



## Open Ended Activity Report

**On**

**Cricket Tournament**

**Object Oriented Programming with C++ (20ECSC204)**

**Object Oriented Programming with C++ Lab (20ECSP203)**

Submitted by

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# **1. Introduction**

## **1.1 Overview of Problem Statement**

Cricket is immensely popular team game and played on a field that has 20-meters pitch and its center with one wicket of three stumps on each end. It is played between two teams of eleven players each. The objective is to score more run(points) than the opposing team. A match is divided into innings during which one team bats, two batsmen at time, and other team bowls. Here in this project we are simulating the cricket tournament, which involves auction of players(which will have players details), setting team players, organizing the matches(normal and final matches) between teams and at the end gives winner list and also declares final winner in the tournament.

## **1.2 Features of Application**

### **1.2.1 Auction of players**

A player can be selected for particular team by providing team no and bid amount. Then the provided team no and bid amount is checked and if eligible then the player is fixed to selected team.

### **1.2.2 Matches between teams**

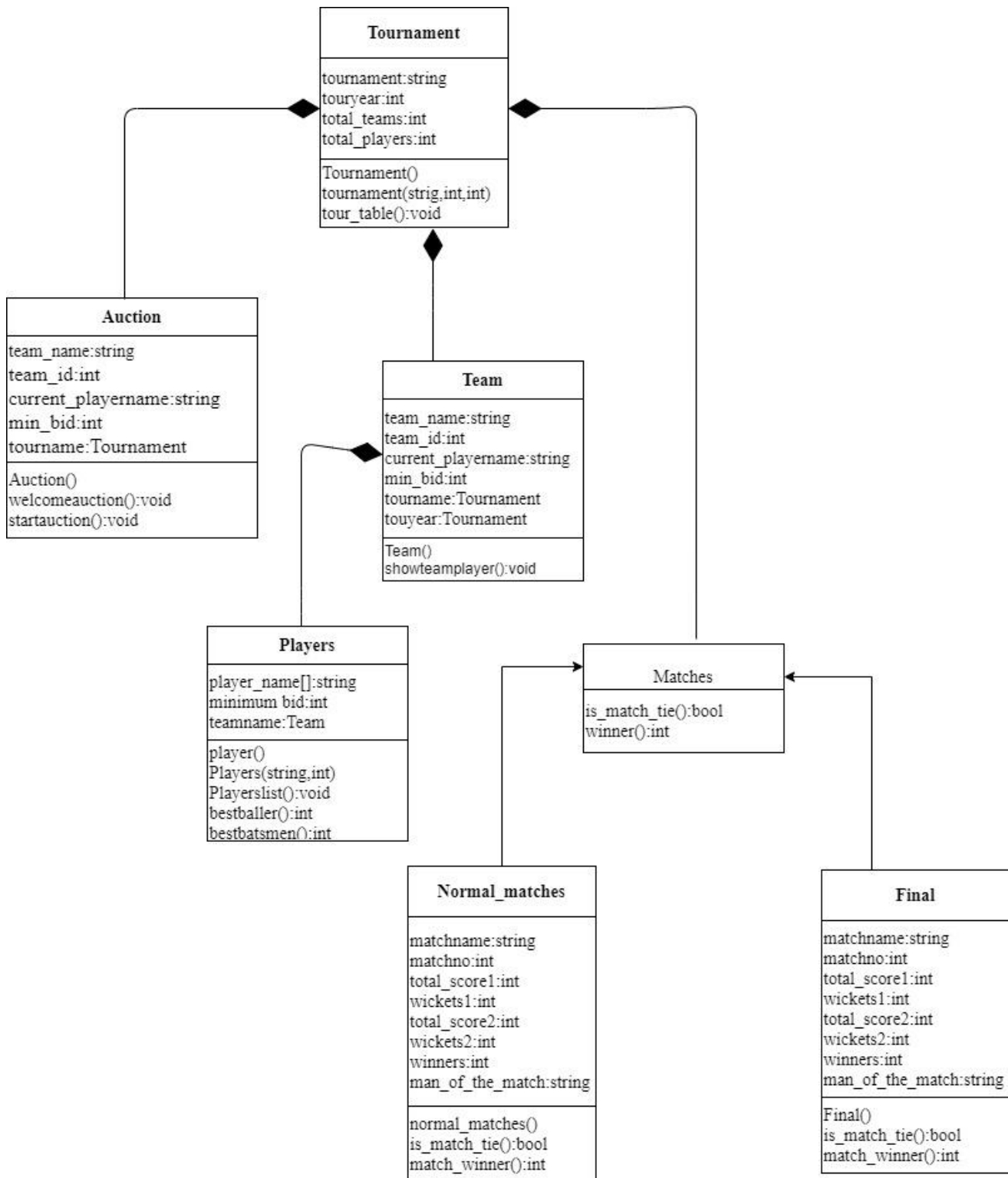
This feature the user can perform after players get selected for particular team then it comes turn of match where we should select between normal and final match with teams to play then the match starts.

