

Assignment - 2

Tennis Game - Python

Instructions:

1. Submission Format: <RollNumber>_Assignment2.tar.gz
2. Plagiarism in any form shall not be tolerated.
3. Marks will not be awarded if you don't use the concepts of Object oriented Programming

Tennis is a sport that is played on a court with a net that divides it in half. Two (2) players (singles) or two (2) teams of two (2) players each (doubles) compete by hitting a ball back and forth over a net. For this assignment, we consider only singles (a match comprising of 2 players competing against each other (players))

Before going to the game, let's get introduced to some of the terms

- **Server:** the player who starts the point by hitting the ball into play
- **Receiver:** the player who is waiting for the Server to hit the ball and start the point
- **Serve:** A stroke, made from over your head, which you use to start each point.
- **Ace:** A serve that the returner doesn't even touch with the racquet. An ace wins the point immediately for the server.
- **Fault:** the server has 2 chances to hit the ball (known as a serve) into the service box to start the point. If the server misses the service box, "fault" is called. The server has 1 remaining chance to hit the ball in the service box with a miss resulting in a second "fault" being called and the point lost.

For now you can relax on the Fault and treat "Fault" as PointLost

- **Nets:** The two very hard metal posts that hold up the net. If your shot hits one of the net posts during play and bounces in your opponent's court, the shot is good, else the shot is bad. If the shot is good, then the server can reserve else, the point is gained by opponent.

For now you can relax on the Nets and treat "Nets" as Point Lost.

- **Backhand:** The side of your body that you perform fewer tasks on. For example, if you're right-handed, your backhand side is the left side of your body.
- **Forehand:** The side of your body that you perform most tasks on. For example, if you're right-handed, the right side of your body is your forehand side
- **Point Lost - Out:** when a player hits the ball outside of the lines that mark the court boundary, out is called and the point is lost
- **Point Lost - Could not reach:** When a player tries to defend the opponent's shot, the player couldn't reach the place to defend resulting in the losing of point
- **Point Lost - Same Side:** When a player tries to defend the opponent's shot and the player tries to defend, the ball doesn't cross the nets resulting in the losing of point

Tennis Scoring:

The server's score will always be called first in tennis.

Game scoring

- Zero point = Love
- 1st point = 15

- 2nd point = 30
- 3rd point = 40
- 4th point = Game

For example, if the server has won 2 points and the receiver has won 1 point, the score is “30-15”. If the server has won zero points and the receiver has won 3 points, the score is “0-40” announced by the Chair Umpire as “Love 40”.

If both players have 3 points, the score is 40-40, known as “Deuce”. To win the game at deuce, one player (team) needs 2 consecutive points to win. After the 1st point is won, the score is “Advantage” to the player (team) who won that point.

If the same player (team) wins the next point, “Game” is awarded. However, if the other player (team) wins the next point, the score goes back to “Deuce”.

Tie break scoring:

A tie break occurs when both players (teams) are tied at 6-6. During a tie break, points are scored “Zero”, “1”, “2”, “3”, etc. The first player (team) to win 7 games, with a minimum 2 point advantage, wins the “Set”.

For example, a tie break score of 7-2 or 7-5 will result in the set being awarded to the winning player (team). If the players were tied at 6-6, the tie break game is awarded to make the final set score 7-6.

If the player does not have a minimum 2 point advantage when they reach 7 points, they continue to play until there is a margin of 2 points.

For example, a tie break score of 7-6 will continue until there is a 2 point margin. This may result in a tie break score of 8-6 or 17-15 for example, which will result in the set being awarded to the winning player (team). As the players(teams) were tied at 6-6, the tie break game is awarded to make the final set score 7-6.

The input file (csv with delimiter as space) contains lines whose first column is the time (in seconds) and second column is the particular shot played by the player at that point of time

```
34 Serve
36 Fault
48 Serve
49 Backhand
50 Forehand
52 Forehand
53 Backhand
54 Backhand
56 PointLost-SameSide
73 Serve
74 Backhand
76 Forehand
77 Forehand
79 Forehand
80 Backhand
82 PointLost-Out
98 Serve
99 Fault
109 Serve
```

110 Forehand
111 Forehand
112 Backhand
113 Backhand
115 Backhand
116 PointLost-CouldNotReach

The Output Format:

Player1 : Serve
P1 Score: 0
P2 Score: 0
P1 Game Win Count: 0
P2 Game Win Count: 0
P1 Set Win Count: 0
P2 Set Win Count: 0

Player1 : Fault
P1 Score: 0
P2 Score: 15
P1 Game Win Count: 0
P2 Game Win Count: 0
P1 Set Win Count: 0
P2 Set Win Count: 0

Iteration: 3
Player1 : Serve
P1 Score: 0
P2 Score: 15
P1 Game Win Count: 0
P2 Game Win Count: 0
P1 Set Win Count: 0
P2 Set Win Count: 0

Iteration: 4
Player2 : Backhand
P1.Score: 0
P2.Score: 15
P1 Game Win Count: 0
P2 Game Win Count: 0
P1 Set Win Count: 0
P2 Set Win Count: 0

Iteration: 5
Player1 : Forehand
P1.Score: 0
P2.Score: 15
P1 Game Win Count: 0
P2 Game Win Count: 0
P1 Set Win Count: 0
P2 Set Win Count: 0