

## Quiz 3

Name: \_\_\_\_\_

**Question 1 (20 points).** For each of the conditions below, write the corresponding Python code. The first part of this question has been filled in for you as an example.

Description	Expression
(a). The first element of the list to which <code>z</code> refers is 4.	<code>z[0] == 4</code>
(b). The second character of the string to which <code>s</code> refers is <code>'a'</code> .	_____
(c). The list to which the variable <code>x</code> refers has four elements.	_____
(d). The list to which the variable <code>x</code> refers is empty.	_____
(e). The second element of the list to which <code>a</code> refers is negative.	_____
(f). The first element of the list to which <code>b</code> refers is <code>True</code> .	_____

**Question 2 (30 points).** Each of the following Python programs prints `"Hello"` some number of times. For each program, indicate the number of times it prints `"Hello"` and then **briefly justify your answer**. Hint: try working out how the program runs by tracking the value of each variable, as in a stack diagram.

(a).

```

1 i = 0
2 while i < 10:
3     print "Hello"
4     i += 1

```

(b).

```

1 for i in range(10):
2     for j in range(10):
3         print "Hello"
4 print "Hello"

```

(c).

```

1 i = 6
2 while i > 1:
3     print "Hello"
4     if i % 2 == 0:
5         i = i / 2
6     else:
7         i = i + 1

```

**Question 3 (30 points).** Each function below is accompanied by a description of what it is intended to do. The functions are incorrect; they do not do what is described. Describe what is wrong with each function and how to correct it.

(a). This function was intended to create and return a list containing four random numbers.

```
1 from random import *
2 def random_numbers():
3     numbers = []
4     rand = randrange(10)
5     for n in range(4):
6         numbers.append(rand)
7     return numbers
```

(b). This function was intended to return the square of the parameter `number`.

```
1 def square(number):
2     number = 4
3     return number * number
```

**Question 4 (20 points).** Write a function called `replicate` which, given two parameters `n` and `v`, will create and return a new list that contains `n` elements, all of which are `v`. For instance, `replicate(3, "bo")` should return `["bo", "bo", "bo"]` while `replicate(4, False)` should return `[False, False, False, False]`. (Hint: you'll need a `for` loop and a list accumulator.)