Unit 3 Assignment Instructions

In this unit you will complete the coding exercises before starting the Coding Project. Review the detailed instructions and rubrics before starting your Assignments.

Submission Instructions

You will submit the following:

.cs files for C#
.java files for Java
.php and/or .js files for Web Development

Additionally, in a Word document, paste a screenshot of the output for each exercise.

You will be submitting three code files, one for each exercise (.cs, .java, .php or .js) and one Word document in a zipped folder.

Zip these four files into a zipped folder and submit the one zipped folder.

Naming Your Files and Zip Folder

The code files should be saved as: IT213_YourLastName_UnitX_ExerciseX_Language.

The word document should be saved as: IT213_YourLastName_UnitX_Screenshots

The zip folder should be saved as: IT213_YourLastName_UnitX_ZIP

Unit 3 Assignment: Coding Exercises

You must complete the following coding exercises before starting the two Coding Projects. By completing these exercises you will be better prepared for the Assignment.

Note: If your language of choice is Web Development, you will need to complete the exercises in both PHP and JavaScript.

3-1. Class Grade Average The following code is shown for Java, C#, and JavaScript. For the language of your choice, type in the following code and run it."

Java

```
// GradeBook class that solves class-average problem using
  // counter-controlled repetition.
  import java.util.Scanner; // program uses class Scanner

  public class GradeBook
  {

    public static void main(String[] args){
                    determineClassAverage();
    }

    // determine class average based on 10 grades entered by user
   public static void determineClassAverage()

    {
      // create Scanner to obtain input from command window
      Scanner input = new Scanner( System.in );
      int total; // sum of grades entered by user
      int gradeCounter; // number of the grade to be entered next
      int grade; // grade value entered by user
      int average; // average of grades
      // initialization phase
      total = 0; // initialize total
      gradeCounter = 1; // initialize loop counter

      // processing phase uses counter-controlled repetition
```

```
        while ( gradeCounter <= 10 ) // loop 10 times
        {
           System.out.print( "Enter grade: " ); // prompt
           grade = input.nextInt(); // input next grade
           total = total + grade; // add grade to total
           gradeCounter = gradeCounter + 1; // increment counter by 1
        } // end while

        // termination phase
        average = total / 10; // integer division yields integer result

        // display total and average of grades
        System.out.printf( "\nTotal of all 10 grades is %d\n", total );
        System.out.printf( "Class average is %d\n", average );
     } // end method determineClassAverage
    }
```

C#

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace Sample
{
   class GradeBook
   {

      static void Main(string[] args)
      {
         DetermineClassAverage();

      }
```

```
        public static void DetermineClassAverage()
        {
            int total; // sum of the grades entered by user
            int gradeCounter; // number of the grade to be entered next

            int grade; // grade value entered by the user
            int average; // average of the grades
                        // initialization phase
            total = 0; // initialize the total
            gradeCounter = 1; // initialize the loop counter
                            // processing phase
            while (gradeCounter <= 10) // loop 10 times
            {
                Console.Write("Enter grade: "); // prompt the user
                grade = Convert.ToInt32(Console.ReadLine()); // read grade
                total = total + grade; // add the grade to total
                gradeCounter = gradeCounter + 1; // increment the counter by 1
            } // end while
              // termination phase
            average = total / 10; // integer division yields integer result
                                // display total and average of grades
            Console.WriteLine("\nTotal of all 10 grades is {0}", total);
            Console.WriteLine("Class average is {0}", average);
            Console.ReadKey();
        } // end method DetermineClassAverage

    } // end class GradeBook

} //End of Program
```

JavaScript

```
<html>

<head>

<meta charset = "utf-8">

<title>Class Average Program</title>

<h1>Class Average Program</h1>

</head>

<body>
```

```
<p id="demo">Enter Grades</p>

<button type="button" onclick="myFunction()">Enter Grades</button>

<script>
//function myFunction() {
//    document.getElementById("demo").innerHTML = "Paragraph changed.";
//}
function myFunction() {
    //document.getElementById("demo").innerHTML = "Paragraph changed.";
var total; // sum of grades
var gradeCounther; // number of grades entered
var grade; // grade typed by user (as a string)
var gradeValue; // grade value (converted to integer)
var average; // average of all grades
//Unit 3 [IT213: Software Development Concepts]
// initialization phase
total = 0; // clear total
gradeCounter = 1; // prepare to loop
// processing phase
while ( gradeCounter <= 3 ) // loop 10 times
{
            // prompt for input and read grade from user
            grade = window.prompt("Enter integer grade:", "0" );
            // convert grade from a string to an integer
```

