1. Programming

Part a. Write the code that will determine if a 2 by 2 array contains any zeroes. Print yes if it does, otherwise do no printing. Assume I will fill in values of the array later.

```java
int [][] two_by_two = { {...}, {...}, ... };  
int rows = two_by_two.length;  //number of rows  
int cols = two_by_two[0].length;  //number of columns  
//your code goes below
```

Part b. Swap the values of A[i] and A[j]. You can assume that A is an array of ints, and that i and j are legal indices.

```java
//your swap code goes below
```
2. **Combinatorial Circuits**

What does this circuit do?

![Combinatorial Circuit Diagram](image)

3. **Sequential Circuits**

**Part a.** Assume that this circuit has output $Q_1=0$. How can I change it to $Q_1=1$?

![Sequential Circuit Diagram](image)
Part b. Draw the finite automata that goes with this circuit.

4. Binary numbers (review)

Given the value 1010111 in binary (base 2), show the equivalent in decimal (base 10)?

What is the value of 100 (decimal) in binary?

5. Cellular Automata (chapter 44)

When does a cellular automata become stable?