

Northeastern Illinois University
CS200 Programming II, Fall 2018

Homework 7

Due: Tuesday, December 4, 2018 at 10:00 pm

Instructions

Download the HW7 Needed Files.zip folder from D2L. Inside you will find 7 files as follows: MathProblems.java, StockPrices.java, portfolio.txt, IAthlete.java, Itrainer.java, TestSkiJumper.java, and SkiJumper.java.

Problem 1 (30 points):

Open MathProblems.java. This class should have the following:

- Implement the public method named divide(). This method accepts no input and returns nothing
 - This method should declare a Scanner and within a try-catch block prompt the user for two integers, a and b
 - Next it should attempt to divide a by b (a/b) and store the result
 - Next it should attempt to find a mod b (a%b) and store the result
 - Lastly, it should print out the results as shown in the output examples below
 - If the user enters invalid input a catch block should catch the InputMismatchException and print out that invalid input was entered
 - If the user enters a zero for the divisor, a catch block should catch an ArithmeticException, and inform the user that a could not be divided by b

Sample runs provided below:

Successful run:

```
Enter the numerator: 9
Enter the divisor: 4
9 / 4 is 2 with a remainder of 1
```

User enters the wrong type of input:

```
Enter the numerator: 9
Enter the divisor: three
Invalid input type
Run the program again
```

User enters a zero for the divisor:

```
Enter the numerator: 5
Enter the divisor: 0
You can't divide 5 by 0
Run the program again
```

Problem 2 (35 points):

Open `StockPrices.java`. Be sure that `portfolio.txt` is located in the *same directory* (folder). This class will read the names of shares and their prices from an external file and sum the total. It should do the following:

- Declare a `File` object that accepts the file `portfolio.txt` to its constructor
- Declare a `Scanner` that accepts the file object to its constructor
- A `try-catch-finally` structure that reads in data from `portfolio.txt` and sums and displays the *total* value of the portfolio
 - A `while` loop will be needed inside the `try` block to read in each line of the file
- A `catch` block should catch a `FileNotFoundException` and print “File not found” if the file is not there
- The `finally` block should close the file
- Lastly, the total value in the portfolio should be printed

You may assume that the text file will always have the name of the company, followed by a blank space, and the price of its stock for each line.

A sample run is provided below:

```
Calculating total value in the portfolio:
The total value is: $299.51
```

Problem 3 (35 points):

Complete the Java class named `SkiJumper` that implements the `ITrainer` and `IAthlete` interfaces as follows:

- A private `String` instance variable named `name`
- A private `double` instance variable named `hours`
- A private `int` instance variable named `nJumps`
- A constructor that takes one parameter, a `String`, and sets the corresponding instance variable. The constructor should also set both `hours` and `nJumps` to 0
- A getter method for the `name` instance variable
- A method named `jump()` which does not take any parameters and does not return a value. The method should increment the value of `nJumps` by 1
- Override the `data()` method from the `IAthlete` interface to print the values of the `name`, `nJumps`, and `hours` each on a separate line
- Override the `train()` method from the `ITrainer` interface to add the parameter value to the `hours` instance variable. It should also print “I am on the slopes x hours today” where `x` is the value of the method parameter
- Create a **properly** overridden `equals()` method that returns `true` if the value stored in `nJumps` of the object passed in, and that of the object calling the method are equal and `false` otherwise. Hint: you might want to add another getter method

Once complete, compile all files and run `TestSkiJumper`. If your output matches the output shown below, your code is correct.

```
I am on the slopes 5.2 hours today
I am on the slopes 3.2 hours today
John Smith
2
8.4
I am on the slopes 7.3 hours today
Jenny Adam
1
7.3
false
true
```

No hard copies will be collected. Do not send your files through e-mail! You should submit your work on D2L by the due date. See syllabus for late homework policy.

What to turn in:

There should be three Java files: `MathProblems.java`, `StockPrices.java`, and `SkiJumper.java`.

Place these three files into a zip file and name it *YourNameHW7.zip*, and submit the zip file to the **Homework 7** folder in D2L. Do **not** turn in `.class` files.

Helpful Links:

[How to zip files in Mac OS](#)

[How to zip files in Windows](#)