Operating System Lab 10

Name: Ahmed Kasteer

Section: 4D

Roll Number: 20F-0336

Task 1

#include<stdio.h>

#include<unistd.h>

#include<pthread.h>

#include<string.h>

#include<sys/types.h>

#include<sys/wait.h>

int fuel=0;

pthread\_mutex\_t mutex;

pthread\_cond\_t cond;

char message[5]={"ahmed"};

int i;

void \*sender(void \*arg){

for(i=0;i<5;i++)

{

pthread\_mutex\_lock(&mutex);

printf("Enter Message\n");

scanf("%s",message);

pthread\_mutex\_unlock(&mutex);

pthread\_cond\_signal(&cond);

sleep(1);

}

}

void \*reciever(void \*arg){

pthread\_mutex\_lock(&mutex);

if(message!="Ahmed"){

printf("Message INVALID.\n");

pthread\_cond\_wait(&cond,&mutex);

}

printf("Reciever: %s\n",message);

i=5;

pthread\_mutex\_unlock(&mutex);

}

int main(){

pthread\_mutex\_init(&mutex,NULL);

pthread\_cond\_init(&cond,NULL);

pthread\_t th[2];

for(int i=0;i<2;i++){

if(i==0){

pthread\_create(&th[i],NULL,sender,NULL);

}

else{

pthread\_create(&th[i],NULL,reciever,NULL);

}

}

for(int i=0;i<2;i++){

pthread\_join(th[i],NULL);

}

pthread\_mutex\_destroy(&mutex);

pthread\_cond\_destroy(&cond);

return 0;

}

Text

Description automatically generated

Task 2

#include<stdio.h>

#include<pthread.h>

#include<unistd.h>

#include<sys/wait.h>

#include<semaphore.h>

int global=0;

sem\_t sema;

void \*fun1(void \*arg);

void \*fun2(void \*arg);

void \*fun3(void \*arg);

int main(){

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

pthread\_t t1,t2,t3;

pthread\_create(&t1,NULL,fun1,NULL);

pthread\_create(&t2,NULL,fun2,NULL);

pthread\_create(&t3,NULL,fun2,NULL);

pthread\_join(t1,NULL);

pthread\_join(t2,NULL);

pthread\_join(t3,NULL);

printf("Total Final amount in account: %d \n",global);

return 0;

}

void \*fun1(void \*arg){

sem\_wait(&sema);

int x;

printf("Deposite said amount by Dad:\n");

scanf("%d",&x);

global=global+x;

sem\_post(&sema);

}

void \*fun2(void \*arg){

sem\_wait(&sema);

int x;

printf("Deposite said amount by Brother:\n");

scanf("%d",&x);

global=global+x;

sem\_post(&sema);

}

void \*fun3(void \*arg){

sem\_wait(&sema);

int x;

printf("Deposite said amount by Cousin:\n");

scanf("%d",&x);

global=global+x;

sem\_post(&sema);

}

Text

Description automatically generated

Task 3

#include<stdio.h>

#include<pthread.h>

#include<unistd.h>

#include<sys/wait.h>

#include<semaphore.h>

int global=5;

sem\_t sema;

void \*fun1(void \*arg);

void \*fun2(void \*arg);

int main(){

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

pthread\_t t1,t2;

pthread\_create(&t1,NULL,fun1,NULL);

pthread\_create(&t2,NULL,fun2,NULL);

pthread\_join(t1,NULL);

pthread\_join(t2,NULL);

printf("final value of global variable is: %d ",global);

return 0;

}

void \*fun1(void \*arg){

sem\_wait(&sema);

int x,y;

printf("Enter value 1:\n");

scanf("%d",&x);

printf("Enter value 2:\n");

scanf("%d",&y);

global=x+y;

sem\_post(&sema);

}

void \*fun2(void \*arg){

sem\_wait(&sema);

int x;

printf("Enter value for multiplication for global variable\n");

scanf("%d",&x);

global=global\*x;

sem\_post(&sema);

}

Text

Description automatically generated