### **1.2.3 Winner of the match**

This feature gives us the final result that is it displays the winner teams name with match number.

## 2. Design

### 2.1 Class Diagram



## 2.2 Description of Each Class

### 1. Tournament

Tournament
+tournament:string
+touryear:int
+total_teams:int
+total_players:int
+Tournament( )
+tournament(string,int,int)
+tour_table( ):void

- Tournament class : this class includes the information about tournament has name,year,total teams ,and total players
- The classes like auction and team from it.

## 2. Auction

Auction
+team_name:string +team_id:int +current_playername:string +min_bid:int +tournament:Tournament
+Auction( ) +welcomeauction( ):void +startauction( ):void

- Auction class is to give the information about the bid and the team who bid for which player.
- It includes team name,team id,current player,and minimum bid

## 3. Team

Team
+team_name:string +team_id:int +current_playername:string +min_bid:int +tournament:Tournament +touryear:Tournament
+Team( ) +showteamplayer( ):void

- Team class : this class has player and give information about the player present in each team and team name , team id, currentplayer
- This class also includes minimum bid

#### 4. Matches

Matches
+is_match_tie( ):bool +winner( ):int

- This is an Abstract class where we have a is\_match\_tie( ) function and winner( ) function.
- It creates the type of match as per demands of the user.
- It has 2 sub-classes: normal match and final match.

#### 5. Normal matches and final

Normal_matches	Final
+matchname:string +matchno:int +total_score1:int +wickets1:int +total_score2:int +wickets2:int +winners:int1 +man_of_the_match:string	+matchname:string +matchno:int +total_score1:int +wickets1:int +total_score2:int +wickets2:int +winners:int1 +man_of_the_match:string
+normal_matches( ) +is_match_tie( ):bool +match_winner( ):int	+Final( ) +is_match_tie( ):bool +match_winner( ):int

- The above classes are used to create matches using factorydesign pattern.
- Matches is a interface between normal match ,final match and match class

## 6. Players

Players
+player_name():string +minimum bid:int +teamname:Team
+player() +Players(string,int) +Playerlist():void +bestballer():int +bestbatsmen():int

- Player class : player class gives information about the players with their name and bid amount



## 2.3 Main Function

In main function,

There is a switch menu for different options like displaying players list, auction process, displaying teams, match fixing, matches, displaying each match winners and finally displaying final match winner.

According to the user input we will be doing auction of players then the team will be formed. Once team is formed we can start the match where again there we will be selecting matches (normal match and final match). If matches get tie then there will be super overs and again if there is tie then each team will be give 1 point. Winner of the match displays winners of each match played and finally, at last final winner of the tournament will also be displayed.

## 2.4 Use of Standard Design Patterns

Factory design pattern is used for the above application.

- **Factory method pattern(creational pattern):**
- **Definition:-** The Factory Method pattern is a design pattern used to define a runtime interface for creating an object. It's called a factory because it creates various types of objects without necessarily knowing what kind of object it creates or how to create it.
- **Usage:-** Factory method is suitable for this scenario because matches are to be created as per user demand, so to create the objects of the required matches type during the run time interface it becomes easier.

### 3. Unit Test plan

#### 3.1 Auction: void startauction(string players[],int mb[],string teams[],string role[])

The auction process involves giving team players details like name of the player, minimum bid amount and role of the player and then user should enter team no and bid amount then it checks if the team no entered and bid amount entered is eligible then finally if both the cases are passed then the player will be fixed to selected team.

