INTRODUCTION

Cricket is a complex and popular sport loved by people worldwide. We've created a C++ program that acts like a virtual cricket game. Our program is built using a set of well-organized classes and objects to represent the different parts of the game, like players, teams, amphire and overs.

One major thing about our program is that you can easily set up the details of the teams by just using a text file. This makes it flexible and user-friendly, as you don't have to type in all the information every time.

When you run our program, it shows you the progress of the cricket match right in your computer's console. You can see the scores, wickets, batsman name, bowler name and how fast the team is scoring runs, just like you're watching a real cricket match on TV.

OBJECTIVE

- Demonstrate the use of classes, objects, inheritance, and encapsulation (Object oriented programming concepts) in a real-world context.
- Create an interactive cricket simulation game.
- Showcase programming skills and knowledge of software design through a complex project.

OVERVIEW

The cricket simulation program is a C++ application designed to emulate the game of cricket, providing users with a virtual cricket match experience. The program incorporates object-oriented principles and utilizes various classes to represent the essential elements of the game, including players, teams, and overs.
Matches are played over a specific number of overs, with the default set at 20.

Classes:

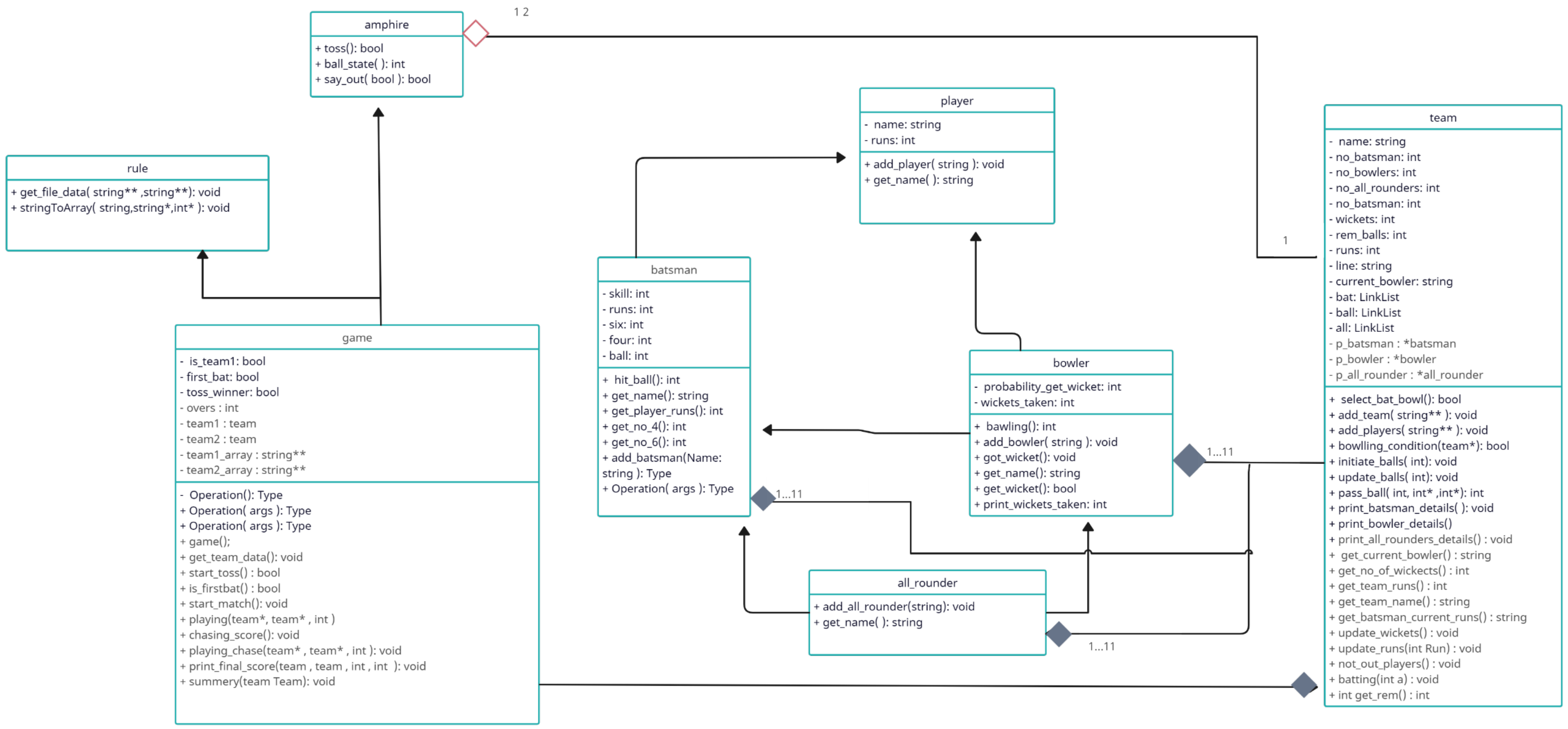
- Rule : Responsible for reading data from a text file and other operational functions.
- Amphire : Manages the toss and ball state, and take relevant decisions according to the rules.
- Player : Represents a generic player with a name and runs.
- Batsman : Extends the player class and adds batting-related attributes such as skill, runs, and ball counts.
- Bowler : Extends the player class and adds bowling-related attributes such as wickets taken and bowling statistics.
- All-rounders: Represents an all-rounder player, inheriting from both batsman and bowler classes.
- Team : Represents a cricket team, managing players, wickets, runs, and other match-related information.
- Game : Controls the flow of the cricket match, including toss, match initiation, and match summary (all the functions of game).

