TASK 11

Inter-Process Communication (IPC) Using Shared Memory
Implement an IPC mechanism using shared memory in C:
Create a shared memory segment and attach it to the process's memory space.
Write a string message to the shared memory in one process.
Read and display the message from the shared memory in another process.

READER CODE

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

#define SHM_SIZE 1024

int main() {
    key_t key = ftok("shmfile", 65); // same key as writer
    int shmid = shmget(key, SHM_SIZE, 0666); // get shared memory

    if (shmid == -1) {
        perror("shmget failed");
        return 1;
    }

    char *str = (char *) shmat(shmid, (void *)0, 0); // attach
    if (str == (char *)-1) {
        perror("shmat failed");
        return 1;
    }

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

    shmdt(str); // detach
    shmctl(shmid, IPC_RMID, NULL); // remove shared memory

    return 0;
}
```

FILE

reader.c

WRITER CODE

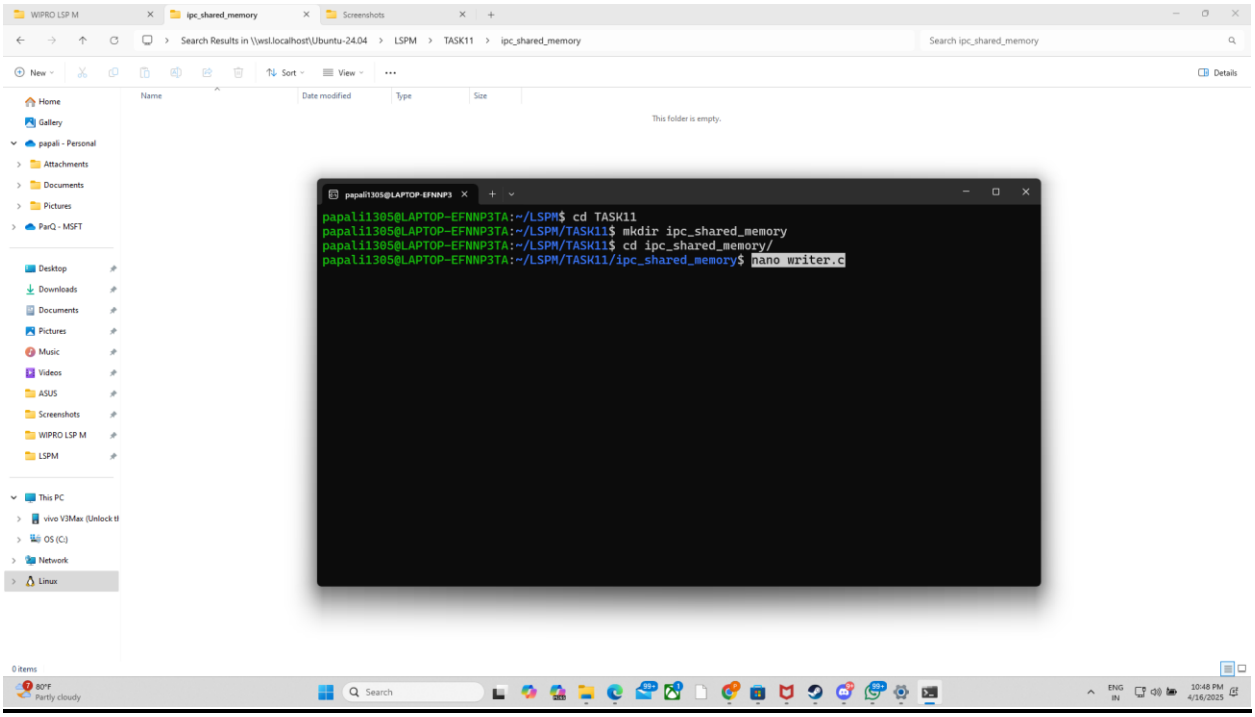
```c
#include <stdio.h>
#include <stdlib.h>
#include <sys/ipc.h>
#include <sys/shm.h>
#include <string.h>

