

Exam 1  
Computer Programming 230  
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City University of New York  
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**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	

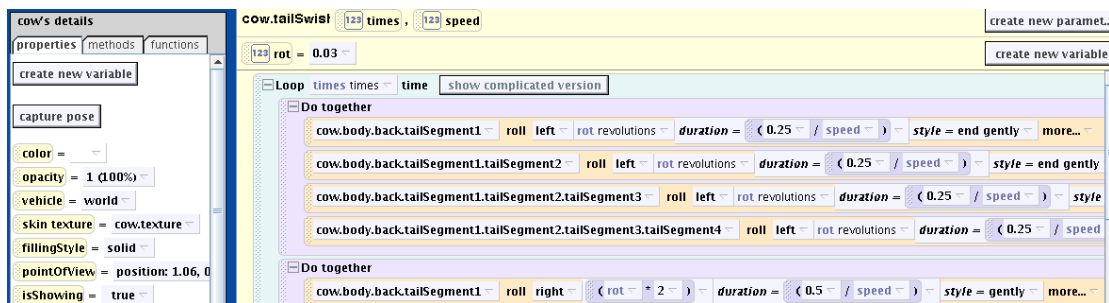
1. True or False:

- (a) \_\_\_ Properties describe the current state of an object.
- (b) \_\_\_ Methods cannot call other methods.
- (c) \_\_\_ Every program must have a comment.
- (d) \_\_\_ A variable can be used anywhere in the program, even before the declaration.
- (e) \_\_\_ The random number generation function only produces numbers between 0 and 10.
- (f) \_\_\_ Parameters can have only numeric values.
- (g) \_\_\_ Both portions of an If/Else statement must contain statements.
- (h) \_\_\_ An If/Else statement can be included in either part of another If/Else statement.
- (i) \_\_\_ If the condition is false, the statements inside the loop are never run.
- (j) \_\_\_ An event can execute its statements only once.

2. (a) What is a property? Give an example.

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

3. Indicate if the items are a property, a variable or a parameter:



cow.color	rot	times	speed	cow.vehicle

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

(a) `More = true`

`Done = false`

expression	True or False?
<code>!Done</code>	

(b) `a = -16, b = 0.5, c = 0`

expression	True or False?
<code>(c - 2) == 0</code>	

(c) (no change)

expression	True or False?
<code>a != 0</code>	

(d) Increment `a` by 1

expression	True or False?
<code>a == 0</code>	

(e) Increment `b` by 3

expression	True or False?
<code>b == c</code>	

(f) `a` set value to `b+c`

expression	True or False?
<code>(a == 0) AND Done</code>	

(g) `More` set value to `true`

expression	True or False?
<code>!More OR More</code>	

(h) (no change)

expression	True or False?
<code>!Done OR More</code>	

(i) (no change)

expression	True or False?
<code>(a ≥ b) AND (c ≥ 2b)</code>	

(j) (no change)

expression	True or False?
<code>(IEEERemainder of a/2) == 0</code>	

5. In words, what does the following do?

(a)

```

world.my first method ( )
actionNumber = 0
// Programming Project 3.7
actionNumber set value to ( random number minimum = 0 maximum = 4 integerOnly = true )
horse.dipNeck
While true
  If ( actionNumber == 0 )
    horse.swayTail
  Else
    If ( actionNumber == 1 )
      horse.dipNeck
    Else
      If ( actionNumber == 2 )
        horse.whinny
      Else
        If ( actionNumber == 3 )
          horse.scratch
        Else
          Do Nothing
    Wait ( random number minimum = 1 maximum = 3 )
  actionNumber set value to ( random number minimum = 0 maximum = 4 integerOnly = true )
  
```

(b)

```

world.my first method ( )
No variables
// Collision.a2w
Wait 0.5 seconds
While ( cementTruck1.frontLeftWheel is at least .5 meters away from dumpTruck.frontRightWheel )
  Do together
    cementTruck1 move forward .25 meters style = abruptly duration = 0.25 seconds
    dumpTruck move forward 0.25 meters style = abruptly duration = 0.25 seconds
    camera move forward 0.5 meters style = abruptly duration = 0.25 seconds
    camera move down .1 meters style = abruptly duration = 0.25 seconds
  
```

6. (a) Write an **If/Else** statement that causes an object called **bunny** to turn red if it is within 2 meters of an object called **stove**, otherwise the bunny should turn blue.

- (b) Write a method, **bike.ChoosePath()** that has a bike turn left 75% of the time and right 25% of the time.

7. Create an Alice world with a dragon in it. When you type 'F' the dragon should breathe fire. When you type 'S', a puff of smoke should appear. Both the fire and smoke should disappear after half a second.

`methods:`

`events:`

8. Write the my **first method** for a world that shows 10 airplanes taking off from an airport, one after another. Each airplane should drive to the start of the runway, wait one second and then take off. You may assume that a list, **airplanes** has already been set up and that all the planes are in position.

9. Create an Alice world with a jumping animal (e.g. a frog, a bunny, an insect) and have the animal repeatedly jump a random amount into the air and then back to the ground.
- The animal should stop his jumping after he has a jump of over 20 meters.
  - You should display, using 3DText the height of the current jump and the highest jump thus far.
  - At the end of the program, display the height of the highest jump.

Assume that the bunny object, `Bugs`, and the 3DText objects, `CurrentJump` and `HighestJump`, as well as the number variables, `current` and `max`, have already been set up.

10. Write the `my first method()` which displays the maximum height of the 10 objects in the array, `people`. You may assume that the 3D Text object, called `displayMax` has already been set up.
- `my first method:`