

(1 pt) **NAME:** _____

CSCI 3308 Fall 2013
EXAM 1

Directions:

- ❖ Questions on this exam vary in difficulty and expected time to complete. Points per question are provided in parenthesis with each question.
- ❖ Read through the entire exam before and start by answering the questions that you are most sure of.
- ❖ A Rubular regular expression cheat sheet is provided on the last page of the exam.
- ❖ If you are torn between two responses to a multiple choice question you can provide up to two responses. Grading will be as follows:
 - 2 responses given: If neither response is the correct answer a penalty in the amount of 25% of the problem value will be taken.
 - 2 responses given: If one of your choices is correct you will receive half credit.
 - 1 response given: If one choice is provided and it is correct you receive full credit.
 - 1 response given: If one choice is provided and it is incorrect you receive a zero for the problem.
 - If no choices are made you receive a zero for the problem.

The purpose of the grading scheme is to provide partial credit for multiple choice questions without encouraging guessing. IF YOU ARE NOT AT LEAST SOMEWHAT CERTAIN DO NOTHING.

- ❖ If you need more room to answer a question use the back of the previous sheet.
- ❖ There are four versions of the exam randomly distributed to the class.

HONOR PLEDGE

SIGN BELOW: On my honor, as a University of Colorado at Boulder student, I have neither given nor received unauthorized assistance on this work.

Student Signature

1. (2 pts) Which type of software is considered an epic failure? ____C____
 - a. Beautiful code
 - b. Legacy code
 - c. Unexpectedly short-lived code
 - d. Both a and b
 - e. Both a and c
 - f. Both b and c

2. (2 pts) Which statement is TRUE about productivity in software development? _D_
 - a. Copy and pasting code is a good way to get reuse.
 - b. Metaprogramming helps productivity via program synthesis
 - c. Of the four productivity reasons, the primary one for High Level Languages is reuse
 - d. A concise syntax is more likely to have fewer bugs and be easier to maintain.

3. (2 pts) Which statement is ALWAYS true when an exception occurs in a modern programming language? _____B_____
 - a. The program will immediately stop execution.
 - b. An immediate change of control flow occurs.
 - c. An arithmetic operation was performed whose result is outside the range that the computer can represent.
 - d. None of the above.

4. (2 pts) Which statement is NOT part of the Agile Manifesto? _____E_____
 - a. We value individuals and interactions over processes and tools.
 - b. We value working software over comprehensive documentation.
 - c. We value customer collaboration over contract negotiation.
 - d. We value responding to change over following a plan.
 - e. None of the above

5. (2 pts) Why must every interaction with a SaaS app eventually cause something to be rendered? _____B_____
 - a. Because of convention over configuration.
 - b. Because HTTP is a request-reply protocol.
 - c. Because Model-View-Controller implies that every action renders its own View.
 - d. All of the above

6. (3 pts) Given the following Ruby assignment statement, which expression will evaluate to non-nil?

_____ **C** _____

```
rx = { :fox=>/^arm/, 'fox'=>[%r{AN(DO)$}, /an(dO)/i] }
```

- a. "armando" =~ rx{:fox}
- b. rx{:fox}[1] =~ "ARMANDO"
- c. rx['fox'][1] =~ "ARMANDO"
- d. "armando" =~ rx['fox', 1]

7. (2 pts) Which of the following statements are true? _____ **E** _____

- (1) A route consists of *both* a URI and an HTTP method.
- (2) A route URI *must* be generated by Rails URI helpers.
- (3) A route URI *may* be generated by Rails URI helpers.

- a. Only (1) is true.
- b. Only (2) is true
- c. Only (3) is true.
- d. Both (1) and (2) are true.
- e. Both (1) and (3) are true

8. (2 pts) Which of the following are examples of structured storage:

_____ **E** _____

- a. An Excel spreadsheet
- b. A text file containing an email message
- c. A text file that contains names with exactly one name per line
- d. Both a and b
- e. Both a and c
- f. Both b and c

9. (3 pts) Why does `5.superclass` (in Ruby) result in an undefined method?

response must include words that indicate knowledge of the following:

- a. `superclass` is a method of the `Class` class.
- b. `5` is an object not a class or some statement implying this
For instance: "you call `superclass` on a class, not an object" is okay.

