

Assignment-VName: Amiya ChowdhuryRoll: 122CS0067Date: 09/09/2024

1. Write a program to implement a two-way continuous chat between two separately executing processes.

lab5_1w.c

```
#include <stdio.h>
#include <sys/types.h>
#include <sys/stat.h>
#include <fcntl.h>
#include <string.h>

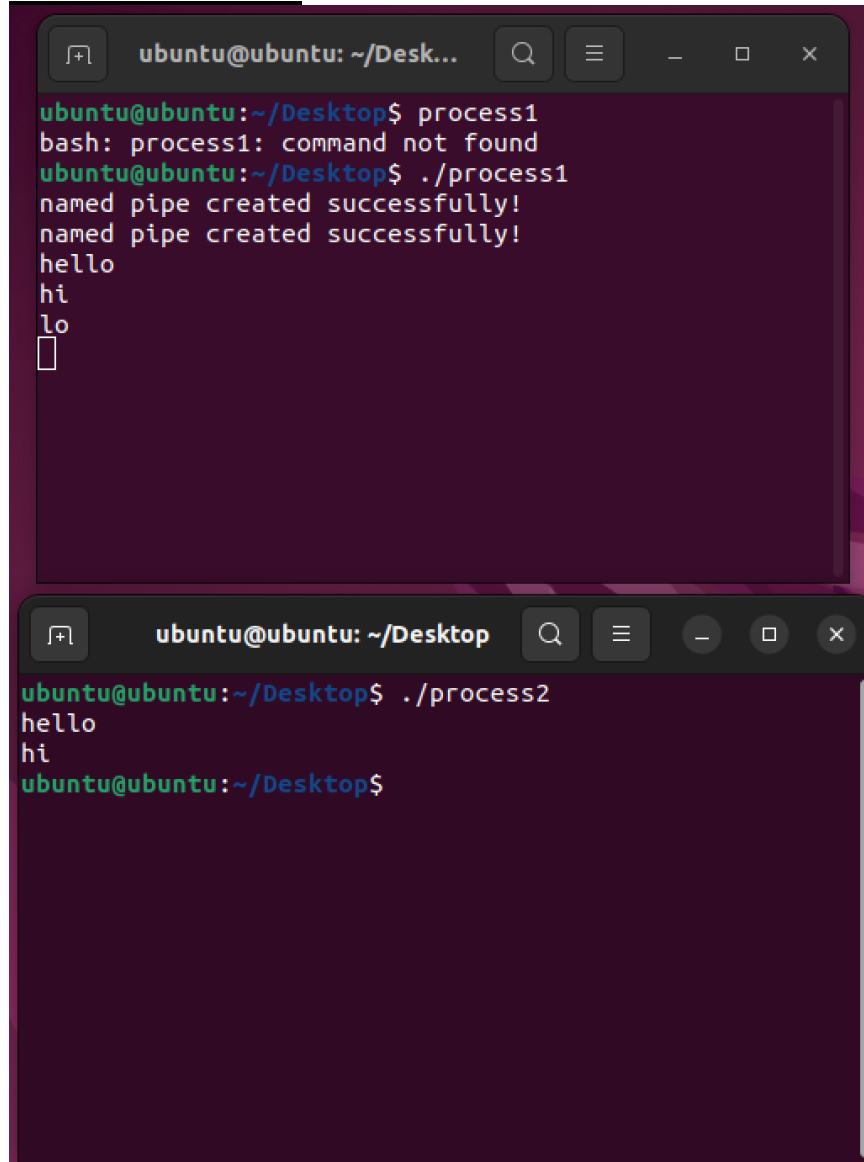
int main(){
    int res;
    char buffer[50];
    //first file
    res=mknfifo("fifo1",0777);
    if(res==0) printf("named pipe created successfully!\n");
    //second
    res=mknfifo("fifo2",0777);
    if(res==0) printf("named pipe created successfully!\n");
    //opening
    int n,fd,fd2;
    fd=open("fifo1",O_WRONLY);
    fd2=open("fifo2",O_RDONLY);
    while(1){
        fgets(buffer, 50, stdin);
        n=write(fd,buffer,strlen(buffer));
        //
        n=read(fd2,buffer,50);
        if(n) printf("%s",buffer);

    }
    return 0;
}
```

lab5_1r.c

```
#include <stdio.h>
#include <sys/types.h>
#include <sys/stat.h>
#include <fcntl.h>
int main(){
    int res;
    char buffer[50];
    //first
    res=mknfifo("fifo1",0777);
    if(res==0) printf("named pipe created successfully!\n");
    //second
    res=mknfifo("fifo2",0777);
    if(res==0) printf("named pipe created successfully!\n");
    //open
    int n,fd,fd2;
    fd=open("fifo1",O_RDONLY);
    fd2=open("fifo2",O_WRONLY);
    while(1){
        n=read(fd,buffer,50);
        if(n) printf("%s",buffer);
        if(strcmp(buffer,"exit")==0)break;
    }
}
```

```
//  
fgets(buffer, 50, stdin);  
n=write(fd2,buffer,strlen(buffer));  
return 0;  
}  
}  
}
```

Terminal Screenshot:

