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Branch - CBA Batch - 41

OS Practical 5

1. Design a program to create a shared memory segment of 2048 bytes and write some content into it. Then create a child process which then reads the content written by the parent process in the shared memory segment.

Code:

```
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<sys/shm.h>
#include<string.h>
#include"time.h"

int main()
{
    int i;
    char *shared_memory;
    char buff[200];
    int shmid;
    int pid=fork();
    if(pid>0)
    {
        printf("\nParent Process!!\n");
        shmid=shmget((key_t) 9099, 2024, 0666|IPC_CREAT);
        printf("\nKey of shared memory is %d\n",shmid);

        shared_memory=shmat(shmid,NULL,0);
        printf("\nProcess attached at %p\n",shared_memory);

        printf("\nEnter the data to add in shared memory:\n");
        read(0,buff,200);
        strcpy(shared_memory,buff);
        printf("\nData written to shared memory is:%s\n", (char*)
shared_memory);
```

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```
        exit(0);
    }
    else
    {
        sleep(10);
        printf("\nChild Process!!\n");
        shmid=shmget((key_t) 9099, 2024, 0666);
        shared_memory=shmat(shmid,NULL,0);
        printf("\nData available in shared memory is:%s\n", (char*)
shared_memory);
        exit(0);
    }

    return 0;
}
```

Output :

```
YSL_Ubuntu_22.04 [Running] - Oracle VM VirtualBox
4.1 kb/s 23.7 kb/s 11:04:09 AM
p5e1.c - Documents - Visual Studio Code
Feb 21 11:04

EXPLORER
DOCUMENTS
  .vscode
  OS_prac_1
  OS_prac_2
  OS_prac_3
  OS_prac_4
    orphan
    orphan.c
    p4e1
    p4e1.c
    p4e2
    p4e2.c
    zombie
    zombie.c
  OS_prac_5
    p5e1
    p5e1.c
    p5e2.c
    config.fish
    fish_variables
    Mojave-nord-dark.png
    starship.toml

p5e1.c
1 #include<stdio.h>
2 #include<stdlib.h>
3 #include<unistd.h>
4 #include<sys/shm.h>
5 #include<string.h>
6 #include<time.h>
7
8 int main()
9 {
10     int i;
11     char *shared_memory;
12     char buff[200];
13     int shmid;
14
15     int pid=fork();
16
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Code - OS_prac_5
- redd@vbox1 in ~/Documents
- cd ~/home/redd/Documents/OS_prac_5/" && gcc p5e1.c -o p5e1 && "/home/redd/Documents/OS_prac_5/"p5e1
Parent Process!!
Key of shared memory is 9
Process attached at 0x7f0e560ff000
Enter the data to add in shared memory:
Hare Krishna!
Data written to shared memory is:Hare Krishna!
- redd@vbox1 in ~/Documents/OS_prac_5 via C v11.3.0-gcc took 5s
- A
```

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2. Using shared Memory Concept, design the below scenario:

Input: Integer array of 10 Nos: 1,2,3,4,5,6,7,8,9,10

Operation : Addition of all ODD no by Parent Process & Addition of all EVEN no by Child Processes.

Output:

Child Sum : 30

Parent Sum : 25

Final Sum is : 55

Code :

```
#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<sys/shm.h>
#include<string.h>
#include"time.h"

int main()
{
    int i;
    void *shared_memory;
    char buff[100];
    int shmid;
    int a[10]={1,2,3,4,5,6,7,8,9,10};

    int pid=fork();
    if(pid>0)
    {
        printf("\nParent Process!!\n");
        shmid=shmget((key_t) 9099, 2024, 0666|IPC_CREAT);

