COSC 1336 Homework 4

Relevant reading: Sections 5.1-5.3

Due: Oct. 11, 2:30 pm

(Late date: Oct. 18, 2:30 pm)

40 Points

Problem 1. [12 points]

1. A _____ -controlled loop uses a true/false condition to control the number of times the body of the loop is executed.

   a. Boolean
   b. condition
   c. decision
   d. count

2. A _____ -controlled loop repeats a specific number of times.

   a. Boolean
   b. condition
   c. decision
   d. count

3. In Python, a `for` loop executes

   a. as long as the condition is `True`.
   b. as long as the condition is `False`.
   c. once for each item in a sequence.
   d. as long as a counter is less than the maximum.

4. A(n) _____ loop has no way of ending and repeats until the program is interrupted.

   a. indefinite
   b. incorrect
   c. infinite
   d. `while`

5. What value does `x` contain after the following code is executed?

```
x = 2
x += 3
```

   a. 2
   b. 3
   c. 5
   d. 6

6. What value does `x` contain after the following code is executed?

```
x = 2
x + 3
```

   a. 2
   b. 3
   c. 5
   d. 6

7. If a `while` loop has the following first line, what will be true when the loop exits?

```
while i < 5:
```

   a. `i` will be 4.
   b. `i` will be 5.
   c. `i` will be >= 5.
   d. `i` will be < 5.

8. If `stop` is a Boolean variable, and a `while` loop has the following first line, what will be true when the loop exits?

```
while not stop:
```

a. `stop` will be `True`
b. `stop` will be `False`
c. `not stop` will be `True`
d. This loop can never exit

9. What numbers will the following code display on the computer screen?

```
x = 1
while x < 5:
    display(x, end=" ")
    x += 1
```

a. `0 1 2 3 4`
b. `0 1 2 3 4 5`
c. `1 2 3 4`
d. `1 2 3 4 5`

10. What numbers will the following code display on the computer screen?

```
x = 5
while x <= 5:
   display(x, end=" ")
   x -= 1
```

a. `5 4 3 2 1`
b. `5 4 3 2 1 0 -1...`
c. `5 4 3 2 1 0`
d. `5 6 7 8 9...`

11. What numbers will the following code display on the computer screen?

```
for x in [5, 4, 3, 2, 1]
   display(x, end=" ")
```

a. `5 4 3 2 1`
b. `5 4 3 2 1 0 -1...`
c. `5 4 3 2 1 0`
d. `5 6 7 8 9...`

12. What numbers will the following code display on the computer screen?

```
for x in range(5):
   display(x, end=" ")
```

a. `0 1 2 3 4`
b. `0 1 2 3 4 5`
c. `1 2 3 4`
d. `1 2 3 4 5`

Problem 2. **[14 points]** For each of the following, write a `while` loop with the described behavior.

a. **[4 points]** Allow the user to enter a number, display the square of the number, and ask the user if she wishes to continue. The loop should continue as long as the user enters 'y', 'Y', or 'yes' in response.

b. **[4 points]** Call a `print_hello_world` function as long as the user indicates that he wishes to continue. Assume the function has no parameters.

c. **[3 points]** Display the numbers `1` through `10`.

d. **[3 points]** Display the numbers `1` through `10`, but in reverse order.

Problem 3. [**4 points**] Rewrite the following Python code to use a `while` loop instead of a `for` loop. Be sure that the behavior of the new code is exactly the same as the old code.

```
for i in range(10, 0, -1):
    print(i, end=" ")
print("Blast off!")
```

Problem 4. [**4 points**] Rewrite the following Python code to use a `for` loop instead of a `while` loop. Be sure that the behavior of the new code is exactly the same as the old code.

```
odd = 1
while odd <= 100:
    print("Next odd number:", odd)
    odd += 2
```

Problem 5. [**6 points**] In this problem, you will write Python instructions that display the squares of all the even numbers from 4 to 15. The code should produce the following output:

```
Squares of even numbers from 4 to 15: 16 36 64 100 144 196
```

a. [**3 points**] Write code that uses a `while` loop.

b. [**3 points**] Write code that uses a `for` loop.