East West University

Course Code & Name: CSE 302 (Database Systems)

Course Instructor: Sanzana Karim Lora

Course Section: 10

Academic Session: Summer 2025

Project Report

Group No.- 03

Group Members:

Name	Id	Contribution
Md. Abir Rahman	2023-3-60-223	25%
Md Julfiker Hossain	2023-3-60-490	25%
Sudeepta Mandal	2023-3-60-222	25%
Md. Rashid Uz Zaman	2023-3-60-195	25%

Project Title:

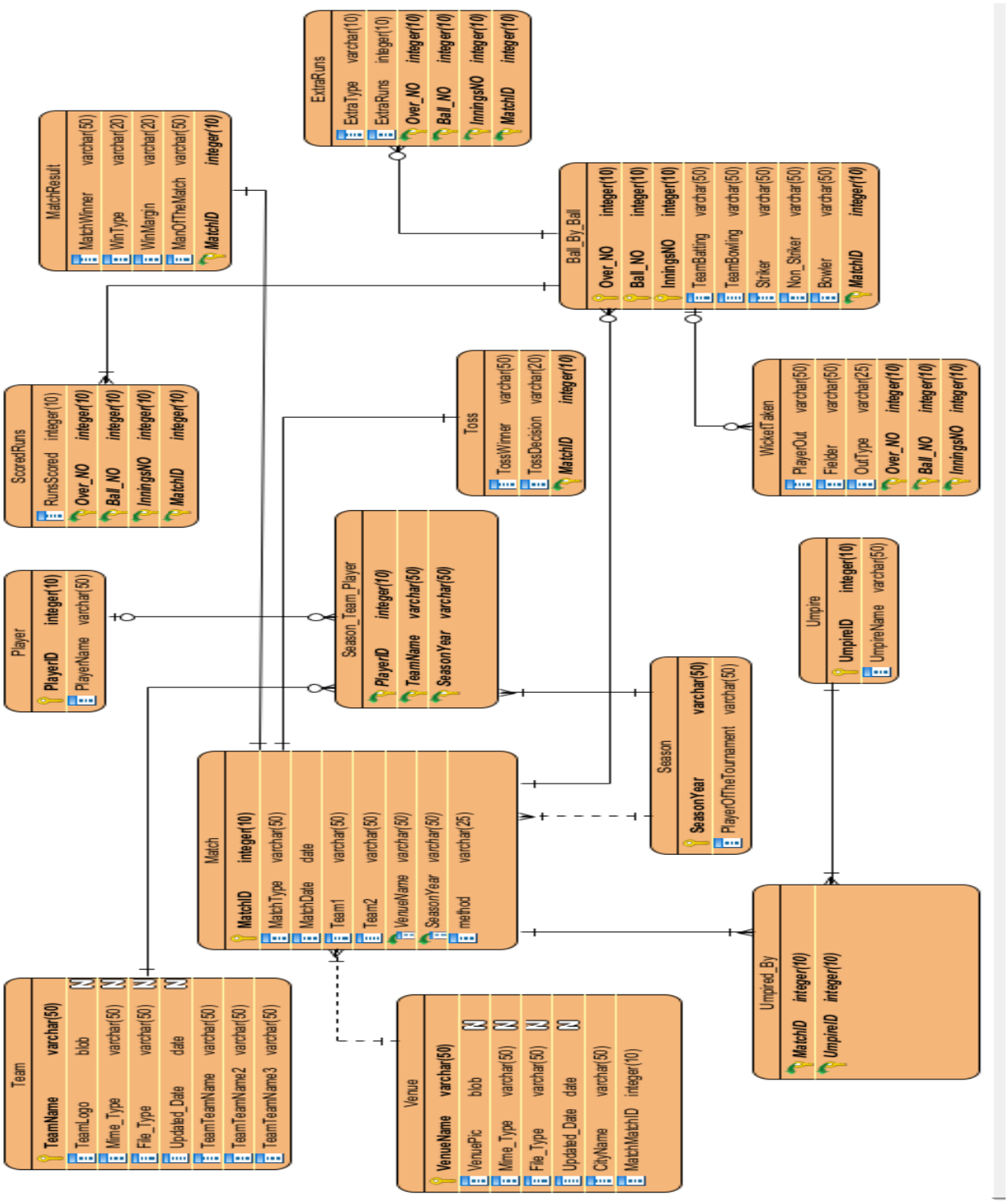
****BPL DataVault : A BPL Database Management System****

Submission Date & Day: September 04, 2025 (Thursday)

Table of Contents

Topic	Page No.
ER- Model: Relational Diagram	03
Implementation Checklist	04
Normalization	05-14
Pages	15-42
Authorization and User Role Assignment	42
Page-Wise Authorization Information	43
Conclusion	45

ER- Model: Relational Diagram:



Implementation Checklist:

Description	Remarks
Project ID	14889
Workspace Name	Sakin_Workspace
Workspace Email	abirrahman.sakin@gmail.com
Workspace Password	#spsakin@329
Authentication Type	Custom
Username and Password to Login	User: sakin (Administrator) Password: lion User: julfiker (Administrator) Password: monkey User: sudeep (Administrator) Password: sheep User: rashed (Administrator) Password: rashed
	User: thor (Contributor) Password: loki
	User: messi (reader) Password: goat User: neymar (reader) Password: goat User: ronaldo (reader) Password: goat
Uploaded and Displayed Images in Reports	yes
Implemented Page-wise Authorization	yes
Number of Total Pages	51
Number of Reports with Forms	34
Number of Reports based on Queries, Aggregate Queries	13
Number of Graphs/Charts	9

Normalization:

1. Team

Column Name	Data Type	Constraints
TeamName	VARCHAR2	NOT NULL, PRIMARY KEY
TeamLogo	BLOB	

Team table is in BCNF.

Primary Key: TeamName

Non-Key columns: TeamLogo, Mime_Type, File_Type, Updated_Date.

Functional Dependencies:

TeamName → TeamLogo, Mime_Type, File_Type, Updated_Date

BCNF Check:

- **1NF (First Normal Form):** All columns contain atomic values, no repeating groups.
- **No Partial Dependencies:** No partial dependencies exist; table satisfies **2NF**.
- **No Transitive Dependencies:** No non-key attribute depends on another non-key attribute; satisfies **3NF**.
- **BCNF Rule:** All functional dependencies have candidate keys on **LHS.**

2. Venue

Column Name	Data Type	Constraints
VenueName	VARCHAR2	NOT NULL, PRIMARY KEY
VenuePic	BLOB	
CityName	VARCHAR2	

Venue table is in BCNF.

Primary Key: VenueName

Non-Key columns: VenuePic, Mime_Type, File_Type, Updated_Date, CityName.

Functional Dependencies:

VenueName → VenuePic, Mime_Type, File_Type, Updated_Date, CityName

BCNF Check:

- **1NF (First Normal Form):** All columns contain atomic values, no repeating groups.
- **No Partial Dependencies:** No partial dependencies exist; table satisfies **2NF**.
- **No Transitive Dependencies:** No non-key attribute depends on another non-key attribute; satisfies **3NF**.
- **BCNF Rule:** All functional dependencies have candidate keys on **LHS.**

3. Match

Column Name	Data Type	Constraints
MatchID	NUMBER	NOT NULL, PRIMARY KEY
MatchType	VARCHAR2	
MatchDate	DATE	
Team1	VARCHAR2	
Team2	VARCHAR2	
VenueName	VARCHAR2	
SeasonYear	VARCHAR2	
Method	VARCHAR2	

Match table is in BCNF.

Primary Key: MatchID

Non-Key columns: MatchType, MatchDate, Team1, Team2, VenueName, SeasonYear, Method.

Functional Dependencies:

MatchID → MatchType, MatchDate, Team1, Team2, VenueName, SeasonYear, Method

BCNF Check:

- **1NF (First Normal Form):** All columns contain atomic values, no repeating groups.
- **No Partial Dependencies:** No partial dependencies exist; table satisfies **2NF**.

- **No Transitive Dependencies:** No non-key attribute depends on another non-key attribute; satisfies **3NF**.
- **BCNF Rule:** All functional dependencies have candidate keys on **LHS.**

4. Player

Column Name	Data Type	Constraints
PlayerID	NUMBER	NOT NULL, PRIMARY KEY
PlayerName	VARCHAR2	

Player table is in BCNF.

Primary Key: PlayerID

Non-Key columns: PlayerName.

Functional Dependencies:

PlayerID → PlayerName

BCNF Check:

- **1NF (First Normal Form):** All columns contain atomic values, no repeating groups.
- **No Partial Dependencies:** No partial dependencies exist; table satisfies **2NF**.
- **No Transitive Dependencies:** No non-key attribute depends on another non-key attribute; satisfies **3NF**.
- **BCNF Rule:** All functional dependencies have candidate keys on **LHS.**

5. Season

Column Name	Data Type	Constraints
SeasonYear	VARCHAR2	NOT NULL, PRIMARY KEY
PlayerOfTheTournament	VARCHAR2	

Season table is in BCNF.

Primary Key: SeasonYear

Non-Key columns: PlayerOfTheTournament.

Functional Dependencies:

SeasonYear → PlayerOfTheTournament

BCNF Check:

- **1NF (First Normal Form):** All columns contain atomic values, no repeating groups.
- **No Partial Dependencies:** No partial dependencies exist; table satisfies **2NF**.
- **No Transitive Dependencies:** No non-key attribute depends on another non-key attribute; satisfies **3NF**.
- **BCNF Rule:** All functional dependencies have candidate keys on **LHS.**

6. Season_Team_Player

Column Name	Data Type	Constraints
PlayerID	NUMBER	PRIMARY KEY
TeamName	VARCHAR2	PRIMARY KEY
SeasonYear	VARCHAR2	PRIMARY KEY

Season_Team_Player table is in BCNF.

Primary Key: (PlayerID, TeamName, SeasonYear)

Non-Key columns: None.

Functional Dependencies:

No non-key attributes

BCNF Check:

- **1NF (First Normal Form):** All columns contain atomic values, no repeating groups.
- **No Partial Dependencies:** No partial dependencies exist; table satisfies **2NF**.
- **No Transitive Dependencies:** No non-key attribute depends on another non-key attribute; satisfies **3NF**.
- **BCNF Rule:** All functional dependencies have candidate keys on **LHS.**

7. Umpire

Column Name	Data Type	Constraints
UmpireID	NUMBER	NOT NULL, PRIMARY KEY
UmpireName	VARCHAR2	

Umpire table is in BCNF.

Primary Key: UmpireID

Non-Key columns: UmpireName.

Functional Dependencies:

UmpireID → UmpireName

BCNF Check:

- **1NF (First Normal Form):** All columns contain atomic values, no repeating groups.
- **No Partial Dependencies:** No partial dependencies exist; table satisfies **2NF**.
- **No Transitive Dependencies:** No non-key attribute depends on another non-key attribute; satisfies **3NF**.
- **BCNF Rule:** All functional dependencies have candidate keys on **LHS.**

8. Umpired_By

Column Name	Data Type	Constraints
MatchID	NUMBER	PRIMARY KEY
UmpireID	NUMBER	PRIMARY KEY

Umpired_By table is in BCNF.

Primary Key: (MatchID, UmpireID)

Non-Key columns: None.

