CODE:

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

void * reader(void *) ;
void *writer (void *) ;
char TextBook[20];
sem_t wsem,mutex ;
int readcount=0 ;

int main(){
    int a=1,b=1,readers;

    system("clear");
    sem_init(&wsem,0,1) ;
    sem_init(&mutex,0,1) ;

    pthread_t r[10],w,r1,w1 ;

    pthread_create(&w1,NULL,writer,(void *)b);
    pthread_join(w1,NULL);
    printf("Enter no. of readrers: ");
    scanf("%d",&readers);

    for(a=1; a<=readers; a++){
    pthread_create(&r[a],NULL,reader,(void *)a);
    }

    for(a=1; a<=readers; a++){
            pthread_join(r[a],NULL);
    }
    printf("main terminated\n");
}

void * reader(void * arg){
    int c=(int)arg;
    char str[20];
    FILE *fp;
    sleep(2);
    printf("\nreader %d is created",c);
    sem_wait(&mutex) ;
    readcount++;
    if(readcount==1)
           sem_wait(&wsem) ;
    sem_post(&mutex) ;

    printf("\nreader%d is reading\n",c);

    fp = fopen(TextBook, "r");
    printf("\t");
    while (fgets(str,20, fp) != NULL)
           printf("%s", str);
    printf("\nreader%d finished reading\n",c);
    fclose(fp);

    sem_wait(&mutex) ;
    readcount-- ;
    if(readcount==0)
          sem_post(&wsem) ;
    sem_post(&mutex) ;
}

void * writer(void * arg){
    int c=(int)arg ;

    FILE * fp;
    char data[100];
    int i;

    printf("\nEnter file name : ");
    scanf("%s",TextBook);
    fp = fopen (TextBook,"a");
    sleep(2);
    printf("\nwriter %d is created",c);
    sem_wait(&wsem) ;
           printf("\nWriter %d is writing in file \n",c) ;
            scanf(" %[^\t\n]s",&data);
           fprintf(fp,data,"w");
           fclose(fp);
           printf("\nWriter%d finished writing\n",c);
    sem_post(&wsem) ;
}
```

OUTPUT:

```
Enter file name : new

writer 1 is created

Writer 1 is writing in file

rea

Writer1 finished writing

Enter no. of readrers: 2

reader 1 is created

reader1 is reading

reader 2 is created

reader2 is reading

          rea
```

```
reader2 finished reading

rea

reader1 finished reading

main terminated
```