CS 381 Test 1

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You have 75 minutes for this test. There are a total of 50 points. Write your name and your major on the top right. Good luck.

1. (1 point) In python 10/3 evaluates to
   (a) 3
   (b) 4
   (c) 3.333
   (d) 3.666
2. (2 points) In python 10/-3 evaluates to
   (a) -3
   (b) -4
   (c) -3.333
   (d) -3.666
3. (2 points) In python, `word = 'Hell' + 'o'` assigns
   (a) Hello
   (b) Hell o

   to `word`.
4. (5 points) In python, if `word = 'Ecslent'`, then
   (a) `word[-1]` evaluates to _____
   (b) `word[2:4]` evaluates to _____
   (c) `word[1:]` evaluates to _____
   (d) `word[:4]` evaluates to _____
   (e) `word[4] = 'x'` evaluates to _____
5. (5 points) In python, what does this print:

```
for x in range(5):
    print x,
```

6. (2 points) In python ogre, if the `frameStarted` method of a `frameListener` class instantiation returns False

   (a) Python-ogre runs the `frameStarted` method again

   (b) Python-ogre runs the `frameEnded` method immediately

   (c) Python-ogre shuts down

   (d) Python-ogre continues running

7. (2 points, True/False) In python ogre, all scene node positions are relative to the root scene node which is at the origin (0, 0, 0). _____

8. (1 point, True/False) In python ogre, the positive z axis points into the screen away from the user. _____

9. (5 points) List the six major components of a game engine.

10. (5 points) Study the function below

```
def foo(n):
    """Prints something"""
    a, b = 0, 1
    while a < n:
        print a,
        a, b = b, a+b
```

What does it print when called with `foo(10)`

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11. (5 points) What does the function below print when called with `print foo(10)`

```
def foo(n):
    ''' prints nothing'''
    if n < 1:
        return 1
    else:
        return n + foo(n-1)
```

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12. (10 points) Assume you have a vector class `Vector3` that overloads vector addition ('+') and vector multiplication by a scalar ('*'). So

```
foo = Vector3(0, 0, 5)
bar = Vector3(2, 3, 3)

baz = foo + bar
# will create a new vector baz whose x, y, z components are
# 2, 3, 8

foobar = bar * 2
# will create a new vector foobar whose x, y, z components are
# 4, 6, 6
```

Now, given a position vector `pos`, a velocity vector `vel`, and a scalar `deltaTime` that specifies the time elapsed since the last to call to a `tick` function. Write the one line of python code for updating an entity's position when the entity is traveling with the velocity specified in `vel`

You may assume all imports have been done for you.

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13. (5 points) Write a stack class `Stack` that implements a stack using python lists. You will need to implement the usual `push`, `pop`, and `isEmpty` methods as well as a constructor.