**STEP 6 Questions and Answers Concerning this Computer Laboratory Project**

Open MS Word and, within a new document, place your responses to these questions. Submit your completed MS Word document for credit.

**(1) ( The Logical XOR Operation )**

Complete the following truth table for the logical XOR operation.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| expr1 | expr2 |  | expr1 XOR exp2 |  |
|  |  |  |  |  |
| 1 | 1 |  | **FALSE** |  |
| 1 | 0 |  | **TRUE** |  |
| 0 | 1 |  | **TRUE** |  |
| 0 | 0 |  | FALSE |  |

**(2) ( The MS Excel XOR Function )**

In a blank MS Excel worksheet execute the following formula, observe the result and explain the reason why the particular value was returned.

=XOR(0, 1)  
  
**This statement returns TRUE because one of the values is true and the other is false (exclusive OR)**

**(3) ( The MS Excel BITXOR Function )**

In a blank MS Excel worksheet execute the following formula, observe the result and explain the reason why the particular value was returned.

=BITXOR(57, 19)

**BITXOR returns the Decimal value of a bitwise XOR comparison on two or more values. In this example, the returned value is 42**

**because 00101010 was the result of the bitwise XOR comparison between the binary representations of 57 and 19.**

**(4) ( Computer Programs and the XOR Operation )**

Review the following Visual Basic program segment, examine the XOR operations therein and determine the outputs that appear in the message boxes when the program is executed.

**Dim x As Integer = 12**

**Dim y As Integer = 9**

**Dim z As Integer = 15**

**Dim firstResult, secondResult, thirdResult As Boolean**

**firstResult = (x > y) Xor (y < z)**

**secondResult = (y < x) Xor (y > z)**

**thirdResult = (y > x) Xor (z < y)**

**MessageBox.Show("first result = " & firstResult)**

**MessageBox.Show("second result = " & secondResult)**

**MessageBox.Show("third result = " & thirdResult)**

**The output of the VB program above would be:**

**first result = False**

**second result = True**

**third result = False**

**(5) ( Encryption / Decryption )**

Review the XOR encryption process that you learned for this computer laboratory project and explain how you could decrypt an encrypted character.

**I could decrypt a character encrypted with XOR encryption if I had the cipher character and the given key.  
  
 To do this, I would perform an XOR comparison on the binary representations of the cipher character and the given key.**

**The result of this would be the binary representation of the given character’s ASCII value.**