

Experiment/Tutorial Number: 04

TITLE: Reader Writer using Threads and Mutex.

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Question: Write a program in C to implement the Reader Writer problem using Threads and Mutex.

Solution:

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

int hr,min,sec,tid1,tid2;
void *read();
void *write();
void *ret;

pthread_t rth,wth;          //threads
pthread_mutex_t mu;         //mutex

void main()
{
    tid1 = pthread_create(&rth,NULL,&read,NULL);
    if(tid1 == 0)
        printf("\nrth created successfully");
    tid2 = pthread_create(&wth,NULL,&write,NULL);
    if(tid2 == 0)
        printf("\nwth created successfully");

    pthread_mutex_init(&mu,0);
    pthread_join(rth,NULL);
    pthread_join(wth,NULL);
}

void *read()
{
    printf("\nin read");
    while(hr <= 1)
    {
        pthread_mutex_lock(&mu);
        printf("\n%d:%d:%d",hr,min,sec);
        pthread_mutex_unlock(&mu);
        sleep(1);
    }
    return(&ret);
}

void *write()
{
    printf("\nin write");
    while(hr <= 1)
    {
```

```
    pthread_mutex_lock(&mu);
    sec++;
    if(sec == 60)
    {
        sec = 0;
        min++;
    }
    if(min == 60)
    {
        min = 0;
        hr++;
    }
    pthread_mutex_unlock(&mu);
    sleep(1);
}
return(&ret);
}
```