Functional Dependencies:

No non-key attributes

BCNF Check:

- **1NF (First Normal Form):** All columns contain atomic values, no repeating groups.
- **No Partial Dependencies:** No partial dependencies exist; table satisfies **2NF**.
- **No Transitive Dependencies:** No non-key attribute depends on another non-key attribute; satisfies **3NF**.
- **BCNF Rule:** All functional dependencies have candidate keys on **LHS.**

9. Toss

Column Name	Data Type	Constraints
MatchID	NUMBER	NOT NULL, PRIMARY KEY
TossWinner	VARCHAR2	
TossDecision	VARCHAR2	

Toss table is in BCNF.

Primary Key: MatchID

Non-Key columns: TossWinner, TossDecision.

Functional Dependencies:

MatchID → TossWinner, TossDecision

BCNF Check:

- **1NF (First Normal Form):** All columns contain atomic values, no repeating groups.
- **No Partial Dependencies:** No partial dependencies exist; table satisfies **2NF**.
- **No Transitive Dependencies:** No non-key attribute depends on another non-key attribute; satisfies **3NF**.
- **BCNF Rule:** All functional dependencies have candidate keys on **LHS.**

10. ScoredRuns

Column Name	Data Type	Constraints
OverNO	NUMBER	PRIMARY KEY
Ball_NO	NUMBER	PRIMARY KEY
InningsNo	NUMBER	PRIMARY KEY
MatchID	NUMBER	PRIMARY KEY
RunScored	NUMBER	

ScoredRuns table is in BCNF.

Primary Key: (OverNO, Ball_NO, InningsNo, MatchID)

Non-Key columns: RunScored.

Functional Dependencies:

(OverNO, Ball_NO, InningsNo, MatchID) → RunScored

BCNF Check:

- **1NF (First Normal Form):** All columns contain atomic values, no repeating groups.
- **No Partial Dependencies:** No partial dependencies exist; table satisfies **2NF**.
- **No Transitive Dependencies:** No non-key attribute depends on another non-key attribute; satisfies **3NF**.
- **BCNF Rule:** All functional dependencies have candidate keys on **LHS.**

11. MatchResult

Column Name	Data Type	Constraints
MatchID	NUMBER	NOT NULL, PRIMARY KEY
MatchWinner	VARCHAR2	
WinType	VARCHAR2	
WinMargin	VARCHAR2	
ManOfTheMatch	VARCHAR2	

MatchResult table is in BCNF.

Primary Key: MatchID

Non-Key columns: MatchWinner, WinType, WinMargin, ManOfTheMatch.

Functional Dependencies:

MatchID → MatchWinner, WinType, WinMargin, ManOfTheMatch

BCNF Check:

- **1NF (First Normal Form):** All columns contain atomic values, no repeating groups.
- **No Partial Dependencies:** No partial dependencies exist; table satisfies **2NF**.
- **No Transitive Dependencies:** No non-key attribute depends on another non-key attribute; satisfies **3NF**.
- **BCNF Rule:** All functional dependencies have candidate keys on **LHS.**

12. ExtraRuns

Column Name	Data Type	Constraints
OverNO	NUMBER	PRIMARY KEY
Ball_NO	NUMBER	PRIMARY KEY
InningsNo	NUMBER	PRIMARY KEY
MatchID	NUMBER	PRIMARY KEY
ExtraType	VARCHAR2	
ExtraRuns	NUMBER	

ExtraRuns table is in BCNF.

Primary Key: (OverNO, Ball_NO, InningsNo, MatchID)

Non-Key columns: ExtraType, ExtraRuns.

Functional Dependencies:

(OverNO, Ball_NO, InningsNo, MatchID) → ExtraType, ExtraRuns

BCNF Check:

- **1NF (First Normal Form):** All columns contain atomic values, no repeating groups.
- **No Partial Dependencies:** No partial dependencies exist; table satisfies **2NF**.
- **No Transitive Dependencies:** No non-key attribute depends on another non-key attribute; satisfies **3NF**.
- **BCNF Rule:** All functional dependencies have candidate keys on **LHS.**

13. Ball_By_Ball

Column Name	Data Type	Constraints
OverNO	NUMBER	PRIMARY KEY
Ball_NO	NUMBER	PRIMARY KEY
InningsNo	NUMBER	PRIMARY KEY
MatchID	NUMBER	PRIMARY KEY
TeamBatting	VARCHAR2	
Team_Bowling	VARCHAR2	
Striker	NUMBER	
Non-Striker	NUMBER	
Bowler	NUMBER	

Ball_By_Ball table is in BCNF.

Primary Key: (OverNO, Ball_NO, InningsNo, MatchID)

Non-Key columns: TeamBatting, Team_Bowling, Striker, Non-Striker, Bowler.

Functional Dependencies:

(OverNO, Ball_NO, InningsNo, MatchID) → TeamBatting, Team_Bowling, Striker, Non-Striker, Bowler

BCNF Check:

- **1NF (First Normal Form):** All columns contain atomic values, no repeating groups.
- **No Partial Dependencies:** No partial dependencies exist; table satisfies **2NF**.
- **No Transitive Dependencies:** No non-key attribute depends on another non-key attribute; satisfies **3NF**.
- **BCNF Rule:** All functional dependencies have candidate keys on **LHS.**

14. WicketTaken

Column Name	Data Type	Constraints
OverNO	NUMBER	PRIMARY KEY
Ball_NO	NUMBER	PRIMARY KEY
InningsNo	NUMBER	PRIMARY KEY
MatchID	NUMBER	PRIMARY KEY
PlayerOut	VARCHAR2	
Fielder	VARCHAR2	
OutType	VARCHAR2	

WicketTaken table is in BCNF.

Primary Key: (OverNO, Ball_NO, InningsNo, MatchID)

Non-Key columns: PlayerOut, Fielder, OutType.

Functional Dependencies:

(OverNO, Ball_NO, InningsNo, MatchID) → PlayerOut, Fielder, OutType

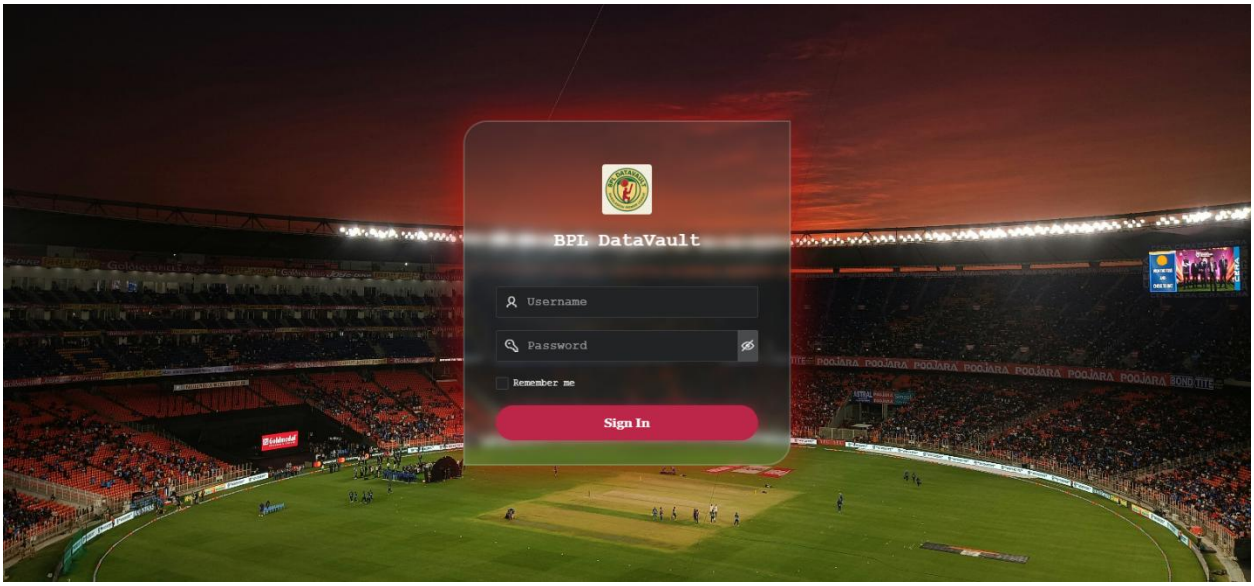
BCNF Check:

- • 1NF (First Normal Form): All columns contain atomic values, no repeating groups.
- • No Partial Dependencies: No partial dependencies exist; table satisfies 2NF.
- • No Transitive Dependencies: No non-key attribute depends on another non-key attribute; satisfies 3NF.
- • BCNF Rule: All functional dependencies have candidate keys on LHS.

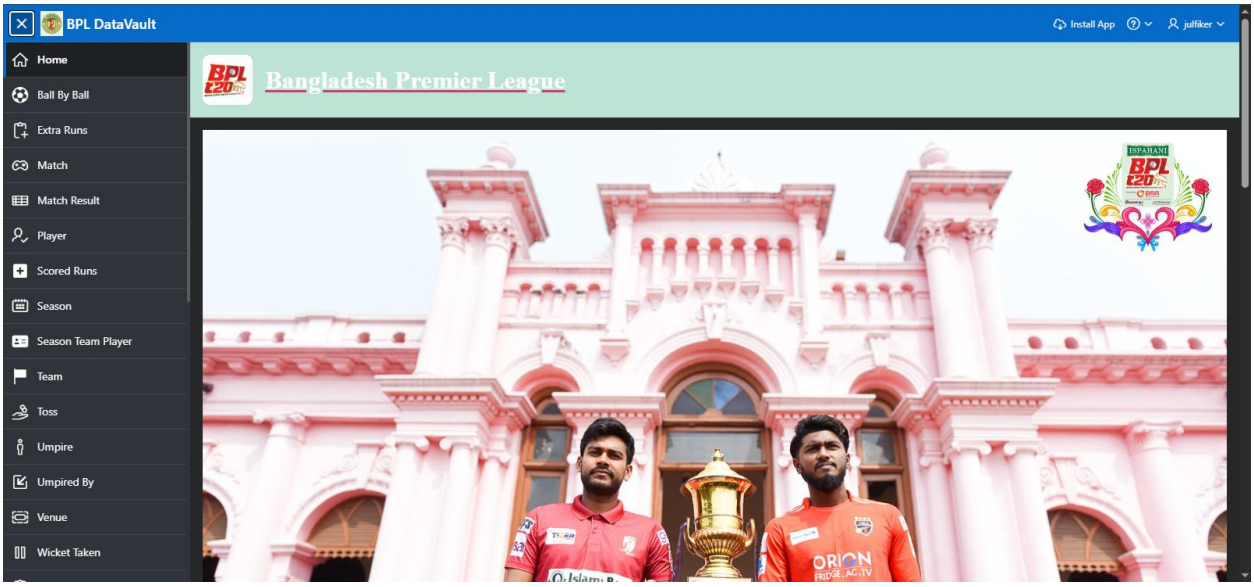
Pages:

Report Page Number and Name	**Form Page Number and Name**	**Table**
2. Ball_By_Ball	3. Ball_By_Ball Form	Ball_By_Ball
4. ExtraRuns	5. ExtraRuns Form	ExtraRuns
6. Match	7. Match Form	Match
8. MatchResult	9. MatchResult Form	MatchResult
10. Player	11. Player Form	Player
12. ScoredRuns	13. ScoredRuns Form	ScoredRuns
14. Season	15. Season Form	Season
16. Season_Team_Player	17. Season_Team_Player Form	Season_Team_Player
18. Team	19. Team Form	Team
20. Toss	21. Toss Form	Toss
22. Umpire	23. Umpire Form	Umpire
24. UmpiredBy	25. UmpiredBy Form	UmpiredBy
26. Venue	27. Venue Form	Venue
28. WicketTaken	29. WicketTaken Form	WicketTaken