Main function:
The main function controls the flow of functions, allowing users to start a new cricket game, participate in the toss, and select their preferred team to bat or bowl first**.**

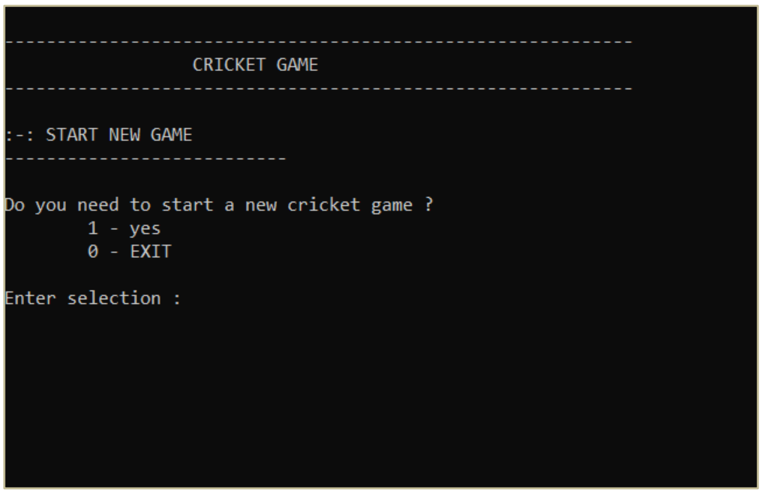
Team details:
Team details can be inputted into the program using a text file. It enhancing user flexibility in setting up teams for simulation.

Output:
The program provides real-time match updates through console output. So user can see the score updates on the console screen. It generates comprehensive match summaries for both teams at the end of each game, allowing users to review the performance of the participating teams.

Class Diagram



USER MANNUAL



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                  CRICKET GAME
------------------------------------------------------------

:-: START NEW GAME
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Do you need to start a new cricket game ?
        1 - yes
        0 - EXIT

Enter selection :
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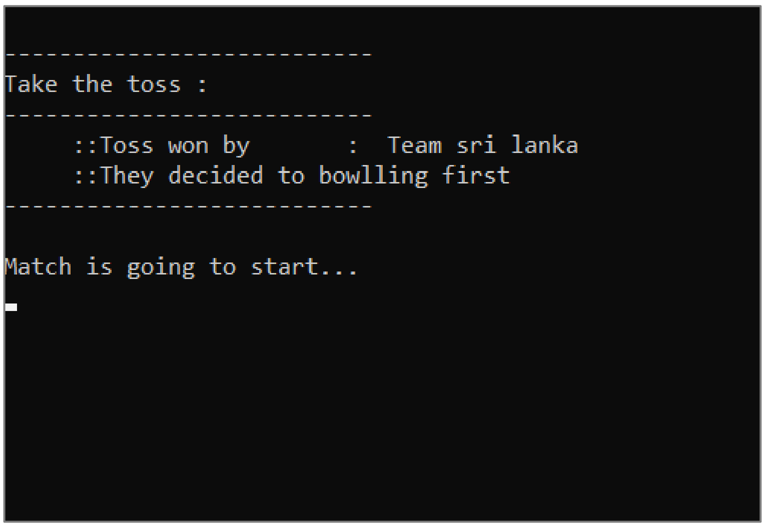
Main Interface:

- User able to start a new match by enter 1.
- Can exit from game by entering 0.



