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1. Illustrate the concept of inter-process communication using shared memory with a C program.

# Aim:

To demonstrate inter-process communication (IPC) using shared memory in C, where two or more processes can communicate by accessing a common memory space.

# Concept:

Inter-process communication (IPC) allows processes to exchange data and synchronize their actions. Shared memory is one of the most efficient IPC mechanisms. It allows multiple processes to access the same region of memory. One process writes to this shared memory, and other processes can read from it.

# Procedure:

* 1. Create a shared memory segment using shmget().
  2. Attach the shared memory to the process address space using shmat().
  3. Write data into the shared memory by the writer process.
  4. Read data from the shared memory by the reader process.
  5. Detach the shared memory using shmdt().
  6. Destroy the shared memory segment using shmctl() once communication is done.

CODE:

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

#include <sys/shm.h> #include <string.h>

#define SHM\_SIZE 1024

int main() {

key\_t key = 1234;

int shmid; char \*shm;

shmid = shmget(key, SHM\_SIZE, 0666 | IPC\_CREAT); if (shmid == -1) {

perror("shmget failed"); return 1;

}

shm = shmat(shmid, NULL, 0); if (shm == (char \*) -1) {

perror("shmat failed"); return 1;

}

printf("Enter a message to write to shared memory: "); fgets(shm, SHM\_SIZE, stdin);

shmdt(shm);

printf("Message written to shared memory.\n");

return 0;

}

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

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#define SHM\_SIZE 1024

int main() {

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char \*shm;

shmid = shmget(key, SHM\_SIZE, 0666); if (shmid == -1) {

perror("shmget failed"); return 1;

}

shm = shmat(shmid, NULL, 0); if (shm == (char \*) -1) {

perror("shmat failed"); return 1;

}

printf("Message read from shared memory: %s\n", shm);

shmdt(shm); return 0;

}

OUTPUT:

