XIDIAN UNIVERSITY

SCHOOL OF COMPUTER SCIENCE AND TECHNOLOGY

Programming in Java

2019

Lab-4A

Exercise 1. showChar Method

Write a method named `showChar`. The method should accept two arguments: a reference to a String object and an integer. The integer argument is a character position within the String, with the first character being at position 0. When the method executes, it should display the character at that character position. Here is an example of a call to the method:

showChar("New York", 2);

In this call, the method will display the character `w` because it is in position 2. Demonstrate the method in a complete program.

Hint:

```
public static void showChar(String str, int pos)
{

System.out.println(str.charAt(pos));

}
```

Output

```
run:
w
BUILD SUCCESSFUL (total time: 0 seconds)
```

Exercise 2. Retail price calculator

Write a program that asks the user to enter an item's wholesale cost and its markup percentage. It should then display the item's retail price.

For example:

• If an item's wholesale cost is 5.00 and its markup percentage is 100 percent, then the item's retail price is 10.00.

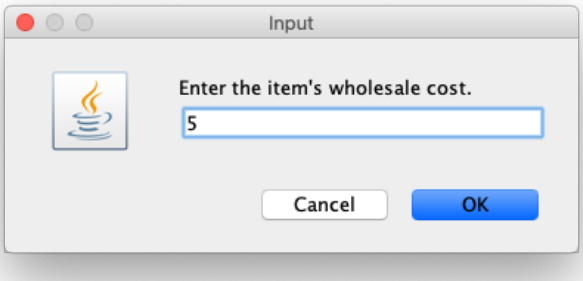
• If an item's wholesale cost is 5.00 and its markup percentage is 50 percent, then the item's retail price is 7.50.

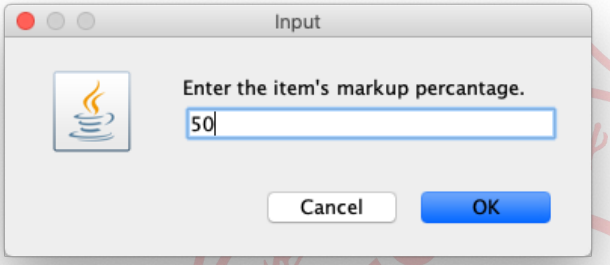
The program should have a method named calculateRetail that receives the wholesale cost and the markup percentage as arguments and returns the retail price of the item.

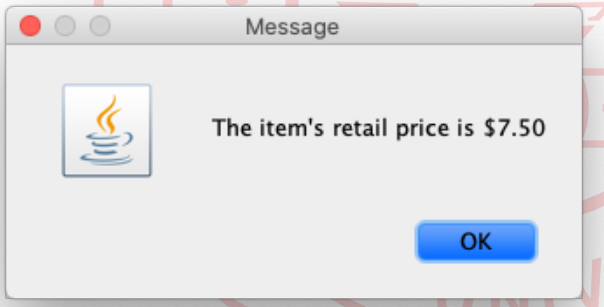
Hint:

```
public static double calculateRetail(double wholesale, double
markupPercent)
   {
      return  // Complete return the statement.
   }
```

Output:







Exercise 3. Celsius Temperature Table

The formula for converting a temperature from Fahrenheit to Celsius is

$$C = 5/9\ (F - 32)$$

where *F* is the Fahrenheit temperature and *C* is the Celsius temperature. Write a method named Celsius that accepts a Fahrenheit temperature as an argument. The method should return the temperature, converted to Celsius. Demonstrate the method by calling it in a loop that displays a table of the Fahrenheit temperatures 0 through 20 and their Celsius equivalents.

Output:

```
run:
Fahrenheit      Celsius
========================
 0              -17.78
 1              -17.22
 2              -16.67
 3              -16.11
 4              -15.56
 5              -15.00
 6              -14.44
 7              -13.89
 8              -13.33
 9              -12.78
10              -12.22
11              -11.67
12              -11.11
13              -10.56
14              -10.00
15               -9.44
16               -8.89
17               -8.33
18               -7.78
19               -7.22
20               -6.67
BUILD SUCCESSFUL (total time: 0 seconds)
```

Exercise 4: Test Average and grade

Write a program that asks the user to enter five test scores. The program should display a letter grade for each score and the average test score. Write the following methods in the program:

- calcAverage—This method should accept five test scores as arguments and return the average of the scores.
- determineGrade—This method should accept a test score as an argument and return a letter grade for the score, based on the following grading scale:

Score	Letter Grade
90–100	A
80–89	B
70–79	C
60–69	D
Below 60	F

Output:

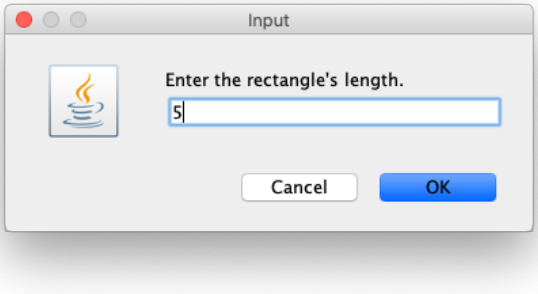
```
run:
Enter the first test score: 90
Enter the second test score: 80
Enter the third test score: 85
Enter the fourth test score: 90
Enter the fifth test score: 79
Here are the grades and the average:
Test 1: A
Test 2: B
Test 3: B
Test 4: A
Test 5: C
Average score: 84.80
Average Letter Grade: B
BUILD SUCCESSFUL (total time: 19 seconds)
```

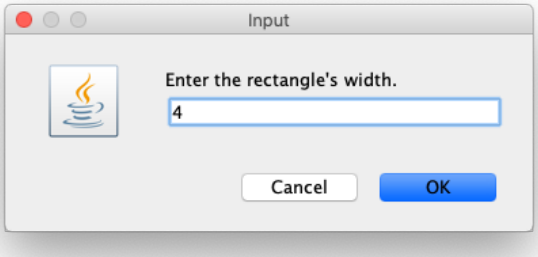
Exercise 5: Rectangle Area—complete the program

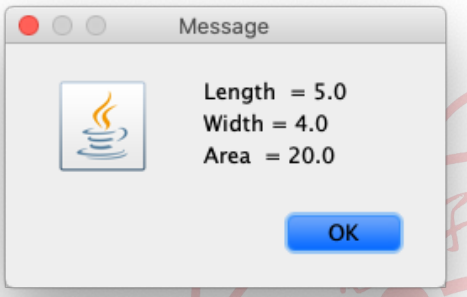
The program will ask the user to enter the width and length of a rectangle, and then display the rectangle's area. The program calls the following methods, which have not been written:

- getLength—This method should ask the user to enter the rectangle's length, and then return that value as a double.
- getWidth—This method should ask the user to enter the rectangle's width, and then return that value as a double.
- getArea—This method should accept the rectangle's length and width as arguments and return the rectangle's area. The area is calculated by multiplying the length by the width.
- displayData—This method should accept the rectangle's length, width, and area as arguments, and display them in an appropriate message on the screen.

Output:







Lab4: Deadline: 2019-11-15 (before 6pm) Submit: Lab4Submit.doc

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