### SIENA COLLEGE

**25th Annual**

### High School Programming Contest

##### April 20, 2012

###### **Problem #7: Bowling**

Background Information: 10-pin bowling is a popular sport which dates back to ancient Egypt. The rules of bowling are as follows. There are ten frames in a game. In each frame, the bowler attempts to knock down ten pins with at most two rolls. If successful with two rolls, then it is called a **spare**. If successful with just the first roll, then it is called a **strike**, and the second roll of the frame is skipped. If you are unable to knock down all 10 pins, it is called an **open frame**; more importantly, it is neither a spare nor a strike. After each frame, 10 pins are reset in the bowling lane. If a spare is rolled in the last (tenth) frame, the bowler gets one more roll at ten pins. If a strike is rolled in the last frame, a bowler gets two more rolls at ten pins (and possible another ten pins, if the first of the two extra rolls is a strike).

Scoring in bowling is this:

* The score for one of the 10 frames is the number of pins knocked down.
* If a spare occurred, then the frame score is 10 + the number of pins knocked down on the next immediate roll.
* If a strike occurred, then the frame score is 10 + the number of pins knocked down on the next two immediate rolls.

For example, three consecutive strikes would score 30 for a frame, while 8-2, 10, 4-1 would score 20 for the first frame, 15 for the second frame, and 5 for the third frame. A perfect bowling score is 300, while the lowest possible score is 0.

Your problem is to determine the minimum and maximum possible bowling scores for a game with M strikes and N spares. For example, for M = 5 and N = 2, the minimum score is 70 and the maximum score is 205.

Write a program that reads in values for M and N, and prints to the screen the minimum and maximum bowling score.

###### Programming Problem:

Input: Two nonnegative integers *M and N*, representing the number of strikes and

the number of spares respectively. M and N will represent achievable numbers of strikes and spares in a bowling game.

Output: Two numbers, *low* and *high* separated by a space where *low* is the

minimum bowling score and *high* is the maximum bowling score.

###### Example 1: Input: **12 0**

###### Output: 300 300

###### Example 2: Input: **2 4**

###### Output: 60 162

Example 3: Input: **0 0**

Output: 0 90

Example 4: Input: **6 6**

Output: 170 235

