

Q1)

Code

Producer

```
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<sys/types.h>
#include<limits.h>
#include<fcntl.h>
#include<sys/msg.h>
#include<sys/stat.h>
#include<string.h>
#define FIFO_NAME "my_fifo"
#define BUFFER_SIZE 1000

int main(int argc, char *argv[]){
    int pipe_fd;
    int res;
    int open_mode=O_RDONLY;
    int n=0;
    char buffer[BUFFER_SIZE+1];
    memset(buffer,'\0',sizeof(buffer));

    printf("Process %d opening FIFO O_RDONLY\n",getpid());
    pipe_fd=open(FIFO_NAME,open_mode);
    printf("Process %d result %d\n",getpid(),pipe_fd);
    if (pipe_fd!=-1){
        do{
            res=read(pipe_fd,buffer,BUFFER_SIZE);
            printf("%s\n",buffer );
            n++;
        }while(n<4);
        (void)close(pipe_fd);
    }
    else
        exit(EXIT_FAILURE);
    printf("Process %d Finished, %d bytes read\n",getpid(),n );
    exit(EXIT_SUCCESS);
}
```

## Consumer

```
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<sys/types.h>
#include<limits.h>
#include<fcntl.h>
#include<sys/msg.h>
#include<sys/stat.h>
#include<string.h>
#define FIFO_NAME "my_fifo"
#define BUFFER_SIZE 1000

int main(int argc, char *argv[]){
    int pipe_fd;
    int res;
    int open_mode=O_RDONLY;
    int n=0;
    char buffer[BUFFER_SIZE+1];
    memset(buffer,'\0',sizeof(buffer));

    printf("Process %d opening FIFO O_RDONLY\n",getpid());
    pipe_fd=open(FIFO_NAME,open_mode);
    printf("Process %d result %d\n",getpid(),pipe_fd);
    if (pipe_fd!=-1){
        do{
            res=read(pipe_fd,buffer,BUFFER_SIZE);
            printf("%s\n",buffer );
            n++;
        }while(n<4);
        (void)close(pipe_fd);
    }
    else
        exit(EXIT_FAILURE);
    printf("Process %d Finished, %d bytes read\n",getpid(),n );
    exit(EXIT_SUCCESS);
}
```

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Output

Producer window

```
student@dslab: ~/180905350/os/lab5
File Edit View Search Terminal Help
student@dslab:~/180905350/os/lab5$ cc p1p.c -o p1p.o
student@dslab:~/180905350/os/lab5$ ./p1p.o
Process 14163 opening FIFO O_WRONLY
Process 14163 result 3
Enter 4 numbers
10
14
7
2
Process 14163 Finished
student@dslab:~/180905350/os/lab5$
```

Consumer Window

```
student@dslab: ~/180905350/os/lab5
File Edit View Search Terminal Help
student@dslab:~/180905350/os/lab5$ cc p1p.c -o p1p.o
student@dslab:~/180905350/os/lab5$ ./p1p.o
Process 14163 opening FIFO O_WRONLY
Process 14163 result 3
Enter 4 numbers
10
14
7
2
Process 14163 Finished
student@dslab:~/180905350/os/lab5$
```

Q2)

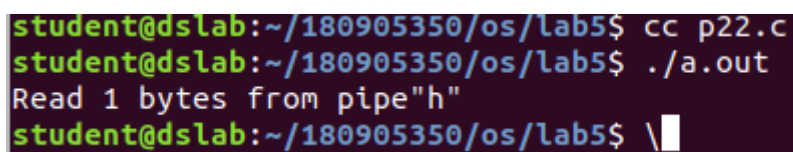
Code

```
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<sys/types.h>
#include<sys/ipc.h>
#include<sys/msg.h>
#include<string.h>

int main(int argc, char *argv[]){
    int n;
    int fd[2];
    char buf[1025];
    char *data="hello this is sample data";
    pipe(fd);
    write(fd[1],data,strlen(data));
    if(n=read(fd[0],buf,1024)>=0){
        buf[n]=0;
        printf("Read %d bytes from pipe\"%s\"\\n",n,buf);

    }
    else
        perror("read");
    exit(0);
}
```