10. (4 pts) What are the two steps you must take to have your app use a specific Gem?

a. Edit the GEMfile adding the GEM

b. run bundle install

11. (2 pts) Of the debugging methods described in Section 4.5 of the book, which one(s) are appropriate for collecting instrumentation or diagnostic information once your app is deployed and in production?

Study the log

12. (2 pts) Circle one: TRUE or FALSE – If you log in to RottenPotatoes using your Twitter ID, RottenPotatoes automatically becomes capable of tweeting using your Twitter ID.

13. (2 pts) Rails models acquire the methods **where** and **find** via ____A____

- a. Inheritance
- b. Mix-in
- c. Both a and b

14. (2 pts) Which of the following is the sugared version of the following ruby code:

____A____

```
a.send(:+, x.send(:*, y))
```

- a. $a + x * y$
- b. $a + x.send(*, y)$
- c. $(a + x) * y$
- d. $a.+x.send(*, y)$
- e. none of the above

15. Hashes

- a. (2 pts) How would you initialize a hash with key "test" and a value that consists of an array ["a"] (write the line of code)?

```
some_hash = { "test" => ["a"] }
```

- b. (2 pts) What code would you use to subsequently append "b", "c", and "d" to the array represented by the "test" key in the above question (write the line of code)?

```
some_hash["test"] << "b" << "c" << "d"
```

16. Class_eval

- a. (2 pts) What does class_eval do?

class_eval is part of Ruby's meta-programming and allows changes to be made to classes at runtime.

- b. (2 pts) What is it used for?

answer should be something along the lines of class_eval can be used to add and retrieve class instance variables from outside the class or class_eval can be used to add instance methods to a class

- c. (1 pt) Give an example. (Note: there is an example in the attr_accessor fill in the Question 22)

This will be subjective – does not need to be a code example but can describe one.

17. (3 pts) What terminal command do you use to create a new rails app (to begin the coding process)?

```
rails new <app_name> -- can give full credit even without the app_name
```

18. (4 pts) Given the following code, what are the four numbers printed by the code? (place your answer on the line in the box to the right of the print statements)?

```
class TestClass
  def setVar1(valueIn)
    @Var1 = valueIn
  end

  def setVar2(valueIn)
    @@Var2 = valueIn
  end

  def printVar1
    print @Var1
  end

  def printVar2
    print @@Var2
  end
end

a = TestClass.new
a.setVar1(1)
a.setVar2(2)

b = TestClass.new
b.setVar1(9)
b.setVar2(10)

a.printVar1
a.printVar2
b.printVar1
b.printVar2
```

prints: _____1_____

prints: _____10_____

prints: _____9_____

prints: _____10_____

19. (4 pts) (Fill in the blanks) What editable file tells ruby which ____gem__ to use in each environment? _____gemfile_____.

Give an example of the first blank:

Any gem will work

20. (2 pts) Circle one: **True False** -- A difference between Waterfall and Agile approaches to software development is that Agile does not require developing a formally written requirements specification. **(Note: this is a bad question because it is reasonable for students to think it is a trick and since agile still requires one record requirements they would answer false)**
21. (4 pts) Before deploying to Heroku we had to change the rails application settings in the configuration file (mentioned in the Question 19). What was the primary change that we had to make? (A short description is fine).

Changed from using the SQLite gem.

22. (3 pts) Given the following code, what goes in the blanks? (Hint: they are all the same):

```
__ #{attr_name} __

def attr_accessor_with_history(attr_name)
  attr_name = attr_name.to_s
  attr_reader attr_name
  attr_reader attr_name + "_history"
  class_eval %Q"
    def __ = (value)
      if !defined? @__ history
        @__ history = [__]
      end
      @__ = value
      @__ history << value
    end
  "
end
```

23. (3 pts) What is the main difference between doing a "git commit" and a "git push"?

**Something along the lines that git commit records changes locally.
git push sends them to remote repositories**

24. (3 pts) Give an example of convention over configuration in your last assignment (editing the rotten potatoes app)

make sure it is a valid example and is an example from the last assignment – a common answer would be that naming conventions

25. (3 pts) Name the 3 environments rails provides.