The image shows two terminal windows. The top window, titled 'ubuntu@ubuntu: ~/Desk...', shows the execution of 'process1'. The command 'process1' is not found, but './process1' runs successfully, creating a named pipe and outputting 'hello', 'hi', and 'lo' on separate lines. The bottom window, titled 'ubuntu@ubuntu: ~/Desktop', shows the execution of './process2', which outputs 'hello' and 'hi' on separate lines.

```
ubuntu@ubuntu: ~/Desk...  
ubuntu@ubuntu:~/Desktop$ process1  
bash: process1: command not found  
ubuntu@ubuntu:~/Desktop$ ./process1  
named pipe created successfully!  
named pipe created successfully!  
hello  
hi  
lo  
[ ]  
  
ubuntu@ubuntu: ~/Desktop  
ubuntu@ubuntu:~/Desktop$ ./process2  
hello  
hi  
ubuntu@ubuntu:~/Desktop$
```

2. Write a program that demonstrates non-blocking I/O with FIFOs. One process writes to the FIFO, while another process reads from it in a non-blocking manner.

lab5_2r.c

```
#include <stdio.h>
#include <sys/types.h>
#include <sys/stat.h>
#include <fcntl.h>
int main(){
    int res;
    char buffer[50];
//first
    res=mknfif("fifo1",0777);
    if(res==0) printf("named pipe created successfully!\n");
//open
    int n,fd;
    fd=open("fifo1",O_RDONLY);
    while(1){
        n=read(fd,buffer,50);
        if(n) printf("%s",buffer);
    }
    return 0;
}
```

lab5_2w.c

```
#include <stdio.h>
#include <sys/types.h>
#include <sys/stat.h>
#include <fcntl.h>
#include <string.h>

int main(){
    int res;
    char buffer[50];
//first file
    res=mknfif("fifo1",0777);
    if(res==0) printf("named pipe created successfully!\n");

//opening
    int n,fd;
    fd=open("fifo1",O_WRONLY);

    while(1){
        fgets(buffer, 50, stdin);
        n=write(fd,buffer,strlen(buffer));
    }
    return 0;
}
```

Terminal Screenshot:

```

ubuntu@ubuntu: ~/Desk...
ubuntu@ubuntu:~/Desktop$ ./writer
Sending first message
hello
time

ubuntu@ubuntu:~/Desktop$ ./reader
Sending first message
hello
g first message
time
g first message

```

3. Write a program where multiple child processes write data to a single FIFO, and a parent process reads the data from the FIFO.

lab5_3.c

```

#include <stdio.h>
#include <sys/types.h>
#include <sys/stat.h>
#include <fcntl.h>
#include <string.h>
#include <unistd.h>

int main(){
    int res;
    char buffer[50];
    //first file
    res=mknfif("fifo1",0777);
    if(res==0) printf("named pipe created successfully!\n");
    int a=fork();
    int b=fork();
    //opening
    if(a>0 && b>0){
        int n,fd;
        fd=open("fifo1",O_RDONLY|O_NONBLOCK);
        while(1){
            n=read(fd,buffer,50);
            if(n) printf("%s",buffer);
        }
    }

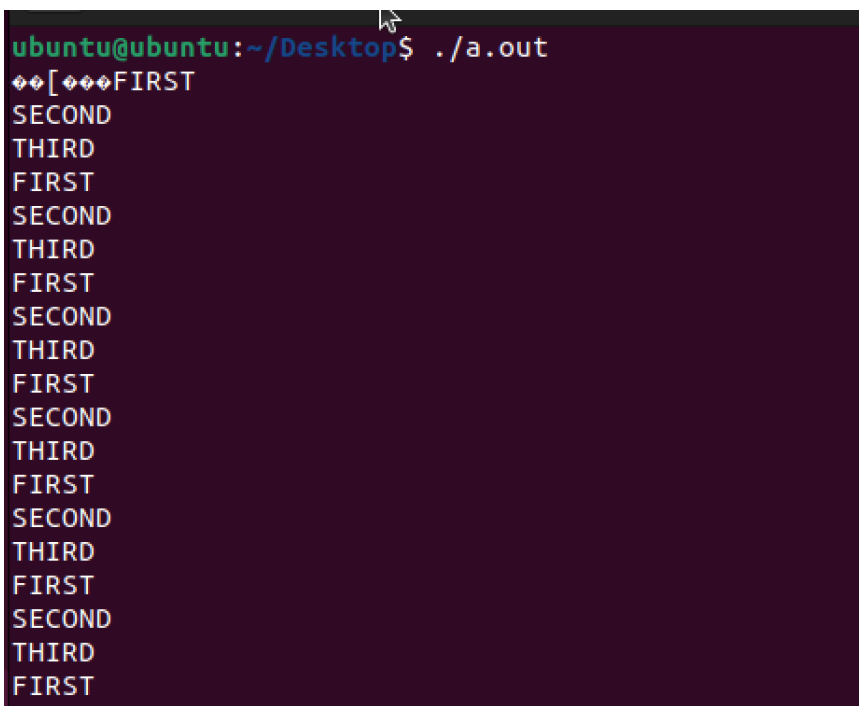
    else if(a==0 && b>0){
        int n,fd;
        fd=open("fifo1",O_WRONLY);
        n=write(fd,"FIRST\n",6);
    }
}

```

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```
    }  
else if(a>0 && b==0){  
    int n,fd;  
    fd=open("fifo1",O_WRONLY);  
    n=write(fd,"SECOND\n",7);  
  
    }  
else if(a==0 && b==0){  
    int n,fd;  
    fd=open("fifo1",O_WRONLY);  
    n=write(fd,"THIRD\n",8);  
    }  
  
    return 0;  
}
```

Terminal Screenshot:



```
ubuntu@ubuntu:~/Desktop$ ./a.out  
FIRST  
SECOND  
THIRD  
FIRST  
SECOND  
THIRD  
FIRST  
SECOND  
THIRD  
FIRST  
SECOND  
THIRD  
FIRST  
SECOND  
THIRD  
FIRST
```