MIS 768: Advanced Software Concepts
Spring 2024

Methods

Purpose

- Learn the syntax of defining a method
- Learn the syntax of calling a method
- Practice solving a problem by decompose the problem into smaller ones

1. Preparation

(1) Launch Eclipse, and set the workspace to your personal directory.

(2) Create a package as edu.unlv.mis768.labwork5.

(3) Download **05_lab_files.zip** from WebCampus. Extract the zip file and then import the .java files into the package you just created.

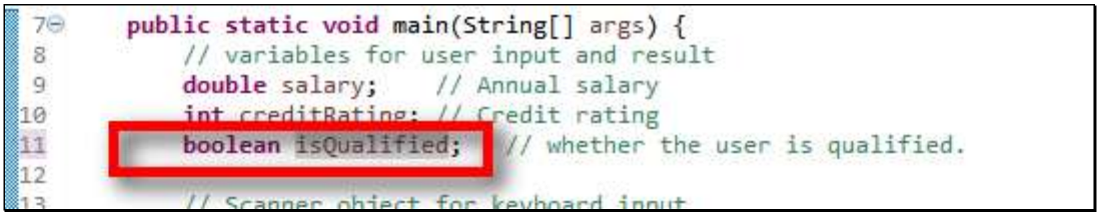
2. Design a Method: CreditCardApproval.java

(4) In this program, the user will enter the salary and the credit rating, the program will then show the application is approved or not.

If the salary is no less than $20,000 and the credit rating is no less than 7, the application can be approved.

(5) Please open **CreditCardApproval**. In this program, the I/O is all handled in the main method. Use a **determineQulificatio()** method only for determining the qualification. This **determineQulificatio()** method will return only true/false.

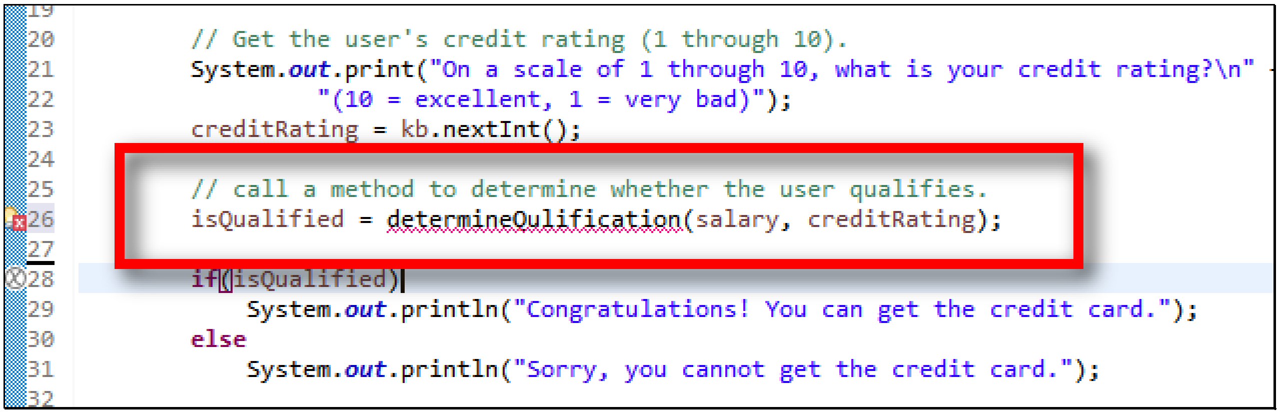
In the main method, declare a boolean variable for storing the results of the method.



```
    public static void main(String[] args) {
        // variables for user input and result
        double salary;    // Annual salary
        int creditRating; // Credit rating
        boolean isQualified;  // whether the user is qualified.

        // Scanner object for keyboard input
```

(6) The call a method to determined the qualification.

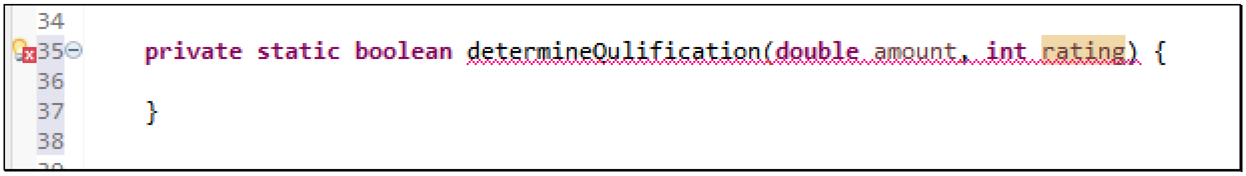
For this method, the input data are salary and creditRating, the result is a true/false value.



```
        // Get the user's credit rating (1 through 10).
        System.out.print("On a scale of 1 through 10, what is your credit rating?\n" +
                "(10 = excellent, 1 = very bad)");
        creditRating = kb.nextInt();

        // call a method to determine whether the user qualifies.
        isQualified = determineQulification(salary, creditRating);

        if(isQualified)
            System.out.println("Congratulations! You can get the credit card.");
        else
            System.out.println("Sorry, you cannot get the credit card.");
```

