



**BHARATIYA VIDYA BHAVAN'S**  
**SARDAR PATEL INSTITUTE OF TECHNOLOGY**  
Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai – 400058-India  
**Department of Computer Engineering**

<b>Name</b>	SHIVSHARAN GURUNATH SANJAWAD
<b>UID no.</b>	2023300194
<b>Experiment No.</b>	8

<b>AIM:</b>	IPC using shared memory
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Reader :

```
#include <stdio.h>
#include <sys/ipc.h>
#include <sys/shm.h>
#include <semaphore.h>
#include <string.h>
#include <unistd.h>
#include "shared.h"
```

```
int main() {
    key_t key = ftok("shmfile", 35);
    int shmid = shmget(key, sizeof(struct shmseg), 0666 | IPC_CREAT);
    struct shmseg *shm = (struct shmseg *)shmat(shmid, NULL, 0);
    while (shm->initialized != 1) {
        usleep(100000);
    }

    for (int i = 0; i < 2; i++) {
        sem_wait(&shm->sem_reader);
        printf("Reader got: %s\n", shm->data);
        sem_post(&shm->sem_writer);
        sleep(2);
    }

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

Writer :

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



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```
#include <sys/shm.h>
#include <semaphore.h>
#include <string.h>
#include <unistd.h>
#include "shared.h"

int main() {
    key_t key = ftok("shmfile", 35);
    int shmid = shmget(key, sizeof(struct shmseg), 0666 | IPC_CREAT);
    struct shmseg *shm = (struct shmseg *)shmat(shmid, NULL, 0);

    if (shm->initialized != 1) {
        sem_init(&shm->sem_writer, 1, 1);
        sem_init(&shm->sem_reader, 1, 0);
        shm->initialized = 1;
    }

    for (int i = 0; i < 2; i++) {
        sem_wait(&shm->sem_writer);
        if (i == 0)
            strcpy(shm->data, "Hello from Writer");
        else
            strcpy(shm->data, "Again Hello from Writer");
        sem_post(&shm->sem_reader);
        sleep(2);
    }

    shmdt(shm);
    return 0;
}

Shared
#ifndef SHARED_H
#define SHARED_H

#include <semaphore.h>

struct shmseg {
    int initialized;
    sem_t sem_writer;
    sem_t sem_reader;
    char data[1024];
};
```



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#endif

```
students@students-HP-280-G3-SFF-Business-PC: ~/Shivsharan
students@students-HP-280-G3-SFF-Business-PC: ~/Shivsharan$ gcc reader.c -o a.out
students@students-HP-280-G3-SFF-Business-PC: ~/Shivsharan$ ./a.out
Reader got: Hello from Writer
Reader got: Again Hello from Writer
students@students-HP-280-G3-SFF-Business-PC: ~/Shivsharan$

students@students-HP-280-G3-SFF-Business-PC: ~/Shivsharan$ gcc writer.c -o b.out
students@students-HP-280-G3-SFF-Business-PC: ~/Shivsharan$ ./b.out
students@students-HP-280-G3-SFF-Business-PC: ~/Shivsharan$

students@students-HP-280-G3-SFF-Business-PC: ~$ ipcs -m
Memory Segments -----
shd      owner      perms      bytes      nattach    statu
students 666        4096       0
students 666        1048576    0
students 666        1088       0
students 666        1096       0
students 666        1096       0
students-HP-280-G3-SFF-Business-PC: ~$
```

Conclusion :

Learnt how to use the shared memory between two different processes and how to check existing shared memories and also communicate between processes.