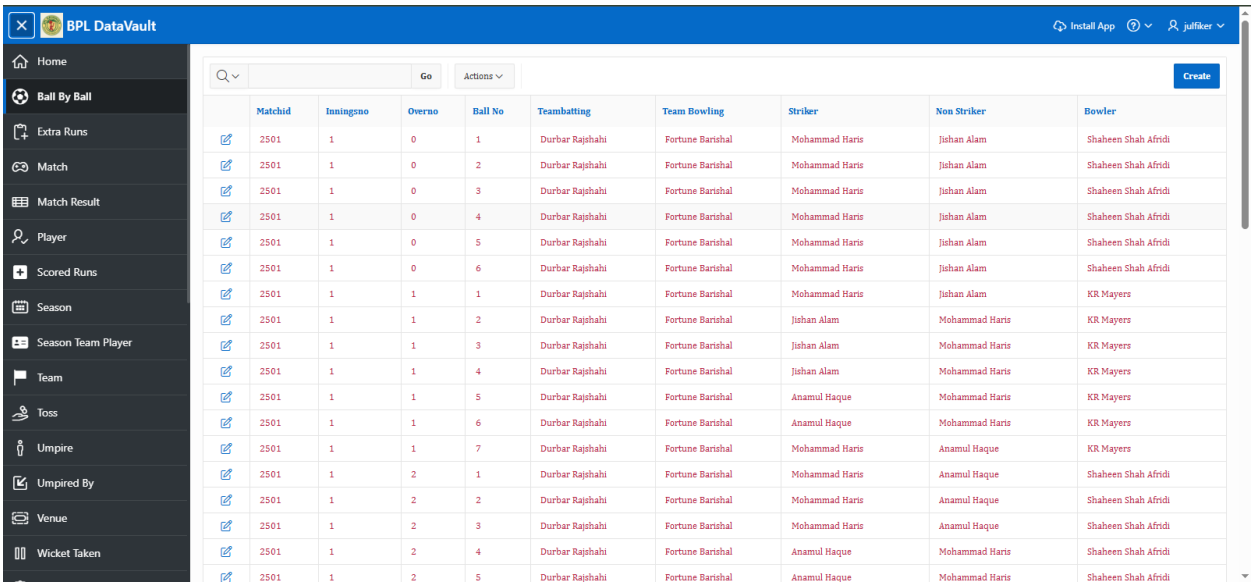
Login page:



