

CMSC 330 Fall 2016 Quiz #1 Solution

Name _____

Discussion Time (circle one) 10am 11am 12noon 1pm 2pm 3pm

Discussion TA (circle one) Alex Austin Ayman Brian Damien Daniel K.
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Instructions

- Do not start this quiz until you are told to do so.
 - You have 20 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. (4 points) Write a Ruby regular expression to match only strings which represent timestamps, which represent a date and an **optional** time. The format of these timestamps is YYYY-MM-DD HH:MM:SS, where the date and time are separated by a single space. Here are some strings which your regex should and should not match:

Should match	Should not match
"2016-09-10 20:26:56"	"abc2016-09-10 20:26:56def"
"2017-04-30"	"2016-09-10 "
"0001-40-77 46:99:00"	"201-609-10 :20:26:56"

Note that you do **not** need to validate the dates and times themselves, just their format.

Solution: `/^\d{4}(-\d\d){2}(\s\d\d(:\d\d){2})?$/`

2. (9 points) What is the output of the following Ruby programs? If there is no output, please write only **NO OUTPUT**. Recall that `foo.inspect` gives the representation of `foo` as it would appear in source code, e.g. `[1,2,3].inspect` is `"[1,2,3]"`.

a) (3 points) **Solution:** `[nil, nil, nil, "foo"]`

```
arr = []  
arr[3] = "foo"  
puts arr.inspect
```

b) (3 points) **Solution:** `[4, 8, 15, 16, 23, 42]`

```
arr = [15, 23, 4, 16, 8, 42]  
arr.sort!  
arr.select { |x| x.even? }  
puts arr.inspect
```

c) (3 points) **Solution:** `4`

```
foo = "abcd45efghi" =~ /..(\d)/  
puts $1.inspect
```

3. (7 points) Given the following Ruby Set class declaration, implement the indicated methods:

```
class Set
  include Enumerable

  def initialize
    @s = Hash.new(false)
  end

  def insert(val)
    @s[val] = true
  end

  # Your methods are here.

end
```

- a) (3 points) Implement `contains?` for `Set`. It should return `true` if `val` is in the set, and `false` otherwise.

Solution:

```
def contains?(val)
  @s[val]
end
```

- b) (4 points) Implement the `each` method for `Set`. Recall that `each` takes a code block and yields each member of a collection to it in turn. You may iterate over the elements in any order.

Solution:

```
def each
  @s.keys.each { |key|
    yield key
  }
end
```