Given below is how auction of players takes place:

First team no and bid amount is stored and checked.

Then if both case passed then ask if it is final bid.

```

Here comes the most awaited moment of tournament

Auction

BIDDING for PLAYES=> Rabada
MINIMUM BID IS=> 10000
ROLE IS=> bat

Team number and bid amount1 10000

is this final bid:y/n y

```

#### Test case 1: Passing teamno and bid amount

##### Input:

Here comes the most awaited moment of tournament

Auction

```

BIDDING for PLAYES=> Rabada
MINIMUM BID IS=> 10000
ROLE IS=> bat

```

Team number and bid amount1 10000

is this final bid:y/n y

Rabada sold to Chennai Stingers for 10000

**Expected output:**

Rabada sold to Chennai Stingers for 10000

**Actual output:**

```
Here comes the most awaited moment of tournament

Auction

BIDDDING for PLAYES=> Rabada
MINIMUM BID IS=> 10000
ROLE IS=> bat

Team number and bid amount1 10000

is this final bid:y/n y

Rabadasold to Chennai Stingersfor 10000
```

**Test case 2: Failing teamno and bid amount****Input:**

Here comes the most awaited moment of tournament

Auction

BIDDDING for PLAYES=> Rabada

MINIMUM BID IS=> 10000

ROLE IS=> bat

Team number and bid amount1 10000

is this final bid:y/n y

Rabada sold to Chennai Stingers for 10000

**Expected output:**

!!!!!!!!! EXCEPTION: WRONG TEAM CALL

0->DELHI

1->CHENNAI

2->BANGALORE

is this final bid:y/n

Team number and bid amount1 1000

!!!!!!!!! EXCEPTION: BID IS TOO SMAL

**Actual Output:**

```
2                                     ENTER CHOICE:----

                                     Here comes the most awaited moment of tournament

                                     Auction

                                     BIDDING for PLAYES=> Rabada
                                     MINIMUM BID IS=> 10000
                                     ROLE IS=> bat

                                     Team number and bid amount3 1000

                                     !!!!!!!!!!! EXCEPTION: WRONG TEAM CALL

                                     0->DELHI
                                     1->CHENNAI
                                     2->BANGALORE

                                     is this final bid:y/n

                                     Team number and bid amount1 1000

                                     !!!!!!!!!!! EXCEPTION: BID IS TOO SMALL
```

### 3.2 Match: match(int choice)

After team is formed then comes matches which is of two types normal match and final match. So here user should select normal or final match by entering team no. Then the match starts which firstly asks for match no. then it displays among which teams the match will be conducted then user will be entering score and wickets of both teams and the innings are displayed and then finally it announces winner of the match and if match tie then super over will be conducted and if again there is tie then 1 point will be given to each team and final winner will be declared.

Given below is how match will take place:  
First match no and match details(score, wicket) stored.

Then it gives the match winners.

```
5          ENTER CHOICE:-----
          Normal Match(1)
          Final Match(2)
          Go(0): 1
0
          NORMAL MATCH STARTED

          Enter Match No: 1
          Dehli WarriorsVSChennai Stingers

          Enter score of :      Dehli Warriors230

          Enter wickets of :    Dehli Warriors3

          First Inning Results :->    230-3

          Enter score of :      Chennai Stingers240
```

**Test case 3: Normal matches:**

**Input:**

```
5
Normal Match(1)
Final Match(2)
Go(0): 1

0

NORMAL MATCH STARTED

Enter Match No: 1

Delhi Warriors VS Chennai Stingers

Enter score of :    Delhi Warriors230

Enter wickets of :    Delhi Warriors3

First Inning Results :->    230-3

Enter score of :    Chennai Stingers240

Enter wickets of :    Chennai Stingers3

Second Inning Results :->    240-3
```

**Expected Output:**

Chennai Stingers Won the match

**Actual Output:**

```
5
    ENTER CHOICE:-----

    Normal Match(1)
    Final Match(2)
    Go(0): 1
0
    NORMAL MATCH STARTED

    Enter Match No: 1
    Dehli WarriorsVSChennai Stingers

    Enter score of :      Dehli Warriors230

    Enter wickets of :    Dehli Warriors3

    First Inning Results :->    230-3

    Enter score of :      Chennai Stingers240

    Enter wickets of :    Chennai Stingers3

    Second Inning Results :->    240-3

    Chennai StingersWon the match
```