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

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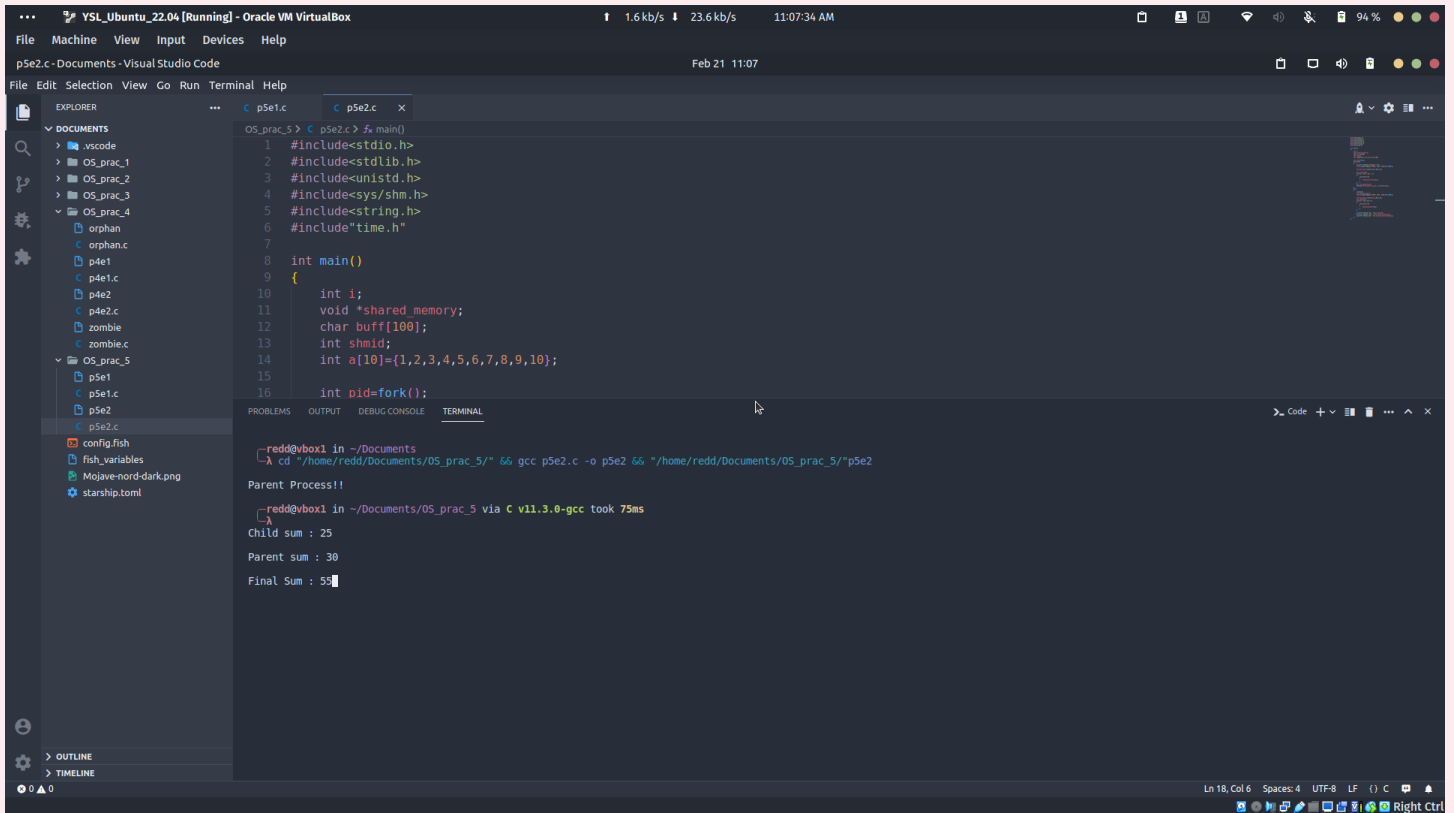
```
int evensum=0;
for(int i=0; i<10; i++)
{
    if(a[i]%2==0)
    {
        evensum=evensum+a[i];
    }
}
int *value=&evensum;
memcpy(shared_memory,value, 1*sizeof(int));
}
else
{
    sleep(3);
    int *shared_memory;
    shmids=shmget((key_t) 9099, 2024, 0666|IPC_CREAT);

    shared_memory=shmat(shmids,NULL,0);
    int oddsum=0;
    for(int i=0;i<10;i++)
    {
        if(a[i]%2!=0)
        {
            oddsum=oddsum+a[i];
        }
    }

    printf("\nChild sum : %d\n",oddsum);
    printf("\nParent sum : %d\n",*shared_memory);
    printf("\nFinal Sum : %d",*shared_memory+oddsum);
}
}
```

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Output :



```
OS_prac_5 > c p5e2.c > f. main()
1 #include<stdio.h>
2 #include<stdlib.h>
3 #include<unistd.h>
4 #include<sys/shm.h>
5 #include<string.h>
6 #include<time.h>
7
8 int main()
9 {
10     int i;
11     void *shared_memory;
12     char buff[100];
13     int shmid;
14     int a[10]={1,2,3,4,5,6,7,8,9,10};
15
16     int pid=fork();

Parent Process!!
Child sum : 25
Parent sum : 30
Final Sum : 55
```