Zebra Technologies Interview Coding Exercise

This coding exercise is an opportunity for you to demonstrate your ability to build a greenfield project, specifically a command-line application to score a game of ten-pin bowling (https://en.wikipedia.org/wiki/Ten-pin_bowling#Rules_of_play)

1. The program should run from the command-line and take a text file as input: ‘bowling-game.txt’
2. The content of the input text file (e.g., ‘game.txt’) for several players bowling 10 frames each. This would be like:

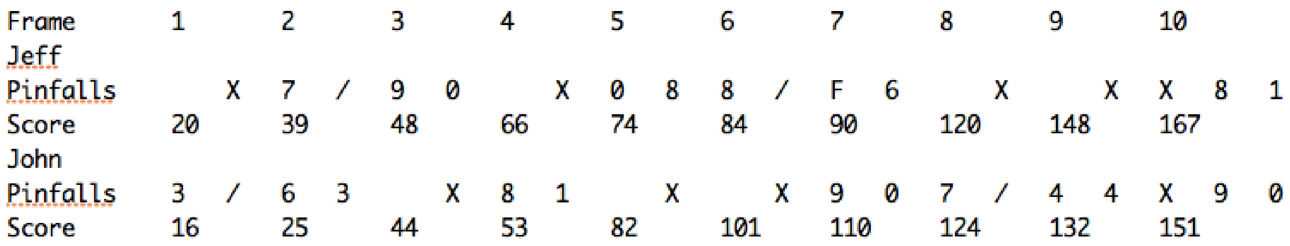
```
Jeff 10
John 3
John 7
Jeff 7
Jeff 3
John 6
John 3
Jeff 9
Jeff 0
John 10
Jeff 10
John 8
John 1
Jeff 0
Jeff 8
John 10
Jeff 8
Jeff 2
John 10
Jeff F
Jeff 6
John 9
John 0
Jeff 10
John 7
John 3
Jeff 10
John 4
John 4
Jeff 10
Jeff 8
Jeff 1
John 10
John 9
John 0
```

   a. Each line represents a player and a chance with the subsequent number of pins knocked down.
   b. An 'F' indicates a foul on that chance and no pins knocked down (identical for scoring to a roll of 0).
   c. The input shall be valid (i.e., no chance will produce a negative number of knocked down pins or more than 10, etc).
   d. The rows are tab-separated.

3. The program should then output the scoring for the associated game. So for the above game for Jeff, the classic scoring would be written:

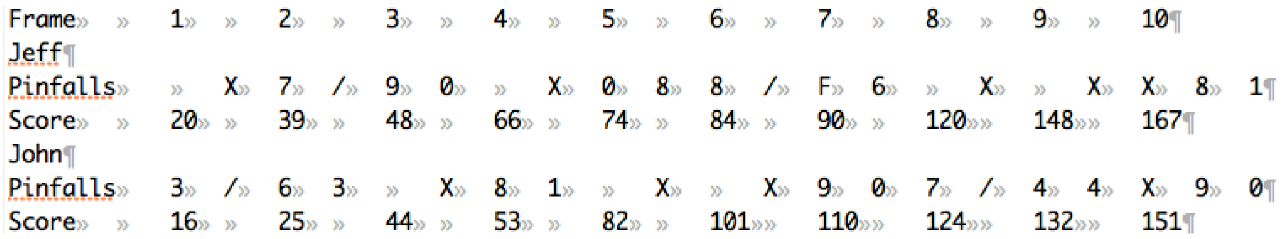
Frame	1		2		3		4		5		6		7		8		9		10		
Pinfalls		X	7	/	9	0		X	0	8	8	/	F	6		X		X	X	8	1
Score	20		39		48		66		74		84		90		120		148		167		

Your program should print out a similar score to standard out, in the format:



```
Frame		1		2		3		4		5		6		7		8		9		10
Jeff
Pinfalls		X	7	/	9	0		X	0	8	8	/	F	6		X		X	X	8	1
Score		20		39		48		66		74		84		90		120		148		167
John
Pinfalls	3	/	6	3		X	8	1		X		X	9	0	7	/	4	4	X	9	0
Score		16		25		44		53		82		101		110		124		132		151
```

Here is the same output with hidden whitespace revealed:



```
Frame»	»	1»	»	2»	»	3»	»	4»	»	5»	»	6»	»	7»	»	8»	»	9»	»	10¶
Jeff¶
Pinfalls»	»	X»	7»	/»	9»	0»	»	X»	0»	8»	8»	/»	F»	6»	»	X»	»	X»	X»	8»	1¶
Score»	»	20»	»	39»	»	48»	»	66»	»	74»	»	84»	»	90»	»	120»»	148»»	167¶
John¶
Pinfalls»	3»	/»	6»	3»	»	X»	8»	1»	»	X»	»	X»	9»	0»	7»	/»	4»	4»	X»	9»	0¶
Score»	»	16»	»	25»	»	44»	»	53»	»	82»	»	101»»	110»»	124»»	132»»	151¶
```

   a. For each player, print their name on a separate line before printing that player's pinfalls and score.
   b. All values are tab-separated.
   c. As seen into the above output, the output should calculate if a player scores a strike ('X'), a spare ('/') and allow for extra chances in the tenth frame.

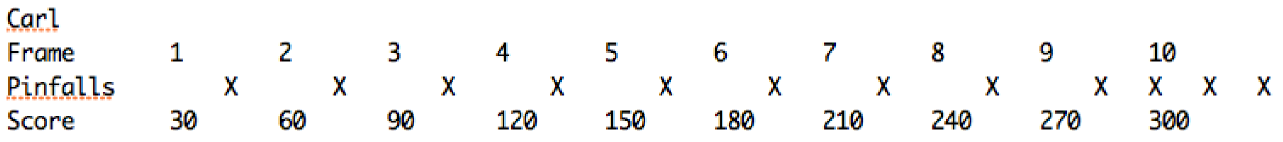
4. What you should deliver to Zebra, a zip file containing:
   a. The source code for a project that satisfies the above bowling problem written in Java (1.6 or up).
   b. A text file containing instructions on how to compile and run the project (Gradle, Maven, shell script).
5. Your code will be evaluated on:
   a. Clarity, design, extensibility and maintainability.
   b. Testing and code coverage (e.g., for Java programs, using JUnit or other unit testing frameworks).

Further help:

- Your program should be able to handle all possible cases of a game both including a game where all rolls are 0, all rolls are fouls (F) and a perfect game, where all rolls are strikes:

```
Carl 10
Carl 10
Carl 10
Carl 10
Carl 10
Carl 10
Carl 10
Carl 10
Carl 10
Carl 10
Carl 10
Carl 10
```

Frame	1		2		3		4		5		6		7		8		9		10		
Pinfalls		X		X		X		X		X		X		X		X		X	X	X	X
Score	30		60		90		120		150		180		210		240		270		300		



```
Carl
Frame		1		2		3		4		5		6		7		8		9		10
Pinfalls		X		X		X		X		X		X		X		X		X	X	X	X
Score		30		60		90		120		150		180		210		240		270		300
```