Fundamentals of High Discipline TDD

# Introduction

Recently Stride acquired a [fictitious] client named Dartsy. Dartsy host professional Dart tournaments. They have engaged Stride to create an electronic scoring system for use in the tournaments they host.

# Board Description

Darts is a game in which small weighted objects known as darts are thrown at a round board known as a dartboard (shown at right). The dartboard is composed of 20 numbered segments and the bullseye. Each segment and the bullseye are divided into regions known as beds:

* *Single Ring* scores the amount as shown at the black edge of the board. In this case single 20 is 20.
* *Double Ring* is a ring at the outer edge of the board and is worth double the numeric amount. In this case double 20 is 40.
* *Triple Ring* is a ring that separates the outer and inner Single Rings and is worth triple the amount. In this case triple 18 is 54.
* *Inner Bulls Eye* is the red circle in the center of the board and is worth 50 points.
* *Outer Bulls Eye* is the green circle that surrounds the inner bulls eye, it is worth 25 points.

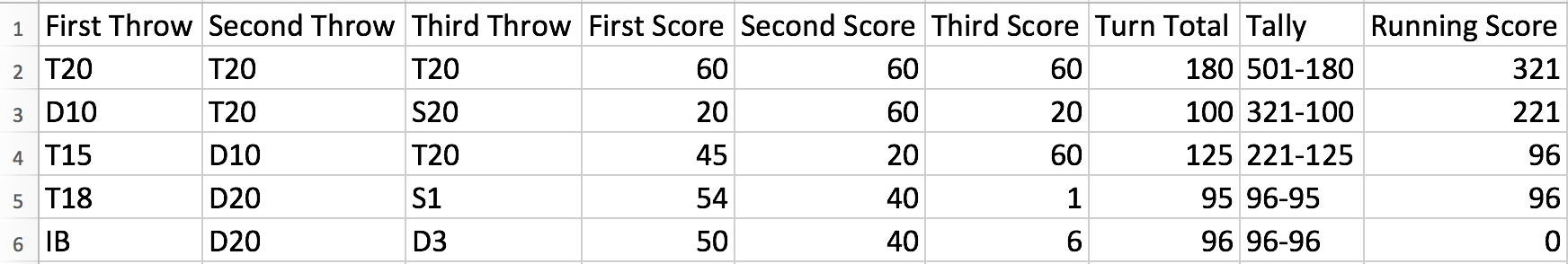
# Rules

* Players begin the game with a score of 501
* The winner is the first to reach a score of exactly 0, with the following considerations:
  + To bring the score to 0 the final throw must be either a double or land in the Inner Bullseye
  + When the score reaches 0 and the final throw is neither a double or in the Inner Bullseye, the score resets to what it was at the beginning of the turn
  + When the score reaches 1 or goes below 0 the score resets to what it was at the beginning of the turn
* A player may throw 1, 2 or 3 darts in each turn, darts that are not thrown are considered to be a Pass and do not score
* A dart that is thrown out of the scoring area is called a Miss and does not score

# Notes on Scoring

* Dartsy have requested that the strings used as throws within a turn be represented as follows:
  + Darts landing on a Single, Double or Triple bed leave the score as is, double it and triple it respectively
  + A score within the Outer Bullseye worth 25 points
  + A score within the Inner Bullseye is worth 50 points
  + Misses and Passes are both worthless
* The highest score that can be won from is 170 and is reached with the following throws:
  + Triple 20 + Triple 20 + Inner Bullseye = 170
* The smallest score that can be won from is 2 because the final throw must either be a double or the Inner Bullseye. The game can be won from 2 with the following throw:
  + Double 1 = 2

# Example Game



# Notes

* Row 5: 96-95 = 1, resets to 96 because the score reached 1, which cannot be won from

# Instructions

You are to implement the scoring mechanism for a single player. You will not be building an entire darts game.

Dartsy have provided skeleton code bases in Java and Ruby, containing the following:

* All data models fully test drive, representing different types of throw, including Misses
* A score Player class which you are to implement. Dartsy want you to implement the supplied API interface which looks like this:
  + score(): Returns Integer – returns the current score
  + turn(firstThrow: ThrowObject, secondThrow: ThrowObject,  
     thirdThrow: ThrowObject): Returns Nothing – represents the throws taken in a single turn