**Test case 4: During super overs:**

Super Over

Enter score of : Delhi Warriors12

Enter wickets of : Delhi Warriors1

First Inning Results :-&gt; 12-1

Enter score of : Chennai Stingers12

Enter wickets of : Chennai Stingers0

Second Inning Results :-&gt; 12-0

```
NORMAL MATCH STARTED

Enter Match No: 1
Dehli WarriorsVSCennai Stingers

Enter score of :      Dehli Warriors230

Enter wickets of :    Dehli Warriors3

First Inning Results :->      230-3

Enter score of :      Chennai Stingers230

Enter wickets of :    Chennai Stingers2

Second Inning Results :->      230-2

SuperOver

Enter score of :      Dehli Warriors12

Enter wickets of :    Dehli Warriors1

First Inning Results :->      12-1

Enter score of :      Chennai Stingers12

Enter wickets of :    Chennai Stingers0

Second Inning Results :->      12-0
```

**Expected Output:**

If super over also gets tie then output will be:

Match Tie      1 point to each teams



**Actual Output:**

```

NORMAL MATCH STARTED

Enter Match No: 1
Dehli WarriorsVSChennai Stingers

Enter score of :      Dehli Warriors230

Enter wickets of :    Dehli Warriors3

First Inning Results :->      230-3

Enter score of :      Chennai Stingers230

Enter wickets of :    Chennai Stingers2

Second Inning Results :->      230-2

SuperOver

Enter score of :      Dehli Warriors12

Enter wickets of :    Dehli Warriors1

First Inning Results :->      12-1

Enter score of :      Chennai Stingers12

Enter wickets of :    Chennai Stingers0

Second Inning Results :->      12-0

Match Tie      1 point to each teams

```

**3.3 Winner: winner()**

Displays match winner and final winner according to choice selected

```

=====
|          6.DISPLAY MATCHES WINNERS LIST          |
=====
|          7.FINAL WINNER                          |
=====
|          8.QUIT                                   |
=====

```

**Test case 5: Match Winner****Input:**

6  
7

WINNERS OF TOURNAMENT MATCHES

**Expected Output:**

Match 1 > Chennai Stingers  
Match 1 > Chennai Stingers  
Match 2 > Bangalore knights  
Match 2 > Bangalore knights  
Match 3 > Delhi Warriors  
Match 3 > Delhi Warriors  
Match 3 > Delhi Warriors

**Actual Output:**

```
6
7
ENTER CHOICE:----

WINNERS OF TOURNAMENT MATCHES

Match 1 -->Chennai Stingers
Match 2 -->Chennai Stingers
Match 3 -->Bangalore knights
Match 4 -->Bangalore knights
Match 5 -->Dehli Warriors
Match 6 -->Dehli Warriors
Match 7 -->Dehli Warriors
```

**Test case 6: Final Winner****Input:**

7

1

**Expected Output:**

Final winner is Bangalore knights

**Actual Output:**

```
7
1
ENTER CHOICE:----
Final Winner of tournamentBangalore knights
```

## 4. Implementation

### 4.1 Results

#### 1. Main Menu

```

                                     WELCOME TO      IPL      YEAR2021
=====
|                                     |
|          1.DISPLAY PLAYERS LIST    |
|                                     |
|          2.CONDUCT AUCTION         |
|                                     |
|          3.DISPLAY TEAMS           |
|                                     |
|          4.DISPLAY MATCH FIXTURE   |
|                                     |
|          5.MATCH DAY               |
|                                     |
|          6.DISPLAY MATCHES WINNERS LIST |
|                                     |
|          7.FINAL WINNER            |
|                                     |
|          8.QUIT                    |
|                                     |
=====
+++++
```

