COP 3330 Summer 2024

University of Central Florida

Programming Assignment1

**GUIDELINES**

Your source code have the statement at the beginning.

*package assignment1;*

In other words do not use default packaging.

The source file should have a main method inside.

You will only need to submit one source file, not the whole Eclipse/IDE project.

You cannot use Collections in Java for this assignment.

You cannot use any other 3rd party library.

Your code should compile fine. Non compiling submissions will receive a penalty.

Your program should generate EXACTLY the same output if the sample input is given. Please see the sample inputs and outputs. Give importance to number of stars, spaces etc.

Program Description

In this programming assignment, you are tasked with implementing a simple Java program that generates receipts for a fictional store. The program uses random values to create a unique receipt number and date, and it allows users to input items and their prices. The receipt includes details such as the item number, item name, calculated price (including tax), and the total sum for all items. The output should be printed to the screen.

**Requirements:**

1. **Random Receipt Number:**
   * Generate a random receipt number between 1000 and 2000. 2000 is exclusive, 1000 is inclusive.
2. **Date Generation:**
   * Generate a random date in the format (Month Day Year) for the receipt.
   * Year is in between 1900 and 2100. 2100 is exclusive.
   * The day is between 1 to 28 (Both inclusive)
3. **Input Handling:**
   * Utilize the Scanner class to take user input for item names and prices.
   * Continue taking input until the user enters "DONE" for the item name.
4. **Tax Calculation:**
   * If the item is categorized as "Food" or “food”, set the tax rate to 0.
   * For other items, set the tax rate to 30%.
5. **Receipt Details:**
   * Display each item's details, including the item number, name, and calculated price (including tax).
   * The first letter of the item should be written in capital. If the user has entered in lowercase, you need to fix it. Please check the sample output.
6. **Total Calculation:**
   * Calculate and display the total sum for all items.
7. **Output Formatting:**
   * Use appropriate formatting to create a visually appealing receipt.

**Evaluation Criteria:**

Your assignment will be evaluated based on the following criteria:

1. Correct implementation of random receipt number and date generation.
2. Proper handling of user input and item categorization.
3. Accurate tax calculation and receipt details display.
4. Correct total sum calculation.
5. Code structure, organization, and comments.

Calculation note:

For every calculation ( tax calculation with tax and total sum calculation), you need to round the number to nearest integer. You will round 1 digit after the dot.

Ex:

34.1 -> 34.0

34.5 -> 35

35.8 -> 36

Check java api of Math to do that.

<https://docs.oracle.com/javase/8/docs/api/java/lang/Math.html>

Sample Program outputs

Note that the user input is written with blue.

**SAMPLE OUTPUT**

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\* S store \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

receipt number 1413

February 21 2017

Write item name bag

Write price 15.5

item number 1 Bag 20.0

Write item name pencil

Write price 14.878

item number 2 Pencil 19.0

Write item name food

Write price 150.8

item number 3 Food 151.0

Write item name DONE

3 items total 190.0

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**ANOTHER SAMPLE OUTPUT**

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\*\*\*\*\*\* S store \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

receipt number 1940

January 3 2087

Write item name PEN

Write price 1.5

item number 1 PEN 2.0

Write item name Puzzle

Write price 24.4445

item number 2 Puzzle 32.0

Write item name DONE

2 items total 34.0

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**SAMPLE OUTPUT WHEN WE WRITE DONE AT THE FIRST ITEM CASE**

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\*\*\*\*\*\* S store \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

receipt number 1405

February 24 2022

Write item name DONE

0 items total 0.0

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Notes:

There are 6 spaces between items and total

Ex:

2 itemsXXXXXXtotal 56.42

There are 6 spaces between receipt number and the number

Ex:

receipt numberXXXXXX1235

Besides these, there is one space between others.