

Aim: To implement ipc using message queuing with echo server.

Description: In this program echo server is used. First in client.c a message is taken from user and echoed. Later the same message is echoed and printed onto the console when the server.c is run.

Source code:

Client.c

```
#include <stdio.h>
#include <stdlib.h>
#include <sys/msg.h>
#include <sys/types.h>
#include <sys/ipc.h>
#include <unistd.h>
#include <string.h>
#define MAXSIZE 80
typedef struct
{
    long mtype;
    char mdata[MAXSIZE];
} mymsg_t;

int main()
{
    int mqid,n;
    int key=9823;
    mymsg_t mymsg;
    char buff[MAXSIZE];
    mqid=msgget(key,0666|IPC_CREAT);
    if(mqid<0)
    {
        perror("msgget() error:");
        exit(-1);
    }
    printf("\nMessage queue has been created/opened and its qid=%d\n",mqid);
    printf("Enter a message,(Client):\n");
    n=read(0,&buff,MAXSIZE);
    buff[n]='\0';
    strcpy(mymsg.mdata,buff);
    printf("Message sent was:%s\n",mymsg.mdata);
    mymsg.mtype=1;
    n=msgsnd(mqid,&mymsg,MAXSIZE,0);
    if(n<0)
    {
        perror("msgsnd() error:");
        exit(-1);
    }
}
```

```
    n=msgrcv(mqid,&mymsg,MAXSIZE,2,0);
    printf("message Echoed (Client): %s\n",mymsg.mdata);
    return 0;
}
```

server.c

```
#include <stdio.h>
#include <stdlib.h>
#include <sys/msg.h>
#include <sys/types.h>
#include <sys/ipc.h>
#include <unistd.h>
#define MAXSIZE 80
typedef struct
{
    long mtype;
    char mdata[MAXSIZE];
}mymsg_t;

int main()
{
    int mqid,n,i;
    int key=9823;
    mymsg_t mymsg;
    char buff[MAXSIZE];
    mqid=msgget(key,0666);
    if(mqid<0)
    {
        perror("msgget() error:");
        exit(-1);
    }
    printf("Message queue is created and its id: %d\n",mqid);
    n=msgrcv(mqid,&mymsg,MAXSIZE,1,0);
    if(n<0)
    {
        perror("msgrcv() error:");
        exit(-1);
    }
    printf("Message received(Server):%s\n",mymsg.mdata);
    for(i=0;mymsg.mdata[i]!='\0';++i)
        mymsg.mdata[i]=toupper(mymsg.mdata[i]);

    mymsg.mdata[i]='\0';
    mymsg.mtype=2;
    n=msgsnd(mqid,&mymsg,MAXSIZE,0);
```

```
    if(n<0)
    {
        perror("msgsnd() error:");
        exit(-1);
    }

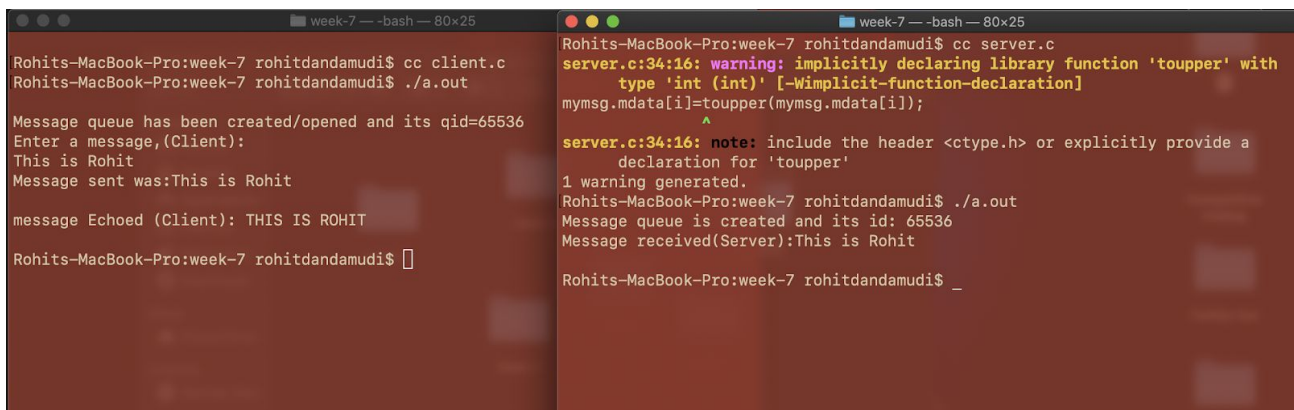
    return 0;

}
```

Result Analysis:

Thus the aim is achieved using message queuing with echo server

Output:



```

Rohits-MacBook-Pro:week-7 rohitdandamudi$ cc client.c
Rohits-MacBook-Pro:week-7 rohitdandamudi$ ./a.out

Message queue has been created/opened and its qid=65536
Enter a message,(Client):
This is Rohit
Message sent was:This is Rohit

message Echoed (Client): THIS IS ROHIT

Rohits-MacBook-Pro:week-7 rohitdandamudi$

Rohits-MacBook-Pro:week-7 rohitdandamudi$ cc server.c
server.c:34:16: warning: implicitly declaring library function 'toupper' with
type 'int (int)' [-Wimplicit-function-declaration]
mymsg.mdata[i]=toupper(mymsg.mdata[i]);
                  ^
server.c:34:16: note: include the header <ctype.h> or explicitly provide a
declaration for 'toupper'
1 warning generated.
Rohits-MacBook-Pro:week-7 rohitdandamudi$ ./a.out
Message queue is created and its id: 65536
Message received(Server):This is Rohit

Rohits-MacBook-Pro:week-7 rohitdandamudi$
```