Output



```
student@dslab:~/180905350/os/lab5$ cc p22.c
student@dslab:~/180905350/os/lab5$ ./a.out
Read 1 bytes from pipe"h"
student@dslab:~/180905350/os/lab5$ \
```

Q3)

Code

user1

```
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<sys/types.h>
#include<limits.h>
#include<fcntl.h>
#include<sys/msg.h>
#include<sys/stat.h>
#include<string.h>
#define FIFO_NAME "my_fifo33"
#define BUFFER_SIZE 10000

int main(int argc, char *argv[]){
    int pipe_fd;
    int res;
    int open_mode1=O_WRONLY;
    int open_mode2=O_RDONLY;
    int n=0;
    char buffer[BUFFER_SIZE+1];
    if(access(FIFO_NAME,F_OK)==-1){
        res=mknod(FIFO_NAME,0777);
        if(res!=0){
            fprintf(stderr, "Could not create file%s\n",FIFO_NAME );
            exit(EXIT_FAILURE);
        }
    }
    printf("You can start chatting with user2 now\n");
    while(1){
        pipe_fd=open(FIFO_NAME,open_mode1);
        printf("\nEnter Text to send User2: ");
        fgets(buffer,BUFFER_SIZE,stdin);
        res=write(pipe_fd,buffer,BUFFER_SIZE);

        close(pipe_fd);
        printf("Wait for user 2 reply\n");
        pipe_fd=open(FIFO_NAME,open_mode2);
        printf("\nText from User2: ");
        res=read(pipe_fd,buffer,BUFFER_SIZE);
        printf("%s\n",buffer );
        close(pipe_fd);
    }
    (void)close(pipe_fd);
```

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```
    printf("Process %d Finished\n",getpid() );
    exit(EXIT_SUCCESS);
}
```

User2

```
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<sys/types.h>
#include<limits.h>
#include<fcntl.h>
#include<sys/msg.h>
#include<sys/stat.h>
#include<string.h>
#define FIFO_NAME "my_fifo33"
#define BUFFER_SIZE 10000

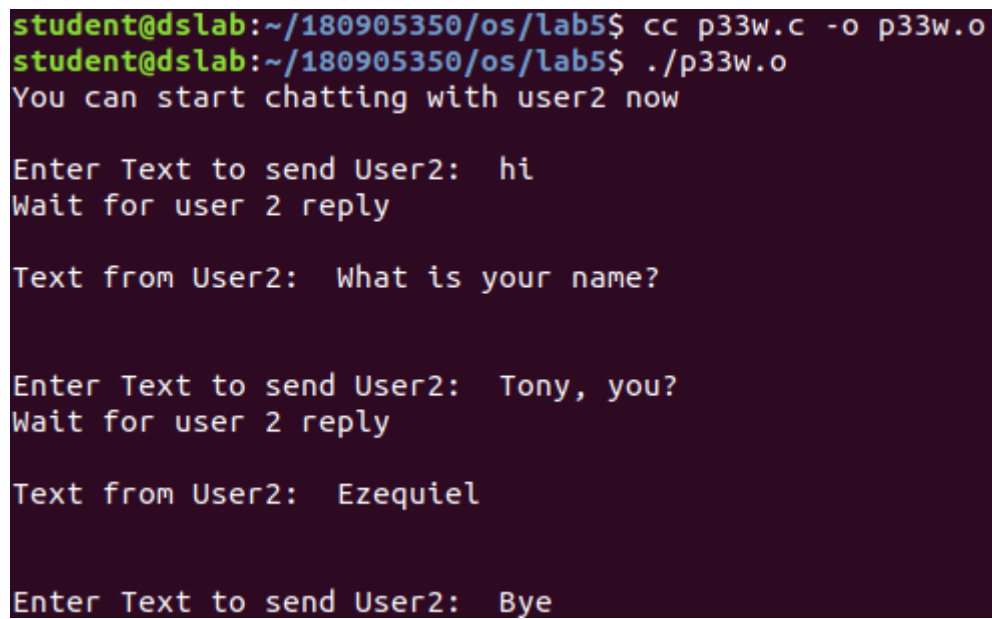
int main(int argc, char *argv[]){
    int pipe_fd;
    int res;
    int open_mode1=O_WRONLY;
    int open_mode2=O_RDONLY;
    int n=0;
    char buffer[BUFFER_SIZE+1];
    if(access(FIFO_NAME,F_OK)==-1){
        res=mknod(FIFO_NAME,0777);
        if(res!=0){
            fprintf(stderr, "Could not create file%s\n",FIFO_NAME );
            exit(EXIT_FAILURE);
        }
    }
    printf("You can start chatting with user2 now\n");
    while(1){
        pipe_fd=open(FIFO_NAME,open_mode2);
        printf("\nText from User1: ");
        res=read(pipe_fd,buffer,BUFFER_SIZE);
        printf("%s\n",buffer );
        close(pipe_fd);
        printf("Wait for user 1 reply\n");
        pipe_fd=open(FIFO_NAME,open_mode1);
        printf("\nEnter Text to send User1: ");
        fgets(buffer,BUFFER_SIZE,stdin);
        res=write(pipe_fd,buffer,BUFFER_SIZE);