#define SHM_SIZE 1024  // size of shared memory

int main() {
    key_t key = ftok("shmfile", 65); // generate unique key
    int shmid = shmget(key, SHM_SIZE, 0666 | IPC_CREAT); // create shared memory

    if (shmid == -1) {
        perror("shmget failed");
        return 1;
    }

    char *str = (char *) shmat(shmid, (void *)0, 0); // attach to memory
    if (str == (char *)-1) {
        perror("shmat failed");
        return 1;
    }

    printf("Writing to shared memory...\n");
    strcpy(str, "Hello from Writer Process using Shared Memory!");

    printf("Done. Detaching and exiting.\n");
    shmdt(str); // detach

    return 0;
}
```

FILE

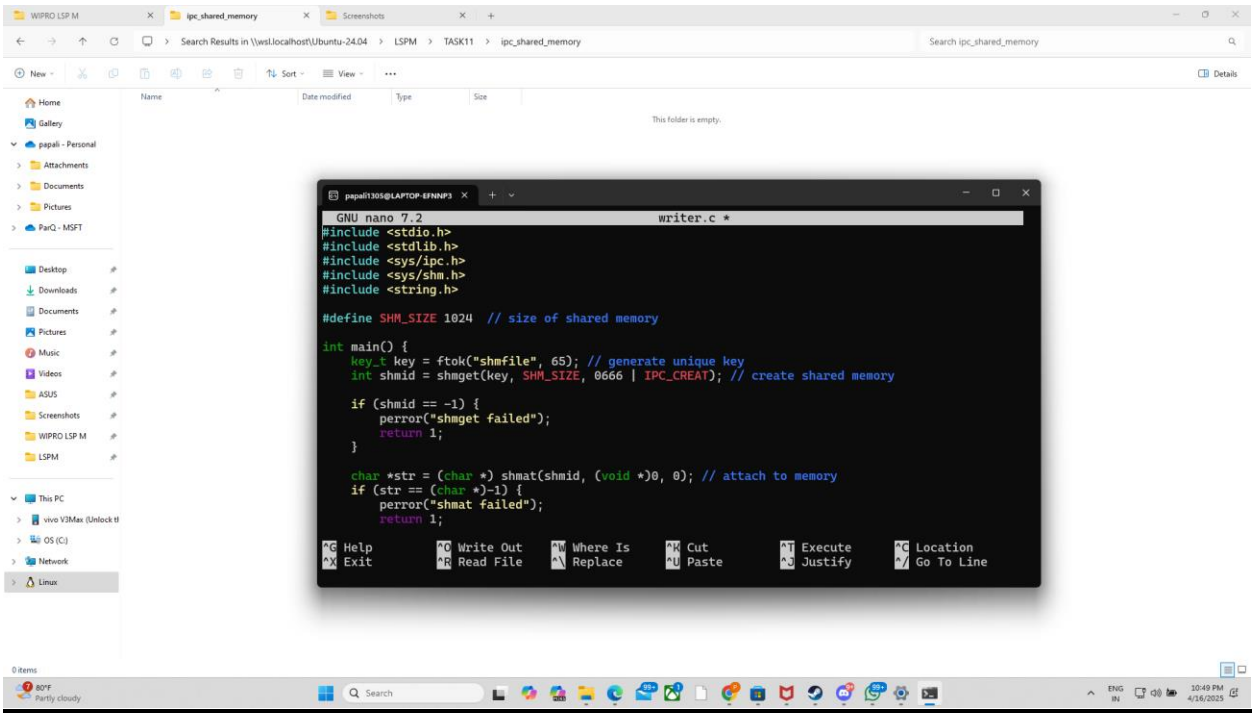
writer.c

OUTPUT AND SCREENSHOT

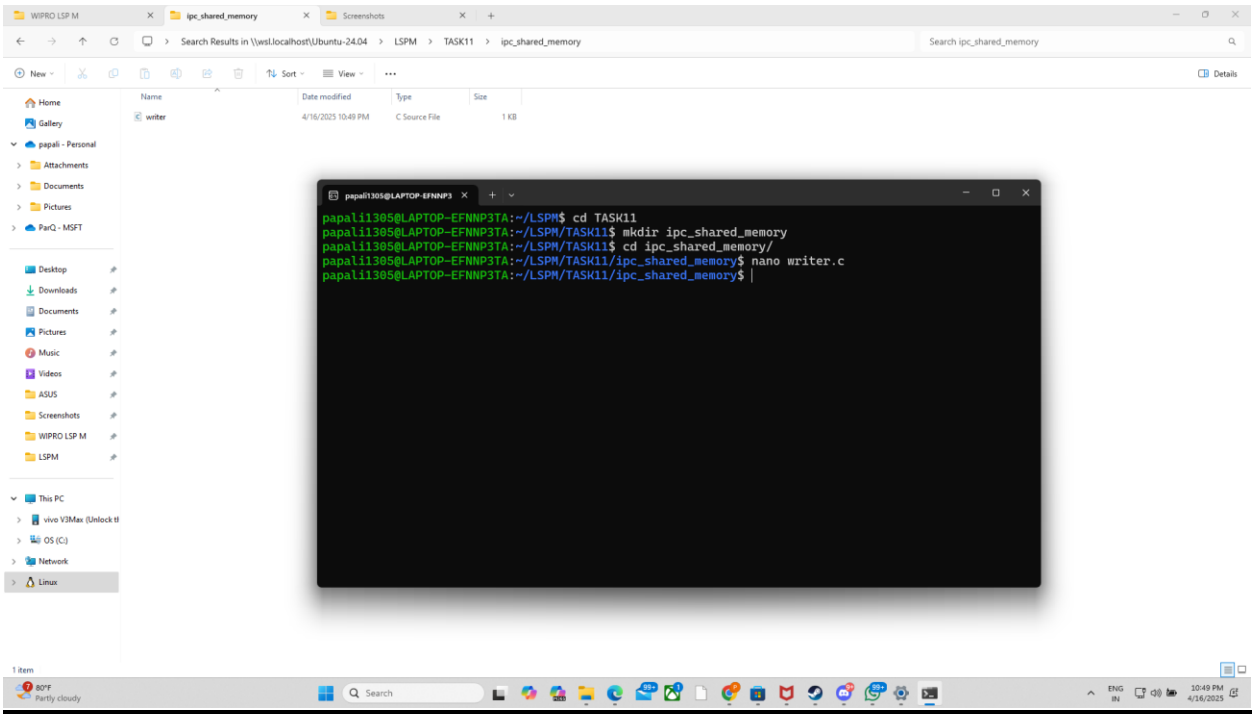
01).



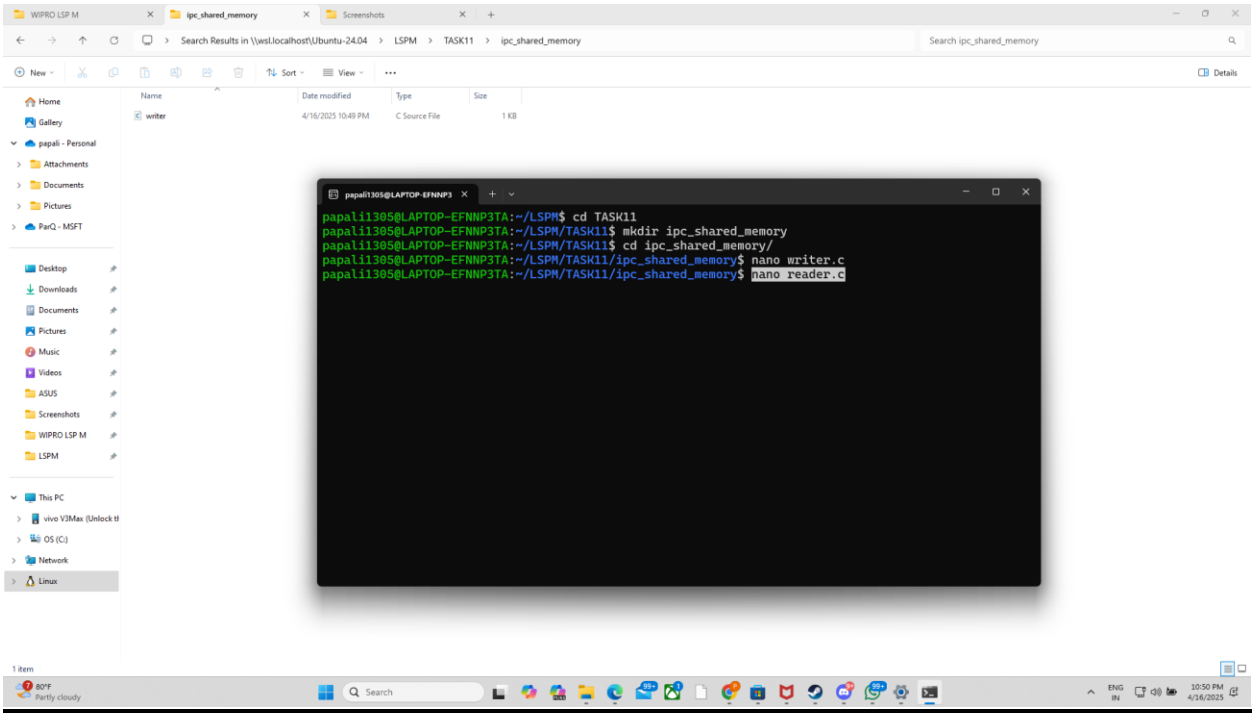
02).


papali1305@LAPTOP-EFNNP3
GNU nano 7.2 writer.c *
#include <stdio.h>
#include <stdlib.h>
#include <sys/ipc.h>
#include <sys/shm.h>
#include <string.h>
