**Name:**

**Java Programming**

**Lab Exercise 12/12/2019**

**Bowling Scoring Application**

Bowling is a game requiring many talents—the ability to lift and throw a sixteen

pound ball, a keen fashion eye for really gaudy clothes, and the advanced mathematical

skills necessary to keep score. Computers aren’t much help in lifting or dressing, but they are fine tools for keeping score. In this problem, we will write a program which keeps score in bowling.

In bowling, the basic idea is to roll the ball toward standing wooden pins, trying to

knock down as many as possible. A game consists of ten frames. Each frame begins with ten pins standing, and the bowler is given a first roll to knock down as many pins as

possible, and a second roll (if any pins are left standing after the first roll) to knock down

as many of the remaining pins as possible. If all ten pins are knocked down after the first roll, it is called a strike. If all ten pins are knocked down after the second roll, it is called a spare. If some pins remain standing after the second roll, it is called an open frame.

Points are accumulated in each frame by a few simple rules. If there is a strike in a

frame, that frame contributes ten points plus the number of pins knocked down on the

next two rolls (in the subsequent one or two frames). If there is a spare in a frame, that

frame contributes ten points plus the number of pins knocked down on the next one roll

(in the subsequent frame). If there is an open frame, that frame contributes the number of pins knocked down in that frame alone. Notice that the two rolls following a strike or the single roll following a spare make a contribution to the score in more than one frame—the frame in which they are rolled as well as some previous frame(s) in which a spare or strike was rolled. In a run of consecutive strikes, a roll can actually contribute to the score in three frames.

Because of the scoring convention, if a spare or strike occurs in the tenth frame, one

or two additional frames may be rolled as necessary to determine the points contributed

in the tenth frame. The final score is the total points contributed by the first ten frames.

**Input Format**

Each line of the input represents a game and contains a list of numbers recording how

many pins were knocked down by each roll of the ball.

**Output Format**

Each line shows the running score of the corresponding game in the input and contains

ten numbers showing the accumulated score after each of the first ten frames. The last

number in each line is the final score.

**Input Sample**

6 4 10 10 6 3 9 1 8 1 10 10 8 2 8 2 9

10 5 5 10 9 1 8 0 6 3 10 10 10 10 8 2

**Output Sample**

20 46 65 74 92 101 129 149 167 186

20 40 60 78 86 95 125 155 183 203