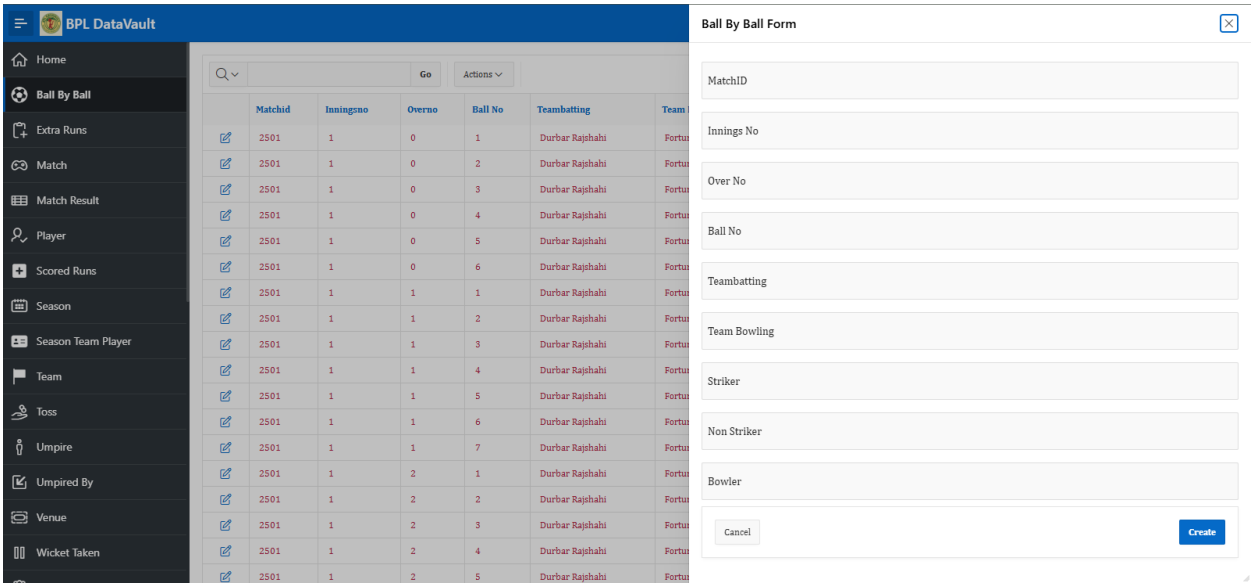
Dashboard: Home Page - 1



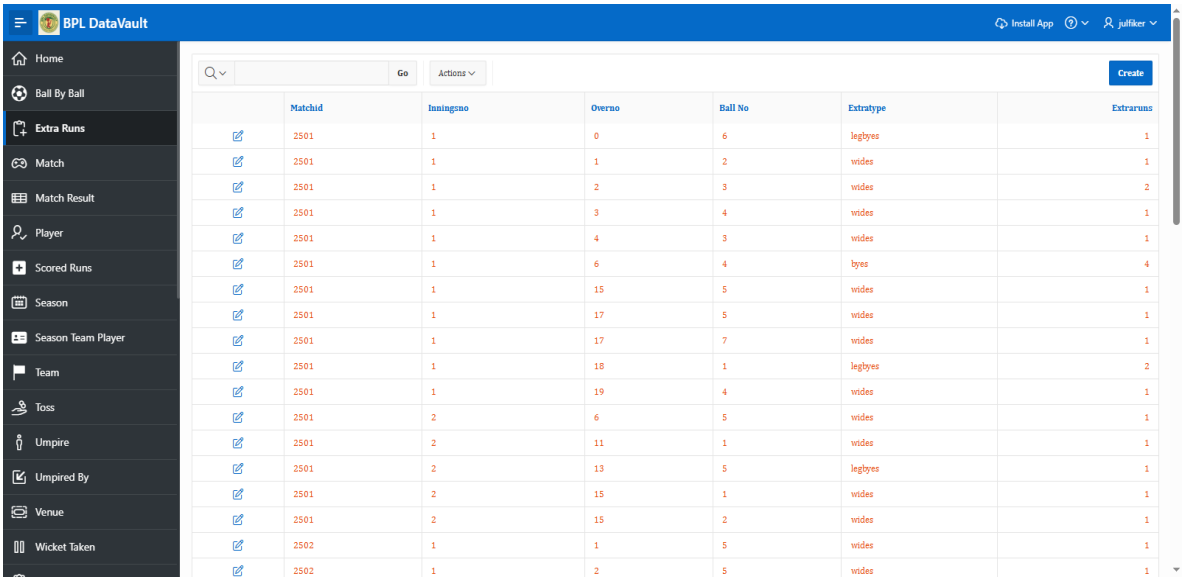
Page2: Ball_By_Ball Report Page



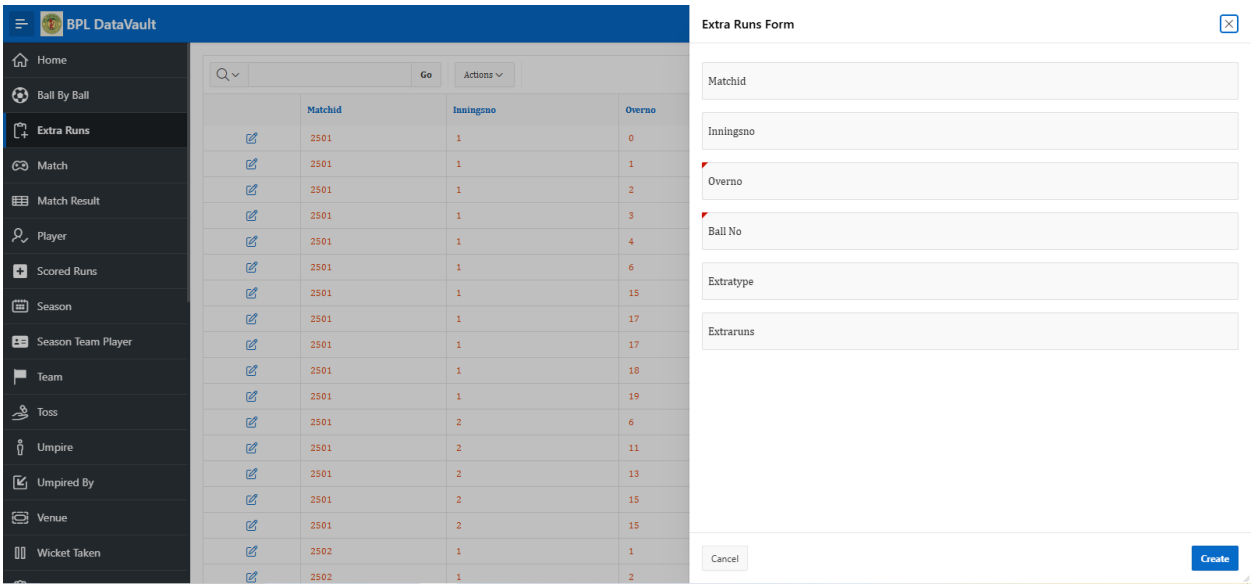
Page3: Ball_By_By Form Page



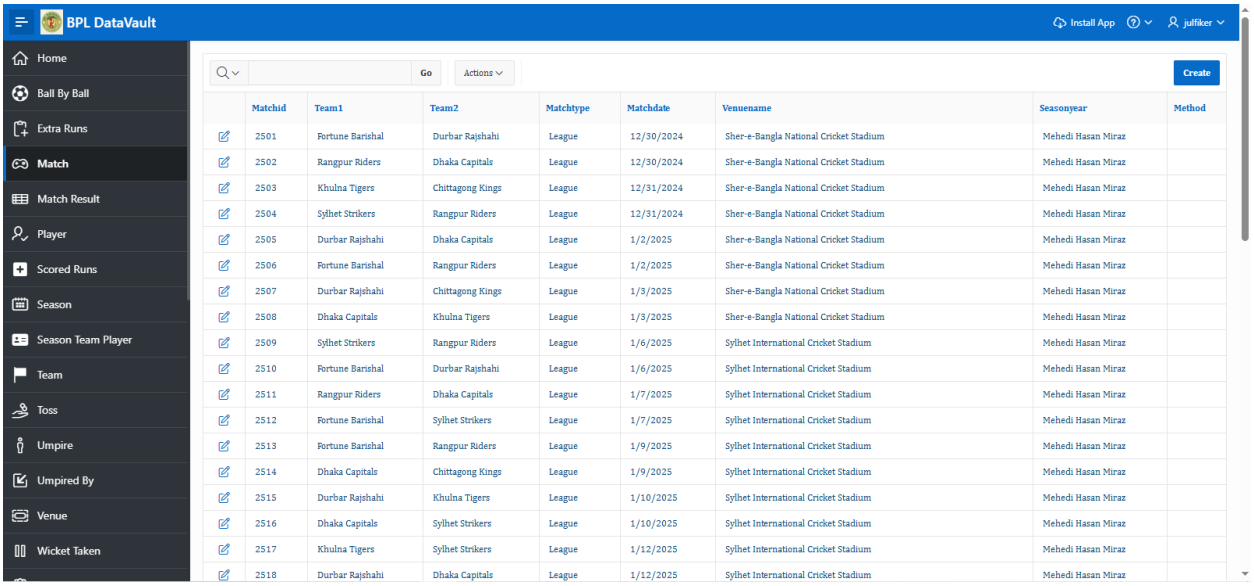
Page4: Extra Runs Report Page



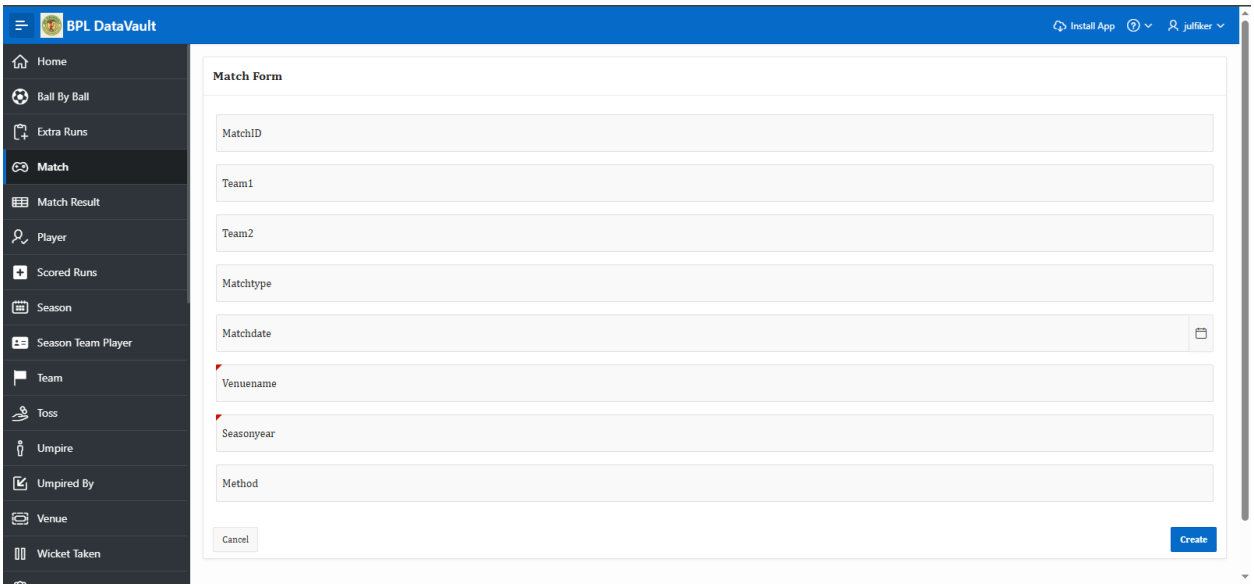
Page5: Extra Runs Form Page



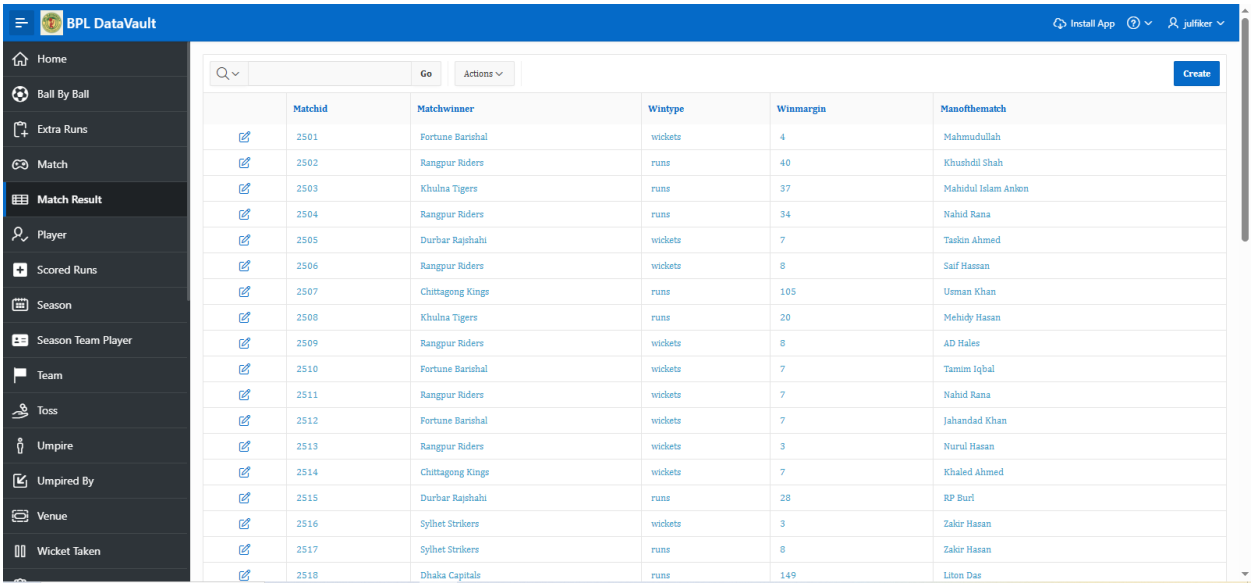