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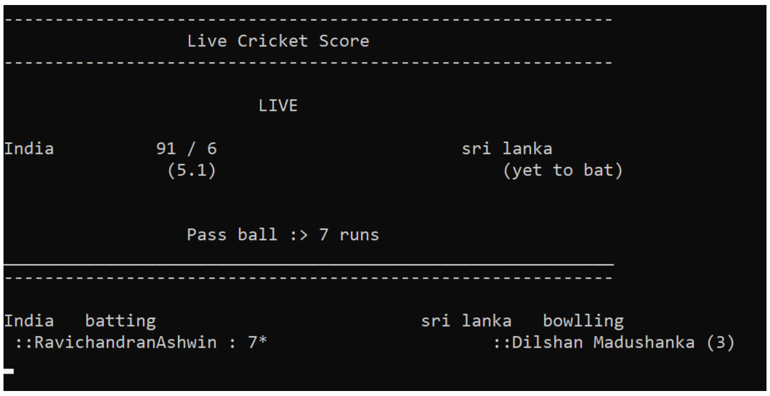
Take the toss :
---------------------------
     ::Toss won by        :  Team sri lanka
     ::They decided to bowlling first
---------------------------

Match is going to start...
```

- Once user start a new cricket match, it will automatically take the toss and print the result.
- Then it automatically redirect to the score board.

Scoreboard Interface:



```
------------------------------------------------------------
                 Live Cricket Score
------------------------------------------------------------

                        LIVE

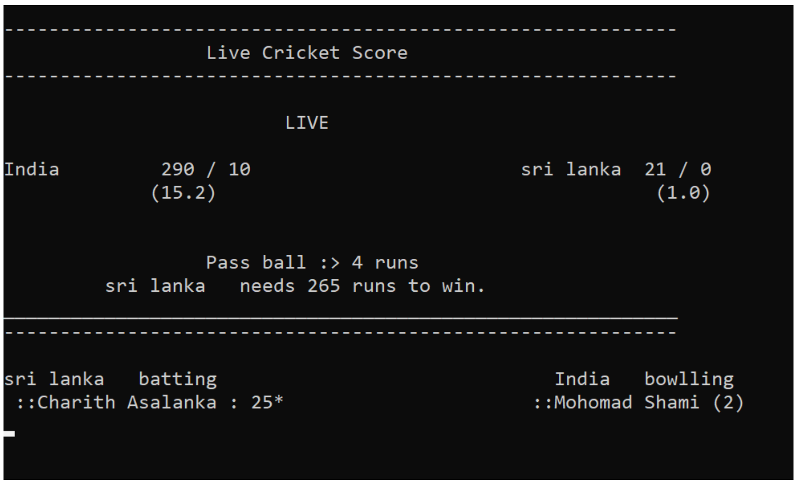
India          91 / 6                        sri lanka
                (5.1)                            (yet to bat)


                 Pass ball :> 7 runs

------------------------------------------------------------

India   batting                          sri lanka   bowlling
 ::RavichandranAshwin : 7*                      ::Dilshan Madushanka (3)
```

- Scoreboard output provides live updates on a cricket match between two teams, including the current scores, wickets lost, and the number of overs bowled for both teams.
- User able to track the progress of the match in quick and informative way.



```
------------------------------------------------------------
                  Live Cricket Score
------------------------------------------------------------

