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.

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

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).
```python
i = 0
while i < 10:
    print "Hello"
    i += 1
```

(b).
```python
for i in range(10):
    for j in range(10):
        print "Hello"
print "Hello"
```

(c).
```python
i = 6
while i > 1:
    print "Hello"
    if i % 2 == 0:
        i = i / 2
    else:
        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.

```python
from random import *
def random_numbers():
    numbers = []
    rand = randrange(10)
    for n in range(4):
        numbers.append(rand)
    return numbers
```

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

```python
def square(number):
    number = 4
    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.)