Page6: Match Report Page



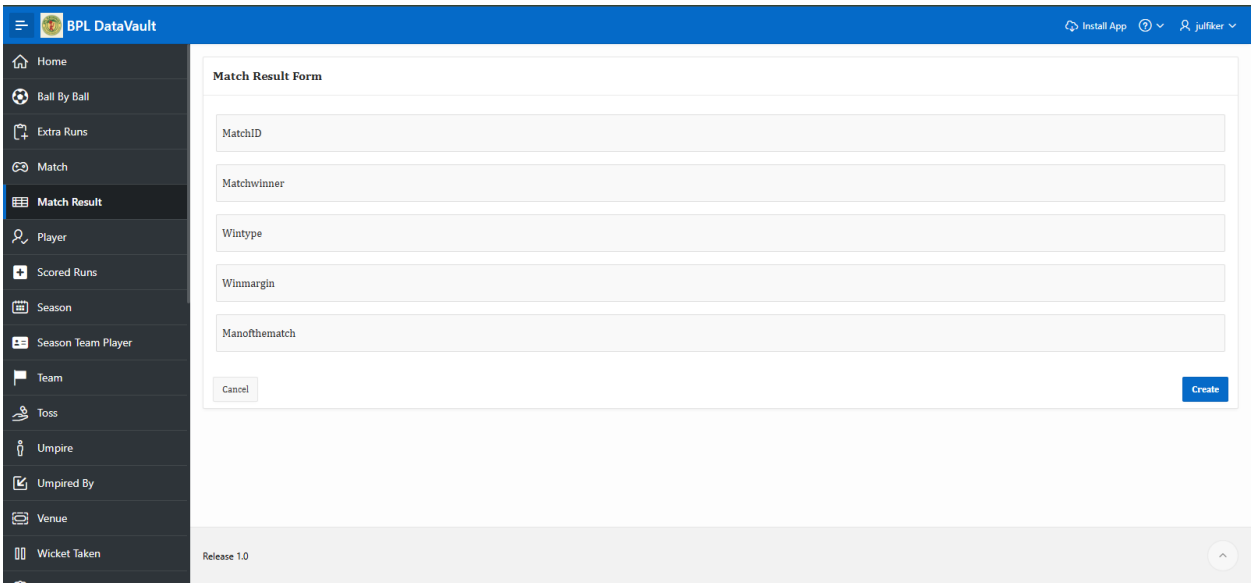
Page7: Match Form Page



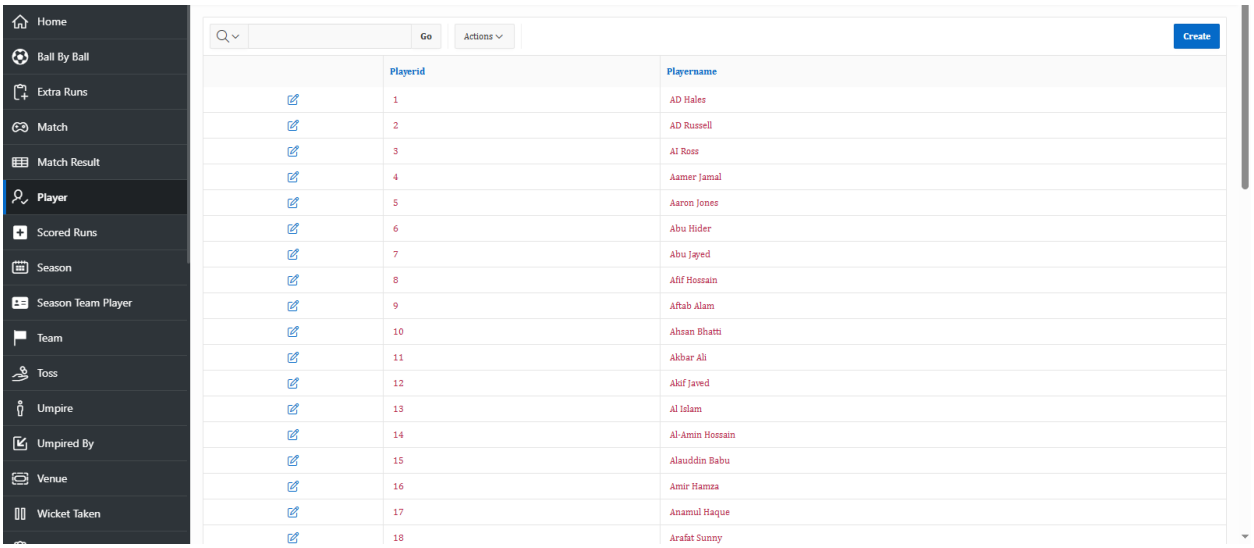
Page8: Match Result Report Page



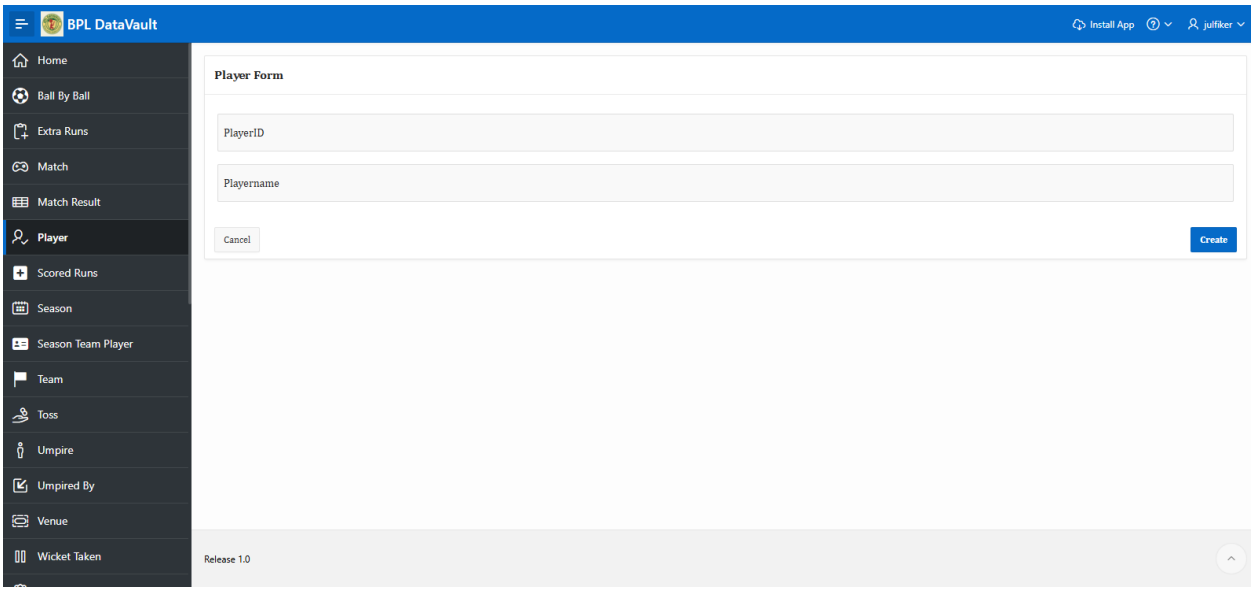
Page9: Match Result Form Page



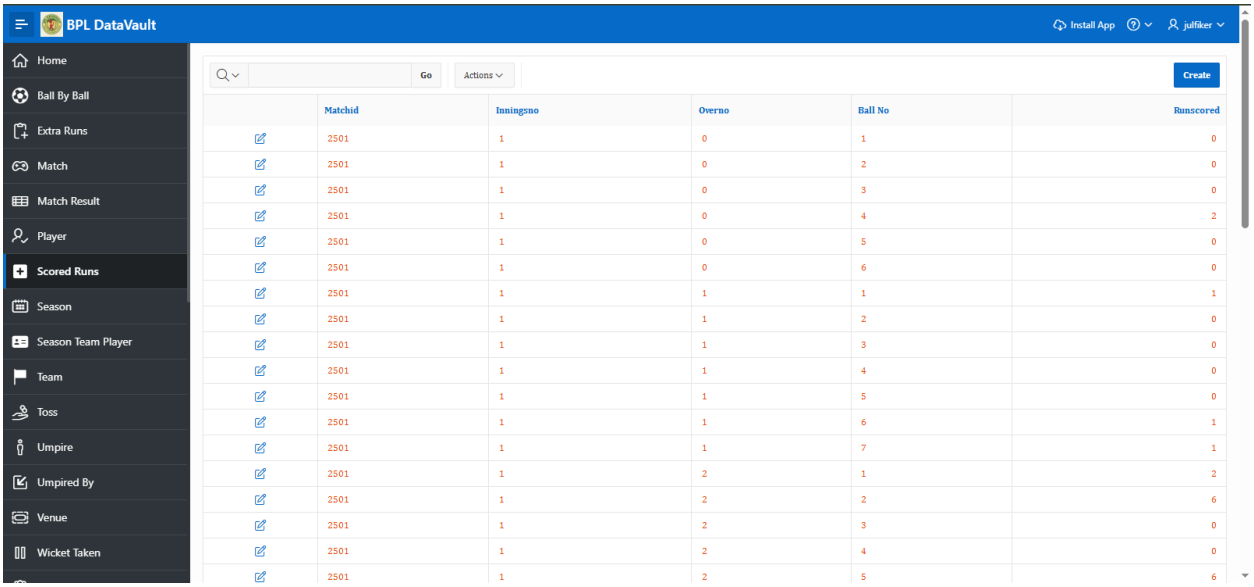
Page 10: Player Report Page



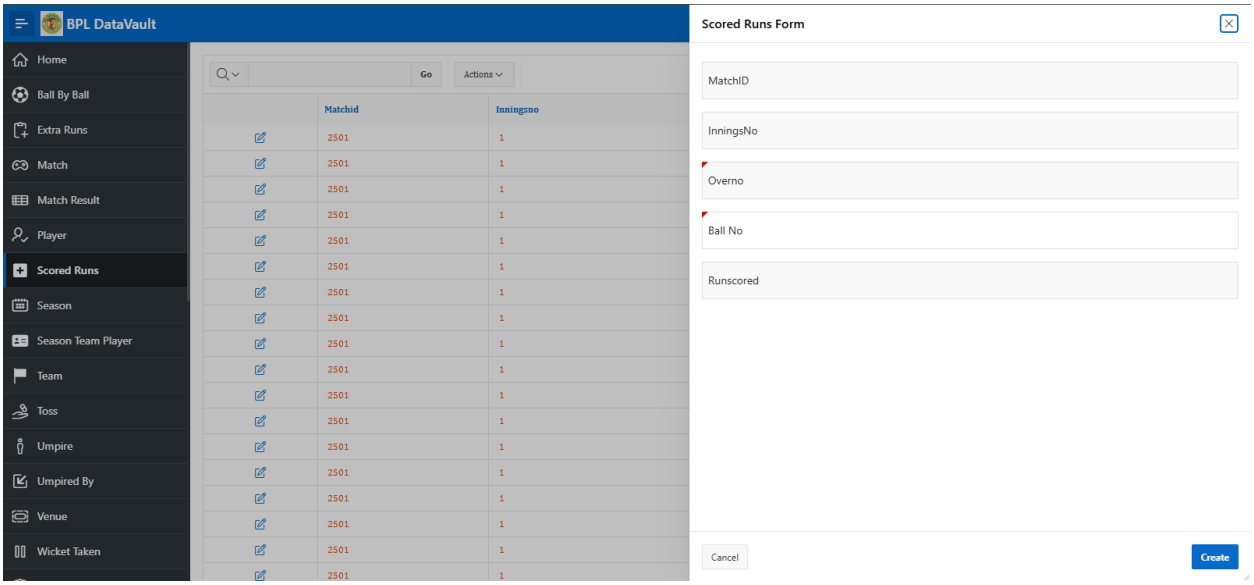
Page 10: Player Form Page



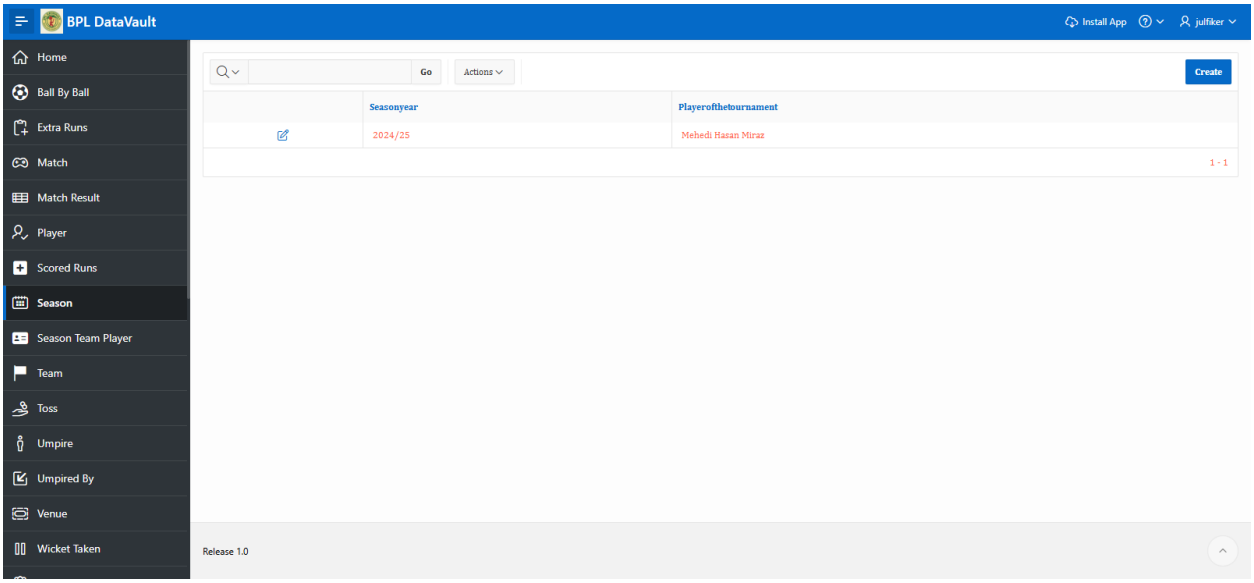
