Client code

```c
#include <stdlib.h>
#include <stdio.h>
#include<sys/shm.h>
#include<sys/ipc.h>
#include <unistd.h>
#include<string.h>

#define CONSUMED_BY_CLIENT -1
#define DATA_IS_NOT_FILLED_BY_SERVER 0
#define DATA_FILLED_BY_SERVER 1
#define CONSUMED_BY_SERVER 2
#define DATA_IS_NOT_FILLED_BY_CLIENT 3
#define DATA_FILLED_BY_CLIENT 4

typedef struct mem
{
        int status;
        char data[];
} SHARED_MEMORY;

int main(){
        SHARED_MEMORY *shm_ptr;
        int shmid ;

        char value[100];
        key_t key = ftok(".", 1);
        shmid = shmget(key, sizeof(SHARED_MEMORY), IPC_CREAT | 0666);

        if(shmid == -1)
        printf("\nError In Creating Shared Memory\n");
        else
        printf("\nShared Memory Created\n");

        shm_ptr = shmat(shmid, NULL, 0);
        if(shm_ptr == -1)
        printf("Error In Attaching To The Memory\n");
        else
        printf("\nAttached To The Shared Memory\n");

        while(shm_ptr->status != DATA_FILLED_BY_SERVER) {
        printf("\nWating For SERVER...\n");
        sleep(5);
```

```c
        }
        printf("\nMessage recieved from SERVER:\n");
        printf("%s\n",shm_ptr->data);
        shm_ptr->status = CONSUMED_BY_CLIENT;
        sleep(5);
        shm_ptr->status = DATA_IS_NOT_FILLED_BY_CLIENT;
        printf("\nWrite a message:\n");
        scanf("%[^\n]", value);
        printf("\nMessage sent to SERVER\n");
        strcpy(shm_ptr->data, value);
        shm_ptr->status = DATA_FILLED_BY_CLIENT;

        while(shm_ptr->status != CONSUMED_BY_SERVER) {
        printf("\nWaiting for SERVER to read...\n");
        sleep(5);
        }

        shmdt(shm_ptr);
        printf("\nExiting The CLIENT Program\n");
        return 0;
}
```

Server Code

```c
#include<stdlib.h>
#include<stdio.h>
#include<sys/shm.h>
#include<sys/ipc.h>
#include<unistd.h>
#include<string.h>

#define CONSUMED_BY_CLIENT -1
#define DATA_IS_NOT_FILLED_BY_SERVER 0
#define DATA_FILLED_BY_SERVER 1
#define CONSUMED_BY_SERVER 2
#define DATA_IS_NOT_FILLED_BY_CLIENT 3
#define DATA_FILLED_BY_CLIENT 4

typedef struct mem
{
        int status;
        char data[];
}SHARED_MEMORY;
```

```c
int main()
{
        SHARED_MEMORY *shm_ptr;
        int shmid;
        char value[100];
        key_t key = ftok(".",1);

        shmid = shmget(key, sizeof(SHARED_MEMORY), IPC_CREAT | 0666);
        if(shmid == -1)
        printf("\nError In Creating Shared Memory\n");
        else
        printf("\nShared Memory Created\n");

        shm_ptr = shmat(shmid, NULL, 0);

        if(shm_ptr == -1)
        printf("\nError In Attaching To The Memory\n");
        else
        printf("Attached To The Shared Memory\n");

        shm_ptr->status = DATA_IS_NOT_FILLED_BY_SERVER;
        printf("\nWrite a message:\n");
        scanf("%[^\n]", value);
        printf("\nMessage sent to CLIENT\n");
        strcpy(shm_ptr->data, value);
        shm_ptr->status = DATA_FILLED_BY_SERVER;

        while(shm_ptr->status != CONSUMED_BY_CLIENT)        {
        printf("\nWaiting for CLIENT to read...\n");
        sleep(5);
        }
        while(shm_ptr->status != DATA_FILLED_BY_CLIENT)     {
        printf("\nWating For CLIENT to respond...\n");
        sleep(5);
        }
        printf("\nMessage recieved from CLIENT:\n");
        printf("%s\n",shm_ptr->data);

        shm_ptr->status = CONSUMED_BY_SERVER;
        shmdt(shm_ptr);
        shmctl(shmid,IPC_RMID,0);
        printf("\nExiting the SERVER Program\n");
        return 0; }
```

OUTPUT:

```
gauravghati@gauravghati:~/OS-Programming/assignment8-SharedMemoryComm$ ./client

Shared Memory Created

Attached To The Shared Memory

Wating For SERVER...

Message recieved from SERVER:
Hi this is Gaurav Testing my program in assignment 8

Write a message:
Yo! finally it's working

Message sent to SERVER

Waiting for SERVER to read...

Exiting The CLIENT Program
gauravghati@gauravghati:~/OS-Programming/assignment8-SharedMemoryComm$
```

```
gauravghati@gauravghati:~/OS-Programming/assignment8-SharedMemoryComm$ ./server

Shared Memory Created
Attached To The Shared Memory

Write a message:
Hi this is Gaurav Testing my program in assignment 8

Message sent to CLIENT

Waiting for CLIENT to read...

Wating For CLIENT to respond...

Wating For CLIENT to respond...

Wating For CLIENT to respond...

Message recieved from CLIENT:
Yo! finally it's working

Exiting the SERVER Program
gauravghati@gauravghati:~/OS-Programming/assignment8-SharedMemoryComm$
```