Operating Systems

Programming Project #1   **Total Points: 25**

Due: 9/24/20

1. Write a program in Java which creates producer and consumer threads. The producer should "produce" by setting the elements of an array of integers to FULL. The consumer should "consume" by setting the elements of an array of integers to EMPTY.

Make sure you properly handle the following situations:

- A producer (consumer) producing (consuming) past the end (beginning) of the buffer

- A producer writing to an array element that is not EMPTY and a consumer reading (i.e. setting the array element to EMPTY) from an array element that is not FULL.

- Use *wait()* and *notify()* to avoid errors producing and consuming and to ensure thread synchronization.

Include your program, along with output showing it run correctly for an interesting case.

17 points

2. Write a program in C which functions as a DOS command interpreter. DOS uses the commands **cd, dir, type, del, ren,** and **copy** to do the same functions as the UNIX commands **cd, ls, cat, rm, mv,** and **cp**. Your program loops continuously, allowing the user to type in DOS commands, which are stored in the variables **command**, **arg1** and **arg2**. The command should be considered by a case statement, which executes an appropriate UNIX command, depending on which DOS command has been given. The program should echo the following instruction to the user: *Type Ctrl-C to exit.*

Include your program, along with output showing it run correctly

8 points