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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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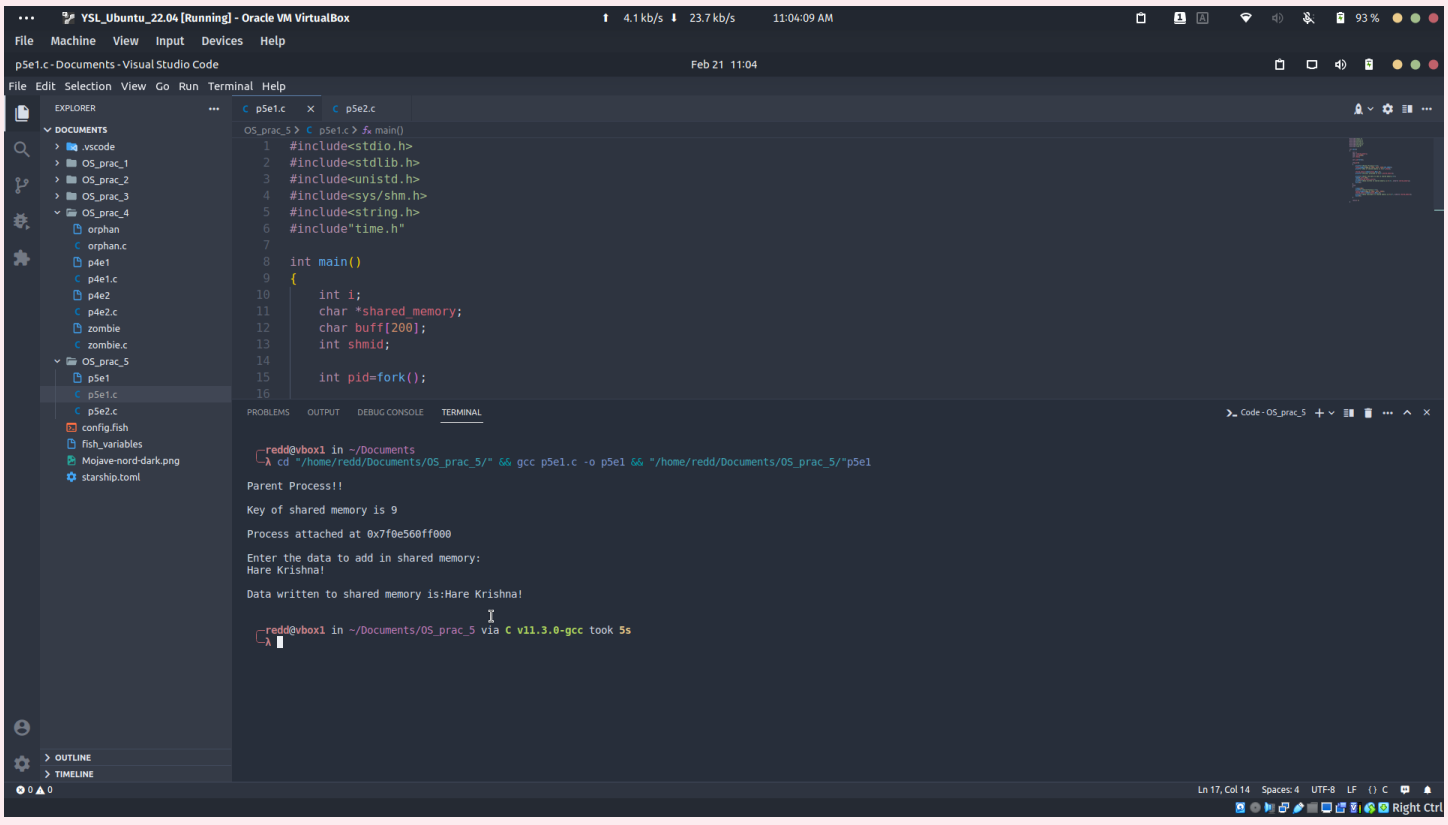
OS Practical 5

```
        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 :



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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 :

```c
#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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Branch - CBA Batch - 41
OS Practical 5

```
        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;
        shmid=shmget((key_t) 9099, 2024, 0666|IPC_CREAT);

        shared_memory=shmat(shmid,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 :