Program Set #4
Total Points: 30

Choose 3 of the 5 problems below for full credit. See Java Grading Guide Sheet for grading/submission information. Partial credit will be given. (10 points each)

1. Implement Programming Exercise #17-Chapter 30 (Liang), p. 1153. Must use streams for full credit. Let the user input the file name from the keyboard. Sample file(s) provided by instructor. Output should be user friendly.

Name the program: CountLetterStreamsXX.java, where XX are your initials.

2. Implement Programming Exercise #6-Chapter 36 (Liang), 36-32 (PDF File). Must use JavaFX. Set the title to Currency Converter and center the stage on the screen. Place all classes into one file. Output should look similar to the PDF file.

Name the program: GUICurrencyCoverterXX.java, where XX are your initials.

3. A geography class is currently studying Europe, and the next test covers the capital cities. The test will be fill-in-the-blank questions. Each question will be in one of the following two formats:

```
Format 1: The capital city of <country> is_____.
Format 2: The capital city of _____ is <city>.
```

Where placeholders <country> and <city> are provided, and you must fill in the blanks. Here is a copy of your study sheet:

Country	Capital	Country	Capital
Albania	Tirana	**Liechtenstein**	Vaduz
Andorra	Andorra la Vella	**Lithuania**	Vilnius
Armenia	Yerevan	**Luxembourg**	Luxembourg
Austria	Vienna	**Macedonia**	Skopje
Azerbaijan	Baku	**Malta**	Valletta
Belarus	Minsk	**Moldova**	Chisinau
Belgium	Brussels	**Monaco**	Monaco
Bosnia Herzegovina	Sarajevo	**Montenegro**	Podgorica
Bulgaria	Sofia	**Netherlands**	Amsterdam
Croatia	Zagreb	**Norway**	Oslo
Cyprus	Nicosia	**Poland**	Warsaw
Czech Republic	Prague	**Portugal**	Lisbon
Denmark	Copenhagen	**Romania**	Bucharest
Estonia	Tallinn	**Russia**	Moscow
Finland	Helsinki	**San Marino**	San Marino
France	Paris	**Serbia**	Belgrade

Georgia	Tbilisi	**Slovakia**	Bratislava
Germany	Berlin	**Slovenia**	Ljubljana
Greece	Athens	**Spain**	Madrid
Hungary	Budapest	**Sweden**	Stockholm
Iceland	Reykjavik	**Switzerland**	Bern
Ireland	Dublin	**Turkey**	Ankara
Italy	Rome	**Ukraine**	Kiev
Kazakhstan	Astana	**United Kingdom**	London
Kosovo	Pristina	**Vatican City**	Vatican City
Latvia	Riga		

To skirt the opportunity of genuine learning, you decide to take advantage of your existing abilities and write a Java program to fill in the blanks. Input will be from a data file each in the format given in the description above. Blanks will consist of 5 consecutive underscore characters ('_'). Output will exactly mirror the input except that the blanks will be replaced with the correct country or capital names from the study sheet. All the countries/capitals may or may not be used. Use the Java `Map` class and other Collection classes as appropriate. Let the user input the file name from the keyboard. Refer to the sample output below.

Sample File:

```
The capital city of Italy is _____.
The capital city of _____ is Helsinki.
The capital city of Bosnia Herzegovina is _____.
```

Sample Run:

```
Enter file name: capitals.txt

The capital city of Italy is Rome.
The capital city of Finland is Helsinki.
The capital city of Bosnia Herzegovina is Sarajevo.
```

Name the program: `MapCapitalsXX.java`, where XX are your initials.

4. Write a Java program that creates a `Coin` table with coin names and values; inserts coin types penny, nickel, dime, quarter, half dollar, and dollar; and prints out the sum of the coin values. Use SQL commands `CREATE TABLE, INSERT`, and `SELECT SUM`. Do not use JavaFX and SQL must be used. Output should be user friendly.

Name the program: `JavaSQLCoinsXX.java`, where XX are your initials.

5. The game of Pong was one of the first computer video games and was all the rage in the 1970's. The game consists of a ball that moves horizontally and vertically within a rectangular region, and a single paddle, located at the right edge of the region, that can be moved up and down by the user. When the ball hits the top, left, or bottom wall or paddle, it bounces off in the opposite direction. If the ball misses the paddle, it passes though the right wall and re-emerges at the left wall. Write a Java FX GUI application that plays pong. Set the title to `Pong!!`, and center the stage on the screen. Place all classes into one file. Use threads as needed. Do not use any images. Output should be user friendly.

Name the program: `JavaFXPongXX.java`, where XX are your initials.