**Exercise 2**

4.5 Four basic elements of counter-controlled repetition:

1. Control variable initialization.

2. Loop-continuation condition.

3. Increment/decrement of the control variable.

4. Body of the loop.

4.6 while vs for:

• while: Best when the number of iterations isn’t known.

• for: Best when iterations are predictable, since it consolidates initialization, condition, and increment in one line.

4.7 Use do...while when the loop body must run at least once regardless of the condition. For example, a menu that should appear once before asking for a valid input.

4.8 break vs continue:

• break: Exits the loop completely.

• continue: Skips the rest of the current iteration and continues with the next.

4.9 Code error fixes:

a)

// Incorrect: For (i = 100, i >= 1, i++)

for (int i = 100; i >= 1; i--)

   System.out.println(i);

b)

// Missing break statements

switch (value % 2) {

   case 0:

       System.out.println("Even integer");

       break;

   case 1:

       System.out.println("Odd integer");

       break;

}

c)

// Loop increments instead of decrements

for (int i = 19; i >= 1; i -= 2)

   System.out.println(i);

d)

// "While" should be lowercase, and condition should be <=

int counter = 2;

do {

   System.out.println(counter);

   counter += 2;

} while (counter <= 100);