

PDSP 2025, Assignment 1

6 Sep 2025, due 12 Sep 2025

Instructions

- All questions below use a table with IPL 2025 data converted to a list of tuples. The data is in the cells following the Questions.
- Write Python function(s) for each question, as specified.
- You may (and probably should) write auxiliary helper functions as needed.
- Submit your solution through Moodle as a single Python notebook with solutions to all the questions.
 - Add documentation to separate out the solutions into clearly marked areas within the notebook, and explain at a high level what your code is doing
 - Show some sample executions

Questions

1. Which team had the highest winning percentage?
 - Write a function `max_win_percentage(m)` that takes a list of matches and returns the team that won the largest fraction of matches that it played.
2. Is it better to bowl first or bat first?
 - Write a function `bowl_first_win(m)` that takes a list of matches and returns the fraction of matches won by the team bowling first.
3. Which team(s) batted first most often?
 - Write a function `bat_first_max(m)` that takes a list of matches and returns the team(s) that batted first most often, as a list.
4. If the match goes into the final over (number of balls left is less than 6), which team has an advantage -- the team that batted first or the team that batted second?
 - Write a function `last_over_favours(m)` that takes a list of matches and returns `1` if the team batting first has an advantage and `2` if the team batting second has an advantage.
5. Which venue(s) most favour the team batting second?
 - Write a function `best_chasing_venue(m)` that takes a list of matches and returns the venue(s) that most favour the team batting second, as a list

IPL 2025 data

- Each match is a tuple of columns
- (Venue, Team 1, Team 2, Toss winner, Toss Decision, Win by runs, Win by wickets, Balls left, Player of the match)
- When the team batting first wins the match, Win by runs denotes the winning margin
- When the team batting second wins the match, Win by wickets denotes the winning margin
- There may be some anomalous rows due to super overs etc. You can deal with these in any way you wish, but document the choices that you have made.

