Name: _____

ICS4U – Java Review Test – Practice

K/U: / 11	A: / 13	T: / 10	Total: / 34

1. The TOEFL test is an English test required by non-English-speaking students for university admission. The test consists of four sections: reading, listening, speaking and writing, each is scored out of 30, with the total score out of 120. The minimum requirement by the University of Waterloo is a total score of 90 and 25 for each of writing and speaking. Write a program segment to input the marks of each section and indicate whether the minimum requirement is met.   **(K/U: 4 marks)**

2. Write a program segment which inputs X and N and calculates the sum:
    $$X - X^2 + X^3 - X^4 + ... - X^{2N}$$
    (A: 5 marks)

3.

a) Write a **non-static** method that returns the time a trip takes given the distance of the trip and the speed someone travels.
Recall the equation time = distance/speed.   **(K/U: 3 marks)**

b) Bunny and Turtle are meeting at the shopping mall. They leave each of their houses at the same time. Finish the following main method such that it asks for the distance between the shopping mall and each of their houses and each of their speed, then outputs who gets to the mall earlier. You must make use of the method from (a) above, assuming the method exists in the same class.

(K/U: 4 marks)

Sample Output

```
public class Calculation{
    public static void main (String[] args){
```

```
Bunny:
Distance between home and mall:  20
Speed:  60
Turtle:
Distance between home and mall:  25
Speed:  100
Turtle gets to the mall earlier
```

4. Write a program segment that reads the lines of text from the file "data.txt", then outputs to file "result.txt" the reverse of each line.   **(A: 6 marks)**

data.txt

result.txt

Computer Science rocks It is fun I love it	*skcor ecneicS retupmoC* *nuf si tI* *ti evol I*

5. A.Y.Jackson S.S. wants to keep attendance data for classes in the following parallel arrays: a one-dimensional array of `String` called `names` and a two-dimensional `boolean` array called `attendance`. The columns in the `boolean` array represent days of the week, Monday (index 0) through Friday (index 4).

names		attendance				
Bob Cook		T	T			
Karen Farlen		F	T			
Jack Herman		T	F			
:				:		
Lynn Zhang		T	T			

The `names` array is sorted in order of last name. In the attendance array, `T` represents the value `true` (present), `F` represents the value `false` (absent). Assume a constant `NUMSTUDENT`, representing the number of students, is declared.

  a) Declare and create the two arrays. **(A: 2 marks)**
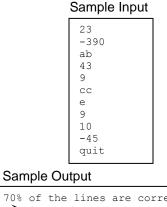
Assume the two arrays have been filled with data.

  b) Write the program segment that prompts for a student name as input and prints the number of days that this student was absent in the week. If a student name cannot be found, indicate the student does not exist. **(T: 4 marks)**

6. The Jackson lab technician is entering experimental data to the computer (via standard input). All data are supposed to be integers and they are entered on individual lines until "quit" is used to indicate the end of data. However, sometimes, errors occurs which the technician enters non-integer values. Write a program segment that reads and checks each line of input and outputs the percentage of lines that are correct. Note that the word "quit" does not count as an input line nor incorrect data. (You must use Exceptions to obtain full marks)   **(T: 6 marks)**

Sample Input

```
23
-390
ab
43
9
cc
e
9
10
-45
quit
```

Sample Output

```
70% of the lines are correct
```

7 out of 10 lines contains integers

Reference

Math Class
```
public static double pow(double a,double b)
```
   Returns the value of the first argument raised to the power of the second argument.

String Class
```
public char charAt(int index)
```
   Returns the character at the specified index. An index ranges from 0 to length() - 1. The first character of the sequence is at index 0, the next at index 1, and so on, as for array indexing.

```
public int length()
```
   Return the length of this string.

BufferedWriter Class
```
public void close()
```
   Close the stream.

```
public void newLine()
```
   Write a line separator.

```
public void write(int c)
```
   Write a single character.

```
public void write(String s)
```
   Write a string

BufferedReader Class
```
public void close()
```
   Close the stream.

```
public int read()
```
   Read a single character.

```
public String readLine()
```
   Read a line of text.

Integer Class
```
public static int parseInt(String s)
```
   Parses the string argument as a signed decimal integer.
   Throws: **NumberFormatException** – if the string does not contain a parsable integer

Scanner Class
```
public static int nextInt(String s)
```
   Scans the next token of the input as an int.
   Throws: **InputMismatchException** – if the next token does not match the *Integer* regular expression, or is out of range