

Noman Ahmed
DT-22032

Operating System (CT-353)

Lab no 05

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1) Implement the above code and paste the screen shot of the output.

```
#include <semaphore.h>
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <pthread.h>

sem_t x, y;
pthread_t tid;
pthread_t writerthreads[100],
readerthreads[100]; int readercount
= 0;

void *reader(void
*param) {
sem_wait(&x);
readercount++;

    if (readercount == 1) {
        sem_wait(&y);
    }
    sem_post(&x);

    printf("%d reader is inside\n",
readercount);
    usleep(3);
```

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```
sem_wait(&x);
readercount--;
if (readercount
== 0) {
    sem_post(&y);
}
sem_post(&x);
printf("%d Reader is leaving\n",
readercount + 1); return NULL;
}
```

```
void *writer(void
*param) {
printf("Writer is trying to
enter\n");
sem_wait(&y);
printf("Writer has
entered\n");
sem_post(&y);
printf("Writer is
leaving\n"); return
NULL;
}
```

```
int main()
{ int
n2, i;
printf("En
ter the
```

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number
of
readers:"

);
scanf("%
d", &n2);

int n1[n2];
sem_init(&x, 0,
1);
sem_init(&y, 0,
1);

for (i = 0; i < n2; i++) {
pthread_create(&writerthreads[i], NULL, reader,
NULL); pthread_create(&readerthreads[i], NULL,
writer, NULL);
}

for (i = 0; i < n2; i++) {
pthread_join(writerthreads[i],
NULL);
pthread_join(readerthreads[i],
NULL);
}

return 0;
}

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Output

```
Enter the number of readers:
3
1 reader is inside
Writer is trying to enter
Writer is trying to enter
Writer is trying to enter
3 reader is inside
3 Reader is leaving
2 reader is inside
2 Reader is leaving
Writer has entered
1 Reader is leaving
Writer has entered
Writer is leaving
Writer has entered
Writer is leaving
Writer is leaving

-----
Process exited after 31.37 seconds with return value 0
Press any key to continue . . .
```