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In [6]: matchlist = [  
        ("Eden Gardens, Kolkata", "KKR", "RCB", "RCB", "Bowl", "", 7, 22, "Krunal Pandya"),
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("Rajiv Gandhi International Stadium, Hyderabad", "SRH", "RR", "RR", "Bowl", 44, "", 0, "Ishan Kishan"),
("MA Chidambaram Stadium, Chennai", "CSK", "MI", "CSK", "Bowl", "", 4, 5, "Noor Ahmad"),
("ACA-VDCA Cricket Stadium, Vishakhapatnam", "DC", "LSG", "DC", "Bowl", "", 1, 3, "Ashutosh Sharma"),
("Narendra Modi Stadium, Ahmedabad", "GT", "PBKS", "GT", "Bowl", 11, "", 0, "Shreyas Iyer"),
("Barsapara Stadium, Guwahati", "RR", "KKR", "KKR", "Bowl", "", 8, 15, "Quinton de Kock"),
("Rajiv Gandhi International Stadium, Hyderabad", "SRH", "LSG", "LSG", "Bowl", "", 5, 23, "Shardul Thakur"),
("MA Chidambaram Stadium, Chennai", "CSK", "RCB", "CSK", "Bowl", 50, "", 0, "Rajat Patidar"),
("Narendra Modi Stadium, Ahmedabad", "GT", "MI", "MI", "Bowl", 36, "", 0, "Prasidh Krishna"),
("ACA-VDCA Cricket Stadium, Vishakhapatnam", "DC", "SRH", "SRH", "Bat", "", 7, 24, "Mitchell Starc"),
("Barsapara Stadium, Guwahati", "RR", "CSK", "CSK", "Bowl", 6, "", 0, "Nitish Rana"),
("Wankhede Stadium, Mumbai", "MI", "KKR", "MI", "Bowl", "", 8, 43, "Ashwani Kumar"),
("Ekana Cricket Stadium, Lucknow", "LSG", "PBKS", "PBKS", "Bowl", "", 8, 22, "Prabhsimran Singh"),
("M. Chinnaswamy Stadium, Bangalore", "RCB", "GT", "GT", "Bowl", "", 8, 13, "Mohammed Siraj"),
("Eden Gardens, Kolkata", "KKR", "SRH", "SRH", "Bowl", 80, "", 20, "Vaibhav Arora"),
("Ekana Cricket Stadium, Lucknow", "LSG", "MI", "MI", "Bowl", 12, "", 0, "Digvesh Singh"),
("MA Chidambaram Stadium, Chennai", "CSK", "DC", "DC", "Bat", 25, "", 0, "KL Rahul"),
("New PCA Cricket Stadium, Mullanpur", "PBKS", "RR", "PBKS", "Bowl", 50, "", 0, "Jofra Archer"),
("Rajiv Gandhi International Stadium, Hyderabad", "SRH", "GT", "GT", "Bowl", "", 7, 20, "Mohammed Siraj"),
("Wankhede Stadium, Mumbai", "MI", "RCB", "MI", "Bowl", 12, "", 0, "Rajat Patidar"),
("Eden Gardens, Kolkata", "KKR", "LSG", "KKR", "Bowl", 4, "", 0, "Nicholas Pooran"),
("New PCA Cricket Stadium, Mullanpur", "PBKS", "CSK", "PBKS", "Bat", 18, "", 0, "Priyansh Arya"),
("Narendra Modi Stadium, Ahmedabad", "GT", "RR", "RR", "Bowl", 58, "", 4, "Sai Sudarshan"),
("M. Chinnaswamy Stadium, Bangalore", "RCB", "DC", "DC", "Bowl", "", 6, 13, "KL Rahul"),
("MA Chidambaram Stadium, Chennai", "CSK", "KKR", "KKR", "Bowl", "", 8, 59, "Sunil Narine"),
("Ekana Cricket Stadium, Lucknow", "LSG", "GT", "LSG", "Bowl", "", 6, 3, "Aiden Markram"),
("Rajiv Gandhi International Stadium, Hyderabad", "SRH", "PBKS", "PBKS", "Bat", "", 8, 9, "Abhishek Sharma"),
("Sawai Mansingh Stadium, Jaipur", "RR", "RCB", "RCB", "Bowl", "", 9, 15, "Phil Salt"),
("Arun Jaitley Stadium, Delhi", "DC", "MI", "DC", "Bowl", 12, "", 6, "Karn Sharma"),
("Ekana Cricket Stadium, Lucknow", "LSG", "CSK", "CSK", "Bowl", "", 5, 3, "MS Dhoni"),
("New PCA Cricket Stadium, Mullanpur", "PBKS", "KKR", "PBKS", "Bat", 16, "", 29, "Yuzvendra Chahal"),
("Arun Jaitley Stadium, Delhi", "DC", "RR", "RR", "Bowl", "super over", 0, "Mitchell Starc"),
("Wankhede Stadium, Mumbai", "MI", "SRH", "MI", "Bowl", "", 4, 11, "Will Jacks"),
("M. Chinnaswamy Stadium, Bangalore", "RCB", "PBKS", "PBKS", "Bowl", "", 5, 11, "Tim David"),
("Narendra Modi Stadium, Ahmedabad", "GT", "DC", "GT", "Bowl", "", 7, 4, "Jos Buttler"),
("Sawai Mansingh Stadium, Jaipur", "RR", "LSG", "LSG", "Bat", 2, "", 0, "Avesh Khan"),
("New PCA Cricket Stadium, Mullanpur", "PBKS", "RCB", "RCB", "Bowl", "", 7, 7, "Virat Kohli"),
("Wankhede Stadium, Mumbai", "MI", "CSK", "MI", "Bowl", "", 9, 26, "Rohit Sharma"),
("Eden Gardens, Kolkata", "KKR", "GT", "KKR", "Bowl", 39, "", 0, "Shubman Gill"),
("Ekana Cricket Stadium, Lucknow", "LSG", "DC", "DC", "Bowl", "", 8, 13, "Mukesh Kumar"),
("Rajiv Gandhi International Stadium, Hyderabad", "SRH", "MI", "SRH", "Bowl", "", 7, 26, "Trent Boult"),
("M. Chinnaswamy Stadium, Bangalore", "RCB", "RR", "RR", "Bowl", 11, "", 0, "Josh Hazlewood"),
("MA Chidambaram Stadium, Chennai", "CSK", "SRH", "SRH", "Bowl", "", 5, 8, "Harshal Patel"),
("Eden Gardens, Kolkata", "KKR", "PBKS", "PBKS", "Bat", "", 114, ""),
("Wankhede Stadium, Mumbai", "MI", "LSG", "LSG", "Bowl", 54, "", 0, "Will Jacks"),
("Arun Jaitley Stadium, Delhi", "DC", "RCB", "RCB", "Bowl", "", 6, 9, "Krunal Pandya"),
("Sawai Mansingh Stadium, Jaipur", "RR", "GT", "RR", "Bowl", "", 8, 25, "Vaibhav Suryavanshi"),
("Arun Jaitley Stadium, Delhi", "DC", "KKR", "DC", "Bowl", 14, "", 0, "Sunil Narine"),
("MA Chidambaram Stadium, Chennai", "CSK", "PBKS", "PBKS", "Bowl", "", 4, 2, "Shreyas Iyer"),
("Sawai Mansingh Stadium, Jaipur", "RR", "MI", "RR", "Bowl", 100, "", 23, "Ryan Rickelton"),
("Narendra Modi Stadium, Ahmedabad", "GT", "SRH", "SRH", "Bowl", 38, "", 0, "Prasidh Krishna"),
("M. Chinnaswamy Stadium, Bangalore", "RCB", "CSK", "CSK", "Bowl", 2, "", 0, "Romario Shepherd"),
("Eden Gardens, Kolkata", "KKR", "RR", "KKR", "Bat", 1, "", 0, "Andre Russell"),
("HPCA Stadium, Dharamshala", "PBKS", "LSG", "LSG", "Bowl", 37, "", 0, "Prabhsimran Singh"),
("Wankhede Stadium, Mumbai", "MI", "GT", "GT", "Bowl", "", 3, 0, "Shubman Gill"),
("Eden Gardens, Kolkata", "KKR", "CSK", "KKR", "Bat", "", 2, 2, "Noor Ahmad"),
("Sawai Mansingh Stadium, Jaipur", "RR", "PBKS", "PBKS", "Bat", 10, "", 0, "Harpreet Brar"),
("Arun Jaitley Stadium, Delhi", "DC", "GT", "GT", "Bowl", "", 10, 6, "Sai Sudarshan")
]