        close(pipe_fd);
```

```
    }  
    (void)close(pipe_fd);  
  
    printf("Process %d Finished\n",getpid() );  
    exit(EXIT_SUCCESS);  
}
```

## Output

User1



```
student@dslab:~/180905350/os/lab5$ cc p33w.c -o p33w.o  
student@dslab:~/180905350/os/lab5$ ./p33w.o  
You can start chatting with user2 now  
  
Enter Text to send User2: hi  
Wait for user 2 reply  
  
Text from User2: What is your name?  
  
Enter Text to send User2: Tony, you?  
Wait for user 2 reply  
  
Text from User2: Ezequiel  
  
Enter Text to send User2: Bye
```

User2

```
student@dslab:~/180905350/os/lab5$ cc p33r.c -o p33r.o
student@dslab:~/180905350/os/lab5$ ./p33r.o
You can start chatting with user2 now

Text from User1:  hi

Wait for user 1 reply

Enter Text to send User1:  What is your name?

Text from User1:  Tony, you?

Wait for user 1 reply

Enter Text to send User1:  Ezequiel

Text from User1:  Bye

Wait for user 1 reply

Enter Text to send User1:  Bye
```



Q4)

Code

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

```
int main()
```

```
{
```

```
    char ch;
```

```
    FILE *fpbr, *fpbw;
```

```
    fpbr = fopen("bin1.exe", "rb");
```

```
    if (fpbr == NULL)
```

```
    {
```

```
        puts("Input Binary file is having issues while opening");
```

```
    }
```

```
    fpbw = fopen("bin2.exe", "wb");
```

```
    if (fpbw == NULL)
```

```
    {
```

```
        puts("Output binary file is having issues while opening");
```

```
    }
```

```
    while(1)
```

```
    {
```

```
        ch = fgetc(fpbr);
```

```
        if (ch==EOF)
```

```
            break;
```

```
        else
```

```
            fputc(ch, fpbw);
```

```
    }
```

```
    fclose(fpbr);
```

```
    fclose(fpbw);
```

```
    return 0;
```

```
}
```

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## Output

```
File Edit View Search Terminal Help
student@dslab:~/180905350/os/lab5$ cc p4.c
student@dslab:~/180905350/os/lab5$ ./a.out
student@dslab:~/180905350/os/lab5$ ls
a.out      my_fifo    my_fifo33  p1p.c      p33r.c      p33w.o      p3write.c
bin1.exe   myfifo2    p1c.c      p1p.o      p33r.o      p3read.c    p3write.o
bin2.exe   myfifo3    p1c.o      p22.c      p33w.c      p3read.o    p4.c
student@dslab:~/180905350/os/lab5$ cat bin1.exe
hello world
student@dslab:~/180905350/os/lab5$ cat bin2.exe
hello world
student@dslab:~/180905350/os/lab5$
```