

LAB09

INTERPROCESS COMMUNICATION USING SHARED MEMORY

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PRODUCER PROCESS(WRITING TO THE SHARED MEMORY):

```
[s2019103562@centos8-linux Sat Apr 10 09:03 AM lab09]$ gcc 1.c -o 1
[s2019103562@centos8-linux Sat Apr 10 09:03 AM lab09]$ ./1
Key of shared memory:1441875
Process attached at 0x7fd1785000 address
Enter some data to write into memory
Hello This is Lab09 of OS
You wrote:Hello This is Lab09 of OS

[s2019103562@centos8-linux Sat Apr 10 09:03 AM lab09]$ vim 1.c
[s2019103562@centos8-linux Sat Apr 10 09:06 AM lab09]$ cat 1.c
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<sys/shm.h>
#include<string.h>
#include<errno.h>
int main(){
    int i;
    void* shared_memory;
    char buff[100];
    int shmid;
    shmid=shmget((key_t)2345,1024,0666|IPC_CREAT);
    printf("Key of shared memory:%d\n",shmid);
    shared_memory=shmat(shmid,NULL,0);
    if(!shared_memory){
        perror("Error in main:shmat\n");
        exit(EXIT_FAILURE);
    }
    printf("Process attached at %p address\n",shared_memory);
    printf("Enter some data to write into memory\n");
    read(0,buff,100);
    strcpy(shared_memory,buff);
    printf("You wrote:%s\n",(char*)shared_memory);
    if(shmdt(shared_memory)==-1){
        perror("Error in main:shmdt\n");
    }
    return 0;
}

[s2019103562@centos8-linux Sat Apr 10 09:06 AM lab09]$ █
```

CONSUMER PROCESS(READING FROM THE SHARED MEMORY):

```
[s2019103562@centos8-linux Sat Apr 10 09:24 AM lab09]$ ./2
Key of shared memory:1441875
Process attached at 0x7fb4adc75000 address
Data read from memory:Hello This is Lab09 of OS

[s2019103562@centos8-linux Sat Apr 10 09:24 AM lab09]$ cat 2.c
#include<stdio.h>
#include<sys/shm.h>
#include<stdlib.h>
#include<string.h>
#include<errno.h>
int main(){
    void* shared_memory;
    char buff[100];
    int shmid;
    shmid=shmget((key_t)2345,1024,0666);
    if(shmid<0){
        perror("Error in main:shmid\n");
        exit(EXIT_FAILURE);
    }
    printf("Key of shared memory:%d\n",shmid);
    shared_memory=shmat(shmid,NULL,0);
    if(!shared_memory){
        perror("Error in main:shmat\n");
        exit(EXIT_FAILURE);
    }
    printf("Process attached at %p address\n",shared_memory);
    printf("Data read from memory:%s\n",(char*)shared_memory);
    if(shmdt(shared_memory)==-1){
        perror("Error in main:shmdt\n");
    }
    return 0;
}
[s2019103562@centos8-linux Sat Apr 10 09:24 AM lab09]$ █
```

FTOK()-TO GENERATE A RANDOM KEY FOR THE SHARED MEMORY OBJECT:

WRITING TO SHARED MEMORY:

```
[s2019103562@centos8-linux Sat Apr 10 10:02 AM lab09]$ gcc 3.c -o 3
[s2019103562@centos8-linux Sat Apr 10 10:02 AM lab09]$ ./3
Key generated:1627521536
Enter the data to write
HII ALL
You wrote:HII ALL
```

```
[s2019103562@centos8-linux Sat Apr 10 10:03 AM lab09]$ cat 3.c
#include<stdio.h>
#include<sys/ipc.h>
#include<sys/shm.h>
#include<stdlib.h>
#include<unistd.h>
#include<string.h>
int main(){
    key_t key;
    char* path="/home";
    int id='a';
    if((key=(ftok(path,id)))==(key_t) -1){
        printf("Error\n");
        exit(EXIT_FAILURE);
    }
    printf("Key generated:%d\n",key);
    int shmid=shmget(key,1024,0666|IPC_CREAT);
    void* shared_memory;
    shared_memory=shmat(shmid,NULL,0);
    if(!shared_memory){
        perror("Error in main:shmat\n");
        exit(EXIT_FAILURE);
    }
    printf("Enter the data to write\n");
    read(0,(char*)shared_memory,100);
    printf("You wrote:%s\n",(char*)shared_memory);
    if(shmdt(shared_memory)==-1){
        perror("Error in main:shmdt\n");
    }
    return 0;
}
[s2019103562@centos8-linux Sat Apr 10 10:04 AM lab09]$
```

READING FROM SHARED MEMORY:

```
[s2019103562@centos8-linux Sat Apr 10 10:02 AM lab09]$ gcc 4.c -o 4
[s2019103562@centos8-linux Sat Apr 10 10:03 AM lab09]$ ./4
Key generated:1627521536
Data read from memory:HII ALL
```

```
[s2019103562@centos8-linux Sat Apr 10 10:04 AM lab09]$ cat 4.c
```

```
#include<stdio.h>
```

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

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

```
#include<stdlib.h>
```

```
#include<unistd.h>
```

```
#include<string.h>
```

```
int main(){
```

```
    key_t key;
```

```
    char* path="/home";
```

```
    int id='a';
```

```
    if((key=(ftok(path,id)))==(key_t) -1){
```

```
        printf("Error\n");
```

```
        exit(EXIT_FAILURE);
```

```
    }
```

```
    else{
```

```
        printf("Key generated:%d\n",key);
```

```
        int shmid=shmget(key,1024,0666|IPC_CREAT);
```

```
        void* shared_memory;
```

```
        char buff[100];
```

```
        shared_memory=shmat(shmid,NULL,0);
```

```
        printf("Data read from memory:%s\n",(char*)shared_memory);
```

```
        shmdt(shared_memory);
```

```
        shmctl(shmid,IPC_RMID,NULL);
```

```
        return 0;
```

```
    }
```

```
}
```

```
[s2019103562@centos8-linux Sat Apr 10 10:06 AM lab09]$
```