The terminal has a sidebar on the left with icons for a user, settings, and a file manager.

```
student@lplab-Lenovo-Product:~/Desktop/190905442$ ./"L1Q2"  
Insufficient Arguments  
student@lplab-Lenovo-Product:~/Desktop/190905442$ ./"L1Q2" src test.txt  
Line:1 Hello world.  
  
File 1 complete  
Line:1 hello world  
Line:2 i am prabhat  
Line:3 how are you  
  
File 2 complete  
student@lplab-Lenovo-Product:~/Desktop/190905442$
```

Q3.

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

```
#include<stdlib.h>
```

```
#include<errno.h>
```

```
int main(){
```

```
    int n = 60;
```

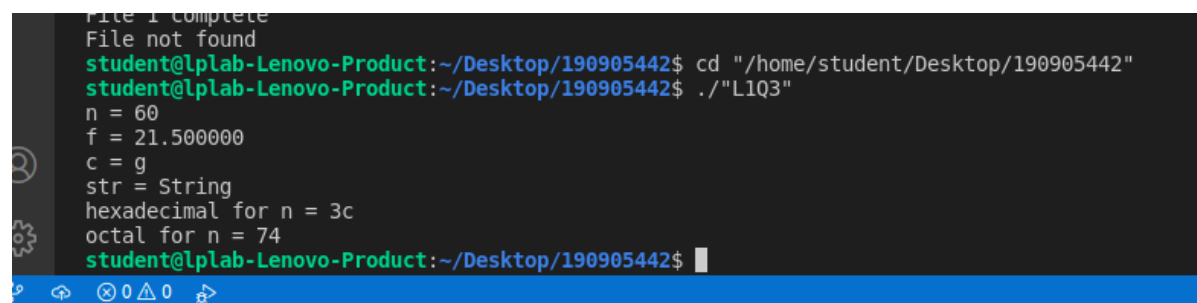
```
    float f = 21.5;
```

```
    char c = 'g';
```

```
    char str[] = "String";
```

```
    printf("n = %d \nf = %f \nc = %c \nstr = %s \nhexadecimal for n = %x \noctal for n = %o\n", n, f, c, str, n, n);
```

```
}
```

A terminal window with a dark background and light blue text. The prompt is 'student@lplab-Lenovo-Product:~/Desktop/190905442\$'. The user enters 'cd "/home/student/Desktop/190905442"' and then './"L1Q3"'. The output shows the values of variables n, f, c, and str, followed by their hexadecimal and octal representations. The prompt is then shown again with a cursor.

```
File 1 complete
File not found
student@lplab-Lenovo-Product:~/Desktop/190905442$ cd "/home/student/Desktop/190905442"
student@lplab-Lenovo-Product:~/Desktop/190905442$ ./"L1Q3"
n = 60
f = 21.500000
c = g
str = String
hexadecimal for n = 3c
octal for n = 74
student@lplab-Lenovo-Product:~/Desktop/190905442$
```


Q4

```
#include <stdio.h>

#include <unistd.h>

#include <sys/stat.h>

#include <fcntl.h>

#include <stdlib.h>

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

    if(argc!=3){

        write(2,"Insufficient Arguments\n",25);

        exit(1);

    }

    int c;

    FILE *in, *out;

    in = fopen("first.txt","r");

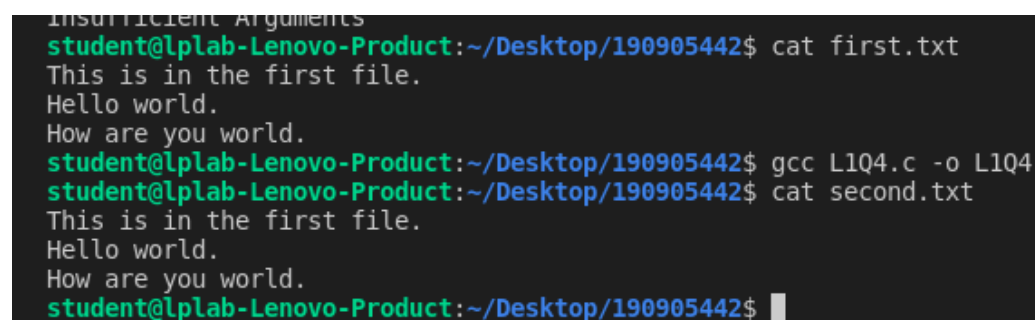
    out = fopen("second.txt","w");

    while((c = fgetc(in)) != EOF)

        fputc(c,out);

    exit(0);

}
```

A terminal window with a dark background and green text. It shows the execution of a C program. The first command is 'cat first.txt', which outputs 'This is in the first file.', 'Hello world.', and 'How are you world.'. The second command is 'gcc L1Q4.c -o L1Q4'. The third command is 'cat second.txt', which outputs the same three lines as the first command. The prompt is 'student@lplab-Lenovo-Product:~/Desktop/190905442\$'.

```
Insufficient Arguments
student@lplab-Lenovo-Product:~/Desktop/190905442$ cat first.txt
This is in the first file.
Hello world.
How are you world.
student@lplab-Lenovo-Product:~/Desktop/190905442$ gcc L1Q4.c -o L1Q4
student@lplab-Lenovo-Product:~/Desktop/190905442$ cat second.txt
This is in the first file.
Hello world.
How are you world.
student@lplab-Lenovo-Product:~/Desktop/190905442$
```

0 0 0