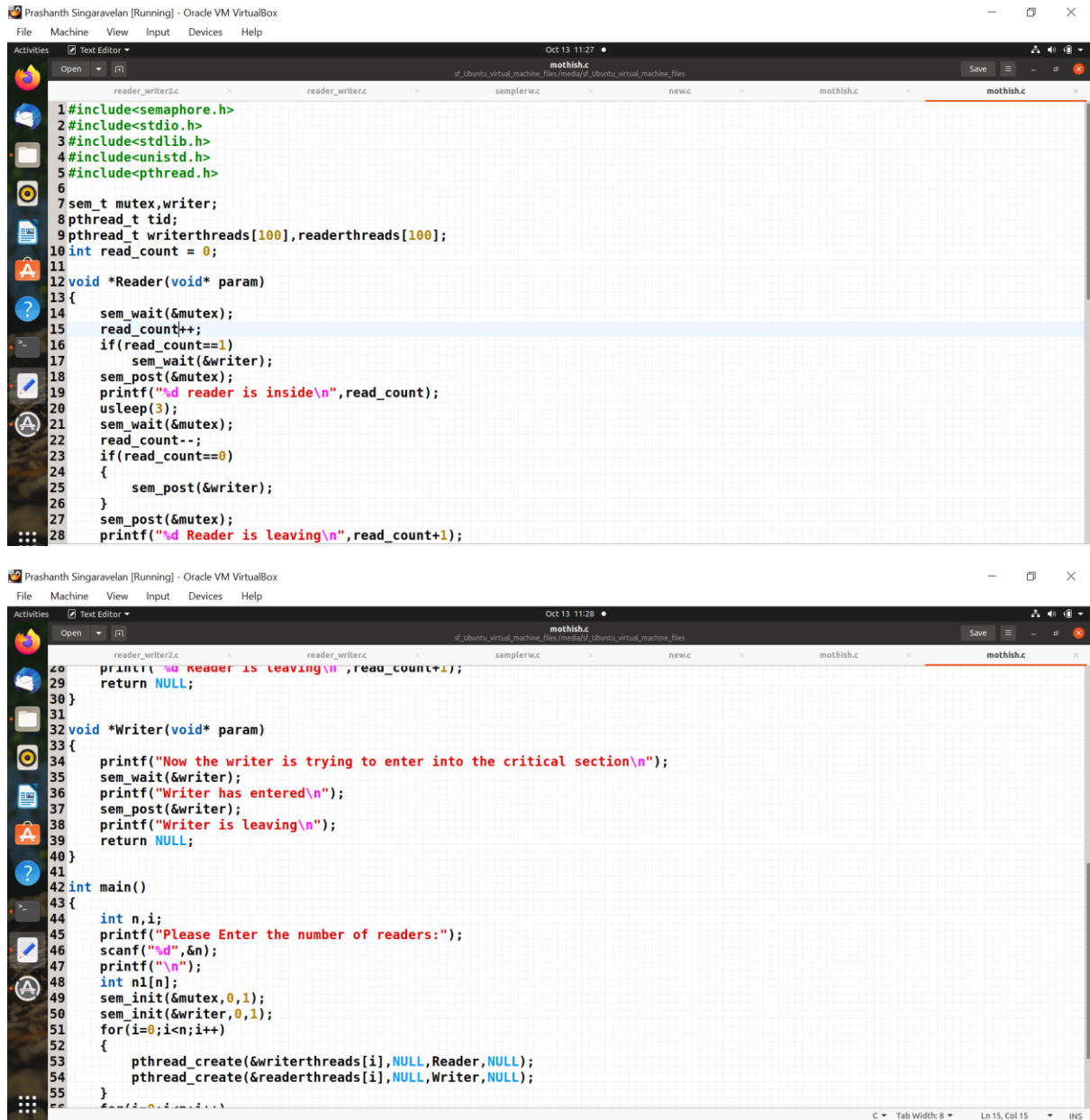


1)



The image shows two screenshots of a C program running in an Oracle VM VirtualBox. The program is titled 'mothish.c' and implements a reader-writer problem using semaphores and pthreads.

