

CSE 2102: Introduction to Software Engineering

String Data Type, Scanner, File I/O

Assigned: February 2, 2023, Due: February 9, 2023

Problem A (25 pts.)

Write a program `BinarytoDecimal.java` that prompts the user to enter a 4-bit binary number. This number is read as a string, and then converted to decimal. If the bits in the number are b_0, b_1, b_2 and b_3 , then the output decimal value is computed as $8*b_3 + 4*b_2 + 2*b_1 + b_0$. For example, the binary number 1100 produces the output 12.

Input cmd:

```
java BinarytoDecimal
```

Output:

```
Please enter 4 digit binary: 1100
The decimal value is 12
```

Problem B (25 pts.)

Write a program `ReadALine.java` that will read a line of text as input and then display the line with the first word moved to the end of the line. Assume that there is no space before the first word and that the end of the first word is indicated by a blank, not by a comma or other punctuation. Note that the new first word must begin with a capital letter. For example, a possible sample interaction with the user might be:

Input cmd:

```
java ReadALine
```

Output:

```
Enter a line of text. No punctuation please.
Java is the language
I have rephrased that line to read:
Is the language java
```

Problem C (25 pts.)

Write a program `FindtheAverages.java` that prompts for a file that stores the scores of each student on three exams. Each student's score is stored on a new line, with the name followed by a comma, followed by three scores separated by commas. The program reads the three scores for each student, computes the average and prints it on the standard output. The program should include code to throw exceptions for any erroneous conditions that may arise with respect to the input file. For example, the input file `in.txt` may contain the lines:

Joy, 50, 50, 50
Ecstasy, 75, 80, 85
Fantasy, 90, 95, 90

Which produces the following output:

Output:

```
Enter the name of the input file:
in.txt
The average score for Joy is 50.00
The average score for Ecstasy is 80.00
The average score for Fantasy is 91.67
```

Note that although the individual exam scores are integers, the average may be a floating point number, and must be printed up to 2 decimal places.

Problem D (25 pts.)

Write a program `WhatsInAName.java` that prompts the user to enter their first name and their last name, separated by a space. The program then prints the first name (last name) and the number of characters in the first name (last name), and the initials of the user. A sample interaction is as follows:

Input cmd:

```
java WhatsInAName
```

Output:

```
Please enter your first name and last name, seperated by a space
Swapna Gokhale
Your first name is Swapna, which has 6 characters
Your last name is Gokhale, which has 7 characters
Your initials are SG
```

Submission

The following deliverables must be submitted on HuskyCT by midnight on February 9, 2023.

- .java and .class files for each problem. Java files should be well-documented
- At least 2 test cases for each problem.
- Late submissions (without any legitimate excuse) will incur a penalty of 10% per day.