#define SHM_SIZE 1024 // size of shared memory
int main() {
key_t key = ftok("shmfile", 65); // generate unique key
int shmid = shmget(key, SHM_SIZE, 0666 | IPC_CREAT); // create shared memory
if (shmid == -1) {
perror("shmget failed");
return 1;
}
char *str = (char *) shmat(shmid, (void *)0, 0); // attach to memory
if (str == (char *)-1) {
perror("shmat failed");
return 1;
^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^/ Go To Line

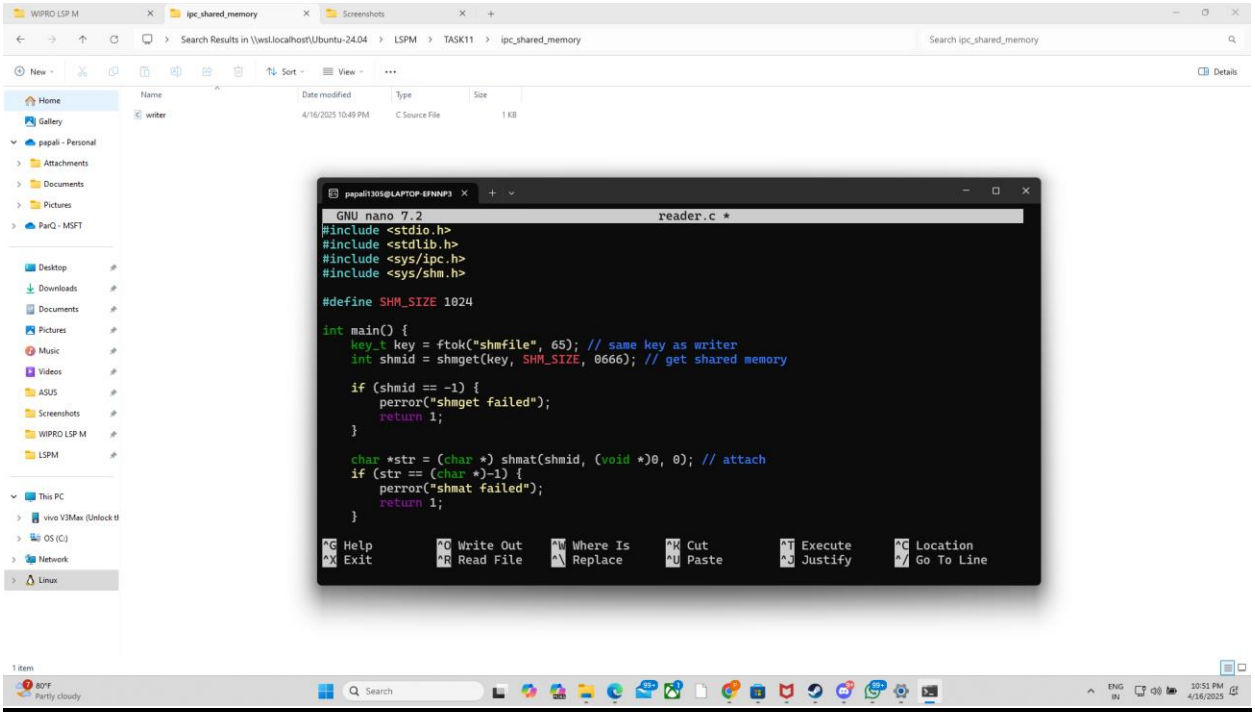
03).


writer
4/16/2025 10:49 PM
C Source File
1 KB
papali1305@LAPTOP-EFNNP3
papali1305@LAPTOP-EFNNP3TA:~/LSPM$ cd TASK11
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11$ mkdir ipc_shared_memory
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11$ cd ipc_shared_memory/
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$ nano writer.c
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$

04).


papali1305@LAPTOP-EFNNP3TA:~/LSPM$ cd TASK11
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11$ mkdir ipc_shared_memory