                         LIVE

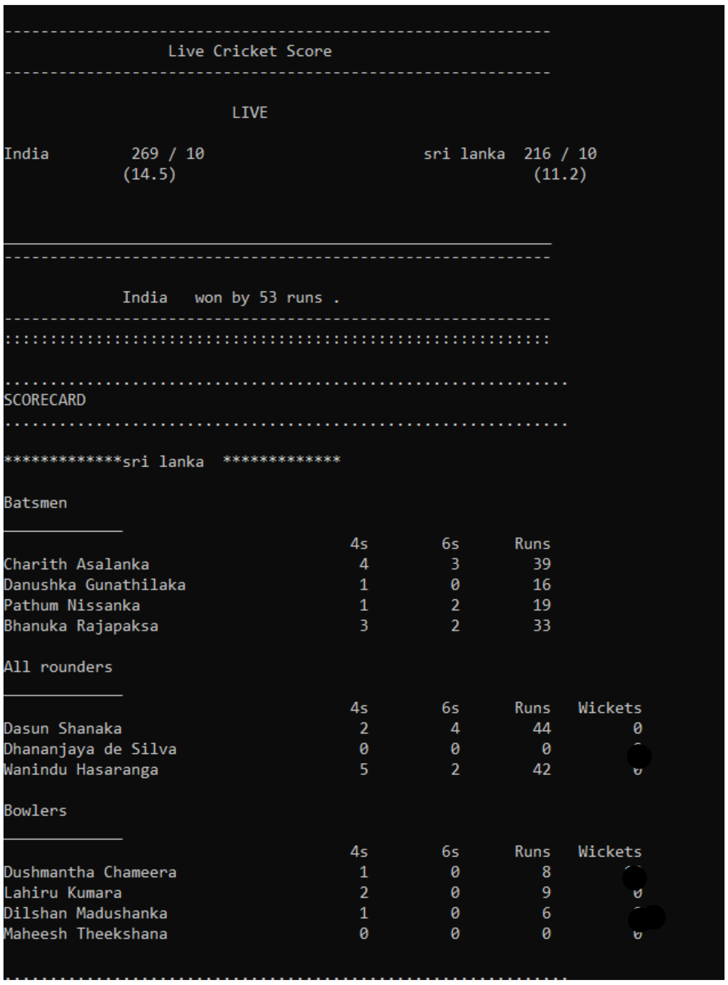
India          290 / 10                        sri lanka  21 / 0
             (15.2)                                        (1.0)


                  Pass ball :> 4 runs
         sri lanka   needs 265 runs to win.

____________________________________________________________
------------------------------------------------------------

sri lanka   batting                               India   bowlling
 ::Charith Asalanka : 25*                        ::Mohomad Shami (2)
```

- Furthermore, user can easily identify the current batsman and the bowler.



```
------------------------------------------------------------
                  Live Cricket Score
------------------------------------------------------------

                         LIVE

India          269 / 10                        sri lanka  216 / 10
             (14.5)                                        (11.2)


____________________________________________________________
------------------------------------------------------------

             India   won by 53 runs .
------------------------------------------------------------
::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::

..............................................................
SCORECARD
..............................................................

*************sri lanka   *************

Batsmen
_____________
                                      4s         6s        Runs
Charith Asalanka                       4          3          39
Danushka Gunathilaka                   1          0          16
Pathum Nissanka                        1          2          19
Bhanuka Rajapaksa                      3          2          33

All rounders
_____________
                                      4s         6s        Runs   Wickets
Dasun Shanaka                          2          4          44         0
Dhananjaya de Silva                    0          0           0  [redacted]
Wanindu Hasaranga                      5          2          42         0

Bowlers
_____________
                                      4s         6s        Runs   Wickets
Dushmantha Chameera                    1          0           8  [redacted]
Lahiru Kumara                          2          0           9         0
Dilshan Madushanka                     1          0           6  [redacted]
Maheesh Theekshana                     0          0           0         0

