**Report**

**Assignment 3**

Answer to Question 1 –

In this implementation of Producer and Consumer, synchronization is achieved using the pre-implemented semaphores of xinu. We use two semaphores here, namely, *produced* and *consumed*. The consumer waits on the semaphore *produced* whereas the producer waits on the semaphore *consumed*. The semaphores are created dynamically using the ***semcreate*** system call. It takes the desired initial count as an argument. The ***wait*** system call decrements a semaphore and adds the calling process to the set of waiting process if the result is negative. The ***signal*** system call does the opposite function of incrementing and allowing one of the waiting processes to continue if there are any. Thus the producer waits on the semaphore *consumed* and consumer waits on the semaphore *produced*. The critical section is between the wait and signal calls so, synchronization is achieved by allowing either the producer or consumer to do their operations on ‘*n*’.

Answer to Question 2 –

The above synchronization cannot be achieved using just one semaphore because we need two, one on which the producer waits and one on which the consumer will wait.