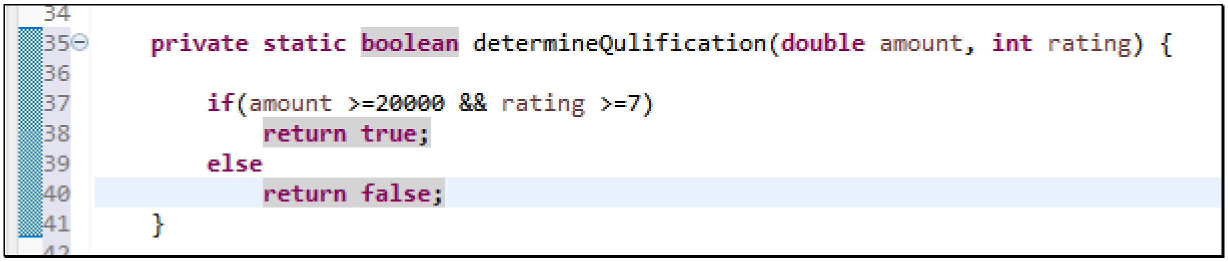
(7) Please create and complete the **determineQulificatio()** method.

Please note that this method should be outside of the main() method.



```
    private static boolean determineQulification(double amount, int rating) {

    }
```

(8) Please complete the program using if/else statement:



```
    private static boolean determineQulification(double amount, int rating) {

        if(amount >=20000 && rating >=7)
            return true;
        else
            return false;
    }
```

(9) You can run and test the program.

(10) In fact, you do not need to declare the variable **isQualified**. Please revise the program to get rid of the variable **isQualified.**

3. Exercise: Average Test Score

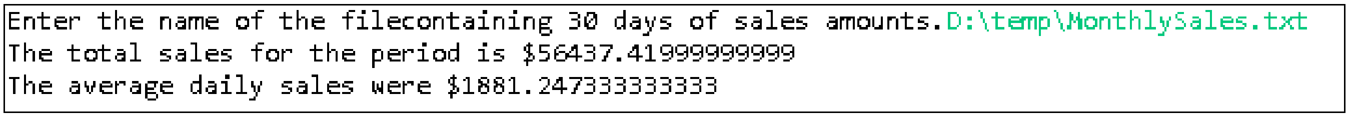
(11) Please write a program that asks the user to enter three test scores. The program should display the average of the test score and the letter grade for average test score, using the following grading scheme:

Score	Grade
90-100	A
80-89	B
70-79	C
Below 70	F

The program should use a method (other than the **`main`** method) in this program. Please follow the top-down design pattern in this program.

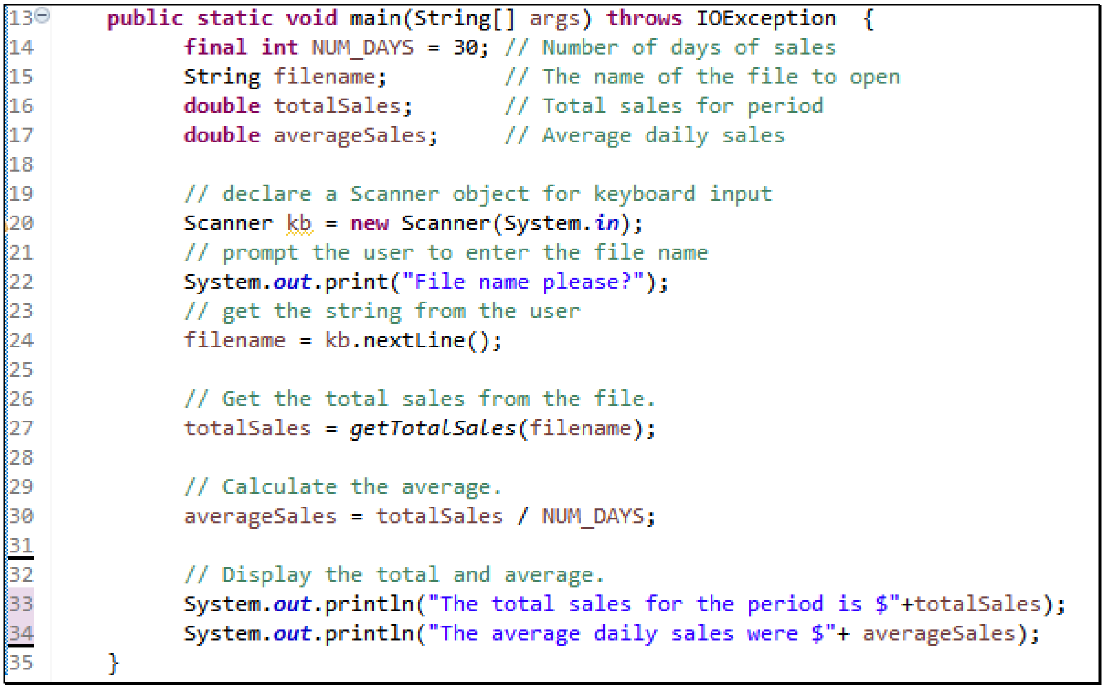
4. Use Method to Solve a Problem: SalesReport.java

