CSE 341 — Ruby Discussion Questions

1. What do the following Ruby expressions do?

   x+2
   octopus.swim("fast")
   octopus.swim "fast"
   octopus.tentacles = 8
   Aquarium.new("clownfish")

   ["clown", "fish"].each { |s| puts s}
   [1,2,3].map { |j| j*10}

   sum=0
   4.times {sum=sum+10}

2. Write a Ruby class Book, which has fields for title and author. When you create a new instance of book you should give values for those fields. Also define getters (but not setters) for them. Finally, write a statement that makes a new instance of Book with a suitable author and title.

3. Write a class Delay that implements delays (like the delay function in Scheme). The following code shows how it should work:

   n = 0
   d = Delay.new {n=n+1; 3+4}
   d.force
   d.force
   v = d.force
   e = Delay.new {1/0}

   After we evaluate these statements v should be 7, but n should only be 1 (since we only evaluate the block once). Further, since we never force e, we shouldn’t get a divide-by-zero error.

4. Write a min method for the Enumerable mixin. You’ll need to decide how to handle finding the minimum of an empty collection. Bonus points for handling this in the same way Ruby itself does!
   Hint: look at the implementation of map at the end of the inheritance.rb handout.

5. Consider the class and module definitions in self_super.rb linked from the 341 Ruby web page. Suppose we define a class C6 as follows:

   class C6 < C1
     include M2
   end

   What is the result of evaluating these expressions?

   x = C6.new
   x.test1
   x.test2
   x.kind_of?(C6)
   x.kind_of?(M2)
   x.kind_of?(M1)
   C6.ancestors
   C6.superclass
   C6.superclass.superclass
   C6.superclass.superclass.superclass
   C6.superclass.superclass.superclass.superclass
6. Write a literal that evaluates to a hash with the keys 1, 2, and 3, and the corresponding values "sam", "sue", and "fred".

7. Suppose words is an array of strings, for example

   ```ruby
   words = ["squid", "octopus", "clam", "squid", "squid"]
   ```

   Write one or more Ruby statements that create a hash named counts, whose keys are the strings in words and whose values are the number of occurrences of that word. So for the example above

   ```ruby
   counts = {"squid"=>3, "octopus"=>1, "clam"=>1}
   ```

8. Suppose the Octopus, Cephalopod, Animal hierarchy from the file self_super.rb has been loaded. What is the result of evaluating the following expressions?

   ```ruby
   c = Cephalopod.new
   c.class
   c.class.superclass
   c.class.superclass.superclass
   c.class.superclass.superclass.superclass
   c.class.superclass.superclass.superclass.superclass
   c.class.class
   c.class.class.class
   ```