..............................................................
```

Final output interface:

- This interface provides a comprehensive overview of the cricket match, including real-time updates on scores, wickets, and overs, as well as detailed player statistics for both teams. It offers a complete picture of the match's progress and player performances.

USER INPUT FILE

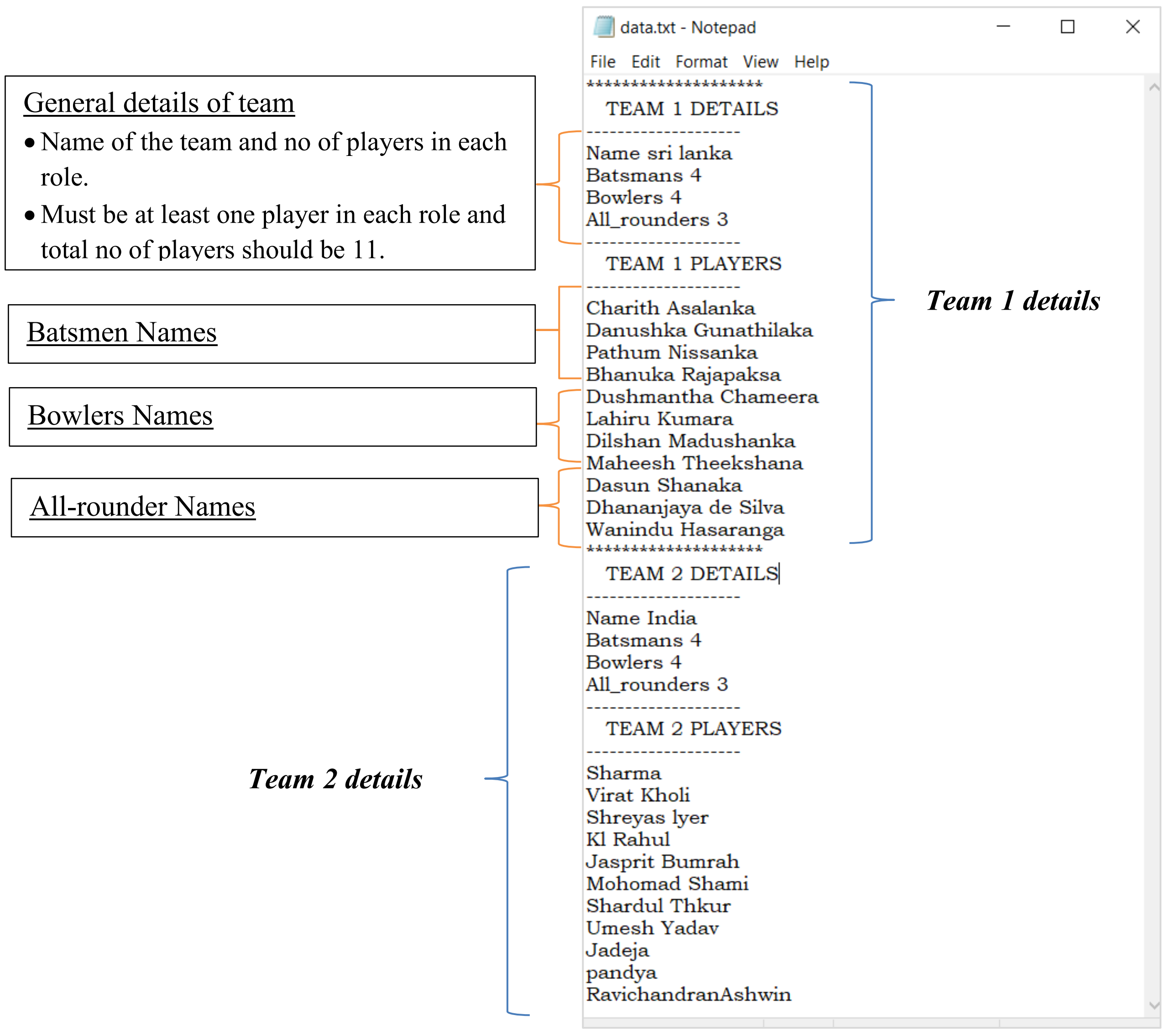
In this cricket scoreboard project, the accurate simulation of cricket matches is reliant upon precise data input. We are giving team details to the program through the text file(.txt) named “***data.txt*** “. One critical aspect of this data input is the order in which players are listed in the user-provided text file.

To ensure that the program accurately identifies and assigns roles to each player during the simulation, it is imperative that a specific order be followed when listing the players and also each team must have 11 players including bowlers, batsmen and all-rounders. This order is as follows:

- Batsmen
- Bowlers
- All-rounders

By adhering to this prescribed order of players, the program can accurately identify the role of each player and allocate responsibilities during the simulation. This ensures that batsmen, bowlers, and all-rounders are appropriately utilized, contributing to the realism and accuracy of the cricket matches generated by our simulation.

(Refer example text file for further understanding).


data.txt - Notepad
File Edit Format View Help
General details of team
• Name of the team and no of players in each role.
• Must be at least one player in each role and total no of players should be 11.
Batsmen Names
Bowlers Names
All-rounder Names
Team 1 details
Team 2 details

```
********************
  TEAM 1 DETAILS
--------------------
Name sri lanka
Batsmans 4
Bowlers 4
All_rounders 3
--------------------
  TEAM 1 PLAYERS
--------------------
Charith Asalanka
Danushka Gunathilaka
Pathum Nissanka
Bhanuka Rajapaksa
Dushmantha Chameera
Lahiru Kumara
Dilshan Madushanka
Maheesh Theekshana
Dasun Shanaka
Dhananjaya de Silva
Wanindu Hasaranga
********************
  TEAM 2 DETAILS
--------------------
Name India
Batsmans 4
Bowlers 4
All_rounders 3
--------------------
  TEAM 2 PLAYERS
--------------------
Sharma
Virat Kholi
Shreyas lyer
Kl Rahul
Jasprit Bumrah
Mohomad Shami
Shardul Thkur
Umesh Yadav
Jadeja
pandya
RavichandranAshwin
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