(12) The program reads 30 days of sales amount from a file (MonthlySales.txt), and then displays the total sales and average daily sales.



```
Enter the name of the filecontaining 30 days of sales amounts.D:\temp\MonthlySales.txt
The total sales for the period is $56437.41999999999
The average daily sales were $1881.247333333333
```

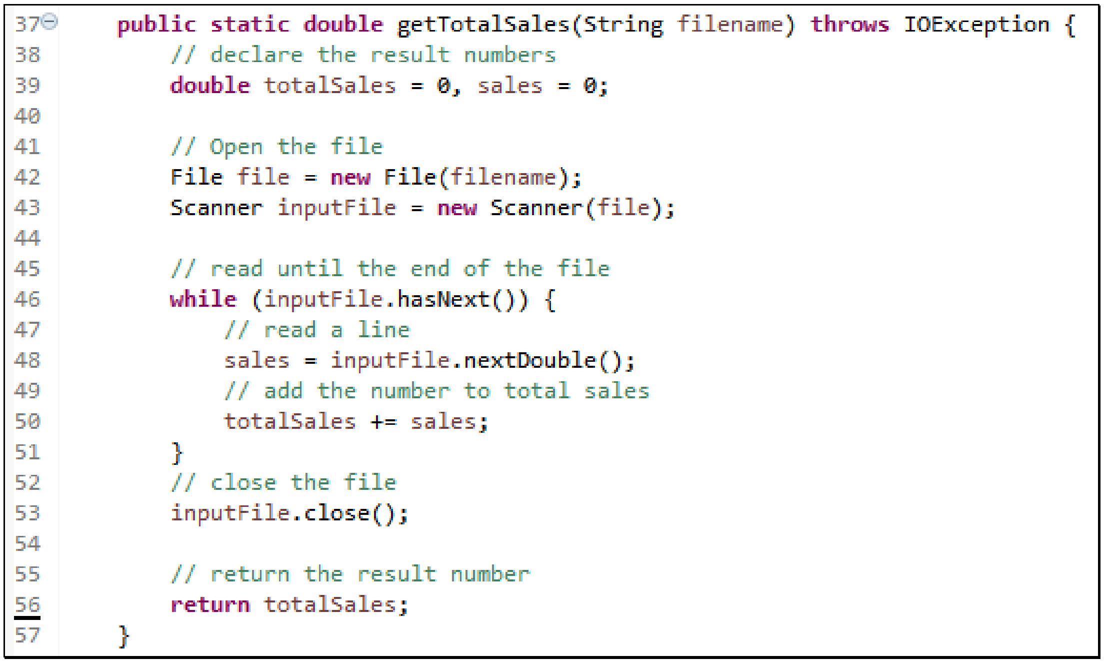
(13) Open the **SalesReports** class. The main method is constructed as shown below



```java
    public static void main(String[] args) throws IOException  {
        final int NUM_DAYS = 30; // Number of days of sales
        String filename;         // The name of the file to open
        double totalSales;       // Total sales for period
        double averageSales;     // Average daily sales

        // declare a Scanner object for keyboard input
        Scanner kb = new Scanner(System.in);
        // prompt the user to enter the file name
        System.out.print("File name please?");
        // get the string from the user
        filename = kb.nextLine();

        // Get the total sales from the file.
        totalSales = getTotalSales(filename);

        // Calculate the average.
        averageSales = totalSales / NUM_DAYS;

        // Display the total and average.
        System.out.println("The total sales for the period is $"+totalSales);
        System.out.println("The average daily sales were $"+ averageSales);
    }
```

(14) Please complete the **getTotalSales(filename)** method

NOTE: this method deals with file input. We need to add the **throws IOException** clause to the header. We also need to add the **throws IOException** clause to the header of the main method.

