PLAYER DRAFT SYSTEM

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Problem Statement

Given n teams and m players, and the order of **player preferences of each team**,
and
teams preferences of each player.

Our task is

To return a stable matching of players with their team.

INTRODUCTION

In this work , we address the Player Draft System that yields a matching instantly, based on the preferences of players and teams alike.
Although the players involved have no say in the real-life player draft system,and involves long procedures of bidding, we have come up with a much effective algorithm, it allows players and teams to have the same weight in choice, and the new teams are set within an instant.

Our main aim is to output a stable algorithm that satisfies both the parties(players and teams).

Gale Shapley Algorithm

Stable Always!

Proposed Solution

We obtain a stable solution to the given problem, by storing the preferences, and based on these preferences, and other parameter such as the maximum limit of players , we compare and assign the “team-player” matchings to yield a complete set of loaded squads. We sort the players according to their type and put them in their respective bunch or “pots”. Matchings are computed with teams from these pots, one at a time.

Algorithms used:
Gale Shapley’s stable marriage algorithm
Many-to-one stable matching

1. The one-to-one stable matching problem is most frequently known as the marriage problem, the Gale-Shapley algorithm is particularly well suited to predict actual marriages.

2.There are numerous real-life situations in which the Gale-Shapley algorithm, or some modification thereof, is extremely useful.

Example (resident-hospital matching)

The important factor here is that a hospital frequently accepts more than a single resident, whereas a participant in the Gale Shapley algorithm is only entitled to a single partner.

- The matching in this case is **one to many**, instead of **one to one**. A simple modification to the Gale-Shapley stable marriage algorithm solves this problem

- The same instance is applied here for Player Drafting System which is used in IPL auctions to buy players and form teams.

To form a cricket team

- Each team should have 15 players out of which
  - 2-Wicket Keepers
  - 2-Domestic All rounders
  - 2-Domestic Bowlers
  - 2-International Allrounders
  - 2-International Bowlers
  - 1-Domestic Batsman
  - 1-International Batman
  - 1-Indian Capped Batsman
  - 1-Indian Capped Bowler
  - 1-Indian Capped Allrounder

- Also, each player have there individual preferences to different teams.
- And, each team also has a preference for all the players.
- We are going to use 10 pots(categories) of players, to be sold.

THANK YOU