Homework – Exceptions

1. **Division.java**: Write a program that repeatedly asked for the numerator and divisor. For each set of data, the program prints out the result (quotient), or an informative error message if there is a problem (division by zero or poor input data). The program continues looping, even if there is a problem. Exit the loop when data entered for the numerator start with characters "q" or "Q". Don't print out an error message in this case. Don't ask for the divisor if the user just asked to quit.

   Here is sample output from one run:

```
Enter the numerator: 12
Enter the divisor:  4
12 / 4 is 3

Enter the numerator: 12
Enter the divisor: 0
You can't divide 12 by 0

Enter the numerator: glarch
You entered bad data.
Please try again.

Enter the numerator: quit
```

2. **GroupOfNumbers.java**: Write a program that reads from a file "`input.txt`" a list of numbers that are arranged into groups of various sizes. The program outputs the sum of the numbers in each group. Each group starts with a one-line descriptive phrase. The phrase can be anything that is not a number. Some groups may have zero number in them.

   Sample text file and corresponding output:

input.txt:	**Output**
Group A 23 -12 29 -84 Group B -2 -45 -90 123 26 19	Group A Sum = -44 Group B Sum = 5 Group C Sum = 0 Last Group Sum = 108

-5 -30 9 Group C Last Group 12 -34 23 47 52 8	

3. **TotalSubjectScore.java:** Write a Java program that reads from a file named "`scores.txt`," which contains multiple sections of student scores. Each section consists of a title. The line containing the title of a section always ends with a colon (:). The title of a section is followed by several lines of student scores. Any other lines that is not a title, but containing non-numeric characters is considered an invalid score. The program should:
   - Identify each section by its title.
   - For each section, calculate the average score of the students in that section.
   - Output the result for each section, showing the title and the average score of the students in that section.
   - If a section contains no valid scores, output that the average score is N/A for that section.

   Sample text file and corresponding output:

scores.txt	**Output**
Math Scores: 80 90 invalid 75 87 55555: 85 92 text 70 Art Class: missing Science Scores: 78 wrong 93	Math Scores - Average Score: 82.4 55555 - Average Score: 82.3 Art Class - Average Score: N/A Science Scores - Average Score: 85.5

4. The Jackson lab technician is entering experimental data to the computer (via standard input). All data are supposed to be integers and they are to be either added or subtracted to calculate the final result. A '+' or '-' is entered to indicate the operation to be performed to the subsequent numbers until the other operator is entered (Begin with addition if no sign is entered at the beginning). Any input other than integers, '+' or '-' signs should be ignored. "quit" will be entered to indicate the end of data. Write a program segment that reads the data, performs the specified operations and outputs the final result. (You must use Exceptions to obtain full marks)