

Ex. No.: 7

IPC USING SHARED MEMORY

Aim:

To write a C program to do Inter Process Communication (IPC) using shared memory between sender process and receiver process.

Algorithm:

sender

1. Set the size of the shared memory segment
2. Allocate the shared memory segment using shmget
3. Attach the shared memory segment using shmat
4. Write a string to the shared memory segment using sprintf
5. Set delay using sleep
6. Detach shared memory segment using shmdt

receiver

1. Set the size of the shared memory segment
2. Allocate the shared memory segment using shmget
3. Attach the shared memory segment using shmat
4. Print the shared memory contents sent by the sender process.
5. Detach shared memory segment using shmdt

Program Code:

sender.c

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

int main() {
    key_t key = ftok("shmfile",65);
    int shmid = shmget(key, 1024, 0666|IPC_CREAT);
    char *str = (char*) shmat(shmid, (void*)0, 0);

    printf("Enter data to write in shared memory: ");
    fgets(str, 1024, stdin);

    shmdt(str);
    return 0;
}
```

receiver.c

```
#include <stdio.h>
#include <sys/ipc.h>
#include <sys/shm.h>

int main() {
    key_t key = ftok("shmfile",65);
    int shmid = shmget(key, 1024, 0666|IPC_CREAT);
    char *str = (char*) shmat(shmid, (void*)0, 0);

    printf("Data read from shared memory: %s", str);

    shmdt(str);
    shmctl(shmid, IPC_RMID, NULL);
    return 0;
}
```

Sample Output

Terminal 1

```
[root@localhost student]# gcc sender.c -o sender
[root@localhost student]# ./sender
```

Terminal 2

```
[root@localhost student]# gcc receiver.c -o receiver
[root@localhost student]# ./receiver
Message Received: Welcome to Shared Memory
[root@localhost student]#
```

Output:

Enter data to write in shared memory: Hello from Sender!

Data read from shared memory: Hello from Sender!

Result:

Inter Process Communication (IPC) using shared memory between sender process and receiver has been implemented successfully and the output has been verified.