_____test_____ _____Development_____ _____Production_____

26. Give an example of a route in the RottenPotatoes app and describe what it does for you.

a. (2 pt) Route:

The name of a route or anything that describes a route is okay.

b. (3 pts) What it does for you:

must describe the result

27. (2 pts) What does the irb interpreter respond to the following code? (fill in the blank)

```
➤ a = "Jesse James"; a.gsub(/s$/, "")
```

⇒ _____Jesse Jame_____

28. (2 pts) (fill in the blank) Beginning a class definition with

```
class MyString < String ...
```

is an example of _____inheritance_____ in Object-Oriented Programming.

29. (3 pts) What is the value of `a` at the end of this javascript?

```
var square = {  
    side: 3,  
    area: function() {  
        return this.side*this.side;  
    }  
};  
  
a = square.area
```

Value of `a` is: `function() { return this.side*this.side; }` – they should get full credit for indicating in anyway that it is the function.

30. (3 pts) What is the purpose of including `method_missing` in Ruby?

Response must say something about it allows the programmer to respond to methods with names that might be variants of others identifiable at runtime. Just saying it allows for adding methods doesn't work because that can be done without `method_missing` so only 1.5 pts credit for this kind of answer. Full credit for anything that talks about method names not explicitly defined. Use your best judgement for partial credit.

31. (2 pts) Given the assignment:

```
myarray=[ [1,3,5], [10, 40, 7], [2,4,6] ]
```

what is the value of `myarray[1][1]` ? _____40_____

32. (6 pts – 1.5 each) What do the following acronyms stand for (with respect to our course)? Fill in the blanks:

a. SaaS = _____ **Software as a Service** _____

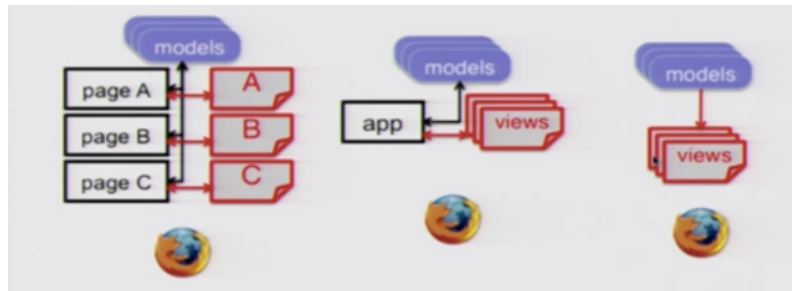
b. SOA = _____ **Service Oriented Architecture** _____

c. MVC = _____ **Model View Controller** _____

d. CRUD = _____ **Create, Read, Update, Delete – can also accept Retrieve for the R** _____

33. (2 pts) Which of the following figures best represents the Ruby MVC?

_____ **Accept either A or B** _____



a.

b.

c.

34. In the rotten potatoes app, if I run `rake db:migrate VERSION=0`,
a. (1 pt) What method does rails run?

This part of question thrown out.

- b. (3 pts) What happens to my table 'movies' ? (briefly describe what happens)

The table is blanked out should get full credit. Partial credit for something that says something about making a change to schema (+2) and (+1) for anything talking about the Version=0 resetting or retrieving the original state.

Rubular Regular Expression Cheat Sheet

[abc]	A single character of: a, b, or c	.	Any single character	(...)	Capture everything enclosed
[^abc]	Any single character except: a, b, or c	\s	Any whitespace character	(a b)	a or b
[a-z]	Any single character in the range a-z	\S	Any non-whitespace character	a?	Zero or one of a
[a-zA-Z]	Any single character in the range a-z or A-Z	\d	Any digit	a*	Zero or more of a
^	Start of line	\D	Any non-digit	a+	One or more of a
\$	End of line	\w	Any word character (letter, number, underscore)	a{3}	Exactly 3 of a
\A	Start of string	\W	Any non-word character	a{3,}	3 or more of a
\Z	End of string	\b	Any word boundary	a{3,6}	Between 3 and 6 of a
options: i case insensitive m make dot match newlines x ignore whitespace in regex o perform #(...) substitutions only once					