Page 12: Scored Runs Reports Page



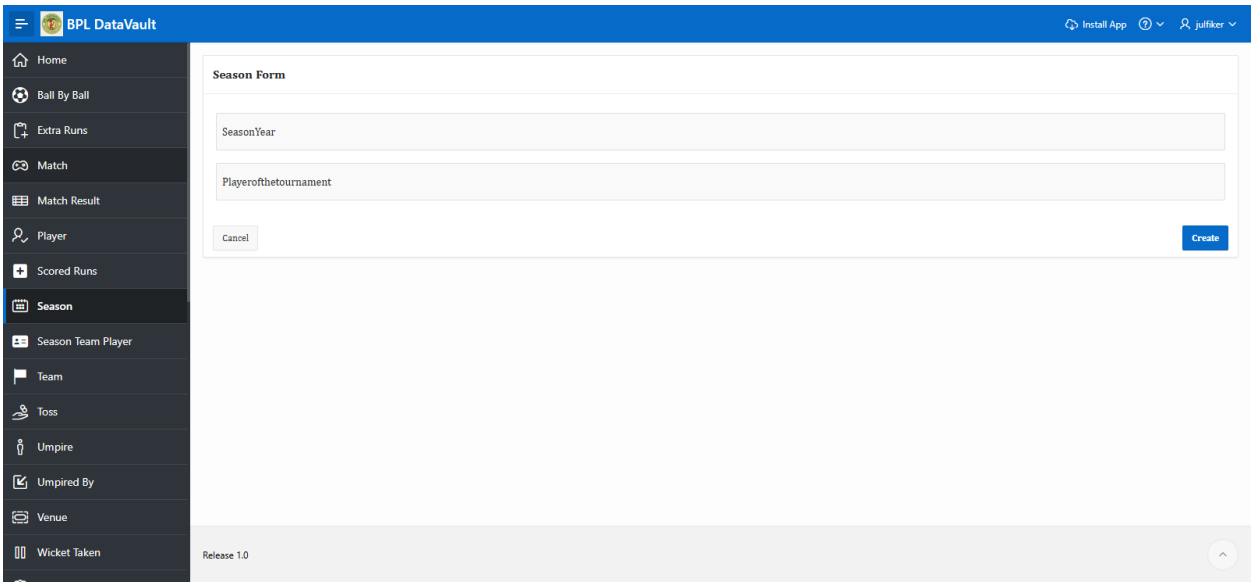
Page13: Scored Runs From Page



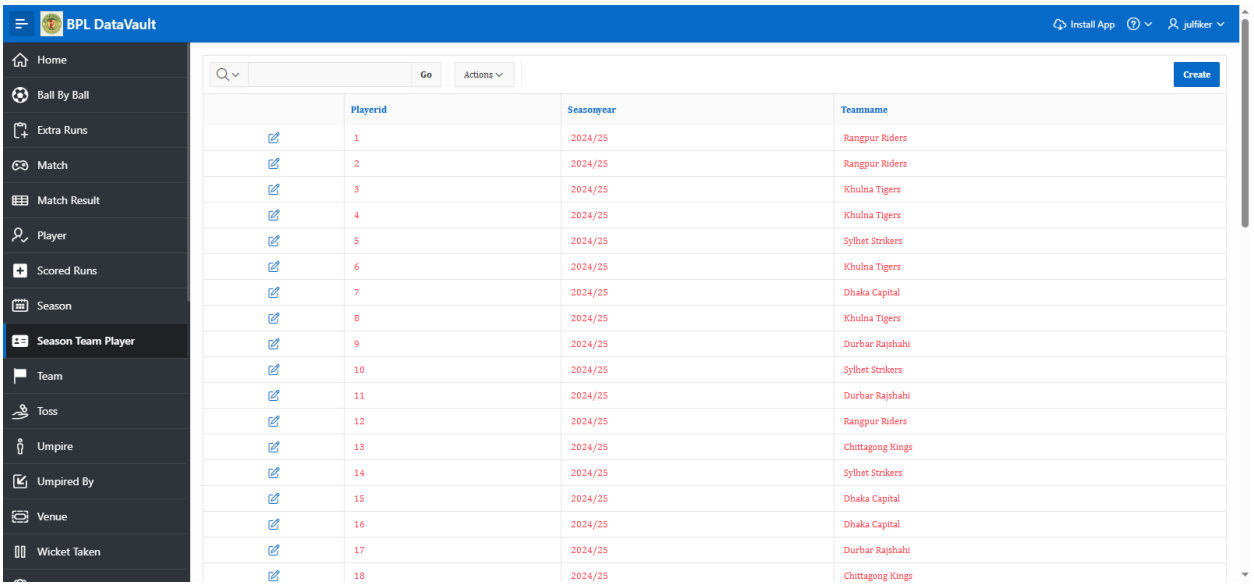
Page 14: Season Report Page



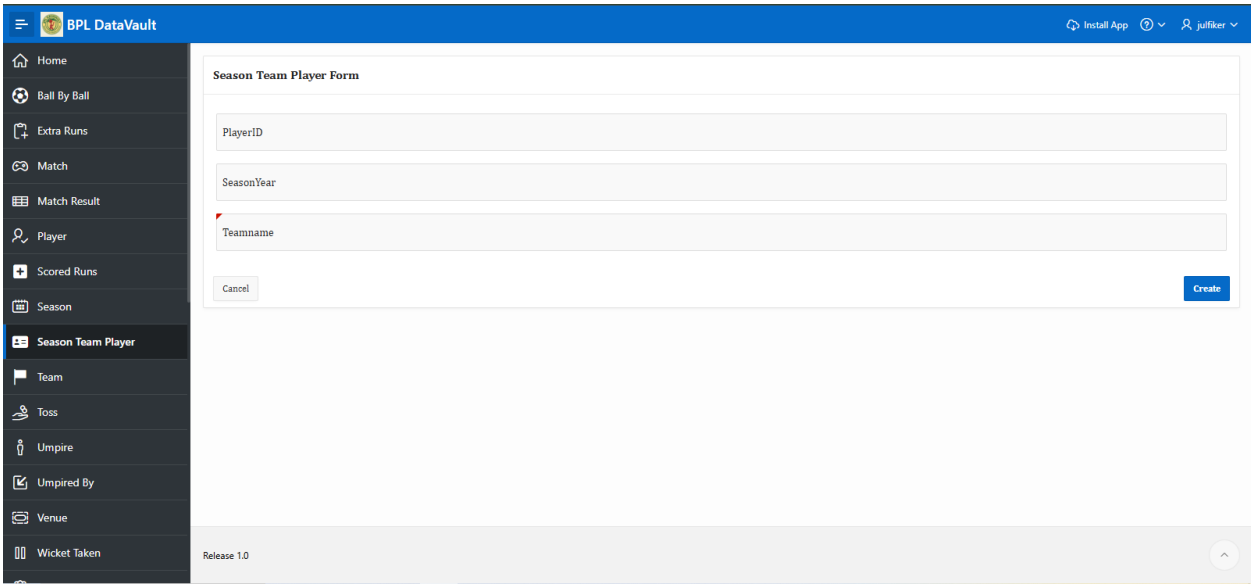
Page15: Season Form Page



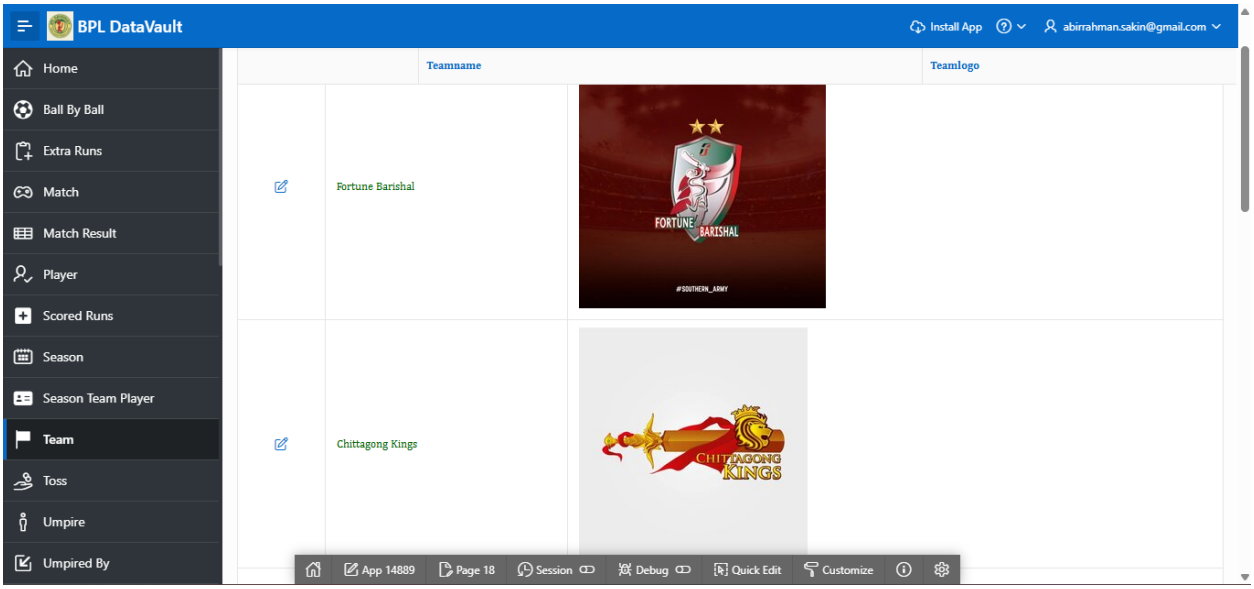
Page16: Season Team Player Report Page



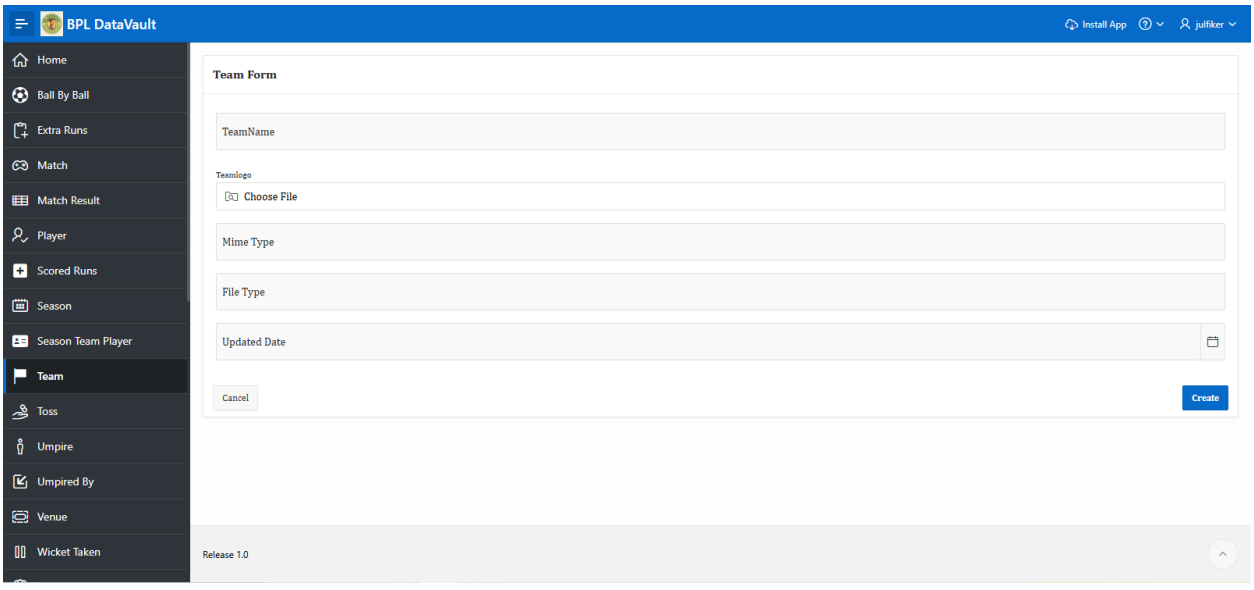
