Task 9

Task: Simulate the Readers –Writers problem using semaphores

Program:

```
#include<stdio.h>
#include<pthread.h>
#include<semaphore.h>
sem_t mutex,writeblock;
int data=0,rcount=0;
void *reader(void *arg)
{
int f;
f=((int)arg);
sem_wait(&mutex);
rcount=rcount+1;
if(rcount==1)
{
sem_wait(&writeblock);
sem_post(&mutex);
printf("Data read by reader %d is %d\n",f,data);
sem_wait(&mutex);
rcount=rcount-1;
}
if(rcount==0)
{
sem_post(&writeblock);
sem_post(&mutex);
}
}
void *writer(void *arg)
{
int f;
f=((int)arg);
sem_wait(&writeblock);
data++;
printf("Data written by writer %d is %d\n",f,data);
sleep(1);
sem_post(&writeblock);
}
void main()
{
int i,b;
pthread_t rtid[5],wtid[5];
sem_init(&mutex,0,1);
sem_init(&writeblock,0,1);
for(i=0;i<=2;i++)
{
pthread_create(&wtid[i],NULL,writer,(void*)i);
pthread_create(&rtid[i],NULL,reader,(void*)i);
```

```
}
for(i=0;i<=2;i++)
{
pthread_join(wtid[i],NULL);
pthread_join(rtid[i],NULL);
}
}
```

Output: