#include<stdio.h>

#include<stdlib.h>

#include<pthread.h>

#include<semaphore.h>

#include<unistd.h>

sem\_t X,Wsem;

FILE \*fp;

int readcount;

pthread\_t tid1[10],tid2[10];

pthread\_attr\_t attr;

//initialize

void initialize\_data()

{

sem\_init(&X,0,1);

sem\_init(&Wsem,0,1);

readcount=0;

pthread\_attr\_init(&attr);

}

// Reader

void \*reader()

{

while(1)

{

sleep(5);

sem\_wait(&X);

readcount++;

if(readcount==1)

sem\_wait(&Wsem);

sem\_post(&X);

printf("\nREADER reading");

readunit();

printf("\nREADER completed");

sem\_wait(&X);

readcount--;

if(readcount==0)

sem\_post(&Wsem);

sem\_post(&X);

}

}

// Writer

void \*writer()

{

while(1)

{

sleep(2);

sem\_wait(&Wsem);

printf("\nwriter writing");

writeunit();

printf("\nwriter completed");

sem\_post(&Wsem);

}

}

// Write Operation

int writeunit()

{

char b,buf1[100];

printf("\nenter the contents of file:");

fp=fopen("hello.txt","w");

scanf("%s",buf1);

fputs(buf1,fp);

fclose(fp);

return(0);

}

//Read operation

int readunit()

{

char b,c,buf[100];

fp=fopen("hello.txt","r");

printf("\ncontents of file are:");

fgets(buf,100,fp);

printf("%s",buf);

fclose(fp);

return(0);

}

int main()

{

int x,r,w,i;

printf("\nenter the main sleep time:");

scanf("%d",&x);

printf("enter the no of readers & writers:");

scanf("%d%d",&r,&w);

initialize\_data();

for(i=0;i<r;i++)

pthread\_create(&tid1[i],&attr,reader,NULL);

for(i=0;i<w;i++)

pthread\_create(&tid2[i],&attr,writer,NULL);

sleep(x);

return(0);

printf("exit ");

exit(0);

}

/\*

guest-NdXxWR@m37:~$ gcc reader\_writer.c -pthread

guest-NdXxWR@m37:~$ ./a.out

enter the main sleep time:15

enter the no of readers & writers:2 1

writer writing

enter the contents of file:sastra

writer completed

READER reading

READER reading

contents of file are:sastra

READER completed

contents of file are:sastra

READER completed

writer writing

enter the contents of file:src

writer completed

READER reading

contents of file are:src

READER completed

READER reading

contents of file are:src

READER completed

writer writing

enter the contents of file:pi

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