

Laporan Ujian Akhir Semester Praktikum – Sistem Operasi Untuk Sistem Informasi

Kelompok: A-14

Anggota:

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Tuliskan hasil percobaan anda di sini, sertakan screenshot

Week07 Problem A:

Source Code:

```
#include <stdio.h>

#include <stdlib.h>

#include <sys/types.h>

#include <unistd.h>

#include "99-myutils.h"


sem_t sem_a, sem_b, sem_c, sem_d;


void* T1 (void* a) {

    sem_wait(&sem_d);

    for(int i=1; i<2; i+=1){

        printf(" T1 Writer  [%d]\n",i);

    }

    sem_post(&sem_a);

}
```

```
void* T2 (void* a) {  
  
    sem_wait(&sem_a);  
  
    for(int i=1; i<3; i+=1){  
  
        printf(" T2 Writer  [%d]\n",i);  
  
    }  
  
    sem_post(&sem_b);  
}
```

```
void* T3 (void* a) {  
  
    sem_wait(&sem_b);  
  
    for(int i=1; i<4; i+=1){  
  
        printf(" T3 Reader  [%d]\n",i);  
  
    }  
  
    sem_post(&sem_c);  
}
```

```
void* T4 (void* a) {  
  
    sem_wait(&sem_c);  
  
    for(int i=1; i<5; i+=1){  
  
        printf(" T4 Reader  [%d]\n",i);  
  
    }  
  
    sem_post(&sem_d);  
}
```

```
int main(int argc, char * argv[])
{
    sem_init(&sem_a, 0, 0);
    sem_init(&sem_b, 0, 0);
    sem_init(&sem_c, 0, 0);
    sem_init(&sem_d, 0, 1);

    daftar_trit(T1);
    daftar_trit(T2);
    daftar_trit(T3);
    daftar_trit(T4);

    while(TRUE) {
        jalankan_trit();
    }

    beberes_trit("Selesai...");
}
```

Running & Output Program :

```
T1    Writer  [1]
T2    Writer  [1]
T2    Writer  [2]
T3    Reader  [1]
T3    Reader  [2]
T3    Reader  [3]
T4    Reader  [1]
T4    Reader  [2]
T4    Reader  [3]
T4    Reader  [4]
T1    Writer  [1]
T2    Writer  [1]
T2    Writer  [2]
T3    Reader  [1]
T3    Reader  [2]
T3    Reader  [3]
T4    Reader  [1]
T4    Reader  [2]
T4    Reader  [3]
T4    Reader  [4]
T1    Writer  [1]
T2    Writer  [1]
T2    Writer  [2]
T3    Reader  [1]
T3    Reader  [2]
T3    Reader  [3]
T4    Reader  [1]
```

Week07 Problem B:

Source Code :

```
#include <stdio.h>

#include <stdbool.h>

#include <stdlib.h>

#include <sys/types.h>

#include <unistd.h>

#include <stdlib.h>

#include "99-myutils.h"

#define T_REHAT 2000

int n;

bool cond = TRUE;

int idmaster = 1;
```

```
int sharedInt = 0;

int temp;

int addvar, subvar;

sem_t alusem;

void* adder (void* a) {

    int id;

    id = ++idmaster;

    while(TRUE) {

        rehat_acak(T_REHAT);

        sem_wait(&alusem);

        addvar = (rand()%5)+1;

        sharedInt += addvar;

        printf("Thread[%3.3d] \t ADD \t [%3.3d] \t CURRENT VALUE \t [%3.3d] \n", id, addvar, sharedInt);

        sem_post(&alusem);

        temp++;

    }

}

void* subtractor (void* a) {

    int id;

    id = ++idmaster;

    while(TRUE) {

        rehat_acak(T_REHAT);

        sem_wait(&alusem);
```

```

        subvar = (rand()%5)+1;

        sharedInt -= subvar;

        printf("Thread[%3.3d] \t SUB \t [%3.3d] \t CURRENT VALUE \t
[%3.3d] \n",id,subvar,sharedInt);

        sem_post(&alusem);

        temp++;

    }
}

void* observer (void* a) {

    int id;

    id = idmaster++;

    while(TRUE) {

        rehat_acak(T_REHAT);

        if(temp%(2*n)==0) {

            printf("Thread[%3.3d] \t OBS --- CURRENT VALUE
[%3.3d] \n",id,sharedInt);

            temp = 0;

        }

        //sem_wait(&alusem);

        //sem_post(&alusem);

    }

}

int main(int argc, char * argv[])
{

    sem_init(&alusem, 0, 1);

```

```

int x;

printf("Hello... \n");

printf("Please input a positive number (N) : ");

scanf("%d", &n);

x=n;

printf("The input N is : %d \n", n);


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

    daftar_trit(observer);

    daftar_trit(adder);

    //temp+=1;

    daftar_trit(subtractor);

    //temp+=1;

    //if(temp%(2*n) !=0){

        //cond = FALSE;

    //}

    //cond = TRUE;

}

jalankan_trit();

beberes_trit("Selesai...");

}

```

Output Program :

```

halim@halim-VirtualBox:~/Documents/UAS/templateUASSOSI2021/Week07$ ./w07b-adder
subtractor
Hello...
Please input a positive number (N) : 3
The input N is : 3
Thread[001]    OBS    ---    CURRENT VALUE    [000]
Thread[005]    SUB    [004]    CURRENT VALUE    [-004]
Thread[005]    SUB    [004]    CURRENT VALUE    [-008]
Thread[004]    ADD    [003]    CURRENT VALUE    [-005]
Thread[003]    SUB    [003]    CURRENT VALUE    [-008]
Thread[009]    ADD    [004]    CURRENT VALUE    [-004]
Thread[005]    SUB    [002]    CURRENT VALUE    [-006]
Thread[001]    OBS    ---    CURRENT VALUE    [-006]
Thread[006]    ADD    [004]    CURRENT VALUE    [-002]
Thread[008]    SUB    [005]    CURRENT VALUE    [-007]
Thread[005]    SUB    [005]    CURRENT VALUE    [-012]
Thread[003]    SUB    [004]    CURRENT VALUE    [-016]
Thread[005]    SUB    [004]    CURRENT VALUE    [-020]
Thread[004]    ADD    [001]    CURRENT VALUE    [-019]
Thread[005]    SUB    [004]    CURRENT VALUE    [-023]
Thread[009]    ADD    [003]    CURRENT VALUE    [-020]
Thread[009]    ADD    [001]    CURRENT VALUE    [-019]
Thread[005]    SUB    [001]    CURRENT VALUE    [-020]
Thread[008]    SUB    [001]    CURRENT VALUE    [-021]
Thread[009]    ADD    [004]    CURRENT VALUE    [-017]
Thread[009]    OBS    ---    CURRENT VALUE    [-017]
^C
halim@halim-VirtualBox:~/Documents/UAS/templateUASSOSI2021/Week07$ gcc w07b-add
ersubtractor.c 99-myutils.c -o w07b-addersubtractor -pthread

```