**Top Screenshot:** Shows the first part of the code, including headers, semaphore initialization, and the Reader function.

```
1#include<semaphore.h>
2#include<stdio.h>
3#include<stdlib.h>
4#include<unistd.h>
5#include<pthread.h>
6
7sem_t mutex,writer;
8pthread_t tid;
9pthread_t writerthreads[100],readerthreads[100];
10int read_count = 0;
11
12void *Reader(void* param)
13{
14    sem_wait(&mutex);
15    read_count++;
16    if(read_count==1)
17        sem_wait(&writer);
18    sem_post(&mutex);
19    printf("%d reader is inside\n",read_count);
20    usleep(3);
21    sem_wait(&mutex);
22    read_count--;
23    if(read_count==0)
24    {
25        sem_post(&writer);
26    }
27    sem_post(&mutex);
28    printf("%d Reader is leaving\n",read_count+1);
```

**Bottom Screenshot:** Shows the continuation of the code, including the Writer function and the main function.

```
29    printf("%d reader is leaving\n",read_count+1);
30    return NULL;
31}
32void *Writer(void* param)
33{
34    printf("Now the writer is trying to enter into the critical section\n");
35    sem_wait(&writer);
36    printf("Writer has entered\n");
37    sem_post(&writer);
38    printf("Writer is leaving\n");
39    return NULL;
40}
41
42int main()
43{
44    int n,i;
45    printf("Please Enter the number of readers:");
46    scanf("%d",&n);
47    printf("\n");
48    int nl[n];
49    sem_init(&mutex,0,1);
50    sem_init(&writer,0,1);
51    for(i=0;i<n;i++)
52    {
53        pthread_create(&writerthreads[i],NULL,Writer,NULL);
54        pthread_create(&readerthreads[i],NULL,Reader,NULL);
55    }
56    for(i=0;i<n;i++)
```

Prashanth Singaravelan [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal

Oct 13 11:29

reader\_writer.c reader\_writer.c sampler.c new.c motish.c motish.c

```
35 sem_wait(&writer);
36 printf("Writer has entered\n");
37 sem_post(&writer);
38 printf("Writer is leaving\n");
39 return NULL;
40 }
41
42 int main()
43 {
44     int n,i;
45     printf("Please Enter the number of readers:");
46     scanf("%d",&n);
47     printf("\n");
48     int n1[n];
49     sem_init(&mutex,0,1);
50     sem_init(&writer,0,1);
51     for(i=0;i<n;i++)
52     {
53         pthread_create(&writerthreads[i],NULL,Reader,NULL);
54         pthread_create(&readerthreads[i],NULL,Writer,NULL);
55     }
56     for(i=0;i<n;i++)
57     {
58         pthread_join(writerthreads[i],NULL);
59         pthread_join(readerthreads[i],NULL);
60     }
61 }
62 }
```

prashanth@prashanth-VirtualBox:~\$ gcc new.c -lpthread  
prashanth@prashanth-VirtualBox:~\$ ./a.out  
Please Enter the number of readers:3

Now the writer is trying to enter into the critical section  
Writer has entered  
Writer is leaving  
1 reader is inside  
Now the writer is trying to enter into the critical section  
2 reader is inside  
Now the writer is trying to enter into the critical section  
3 reader is inside  
3 Reader is leaving  
2 Reader is leaving  
1 Reader is leaving  
Writer has entered  
Writer is leaving  
Writer has entered  
Writer is leaving  
prashanth@prashanth-VirtualBox:~\$ |

C Tab Width: 8 Ln 15, Col 15 INS

2)

Prashanth Singaravelan [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal

Oct 13 10:56

reader\_writer.c reader\_writer.c prog1.sh prog1.sh

```
1
2 i=0
3 str2=done
4 while [ $i -eq 0 ]
5 do
6     echo -n "Enter the age : "
7     read age
8     echo -n "Enter the weight : "
9     read weight
10    if [ $age -gt 20 -a $weight -eq 50 ]
11    then
12        echo "Donated"
13    else
14        echo "Not donated"
15    fi
16    echo -n "Enter state : "
17    read state
18    if [ $state == $str2 ]
19    then
20        i=1
21    else
22        i=0
23    fi
24 done
25
26
27
28
```

prashanth@prashanth-VirtualBox:~\$ bash prog1.sh  
Enter the age : 45  
Enter the weight : 50  
Donated  
Enter state : done  
prashanth@prashanth-VirtualBox:~\$ bash prog1.sh  
Enter the age : 45  
Enter the weight : 50  
Donated  
Enter state : not  
Enter the age : 45  
Enter the weight : 67  
Not donated  
Enter state : not  
Enter the age : 45  
Enter the weight : 50  
Donated  
Enter state : done  
prashanth@prashanth-VirtualBox:~\$ |

sh Tab Width: 8 Ln 2, Col 4 INS