

Date: \_\_\_\_\_

Name: \_\_\_\_\_

## Exercise 5: While & Do-While Loops

**Save these projects as While1.java, While2.java ... DoWhile1.java, etc.**

All programs must have a header, use correct indentation, spacing, comments and adhere to good programming style.

*Use ONLY the while loop for the following exercises:*

1. Design a program that asks the user for a secret password. The program should say "Error - incorrect password" if the user gets it wrong and continue prompting the user until they get it correct. Once correct it should say "Password Accepted" and end. The correct password should be stored in a variable at the beginning of the program.
2. Design a program that uses *Math.Random* to pick a random number. The user then gets to continually guess until they are correct. (Hint: you will need to look up *Math.Random*)
3. Asks the user for numbers until the number 0 is entered. Once the number 0 is entered the program should output the total number of numbers the user entered (excluding the 0) and the average of them.

*Use ONLY the do while loop for the following exercises:*

1. Recreate problem number 1 from above using a do-while loop. Add a comment explaining why do-while is preferred for this problem.
2. We would like to find two numbers that add to 20 and multiply to 96. Instead of solving algebraically we will use a **brute force method**. Design a program that picks two random numbers from 1 - 100 and checks to see if they are the answer. The program will continually repeat this process until it finds the correct answer.

Once the correct answer is found the program should output the answers and the number of attempts it took.

## CHALLENGES

1. Design a program to compute the factorial of a number.

Hint: The factorial of 4 is 24           (4x3x2x1)  
The factorial of 6 is 720           (6x5x4x3x2x1)

2. Design a program to output the following pattern based on the users input of one number:

user inputs 5

output:       1  
              2 2  
              3 3 3  
              4 4 4 4  
              5 5 5 5 5