

## CMSC 330 Spring 2017 Quiz #1

|   |       |      |        |       |        |        |
|---|-------|------|--------|-------|--------|--------|
| <b>Name (as it appears on gradescope)</b> |       |      |        |       |        |        |
| <b>Discussion Time (circle one)</b>       | 10am  | 11am | 12pm   | 1pm   | 2pm    | 3pm    |
| <b>Discussion TA (circle one)</b>         | Aaron | Alex | Austin | Ayman | Daniel | Eric   |
|   | Greg  | Jake | JT     | Sam   | Tal    | Tim    |
|   |       |      |        |       | Tim    | Vitung |

### Instructions

- Do not start this quiz until you are told to do so.
- You have 15 minutes for this quiz.
- This is a closed book quiz. No notes or other aids are allowed.
- For partial credit, show all of your work and clearly indicate your answers.

1. (2 point each) True or False – Circle whether each statement is True or False

- T **F**      0, nil and false are all treated as false in Ruby
- T **F**      Ruby has static type checking
- T **F**      Variables in Ruby are implicitly declared
- T **F**      Ruby requires a main method to execute code
- T **F**      The @ prefix creates global class variables

2. (2 points each) Ruby Execution – Write the expected output of the code snippets below, if there would be an error, write FAIL.

- |  |  |   |                     |   |   |   |   |   |   |
|--|--|---|---------------------|---|---|---|---|---|---|
| <p>a. <code>a = [5,4,3,2,1]</code></p> <p style="padding-left: 20px;"><code>a.sort</code></p> <p style="padding-left: 20px;"><code>a.select! {  x  x % 2 == 0 }</code></p> <p style="padding-left: 20px;"><code>puts a</code></p>  | <p><b>Output:</b></p> <p>4</p> <p>2</p>  |   |                     |   |   |   |   |   |   |
| <p>b. <code>h = Hash.new(0)</code></p> <p style="padding-left: 20px;"><code>h["330"] = 3</code></p> <p style="padding-left: 20px;"><code>h["351"] = 3</code></p> <p style="padding-left: 20px;"><code>a = ["132", 7, "330", "351"]</code></p> <p style="padding-left: 20px;"><code>a.each {  e </code></p> <p style="padding-left: 40px;"><code>puts h[a]</code></p> <p style="padding-left: 20px;"><code>}</code></p> | <p><b>Output:</b></p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">0</td> <td style="width: 50%;"><b>with h[e]: 0</b></td> </tr> <tr> <td>0</td> <td>0</td> </tr> <tr> <td>0</td> <td>3</td> </tr> <tr> <td>0</td> <td>3</td> </tr> </table> | 0 | <b>with h[e]: 0</b> | 0 | 0 | 0 | 3 | 0 | 3 |
| 0  | <b>with h[e]: 0</b>  |   |                     |   |   |   |   |   |   |
| 0  | 0  |   |                     |   |   |   |   |   |   |
| 0  | 3  |   |                     |   |   |   |   |   |   |
| 0  | 3  |   |                     |   |   |   |   |   |   |

3. (6 points) Define a method `frequency` that given an array, prints the number of occurrences of each element in the array on separate lines. The return value of the method can be anything.

**Example**

```
irb(main):01:0> frequency [4,3,2,3,4]
```

```
4: 2
```

```
3: 2
```

```
2: 1
```

```
=> nil
```

```
def frequency a
  counts = Hash.new(0)
  a.each { |e|
    counts[e] = counts[e] + 1
  }
  counts.keys.each { |k,v|
    puts "#{k}: #{v}"
  }
end
```