**Operating Systems**

**University at Albany**

**Department of Computer Science**

**CSI 500**

**Assignment-1**

**Assigned: Wednesday, February 5th, 2020**

**Due: Monday, February 10th by 11:59 PM**

**Student Name:**

## OBJECTIVES

## To develop a C program that uses fork(), pipe(), and the exec family of process system calls to implement a producer/consumer communication.

## PROBLEM

You are to use any distribution of the Linux operating system to create three C programs named *execTwo.c, consumer.c,* and *producer.c* The *consumer.c* program will read integers from *stdin* and will write to *stdout* only the even numbers found in the input provided. The *producer.c* program will write 20 different integers to *stdout*. Both programs, the producer and the consumer, will communicate by means of reading and writing to a shared pipe. Your solution must execute both producer and consumer programs by means of a single command. You may use the *fork()*, pipe(), dup(), dup2(), read(), write(), creat(), as well as any of the *exec()* family of system calls.

Your **.c** files, after compiled, are to be named **execTwo**, **producer**, and **consumer**. The input data set must contain all integers from 0 to 19. The command that follows must be used to obtain the even numbers from the input set displayed at *stdout*.

*Prompt>* ./**execTwo producer consumer**

The result of the above command should produce all even numbers obtained after the execution of your solution. A successful solution should provide the following result:

*Prompt>* *0 2 4 … 16 18*

## WHAT TO SUBMIT

The following are to be submitted through Blackboard:

1. Your *producer.c*, *consumer.c*, and *execTwo.c* source files as well as any output produced by your solution that clearly shows the following:
2. Screenshot of your command line illustrating the syntax used for the execution of the *execTwo* command, and both the 20 integers as well as the even numbers resulting from your computation.