

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

Code

```
#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);

    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;
```

Operating System (CT-353) Lab 05

```
printf("Enter the number of readers:");
scanf("%d", &n2);

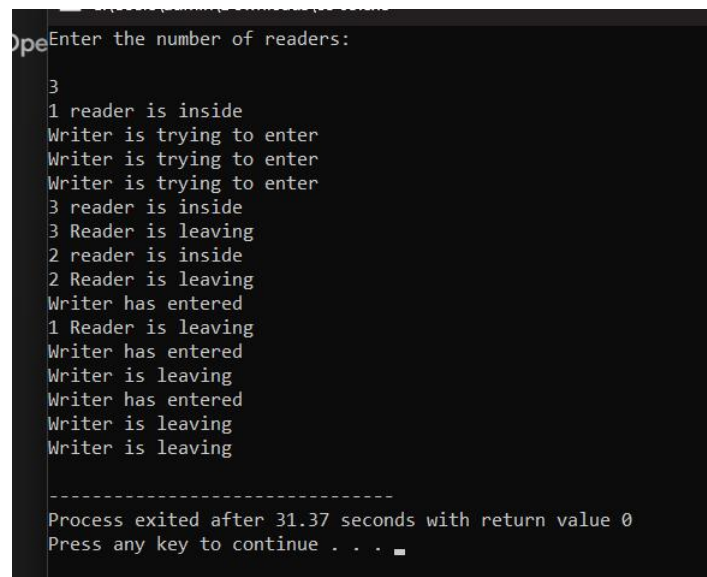
int n1[n2];
sem_init(&x, 0, 1);
sem_init(&y, 0, 1);

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;
}
```

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 . . .
```