**CS 3173 Assignment 7 14 points**

**chapter 10**

**Due 10/21**

**Email your homework to me at** [**harringp@nsuok.edu**](mailto:harringp@nsuok.edu)

**Part 1: Problem Solving: Type your answers (8 points):**

1. What is a sequential circuit? **– A circuit that has a memory cell in addition to its inputs.**
2. What is a rising edge on a transition of input to a circuit? **– The moment where a signal changes from low to high**
3. What two symbols are used to describe the state of a memory cell? **– and ( and represent the previous state)**
4. What two circuits together can be used to store a binary value? **– a Latch and a Flip-Flop**
5. What makes this into a sequential circuit? **– In addition to storing a binary value, it has an input and an output**
6. What is the difference between a latch and a flip-flop? **– A latch is active-low while a flip-flop is active-high**
7. What is a D-latch? **– A latch that stores data on the rising or falling edge of a clock cycle**
8. What is the difference between and SR and JK flip flop? **– While an SR Flip Flop has undefined values, a JK Flip Flop does not.**

**Part 2: Java Programming (6 points):**

Write a Java program to create the input and output of the S-R Latch (flip flop) shown below. Print the output of each state according to the table shown below. Get input for S and R (true and false, or 0 and 1 if you prefer) from the user and print the result: be sure to use NAND gates (AND followed by negation, or in java && followed by !).