Page17: Season Team Player Form Page



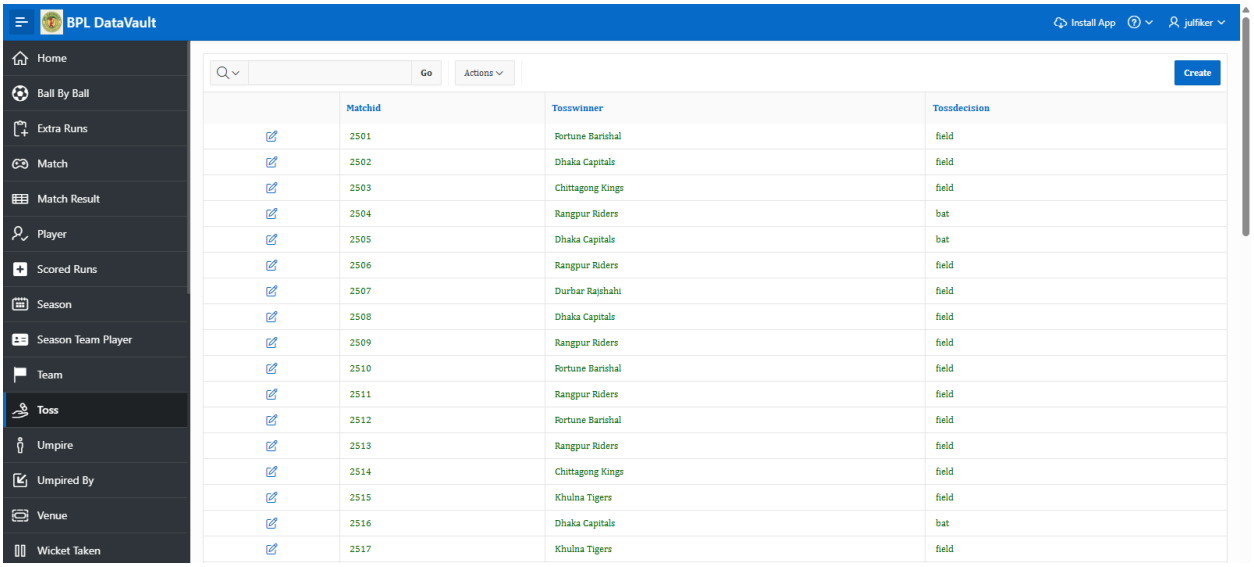
Page18: Team Report



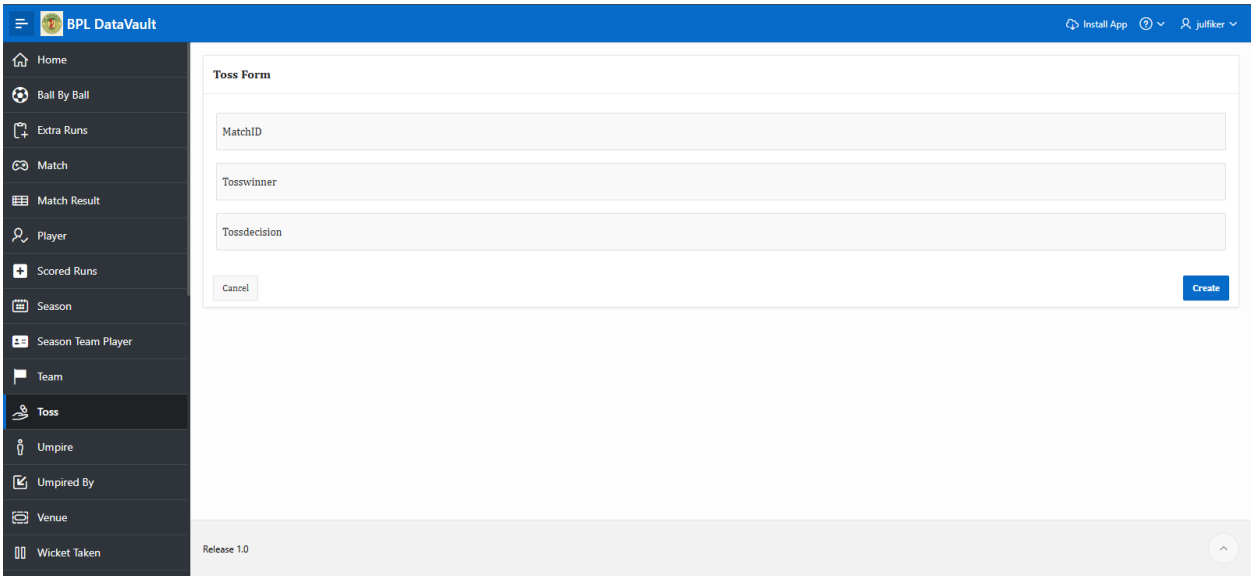
Page19: Team form page



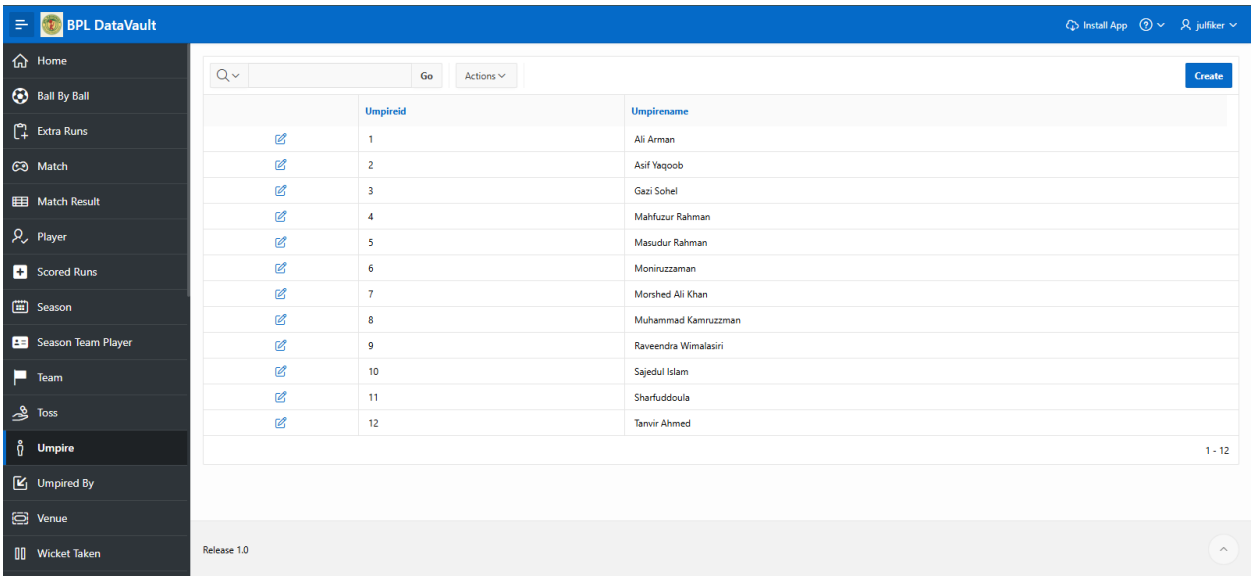
Page20: Toss Report



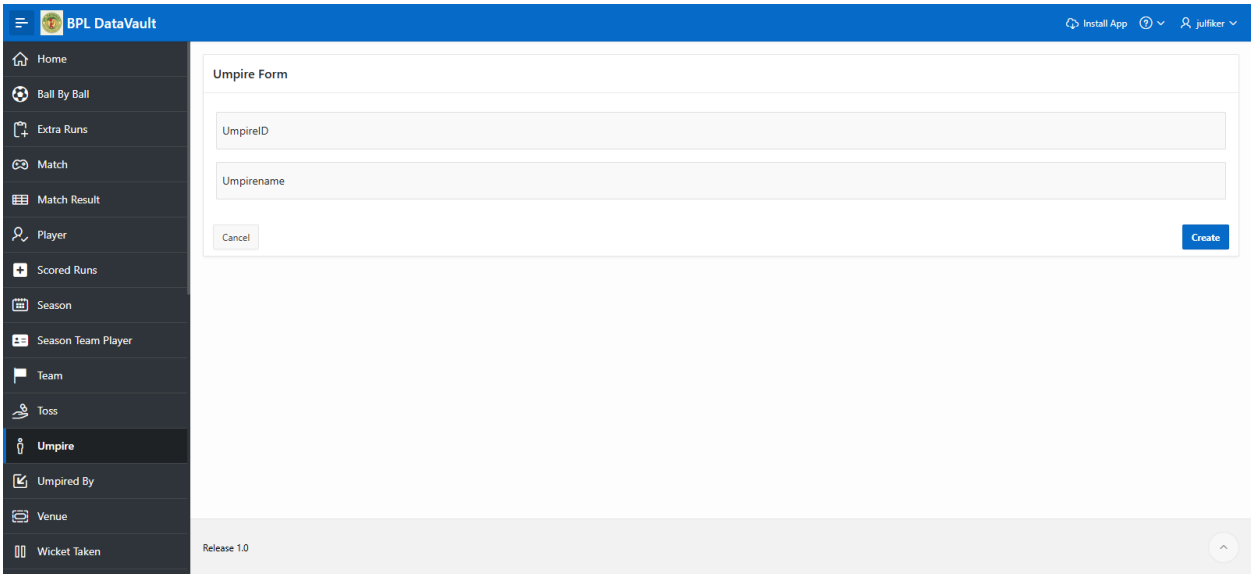
Page21: Toss Form Page



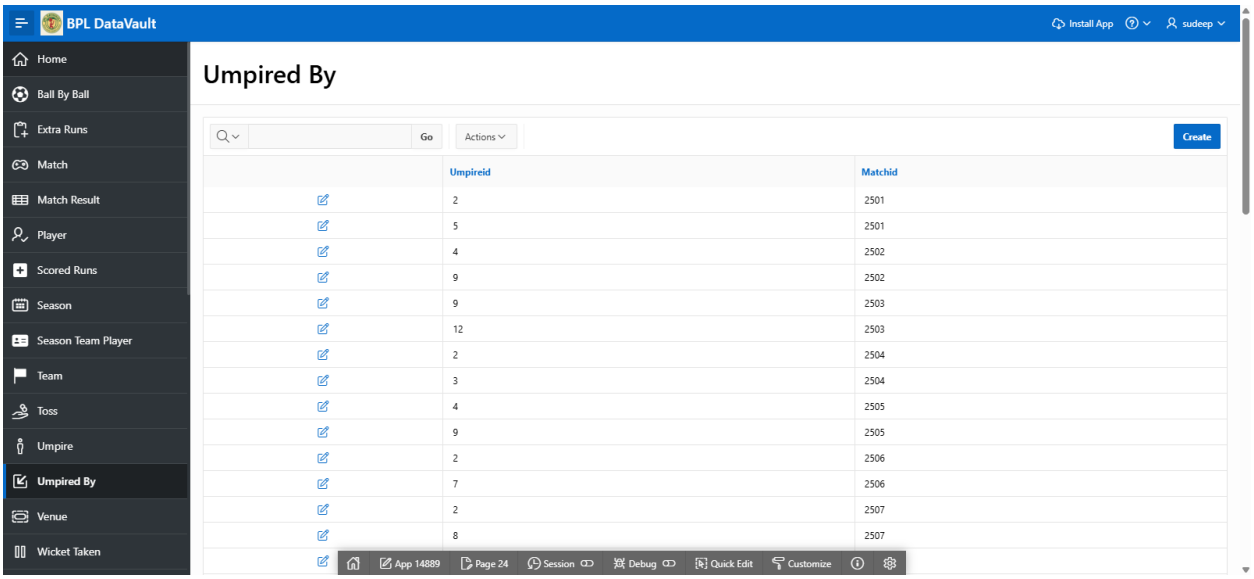
Page22: Umpire Report Page



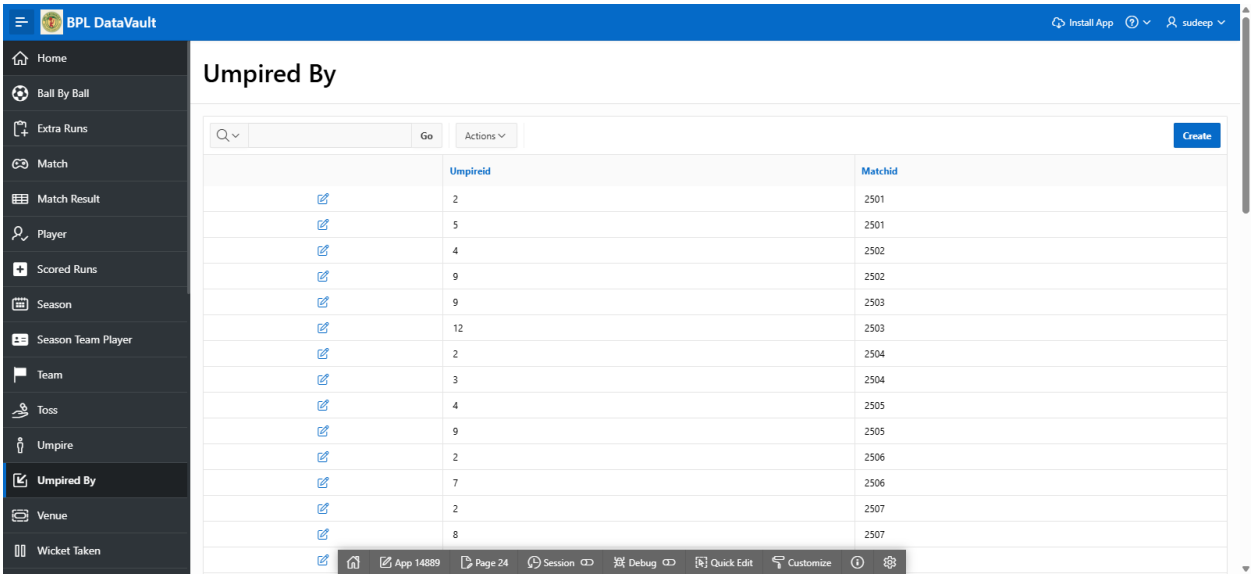
Page23: Umpire Form



