**1050 Programming Logic**

Lab 4 (20 points total)

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*Paste your code and screenshots below.*

1. Describe the four basic elements of the counter-controlled repetition (2 points).

**1. Control variable- Controls what the statement is to do.**

**2. Initial Value- Determines where the code starts.**

**3. Increment or Decrement- Determines if the code increases or decreases from the initial value.**

**4. Loop Continuation Condition- Determines if the statement is true or false and should repeat itself.**

1. Compare and contrast the while and for repetition statements (1 points).

**The while statement executes when the statement is true. The statement is evaluated before it is executed so it loops zero or more times.**

**The for statement executes when the statement is true. The basic elements are displayed in one single line.**

1. Discuss a specific example when it would be more appropriate to use a do-while statement than a while statement. Explain why (2 points).

**Someone could use do while statement when adding a grade to an existing grade. The do while executes at least once since it tests the loop condition after it executes the body, so the existing grade remains existent even if there is no increment or decrement.**

1. Create a for loop that goes from 1-100 using a variable named i as the counter. Each time through the loop, output whether or not the variable is even or odd (3 Points)

*Hint:* Use an if-else statement and the modulus % operator to determine whether the variable is even or odd. Example: if ((i % 2) == 0) // it’s even

1. Use an if…else-if…else statement to output the following based on an int temp that is input by the user (3 Points) Prompt the user with “Please enter a temperature”.

**Input output**

< 10 Polar Bear

< 20 Penguin

< 40 Moose

< 50 Reindeer

< 60 Deer

< 70 Turtle

< 80 Lion

< 90 Fish

Default Bug

1. Use a switch statement to output the following based on an int input that corresponds to an exhibit at the zoo (3 points). Prompt the user with “Please enter the exhibit number: “

**Input output**

1 Polar Bear

2 Penguin

3 Moose

4 Reindeer

5 Deer

6 Turtle

7 Lion

8 Fish

9 Bug

1. The following code is meant to loop and output 10-20, each number on a separate line. What’s wrong? Fix the problem. (3 points)

int i = 10;

while (i < 21)

{

Console.WriteLine(i);

}

*Example output:*



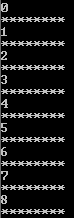
1. *The following statement is supposed to output every number from 0-100 separated by a line with asterisks on it. What is wrong with the code? Fix it. (3 points)*

for (int i = 0; i < 101; i++)

Console.WriteLine(i);

Console.WriteLine("\*\*\*\*\*\*\*\*");

*Example output:*



1. **Extra Credit:** Write an application that displays the following patterns separately, one below the other. Use for loops to generate the patterns. All asterisks (\*) should be displayed by a single statement of the form Console.Write( '\*' ); which causes the asterisks to display side by side. A statement of the form Console.WriteLine(); can be used to move to the next line. A statement of the form Console.Write( ' ' ); can be used to display a space for the last two patterns. There should be no other output statements in the application. [Hint: The last two patterns require that each line begin with an appropriate number of blank spaces.] (4 Points – 1 per correct solution)

