Ex. No.: 7

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## 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 <sys/types.h>
#include <sys/ipc.h>
#include <sys/shm.h>
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#define sharedMemSize 50

void main()
{ char c;
```

```
int shmid;
key_t key;

char *key_memory;

key = 5677;
if (shmid = shmget (key, sharedMemsize, IPC_CREAT | 0666)) < 0)
{
    perror ("shmget");
    exit (1);
}

if ((shared_memory = shmat (shmid, NULL, 0)) == (char *) -1){
        perror ("shmat");
        exit (1);
}
sprintf (key_memory, "Welcome to Shared Memory");
sleep (2);
exit (0);
}
```

receiver.c

```
#include <sys/types.h>
#include <sys/ipc.h>
#include <sys/shm.h>
#include <stdio.h>
#include <stdlib.h>
#define sharedMemSize 50

void main()
{
    int shmid;
    key_t key;
    char *shared_memory;

    key = 5677;
    if ((shmid = shmget(key, sharedMemSize, 0666)) < 0) {
        perror("shmget");
        exit(1);
    }

    if ((shared_memory = shmat(shmid, NULL, 0)) == (char *) -1) {
        perror("shmat");
        exit(1);
    }

    printf("Message Received: %s\n", shared_memory);
    exit(0);
}
```

**Sample Output**

**Terminal 1**

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

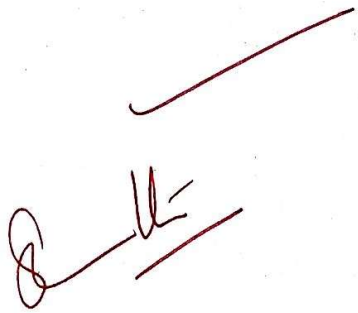
**Terminal 2**

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

Output:

Receiver: Memory read from shared memory:

Hello from sender process



**Result:**

Hence the IPC is executed successfully.