

CODE:-Readers writers problem with readers priority using semaphore and or mutex

```
#include<stdio.h>
#include<pthread.h>
#include<semaphore.h>
sem_t mutex,wrt_mutex;
int data = 0,rcount = 0;
void *reader(void *arg)
{
    int f;
    f = ((int)arg);
    sem_wait(&mutex);
    rcount = rcount + 1;
    if(rcount==1)
        sem_wait(&wrt_mutex);
    sem_post(&mutex);
    printf("Data read by the reader%d is %d\n",f,data);
    sleep(1);
    sem_wait(&mutex);
    rcount = rcount - 1;
    if(rcount==0)

        //printf("\nthis is the last reader\n");

    sem_post(&wrt_mutex);
    sem_post(&mutex);
}

void *writer(void *arg)
{
    int f;
    f = ((int) arg);
    sem_wait(&wrt_mutex);
    data++;
    // sleep(1);
    printf("Data written by the writer%d is %d\n",f,data);
    //sleep(1);
    sem_post(&wrt_mutex);
}

main()
{
    int i,b;
    pthread_t rtid[5],wtid[5];
    sem_init(&mutex,0,1);
    sem_init(&wrt_mutex,0,1);
    for(i=0;i<=4;i++)
    {
        pthread_create(&rtid[i],NULL,reader,(void *)i);
        pthread_create(&wtid[i],NULL,writer,(void *)i);
    }
}
```

```
}  
for(i=0;i<=4;i++)  
{  
pthread_join(wtid[i],NULL);  
pthread_join(rtid[i],NULL);  
}  
  
}
```

OUTPUT:-

```
[root@localhost Documents]# gcc read.c -lpthread
```

```
[root@localhost Documents]# ./a.out
```

```
Data read by the reader0 is 0  
Data read by the reader1 is 0  
Data read by the reader2 is 0  
Data read by the reader3 is 0  
Data read by the reader4 is 0  
Data written by the writer0 is 1s  
Data written by the writer1 is 2  
Data written by the writer2 is 3  
Data written by the writer3 is 4  
Data written by the writer4 is 5
```