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

pthread_mutex_t x,wsem;
pthread_t tid;
int readcount;
void initialize()
{
    pthread_mutex_init(&x,NULL);
    pthread_mutex_init(&wsem,NULL);
    readcount=0;
}

void * reader(void * param)
{
    int waittime;
    waittime=rand()%5;
    printf("\n reader is trying to enter");
    pthread_mutex_lock(&x);
    readcount++;
    if(readcount==1)
        pthread_mutex_lock(&wsem);
    printf("\n &d reader is inside", readcount);
    pthread_mutex_unlock(&x);
    sleep(waittime);
    pthread_mutex_lock(&x);
    readcount--;
    if(readcount==0)
        pthread_mutex_unlock(&wsem);
    pthread_mutex_unlock(&x);
    printf("\n reader is leaving");
}

void * writer(void * param)
{
    int waittime;
    waittime=rand()%3;
    printf("\n writer is trying to enter");
    pthread_mutex_lock(&wsem);
    printf("\n writer has entered");
    sleep(waittime);
    pthread_mutex_unlock(&wsem);
    printf("\n writer is leaving");
    sleep(30);
    exit(0);
}

int main ()
{
    int n1,n2,i;
    printf("\n Enter the number of readers:");
    scanf("%d" ,&n1);

```

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        printf("\n Enter the number of writers:");
        scanf("%d" ,&n2);
        for(i=0;i<n1;i++)
            pthread_create(&tid ,NULL,reader,NULL);
        for(i=0;i<n2;i++)
            pthread_create(&tid ,NULL,writer,NULL);
        sleep(30);
        exit(0);
}

```

OUTPUT:-

```

avcoe@avcoe-HP-ProDesk-400-G1-SFF:~$ gcc Reader-Writer.c -lpthread
avcoe@avcoe-HP-ProDesk-400-G1-SFF:~$ ./a.out

```

Enter the number of readers:5

Enter the number of writers:5

```

reader is trying to enter
&d reader is inside
reader is trying to enter
&d reader is inside
reader is trying to enter
&d reader is inside
reader is trying to enter
&d reader is inside
reader is trying to enter
&d reader is inside
writer is trying to enter
reader is leaving
writer is trying to enter
writer is trying to enter
writer is trying to enter
writer is trying to enter
reader is leaving
reader is leaving
reader is leaving
reader is leaving
writer has entered
writer is leaving
writer has entered
writer is leaving
writer has entered
writer is leaving
writer has entered
writer is leaving
writer has entered
writer is leaving

```