```
        gradeValue = parseInt( grade );
        // add gradeValue to total
        total = total + gradeValue;
        // add 1 to gradeCounter
        gradeCounter = gradeCounter + 1;
        document.writeln("<h1>Grade is " + gradeValue + "</h1>" );
        //document.writeln("<h1>Grade is " + gradeValue + "</h1>" );
} // end while
// termination phase
average = total / 10; // calculate the average
// display average of exam grades
document.writeln("<h1>Class average is " + average + "</h1>" );
}


</script>
</body>
</html>
```

3-2. Write a program called **SumAndAverage** to produce the sum of the numbers 1 through 100. Use a for loop for this program. Also, compute and display the average.

EXPECTED OUTPUT

The sum is 5050

The average is 50.5

3-3. Modify the code created for Exercise 3-2 to use a while loop instead of a for loop.

EXPECTED OUTPUT

The sum is 5050

The average is 50.

Unit 3 Assignment: Coding Exercises

Exercise Criteria	Possible	Earned
Exercise 1 completed correctly	0-5	
Exercise 2 completed correctly	0-5	
Exercise 3 completed correctly	0-5	
Total	0-15	

Unit 3 Assignment 2: Coding Project

Using the language you have chosen to focus on: C#, Java, Web Development languages (PHP and JavaScript), please complete the following two Assignments,

Using while-loops, create an example of a nested loop.

The outer loop will count from 5 to 1.

The inner loop will count from 0 to 10 by 2.

Use the variable **k** for the outer loop counter and the variable **i** for the inner loop counter.

Print out the index value for both k and i as the program executes through each loop.

Expected Output:

k = 5 i = 0

k = 5 i = 2

k = 5 i = 4

k = 5 i = 6

k = 5 i = 8

k = 5 i = 10

k = 4 i = 0

k = 4 i = 2

k = 4 i = 4

k = 4 i = 6

k = 4 i = 8

k = 4 i = 10

k = 3 i = 0

k = 3 i = 2

k = 3 i = 4

k = 3 i = 6

k = 3 i = 8

k = 3 i = 10

k = 2 i = 0

k = 2 i = 2

k = 2 i = 4

k = 2 i = 6

k = 2 i = 8

k = 2 i = 10

k = 1 i = 0

k = 1 i = 2

k = 1 i = 4

k = 1 i = 6

k = 1 i = 8

k = 1 i = 10

Unit 3 Assignment 2: Coding Project Rubric

Criteria	Points Possible	Points Earned

Student names the variables correctly according to Assignment instructions.	0-5	
Student uses appropriate variable for the inner and outer loop according to Assignment instructions.	0-5	
Student uses appropriate count values for outer loop.	0-5	
Student uses appropriate count values for inner loop.	0-5	
Student correctly implements two while loops in a nested loop format.	0-5	
Program produces correct output.	0-5	
Total	0-30	

Unit 3 Assignment 3: Coding Project

Using a for-loop, write code that will countdown from 9 to 0, displaying the countdown number on the screen with the associated count variable named “i”, and then print to the screen "These are the integers in the decimal system!" after it prints the number 0.

Expected Output:

i= 9

i= 8

i= 7

i= 6

i= 5

i= 4

i= 3

i= 2

i= 1

i = 0

These are the digits in the decimal system!

Unit 3 Assignment 3: Coding Project Rubric

Criteria	Points Possible	Earned
Student uses correct variable types.	0-5	
Student correctly names the counter variable according to Assignment instructions.	0-5	
Student uses correct increment/decrement.	0-5	
Student correctly implements a for loop. Variable are declared correctly and correct values used. Correct increment used.	 0-5 0-5	
Program produces correct output.	0-5	
Total	0-30	