

# CMSC330 Spring 2014 Quiz #1

Name \_\_\_\_\_

<b>Discussion Time</b>	<b>10am</b>	<b>11am</b>	<b>noon</b>	<b>1pm</b>	<b>2pm</b>
<b>TA Name (circle):</b>	<b>Tammy</b>	<b>Tammy</b>	<b>Tammy</b>	<b>Daniel</b>	<b>Daniel</b>
		<b>Ilse</b>	<b>Casey</b>	<b>Ian</b>	

## Instructions

- Do not start this test until you are told to do so!
- You have 15 minutes for this quiz.
- This is a closed book exam. No notes or other aids are allowed.
- Answer essay questions concisely in 2-3 sentences. Longer answers are not needed.
- For partial credit, show all of your work and clearly indicate your answers.
- Write neatly. Credit cannot be given for illegible answers.

1. (2 pts) What is the output (if any) of the following Ruby program? Write FAIL if code does not execute.

```
a = "Adama"
b = "Adama"
if a.equal? b then puts "BSG" else puts "Star" end
puts "OK" if a.length - b.length
```

**# Output =**

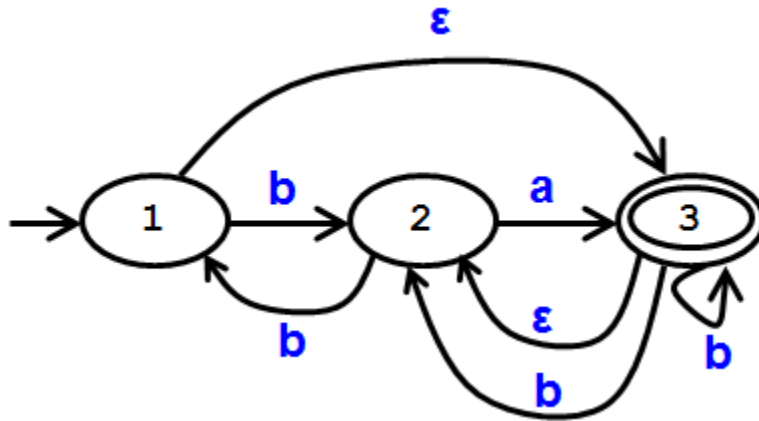
2. (8 pts) Write a Ruby method *get\_request\_number* that given a string *str*, uses regular expressions and back references to find and return a request number (integer) associated with a request. A valid request has the letters **Req**, followed by a #, followed by two digits. For instance, `get_request_number("please use Req#12 after 6 pm or dial 457")` should return the integer value 12. The method will return -1 if no request is found.

```
def get_request_number(str)
```

Some helpful functions (not all need to be used)	
a.each { ... }	// apply code block to each element in array
puts b	// print b followed by a newline
s.to_i	// returns integer value for string s
n.to_s	// returns string for integer n

**There is another problem on the back**

3. (10 pts) Consider the following NFA.



- a. (2 pts) Does the NFA accept the string “aab”? If it accepts the string, list a sequence of state transitions (e.g., 1,2,3) that leads to acceptance of “aab”.
  
- b. (8 pts) Convert the NFA to a DFA using the subset construction algorithm discussed in class. Be sure to label each state in the DFA with the corresponding state(s) in the NFA.