SAMPLE EXAM
Exam 1
Computer Programming 230
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City University of New York
Thursday, 1 October 2009

NAME (Printed) _____
NAME (Signed) _____
E-mail _____

Exam Rules

- Show all your work. Your grade will be based on the work shown.
- The exam is closed book and closed notes.
- When taking the exam, you may have with you pens or pencils, and an 8 1/2" x 11" piece of paper filled with notes, programs, etc.
- You may not use a computer or calculator.
- All books and bags must be left at the front of the classroom during this exam.
- **Do not open this exams until instructed to do so.**

Question 1	
Question 2	
Question 3	
Question 4	
Question 5	
Question 6	
Question 7	
Question 8	
Question 9	
Question 10	
TOTAL	

1. True or False:

   (a) ___ Alice and Java both are object-oriented programming languages.

   (b) ___ Properties describe the objects current state.

   (c) ___ The `Do Together` statement allows you to execute statements one after another.

   (d) ___ Methods can be developed to define additional behavior for objects.

   (e) ___ A variable declared in a method can only be used in that method.

   (f) ___ Parameters can have only numeric values.

   (g) ___ Control statements allow programmers to control a programs logic.

   (h) ___ An `If/Else` statement allows a programmer to determine which of three sets of statements are to be executed.

   (i) ___ A `While` loop executes the statements it contains as long as the loop condition remains true.

   (j) ___ The body of the loop can contain another loop, but only of the `While` type.

2. (a) What is a method? Given an example.

   (b) What is a parameter? Give an example.

3. Write the Alice commands that will modify the `penguin` object to be 33% transparent, red, and riding in the `kayak` object (ie set the vehicle to helicopter).

Properties	`Answer`
color opacity vehicle skin texture fillingStyle pointOfView is Showing	

4. To the right of each line of code, indicate the value of the logical expression after those lines have been executed.

(a) `Again = true`

`Done = false`

expression	True or False?
Again AND Done	

(b) `x = 0, y = 1, z = 2`

expression	True or False?
x == 0	

(c) `(no change)`

expression	True or False?
x != 0	

(d) `Increment x by 1`

expression	True or False?
x == 0	

(e) `Increment x by 1`

expression	True or False?
y == x	

(f) `Set Value of y to x`

expression	True or False?
(y == 0) AND Done	

(g) `Set Value of Done to Again`

expression	True or False?
!Done OR Again	

(h) `(no change)`

expression	True or False?
!Done AND Done	

(i) `(no change)`

expression	True or False?
(y $\geq$ x) AND (z $\geq$ y)	

(j) `(no change)`

expression	True or False?
(IEEERemainder of y/2) == 0	

5. Assume that the object `NavyJet` has a method called `circle` with parameter, `radius` that controls how the size of a circle it flies. Write the `my first method` that makes the jet circle hop 50 meters, 30 meters, and then 70 meters.

   `my first method:`

6. Write the `my first method` for a world that shows a mummy stalking slowly with arms outstretched toward the pharaoh. When the mummy gets close, the pharaoh should gesture mystically, causing the mummy to fall backwards. Assume that the mummy and pharaoh characters have already been created.

   In addition, assume that the following methods have already been written for you:

   ```
   mummy.step()
   mummy.fall()
   pharaoh.gesture()
   ```

   `my first method:`

7. (a) Write an `If/Else` statement that causes an object called `coach` to point at an object called `player` if the value of the variable `score` is less than 20.

(b) Write an `If/Else` statement that causes an object called `zamboni` to turn around if the value of `passes` is between 50 and 100.

8. In words, what does the following loop do?

```
toyBall1.bounce ( )
  fallDistance = ( toyBall1 distance above ground )
  fallDistance set value to ( ( ( toyBall1 distance above ground ) - ( ( ( subject =
toyBall1 's height ) / 2 ) ) ) )
  Do together
    toyBall1 move down fallDistance meters duration = 0.5 seconds style = abruptly
asSeenBy = ground
    toyBall1 move forward 0.5 meters duration = 0.5 seconds style = abruptly
    toyBall1 turn forward 1 revolution duration = 0.5 seconds style = abruptly
  While ( fallDistance > ( ( ( subject = toyBall1 's height ) / 2 ) ) )
    fallDistance set value to ( ( fallDistance - ( ( ( subject = toyBall1 's height ) /
2 ) ) ) )
    Do together
      toyBall1 move up fallDistance meters duration = 0.5 seconds style = abruptly
asSeenBy = ground
      toyBall1 move forward .25 meters duration = 0.5 seconds style = abruptly
asSeenBy = ground
      toyBall1 turn forward 0.5 revolutions duration = 0.5 seconds style = abruptly
    Do together
      toyBall1 move down fallDistance meters duration = 0.5 seconds style = abruptly
asSeenBy = ground
      toyBall1 move forward .25 meters duration = 0.5 seconds style = abruptly
asSeenBy = ground
      toyBall1 turn forward 0.5 revolutions duration = 0.5 seconds style = abruptly
```

9. Write the `my first method` for a world where a `diver` makes 20 somersaults, using a loop. You may assume that the method, `diver.somersault` already exists.

   `my first method:`

10. Write the `my first method:` for a world that displays two numbers using an `3D Text` objects called `Home` and `visitors`. The world also has two variables called `us` and `them`. Your method should use a loop that continues while `us` and `them` are both less than 21. Inside the loop, you should randomly increase the values of `us` and `them` by 0 or 1 every time. These values should be displayed in the 3D Text objects.

    `my first method:`