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11$ cd ipc_shared_memory/
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$ nano writer.c
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$ nano reader.c

05).


GNU nano 7.2 reader.c *
#include <stdio.h>
#include <stdlib.h>
#include <sys/ipc.h>
#include <sys/shm.h>
#define SHM_SIZE 1024
int main() {
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int shmid = shmget(key, SHM_SIZE, 0666); // get shared memory
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char *str = (char *) shmat(shmid, (void *)0, 0); // attach
if (str == (char *)-1) {
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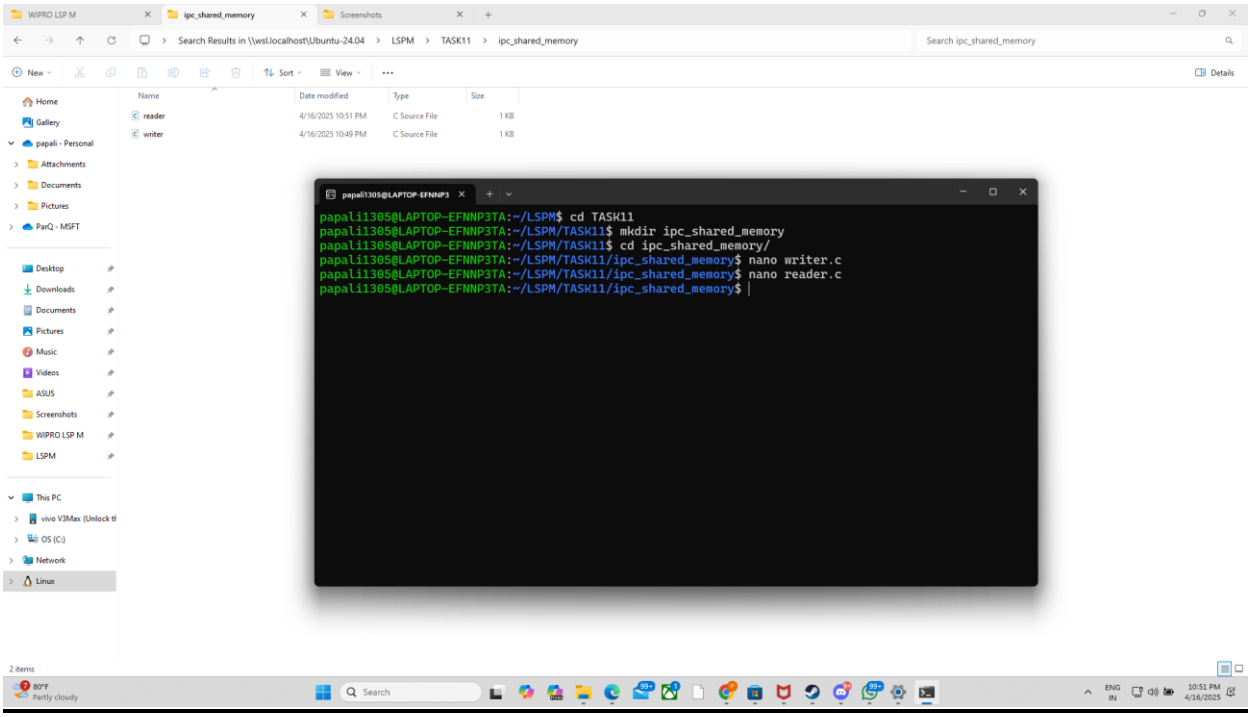
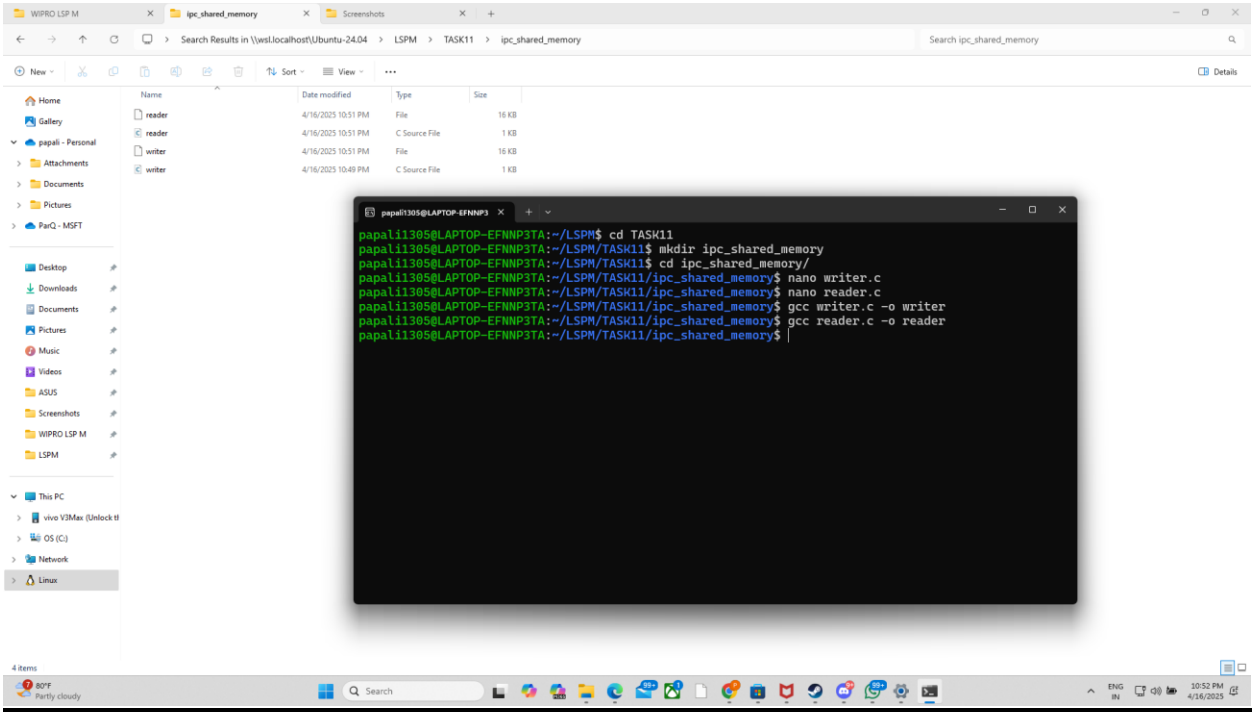
}
^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^/ Go To Line

06).


papali1305@LAPTOP-EFNNP3TA:~/LSPM$ cd TASK11
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11$ mkdir ipc_shared_memory