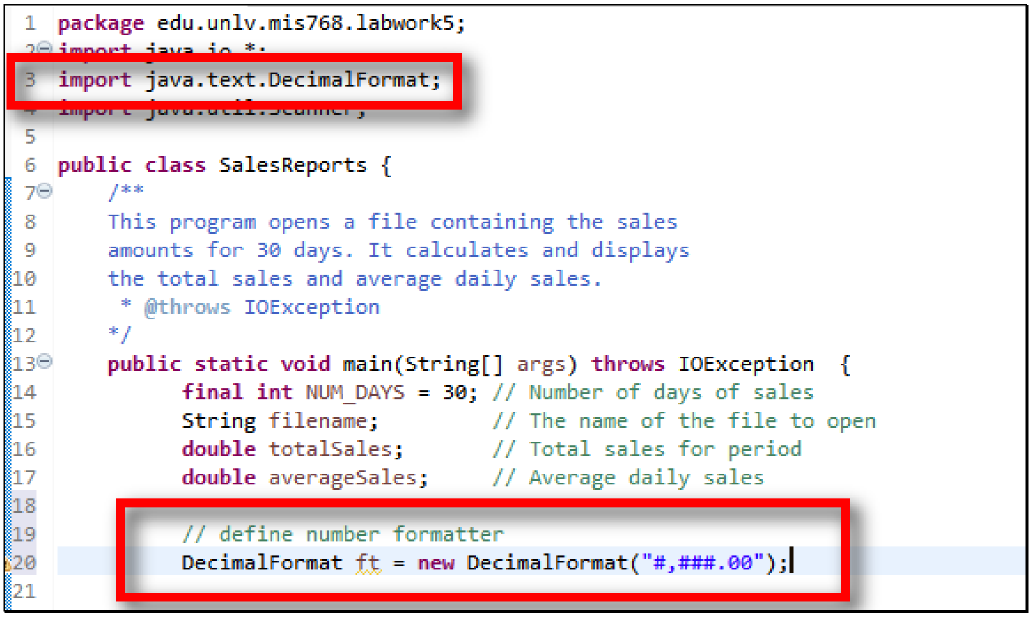


```java
    public static double getTotalSales(String filename) throws IOException {
        // declare the result numbers
        double totalSales = 0, sales = 0;

        // Open the file
        File file = new File(filename);
        Scanner inputFile = new Scanner(file);

        // read until the end of the file
        while (inputFile.hasNext()) {
            // read a line
            sales = inputFile.nextDouble();
            // add the number to total sales
            totalSales += sales;
        }
        // close the file
        inputFile.close();

        // return the result number
        return totalSales;
    }
```

5. Applying DecimalFormat Class

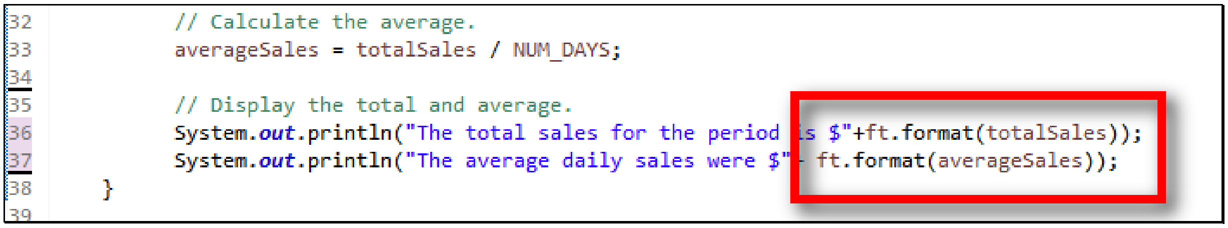
(15) To format the results, we can use an object of **DecimalFormat** class, and specify the format. Please add a line to declare the **DecimalFormat** object:

Please note that the string **“#,###.00”** means adding thousands’ separator, with two digits after the decimal point. The import statement of **java.text.DecimalFormat** should also be used.



```java
package edu.unlv.mis768.labwork5;
import java.io.*;
import java.text.DecimalFormat;
import java.util.Scanner;

public class SalesReports {
    /**
    This program opens a file containing the sales
    amounts for 30 days. It calculates and displays
    the total sales and average daily sales.
     * @throws IOException
    */
    public static void main(String[] args) throws IOException  {
          final int NUM_DAYS = 30; // Number of days of sales
          String filename;         // The name of the file to open
          double totalSales;       // Total sales for period
          double averageSales;     // Average daily sales

          // define number formatter
          DecimalFormat ft = new DecimalFormat("#,###.00");

```

(16) The, the **DecimalFormat** object can be used to format the string:



```java
            // Calculate the average.
            averageSales = totalSales / NUM_DAYS;

            // Display the total and average.
            System.out.println("The total sales for the period is $"+ft.format(totalSales));
            System.out.println("The average daily sales were $"+ ft.format(averageSales));
      }

```