**Converting pseudo code loops to Java**

The pseudo code is either given here or in the referenced pages in the text.

There is almost a one-to-one correspondence between the pseudo code and the Java code. Some syntax is required by Java, watch this carefully!

**Exercise 1**: From page 221 in your book. Algorithm workbench #1

In pseudo code:

1. Declare Integer number
2. Declare Integer product
3. Set product = 0
4. While product < 100
5. Display “Enter a number to be multiplied by 10”
6. Input number
7. Set product = number \* 10
8. End While

In Java (NOTE that all Java code is written inside of a class and inside of a method! I have commented each line that matches from above and included comments for other line of Java code)

//an import statement is required to allow users to enter data //from the keyboard via a Scanner object  
import java.util.Scanner;  
  
//a class header is required  
public class AlgorithmWorkbench\_pg221\_1   
{  
 //a method is required for executable statements, we will

//use the main() method for this example  
 public static void main(String [] args)  
 {  
 //instantiate a Scanner object called scan, scan will

//allow reading from the keyboard - System.in  
 Scanner scan = new Scanner(System.in);  
 //lines 1 and 2 in pseudo code  
 int number;  
 int product;  
   
 //line 3  
 product = 0;  
   
 //line 4  
 while (product < 100)   
 {  
 //line 5  
 System.out.println("Enter a number to be multiplied by 10");  
 //line 6  
 number = scan.nextInt();

//nextInt() is the method that reads an integer from the keyboard

//line 7  
 product = number \* 10;  
 }//line 8  
   
 //the main() method MUST be closed with a brace  
 }//end main()  
}//end class - this brace MUST be here to end the class

**Exercise 2**: From page 221 in your book. Algorithm workbench #2

In pseudo code:

Declare number

For number = 0 to 1000 Step 10  
 Display number  
End For

In Java:

public class AlgorithmWorkbench\_pg221\_3   
{  
 public static void main(String [] args)  
 {  
 int number;  
   
 //this for loop header states the beginning value for number  
 //the ending value for number  
 //the value to increase number by  
 //NOTE that number = number + 10 MUST be written as an assignment  
  
 for (number = 0; number <= 1000; number = number + 10)   
 {   
 System.out.println(number);  
 }  
   
 }//end main()  
}//end class

**Exercise 3**: From page 222 in your book. Debugging Exercises #2

The error in the code to perform as described is the condition in the While header should be

counter <= TIME\_LIMIT

The condition should be less than or equal to, not strictly less than

In Java:

public class Debug\_Exercise\_2\_pg222   
{  
 public static void main(String [] args)  
 {  
 int counter = 1;  
 final int TIME\_LIMIT = 60;  
   
 while (counter <= 60)  
 {  
 System.out.println(counter);  
 counter = counter + 1;  
 }//end while  
   
 System.out.println("Time's up!");  
 }//end main()  
}//end

**Exercise 4**: A Do-while example

Write a do-while loop that will continually ask a user to enter a number between 1 and 10. The loop will stop when the user enters a value outside of the range of 1 to 10.

In pseudo code:

Declare Integer number

Do  
 Display “To continue the loop enter a number between 1 and 10”  
 Input number  
While number >= 1 AND number <= 10

In Java:

import java.util.Scanner;  
  
public class Do\_while\_example {  
 public static void main(String [] args){  
 Scanner scan = new Scanner(System.in);  
 int number;  
   
 do   
 {  
 System.out.println("To continue the loop enter a value   
 between 1 and 10");  
 number = scan.nextInt();  
 }   
 while (number >= 1 && number <= 10);   
 //NOTE the use of && for AND  
   
 }//end main()  
}//end class

**For you to practice:**

1. Page 223, #5

[See the pseudo code solution](#pseudocodesolution5)

[See the Java solution](#javasolution5)

1. Page 224, #8

[See the pseudo code solution](#pseudocodesolution8)

[See the Java solution](#javasolution8)

Pseudo code solution to #5, page 223

Declare Real tuition

Declare Integer counter

Set tuition = 6000

For counter = 1 to 5

Set tuition = tuition \* 0.02  
 Display tuition

End For

Pseudo code solution to #8, page 224

Declare Integer celsiusTemperature

Declare Real fahrenheitTemperature

For celsiusTemperature = 0 to 20

fahrenheitTemperature = 9.0/5.0 \* celsiusTemperature + 32  
 Display celsiusTemperature, “C is “ , fahrenheitTemperature, “F”

End For

Java solution for #5, page 223

public class ProgrammingExercise\_pg223\_5   
{  
 public static void main(String [] args)  
 {  
 double tuition;  
 int counter;  
   
 tuition = 6000;  
   
 for (counter = 1; counter <= 5; counter = counter + 1)  
 {  
 tuition = tuition + tuition \* 0.02;  
 System.out.println(tuition);  
 }//End For  
 }//end main()  
}//end class

NOTE: Don’t worry about the output, you will learn how to format the output in your next programming class.

Java solution #8, page 224

public class ProgrammingExercise\_pg224\_8 {  
 public static void main(String [] args){  
 int celsiusTemperature;  
 double fahrenheitTemperature;  
   
 for (celsiusTemperature = 0; celsiusTemperature <= 20;   
 celsiusTemperature = celsiusTemperature + 1)

{  
 fahrenheitTemperature = 9.0 / 5.0 \* celsiusTemperature + 32;  
 System.out.println(celsiusTemperature + "C is " + fahrenheitTemperature + "F");  
 }//end for  
 }//end main()  
}//end class