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#include<stdio.h>
#include<pthread.h>
#include<semaphore.h>

int data=0,rcount=0;
sem_t mutex,writeblock;
void *reader(void *arg)
{
    int f=((int)(&arg));
    sem_wait(&mutex);
    rcount++;
    if(rcount==1)
    {
        sem_wait(&writeblock);
    }
    sem_post(&mutex);
    printf("Data read by the reader %d is %d \n",f,data);
    sleep(1);
    sem_wait(&mutex);
    rcount--;
    if(rcount==0)
    {
        sem_post(&writeblock);
    }
    sem_post(&mutex);
}

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

int main()
{
    int i,b;
    pthread_t rtid[5],wtid[5];
    sem_init(&mutex,0,1);
    sem_init(&writeblock,0,1);

    for(i=0;i<3;i++)
    {
        pthread_create(&wtid[i],NULL,writer,(void *)i);
        pthread_create(&rtid[i],NULL,reader,(void *)i);
    }
    for(i=0;i<3;i++)
    {
        pthread_join(wtid[i],NULL);
        pthread_join(rtid[i],NULL);
    }
    return 0;
}

```