CISS240: Introduction to Programming
Quiz q1203

Name: _____ Score: [ ]

Q1. Write a program that simulates the rolling of two dice until the sum of the two dice is 10. The program prints the dice values of each throw. You must use a while-loop. The output of a sample execute is given below (notice that the last output has two integer values adding up to 10.) Here's a test run:

```
1 5
2 3
5 6
6 4
```

Answer:

Q2. Write a program that gets a positive integer n from the user and continually compute a sequence of integers starting with n. Here's how the sequence is computed. If a number x in the sequence is even, the *next* number after x is $x/2$. If a number x in the sequence is odd, the *next* number is $3x + 1$. Once the sequence reaches 1, the sequence stops. For instance suppose the integer entered by the user is 7. Then the sequence is $7, 22, 11, 34, 17, 52, 26, 13, 40, 20, 10, 5, 16, 8, 4, 2, 1$. (7 is odd, so the next number is $3 \cdot 7 = 1 = 22$. 22 is even, so the next number is $22/2 = 11$. Etc.) Here's a test run:

```
7
7 22 11 34 17 52 26 13 40 20 10 5 16 8 4 2 1
```

Answer:

(The above procedure always produce a sequence that reaches 1. But the reason is not known and is a famous unsolved problem called Collatz Conjecture.)