**IT 1050 – Programming Logic**  
Midterm Test 1

*30 points (extra credit problem +2)*

1. (4 points) Identify and briefly describe 3 types of control structures that we can use to order the statements in our programs?

**Sequence**- Sequence in which someone wants the statements to execute.

**Selection**- The selection of whether a single, double, or multiple statements should be used. The three would contain an if, if… else, and switch statement.

**Iteration**- Iteration is the repetition of a statement and the process it consists of which would involve the while, do… while, for, and foreach statements.

1. (4 points) Create an infinite while loop. Use a Boolean variable called keepLooping that set to true in the loop’s termination condition. Hint: Use CTRL+C or Debug -> Terminate All to end the program.
2. (4 points) Write a while loop to print 2 through 128 in brackets, each on a new line. You should initialize your loop control variable to 2. Output the value of the loop control variable each time through the loop. Use a condition that ends the loop after 128 is printed.

[2]

[4]

[8]

[16]

[32]

[64]

[128]

1. (4 points) Write a for loop that prints 49 through 1 separated by a comma. Note, you will need to use a condition inside of the loops so it does not print the comma the last time through (no newlines).

49, 48, 47, …, 3, 2, 1

1. (4 points) Write a while loop that prints all odd numbers 1 through 21 separated by spaces (no newlines).

1 3 5 7 9 11 13 15 17 19 21

1. (5 points) What is the output for the following code?

**Just a \* is printed after running the code.**

int n = 8;

int i = 10; // initialize

do {

Console.Write("\*");

i++; // update!

} while (i < n); // test condition

What would the output be with the exact same code but using a while statement as opposed to a do-while?

**If using just a while statement, then it would be blank after running.**

1. (5 points) Explain how we combine multiple Boolean values? Write an if statement that outputs “Let’s go outside!” when both Boolean values are false.

**We can combine Boolean values by creating Booleans and using logical operators between the two Booleans.**

boolean icyRain;  
boolean tornadoWarning;

1. Extra Credit: Use nested loops to print the following to the console:

123454321

1234321

12321

121

1