Lab Assignment 5

**Title: Process synchronization**

**Problem statement:**

To implement Readers-Writers problem

**Objectives:**

* To understand the concept of Process Synchronization
* To understand the classical Readers-Writers problem
* To devise a solution using semaphores

**Theory:**

There is a data area shared among a number of processes. The data area could be a file or record. There are number of processes that only read the data area(readers) and a number of processes that only write the data area (writers). The conditions that must be satisfied are as follows:

* Any number of readers may simultaneously read the file.
* Only one writer at a time may write to the file.
* If a writer is writing to the file, no reader may read it.

**Pseudo Code:**

int readcount = 0; // keeps track of number of readers

semaphore mutex = 1; //binary, used for updating reader count

semaphore wrt = 1; // binary, common to readers & writers.

void reader()

{while(true)

{

wait(mutex); readcount++;

if(readcount == 1)

signal(mutex);

………

reading is performed

………..

wait(mutex);

readcount--;

if (readcount == 0)

signal(wrt);

signal(mutex);

}

}

void writer()

{

while(true)

{

wait(wrt);

………

writing is performed

………..

signal(wrt);

}

}

**Conclusion**: Thus, we have studied and implemented the concept of process syncronization

**FAQs**

1. Explain the working of semaphores.
2. Discuss producer-consumer problem and devise a solution using semaphores.
3. List and discuss the different process synchronization mechanisms.