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Panel: C, **Batch:** C1

OS Lab 6 Code:

Title: Process Synchronization

```
#include <semaphore.h> #include <stdio.h> #include <stdlib.h> #include  
<unistd.h> #include <pthread.h> sem_t mutex,wrt; pthread_t tid;
```

```
int sharedvar = 1000;
```

```
pthread_t writers[5],readers[5];
```

```
int readercount = 0;
```

```
void reader()
```

```
{
```

```
sem_wait(&mutex);
```

```
readercount++;
```

```
if(readercount == 1)
```

```
sem_wait(&wrt);
```

```
sem_post(&mutex);
```

```
printf("\n%d reader reading the shared variable = %d", readercount,  
sharedvar);
```

```

printf("\nReader is done"); sem_wait(&mutex); readercount--;
if(readercount == 0) sem_post(&wrt); sem_post(&mutex);

}

void writer()
{
printf("\nWriter is trying to enter");
sem_wait(&wrt);
printf("\nWriter has entered CS");
sharedvar++;

printf("\nWRITER CHANGED THE VALUE OF SHARED VAR TO
%d", sharedvar);

sem_post(&wrt);
printf("\nWriter is out of CS");
}

int main()
{
int n2;

printf("Enter the no of readers and writers: ");
scanf("%d",&n2);

sem_init(&mutex,0,1);
sem_init(&wrt,0,1);
for(int i = 0;i < n2;i++)

```

```
{ pthread_create(&writers[i],NULL,(void*)writer,NULL);  
pthread_create(&readers[i],NULL,(void*)reader,NULL); }  
  
return 0;  
  
}
```

OUTPUT:

```
Enter the no of readers and writers: 4  
  
Writer is tring to enter  
Writer has entered CS  
WRITER CHANGED THE VALUE OF SHARED VAR TO 1001  
Writer is out of CS  
1 reader reading the shared variable = 1001  
Reader is done  
1 reader reading the shared variable = 1001  
Reader is done  
Writer is tring to enter  
Writer has entered CS  
WRITER CHANGED THE VALUE OF SHARED VAR TO 1002  
Writer is out of CS  
Writer is tring to enter  
Writer has entered CS  
WRITER CHANGED THE VALUE OF SHARED VAR TO 1003  
Writer is out of CS  
1 reader reading the shared variable = 1003  
Reader is done  
Writer is tring to enter  
Writer is tring to enter  
Writer has entered CS  
WRITER CHANGED THE VALUE OF SHARED VAR TO 1
```