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11$ cd ipc_shared_memory/
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$ nano writer.c
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$ nano reader.c
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$

07).


papali1305@LAPTOP-EFNNP3TA:~/LSPM$ cd TASK11
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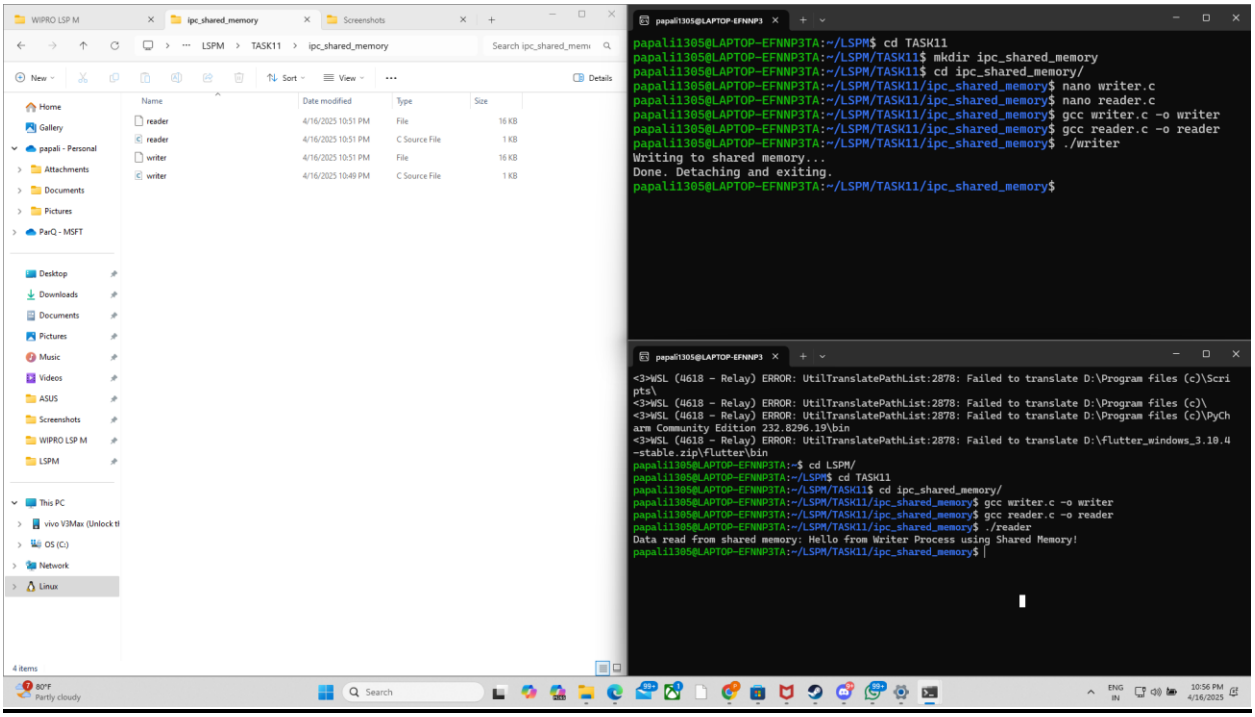
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$ nano reader.c
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$ gcc writer.c -o writer
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$ gcc reader.c -o reader
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$

08).


WIPRO LSP M
ipc_shared_memory
Screenshots
LSPM › TASK11 › ipc_shared_memory
Search ipc_shared_memory
New
Sort
View
Details
Home
Gallery
papali - Personal
Attachments
Documents
Pictures
ParQ - MSFT
Desktop
Downloads
Documents
Pictures
Music
Videos
ASUS
Screenshots
WIPRO LSP M