### 1. Exception handling in main menu:

```

                                     WELCOME TO      IPL      YEAR2021
=====
|                                     1.DISPLAY PLAYERS LIST      |
=====
|                                     2.CONDUCT AUCTION          |
=====
|                                     3.DISPLAY TEAMS            |
=====
|                                     4.DISPLAY MATCH FIXTURE    |
=====
|                                     5.MATCH DAY                |
=====
|                                     6.DISPLAY MATCHES WINNERS LIST  |
=====
|                                     7.FINAL WINNER              |
=====
|                                     8.QUIT                      |
=====
+++++

                                     ENTER CHOICE:----

9
!!!!!!!!!!!! EXCEPTION: You have entered wrong choice
                   Please enter choice between 1 to 8
```

## 2. Display players list

```

WELCOME TO      IPL      YEAR2021

=====
|                1.DISPLAY PLAYERS LIST                |
=====
|                2.CONDUCT AUCTION                      |
=====
|                3.DISPLAY TEAMS                        |
=====
|                4.DISPLAY MATCH FIXTURE                |
=====
|                5.MATCH DAY                            |
=====
|                6.DISPLAY MATCHES WINNERS LIST        |
=====
|                7.FINAL WINNER                        |
=====
|                8.QUIT                                  |
=====
+++++

ENTER CHOICE:----

1
sl.no  playername      minimum bid              Role
1      Rabada          10000                bat
2      dhoni           20000                bat
3      bravo           30000                bat
4      yuvraj          40000                bat
5      pant            20000                bat
6      hetmeyer        30000                bat
7      boubt           14000                bowl
8      ngidi           12000                bowl
9      starc           10500                bowl
10     rahul            10060                bowl
11     shami           10000                bowl
12     karthik         11000                bowl
13     shiraj          90000                ALL-ROUNDER
14     iyer            55000                All-Rounder
15     raina           100000               All-Rounder

```

### 3. Auction of players

```

2      ENTER CHOICE:----

Here comes the most awaited moment of tournament

      Auction

      BIDDING for PLAYES=> Rabada
      MINIMUM BID IS=> 10000
      ROLE IS=> bat

Team number and bid amount0 10000

is this final bid:y/n y

      Rabadasold to Dehli Warriorsfor 10000
      BIDDING for PLAYES=> dhoni
      MINIMUM BID IS=> 20000
      ROLE IS=> bat

Team number and bid amount1 200000

is this final bid:y/n y

      dhonisold to Chennai Stingersfor 200000
      BIDDING for PLAYES=> bravo
      MINIMUM BID IS=> 30000
      ROLE IS=> bat

Team number and bid amount2 30000

is this final bid:y/n y

      bravosold to Bangalore knightsfor 30000
      BIDDING for PLAYES=> yuvraj
      MINIMUM BID IS=> 40000
      ROLE IS=> bat

Team number and bid amount1 40000

is this final bid:y/n y

      yuvrajsold to Chennai Stingersfor 40000
      BIDDING for PLAYES=> pant
      MINIMUM BID IS=> 20000
      ROLE IS=> bat

Team number and bid amount0 20000

is this final bid:y/n y

      pantsold to Dehli Warriorsfor 20000
      BIDDING for PLAYES=> hetmeyer
      MINIMUM BID IS=> 30000
      ROLE IS=> bat

Team number and bid amount2 30000

is this final bid:y/n y

      hetmeyersold to Bangalore knightsfor 30000

```

## 2.Exception handling in auction:

```

                                WELCOME TO      IPL      YEAR2021
=====
|                               1.DISPLAY PLAYERS LIST          |
=====
|                               2.CONDUCT AUCTION              |
=====
|                               3.DISPLAY TEAMS                |
=====
|                               4.DISPLAY MATCH FIXTURE        |
=====
|                               5.MATCH DAY                    |
=====
|                               6.DISPLAY MATCHES WINNERS LIST  |
=====
|                               7.FINAL WINNER                 |
=====
|                               8.QUIT                         |
=====
+++++
2
    ENTER CHOICE:----

    Here comes the most awaited moment of tournament

        Auction

    BIDDING for PLAYES=>    Rabada
    MINIMUM BID IS=>       10000
    ROLE IS=>              bat

    Team number and bid amount1 9000

                !!!!!!!! EXCEPTION:  BID IS TOO SMALL

