OS LAB ASSIGNMENT 3

SP19-BCS-078 Saud ul Hassan

**CSC 322- Operating System**

***Week 11*: *System-V inter process communication mechanisms. Semaphore array***

**Exercise 2:** Write a function that creates and initializes a semaphore set containing a single semaphore.

**Semaphore set:**

A semaphore set is a structure that stores a group of semaphores together, and possibly allows the process to commit a transaction on part or all the semaphores in the set together. Here, a transaction means that we are guaranteed that either all operations are done successfully, or none is done at all.

**Semaphore Set Functions**

* [semget()](https://www.ibm.com/docs/en/ssw_ibm_i_74/apis/ipcsemgt.htm) (Get Semaphore Set with Key) returns the semaphore ID associated with the specified semaphore key.
* [semop()](https://www.ibm.com/docs/en/ssw_ibm_i_74/apis/ipcsemop.htm) (Perform Semaphore Operations on Semaphore Set) performs operations on semaphores in a semaphore set. These operations are supplied in a user-defined array of operations.
* [semctl()](https://www.ibm.com/docs/en/ssw_ibm_i_74/apis/ipcsemct.htm) (Perform Semaphore Control Operations) provides semaphore control operations as specified by cmd on the semaphore specified by semnum in the semaphore set specified by semid.
* [semctl\_time64()](https://www.ibm.com/docs/en/ssw_ibm_i_74/apis/ipcsemct64.htm) (Perform Semaphore Control Operations (64-bit time64\_t enabled)) provides semaphore control operations as specified by cmd on the semaphore specified by semnum in the semaphore set specified by semid.

**Parameters**

The following sections examine semaphore-related parameters in detail.

**semmni**

semmni sets the total number of semaphore sets that a system can have.

**semmns**

semmns determines the maximum number of allowable semaphores system wide.

**semmsl**

semmsl is the maximum number of semaphores allowed in a semaphore set.

**semopm**

semopm defines how many operations a single semop() call can operate on a semaphore set.

**semvmx**

semvmx sets the maximum value of a semaphore. The semvmx hard limit is 65536 because of its data type (unsigned short).

**Code:**

#include<stdio.h>

#include <semaphore.h>

int sem\_init(sem\_t \*sem, int pshared, unsigned int value);

int main()

{

sem\_t sem;

int pshared;

int ret;

int value;

pshared = 0;

value = 1;

ret = sem\_init(&sem, pshared, value);

}