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vivo V3Max (Unlock t
OS (C:)
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File
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writer
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C Source File
1 KB
4 items
papali1305@LAPTOP-EFNNP3TA:~/LSPM$ cd TASK11
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11$ mkdir ipc_shared_memory
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11$ cd ipc_shared_memory/
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$ nano writer.c
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$ nano reader.c
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$ gcc writer.c -o writer
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$ gcc reader.c -o reader
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$ ./writer
Writing to shared memory...
Done. Detaching and exiting.
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$
<3>WSL (4618 - Relay) ERROR: UtilTranslatePathList:2878: Failed to translate D:\Program files (c)\Scripts\
<3>WSL (4618 - Relay) ERROR: UtilTranslatePathList:2878: Failed to translate D:\Program files (c)\
<3>WSL (4618 - Relay) ERROR: UtilTranslatePathList:2878: Failed to translate D:\Program files (c)\PyCharm Community Edition 232.8296.19\bin
<3>WSL (4618 - Relay) ERROR: UtilTranslatePathList:2878: Failed to translate D:\flutter_windows_3.10.4-stable.zip\flutter\bin
papali1305@LAPTOP-EFNNP3TA:~$ cd LSPM/
papali1305@LAPTOP-EFNNP3TA:~/LSPM$ cd TASK11
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11$ cd ipc_shared_memory/
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$ gcc writer.c -o writer
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$ gcc reader.c -o reader
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$ ./reader
Data read from shared memory: Hello from Writer Process using Shared Memory!
papali1305@LAPTOP-EFNNP3TA:~/LSPM/TASK11/ipc_shared_memory$
80°F
Partly cloudy
Search
ENG
IN
10:56 PM
4/16/2025