```



### 3.Exception handling in selecting team members:

```

                                WELCOME TO      IPL      YEAR2021
=====
|                               1.DISPLAY PLAYERS LIST      |
=====
|                               2.CONDUCT AUCTION            |
=====
|                               3.DISPLAY TEAMS              |
=====
|                               4.DISPLAY MATCH FIXTURE      |
=====
|                               5.MATCH DAY                  |
=====
|                               6.DISPLAY MATCHES WINNERS LIST  |
=====
|                               7.FINAL WINNER                |
=====
|                               8.QUIT                        |
=====
+++++

                ENTER CHOICE:----
2

Here comes the most awaited moment of tournament

                Auction

        BIDDING for PLAYES=>   Rabada
        MINIMUM BID IS=>       10000
        ROLE IS=>               bat

Team number and bid amount4 10000

                !!!!!!!! EXCEPTION:  WRONG TEAM CALL

0->DELHI
1->CHENNAI
2->BANGALORE

is this final bid:y/n

Team number and bid amount_

```

#### 4. Display teams

```

Team number and bid amount2 30000
is this final bid:y/n  y
      hetmeyersold to Bangalore knightsfor  30000

      WELCOME TO      IPL      YEAR2021

=====
|                      1.DISPLAY PLAYERS LIST      |
=====
|                      2.CONDUCT AUCTION            |
=====
|                      3.DISPLAY TEAMS              |
=====
|                      4.DISPLAY MATCH FIXTURE      |
=====
|                      5.MATCH DAY                  |
=====
|                      6.DISPLAY MATCHES WINNERS LIST  |
=====
|                      7.FINAL WINNER                |
=====
|                      8.QUIT                        |
=====
+++++

      ENTER CHOICE:----

3

      TEAM DELHI

      Rabada  bat
      pant   bat

      TEAM CHENNAI

      dhoni  bat
      yuvraj bat

      TEAM BANGALORE

      bravo  bat
      hetmeyer      bat

```

## 5. Match fixing

```

                                WELCOME TO      IPL      YEAR2021
=====
|              1.DISPLAY PLAYERS LIST              |
=====
|              2.CONDUCT AUCTION                    |
=====
|              3.DISPLAY TEAMS                      |
=====
|              4.DISPLAY MATCH FIXTURE              |
=====
|              5.MATCH DAY                          |
=====
|              6.DISPLAY MATCHES WINNERS LIST      |
=====
|              7.FINAL WINNER                      |
=====
|              8.QUIT                              |
=====
+++++

4          ENTER CHOICE:----

          Fixture of Tournament

Match1.  Dehli WarriorsVSChennai Stingers
Match2.  Dehli WarriorsVSBangalore knights
Match3.  Chennai StingersVSBangalore knights

```

## 6. Display match winner

```

                                WELCOME TO      IPL      YEAR2021
=====
|                               1.DISPLAY PLAYERS LIST      |
=====
|                               2.CONDUCT AUCTION           |
=====
|                               3.DISPLAY TEAMS             |
=====
|                               4.DISPLAY MATCH FIXTURE     |
=====
|                               5.MATCH DAY                 |
=====
|                               6.DISPLAY MATCHES WINNERS LIST |
=====
|                               7.FINAL WINNER              |
=====
|                               8.QUIT                      |
=====
+++++

        ENTER CHOICE:----

6
7

        WINNERS OF TOURNAMENT MATCHES

        Match 1 -->Chennai Stingers
        Match 2 -->Chennai Stingers
        Match 3 -->Bangalore knights
        Match 4 -->Bangalore knights
        Match 5 -->Dehli Warriors
        Match 6 -->Dehli Warriors
        Match 7 -->Dehli Warriors

```

## 7. Display final winner

```

                                WELCOME TO      IPL      YEAR2021
=====
|                                1.DISPLAY PLAYERS LIST                                |
=====
|                                2.CONDUCT AUCTION                                  |
=====
|                                3.DISPLAY TEAMS                                    |
=====
|                                4.DISPLAY MATCH FIXTURE                            |
=====
|                                5.MATCH DAY                                        |
=====
|                                6.DISPLAY MATCHES WINNERS LIST                      |
=====
|                                7.FINAL WINNER                                      |
=====
|                                8.QUIT                                              |
=====
+++++
7
1
                                ENTER CHOICE:----

                                Final Winner of tournamentBangalore knights

```