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**EXPERIMENT 7**

**Aim:** Inter process communication (POSIX-IPC) using shared memory

Study system calls: mmap(), shm\_open(), shm\_unlink()

**Problem 1.** Write a program, in which one process will write message in shared memory and another process will read that message from shared memory.

**2.** Establish Inter process communication using shared memory Implement day time server and test it using client program. Tools: Linux OS, gcc compiler.

**1. Write a program, in which one process will write message in shared memory and another process will read that message from shared memory.**

**Src1.c**

**#include <stdio.h>**

**#include <fcntl.h>**

**#include <unistd.h>**

**#include <sys/stat.h>**

**#include <sys/types.h>**

**#include <sys/mman.h>**

***int* main()**

**{**

***int* size = 4096;**

**const *char* \*name = "myMemory";**

***void* \*ptr;**

***int* shm\_fd = shm\_open(name, O\_CREAT | O\_RDWR, 0777);**

**ftruncate(shm\_fd, size);**

**printf("Starting writing in memory...\n");**

**ptr = mmap(NULL, size, PROT\_WRITE, MAP\_SHARED, shm\_fd, 0);**

**sprintf(ptr, "%s", "Hello this is shared memory data.");**

**printf("\tWritten data : Hello this is shared memory data.\n");**

**printf("Completing writing in memory...\n");**

**return 0;**

**}**

**Dest.c**

**#include <stdio.h>**

**#include <fcntl.h>**

**#include <unistd.h>**

**#include <sys/stat.h>**

**#include <sys/types.h>**

**#include <sys/mman.h>**

***int* main()**

**{**

***int* size = 4096;**

***void* \*ptr;**

***int* shm\_fd = shm\_open("myMemory", O\_RDONLY, 0666);**

**ftruncate(shm\_fd, size);**

**printf("Starting reading in shared momory...\n");**

**ptr = mmap(NULL, size, PROT\_READ, MAP\_SHARED, shm\_fd, 0);**

**printf("\tCollected data : %s\n", (*char* \*)ptr);**

**printf("completing reading in shared momory...\n");**

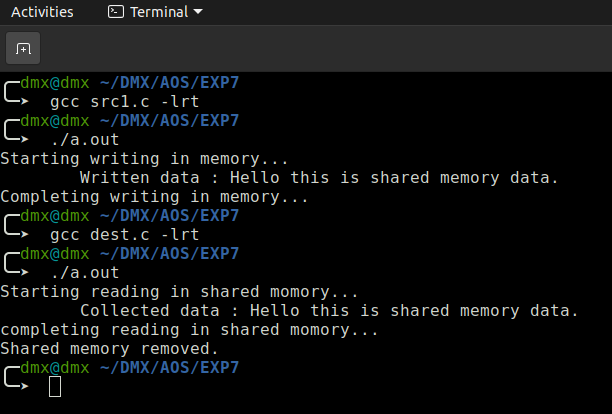
**shm\_unlink("myMemory");**

**printf("Shared memory removed.\n");**

**return 0;**

**}**

**Output:-**

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**2. Establish Inter process communication using shared memory Implement day time server and test it using client program.**

**Server.c**

**#include<stdio.h>**

**#include<fcntl.h>**

**#include<unistd.h>**

**#include<sys/stat.h>**

**#include<sys/types.h>**

**#include<sys/mman.h>**

**#include<time.h>**

**#include<pthread.h>**

***int* size=4096, shm\_fd;**

***void* \*ptask(*void* \**ptr*)**

**{**

**time\_t now;**

***ptr* = mmap(NULL, size, PROT\_WRITE, MAP\_SHARED, shm\_fd, 0);**

**while(1)**

**{**

**time(&now);**

**sprintf(*ptr*, "%s", ctime(&now));**

**printf("\tCurrent time in Sever : %s", ctime(&now));**

**sleep(1);**

**}**

**return NULL;**

**}**

***int* main()**

**{**

**const *char* \*name = "currentTime";**

**shm\_fd = shm\_open(name, O\_CREAT|O\_RDWR, 0777);**

**ftruncate(shm\_fd, size);**

**printf("Shared memory created.\n");**

**printf("To stop server hit enter.\n");**

**pthread\_t threadid;**

**pthread\_create(&threadid, NULL, ptask, NULL);**

**getchar();**

**pthread\_cancel(threadid);**

**shm\_unlink(name);**

**printf("Shared memory removed.\n");**

**return 0;**

**Client.c**

**#include<stdio.h>**

**#include<fcntl.h>**

**#include<unistd.h>**

**#include<sys/stat.h>**

**#include<sys/types.h>**

**#include<sys/mman.h>**

***int* main()**

**{**

***int* size = 4096;**

***void* \*ptr;**

***int* shm\_fd = shm\_open("currentTime", O\_RDONLY, 0666);**

**ftruncate(shm\_fd, size);**

**printf("Starting reading in shared momory...\n");**

**ptr = mmap(NULL, size, PROT\_READ, MAP\_SHARED, shm\_fd, 0);**

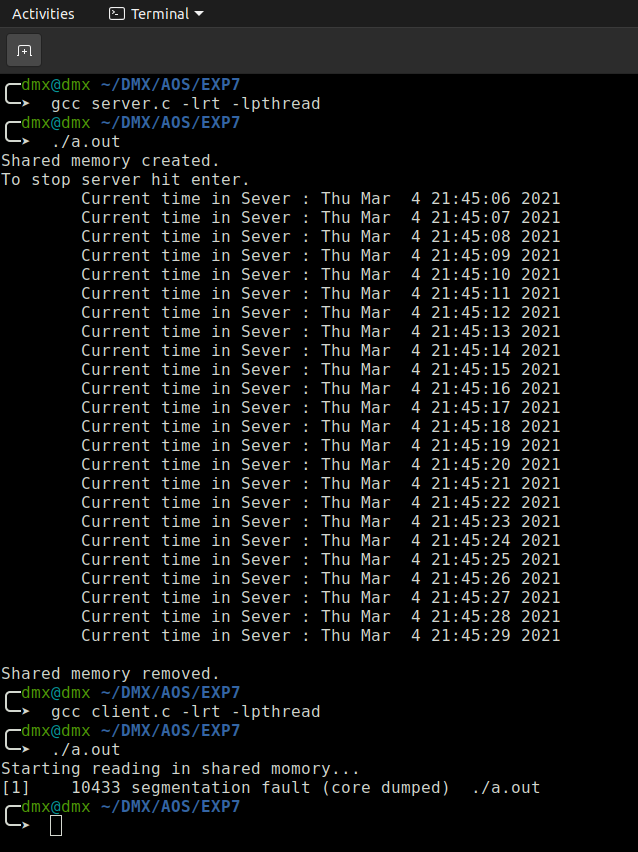
**printf("\tCurrent time received by Client : %s", (*char*\*)ptr);**

**printf("completing reading in shared momory...\n");**

**return 0;**

**}**

**Output:-**

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