Assignment “Bowling Game”

“Would you hire a magician without asking them to show you some magic tricks?
Of course not.” (Joel on Software)

Our goal is to create world class software. Therefore we need world class developers. To make sure that your style and level of experience matches our needs, we want to talk to you mainly about the thing you can do best – writing code.

That’s why we are asking you to create some sample code before coming to your interview. We came up with a straight-forward assignment – only slightly tricky – that can help you show off your ability to create elegant code in a short time.

Write an application that takes score of a bowling game.

It should take…

- the number of pins knocked down by each ball as **input** and
- gives the score for each frame as **output**

Your code must compile, must run and must correctly give the score according to the rules given blow.

Please include all tests you have created during the development of the application.
At minimum we are interested in the logic you write but feel free to make the application as nice as you want to. We are looking for elegance, not cleverness. Feel free to have some fun with this.

We will want to see you run and modify the application during our interview, so please either bring a laptop with a running version or a memory stick with the sources so we can get it to run here.

Your Task

- Bowling is played by throwing a ball down a narrow alley toward ten wooden pins. The object is to knock down as many pins as possible per throw

- The game is played in ten frames. At the beginning of each frame, all ten pins are set up. The player then gets two tries to knock them all down.

- If the player knocks all the pins down on the first try, it is called a „strike," and the frame ends.

- If the player fails to knock down all the pins with his first ball, but succeeds with the second ball, it is called a „spare."

- After the second ball of the frame, the frame ends even if there are still pins standing.

- A strike frame is scored by adding ten, plus the number of pins knocked down by the next two balls, to the score of the previous frame.

- A spare frame is scored by adding ten, plus the number of pins knocked down by the next ball, to the score of the previous frame.

- Otherwise, a frame is scored by adding the number of pins knocked down by the two balls in the frame to the score of the previous frame.

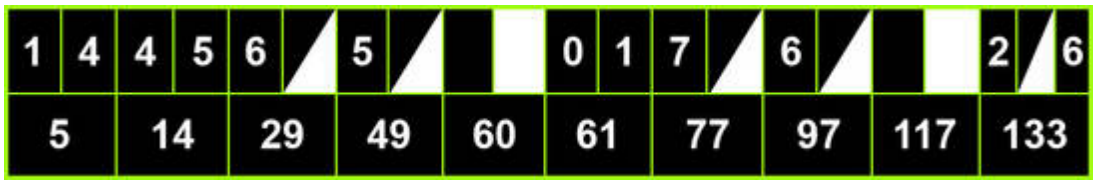
- If a strike is thrown in the tenth frame, then the player may throw two more balls to complete the score of the strike.

- Likewise, if a spare is thrown in the tenth frame, the player may throw one more ball to complete the score of the spare.

- Thus the tenth frame may have three balls instead of two.

For background information, please see
http://en.wikipedia.org/wiki/Ten-pin_bowling

Example



- The score card above shows a typical game.
- In the first frame, the player knocked down 1 pin with his first ball and four more with his second. Thus, his score for the frame is five.
- In the second frame, the payer knocked down four pins with his first ball and five more with his second. That makes nine pins total, added to the previous frame makes fourteen.
- In the third frame, the player knocked down six pins with his first ball and knocked down the rest with his second for a spare. No score can be calculated for this frame until the next ball is rolled.
- In the fourth frame, the player knocked down five pins with his first ball. This lets us complete the scoring of the spare in frame three. The score for frame three is ten, plus the score in frame two (14), plus the first ball of frame four (5), or 29. The final ball of frame four is a spare.
- Frame five is a strike. This lets us finish the score of frame four which is
  29 + 10 + 10 = 49.
- Frame six is dismal. The first ball went in the gutter and failed to knock down any pins. The scond ball knocked down only one pin. The score for the strike in frame five is 49 + 10 + 0 +1 = 60.

The rest you can probably figure out for yourself!