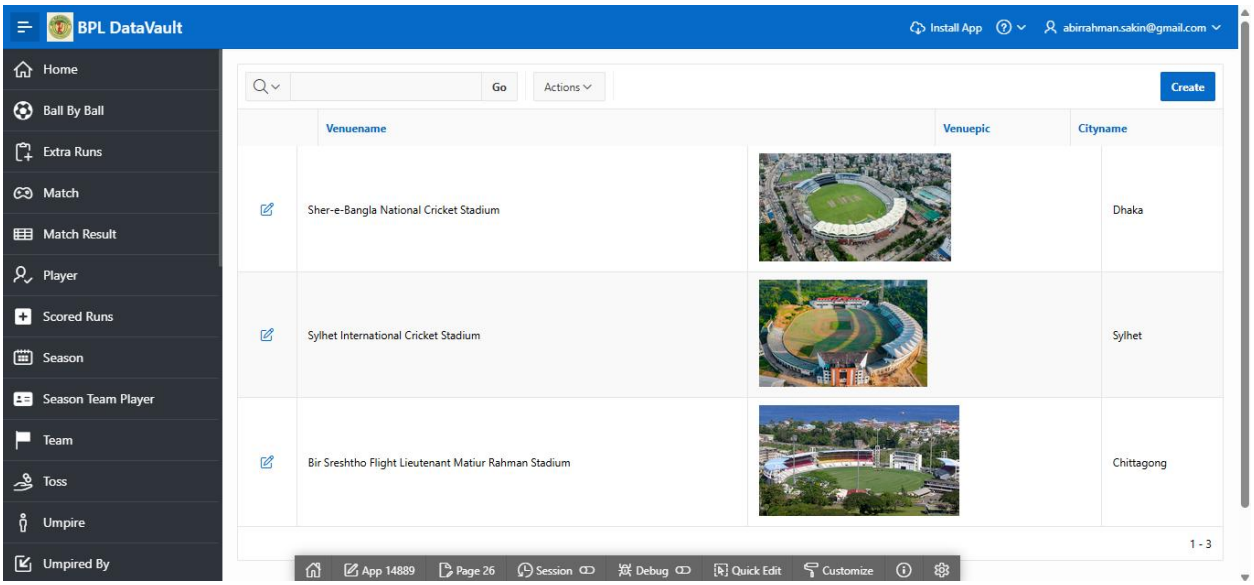
Page24: Umpired By Report page



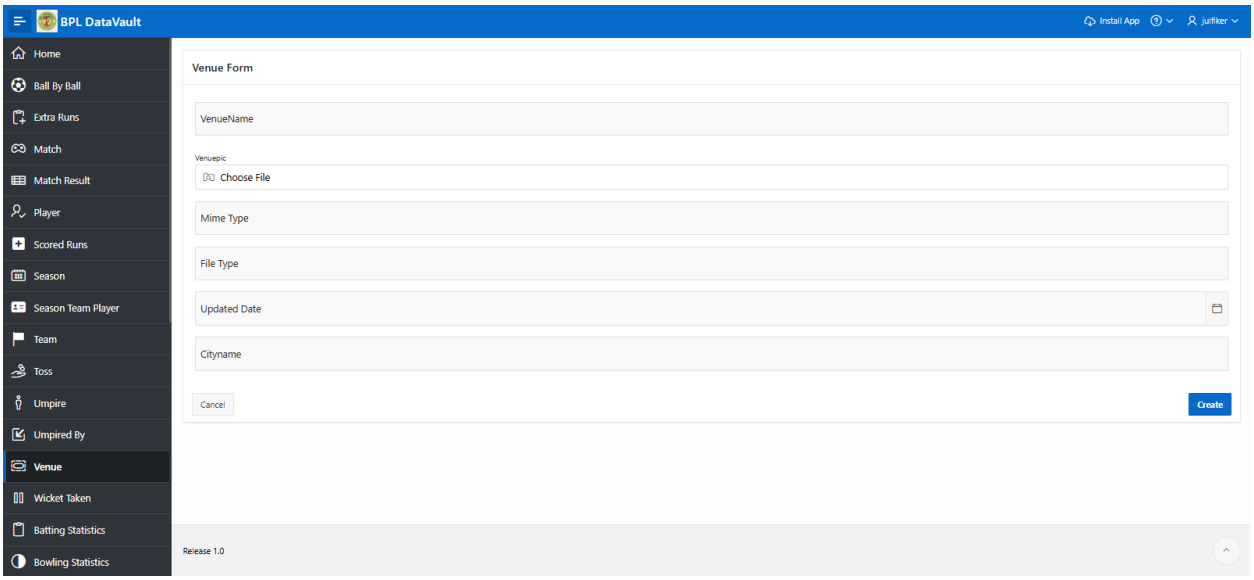
Page25: Upmired by Form Page



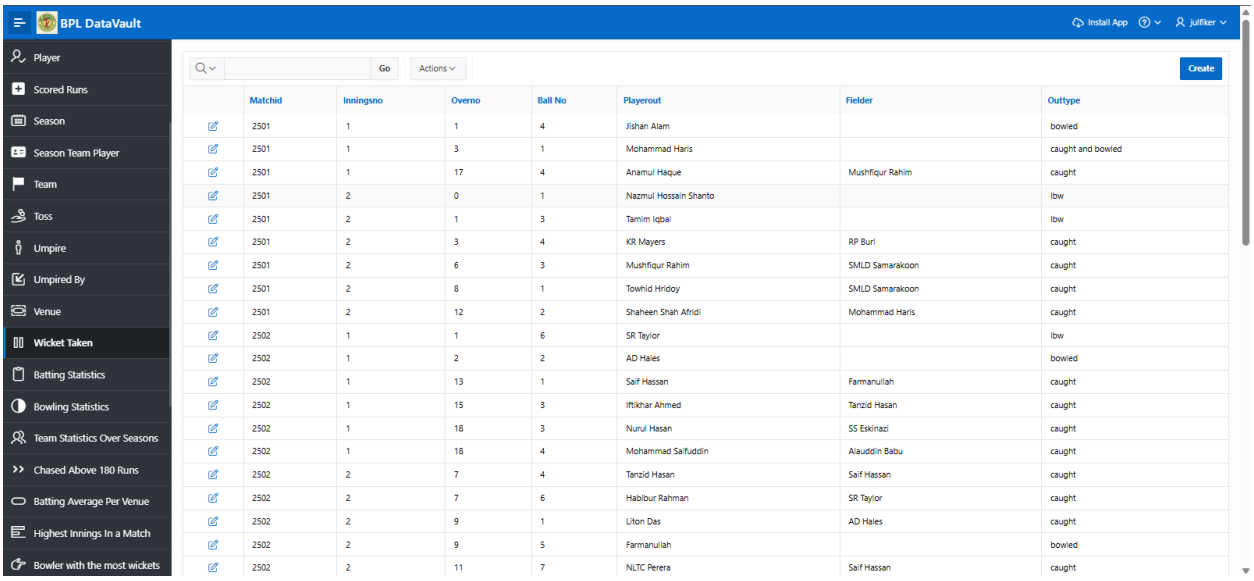
Page26: Venue Report Page



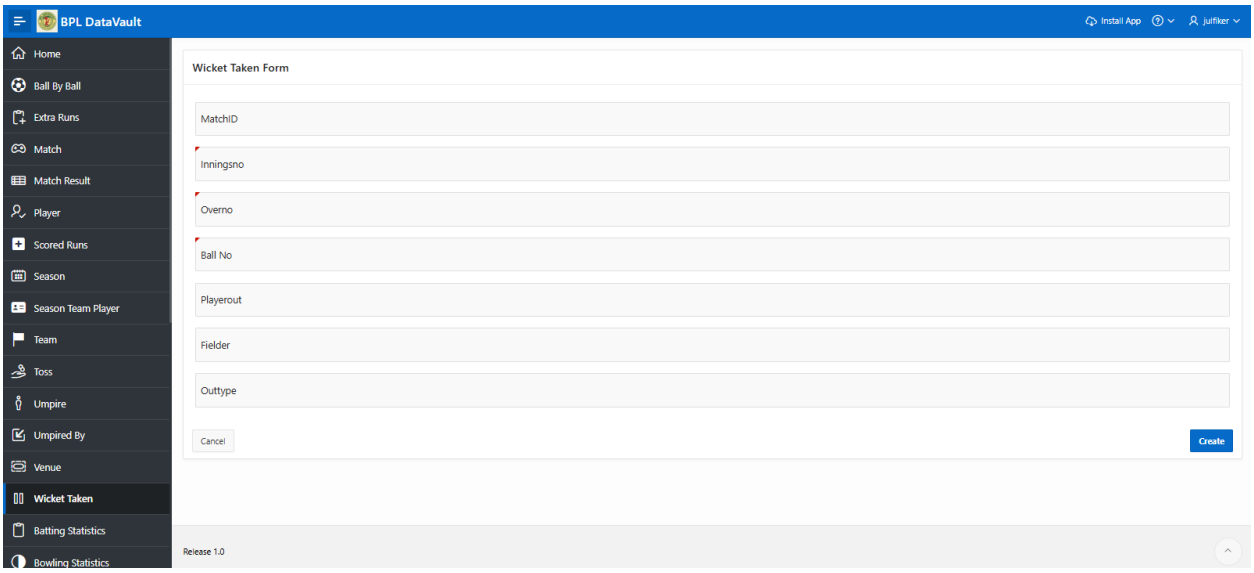
Page27: Venue Form Page



Page28: Wicket Taken Report Page



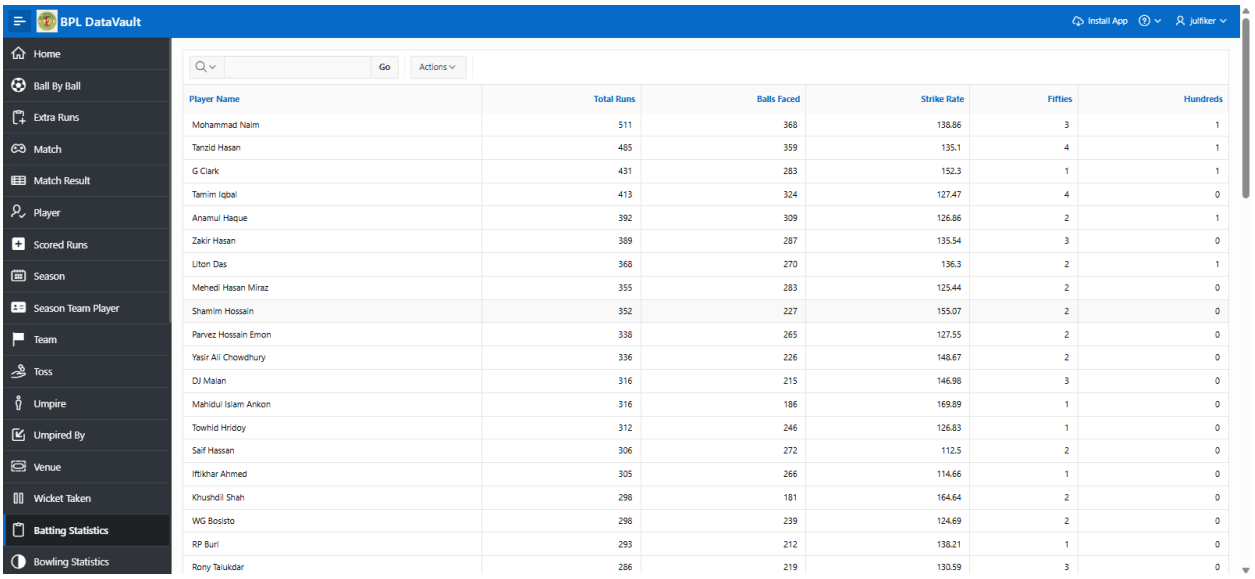
Page29: Wicked taken Form Page



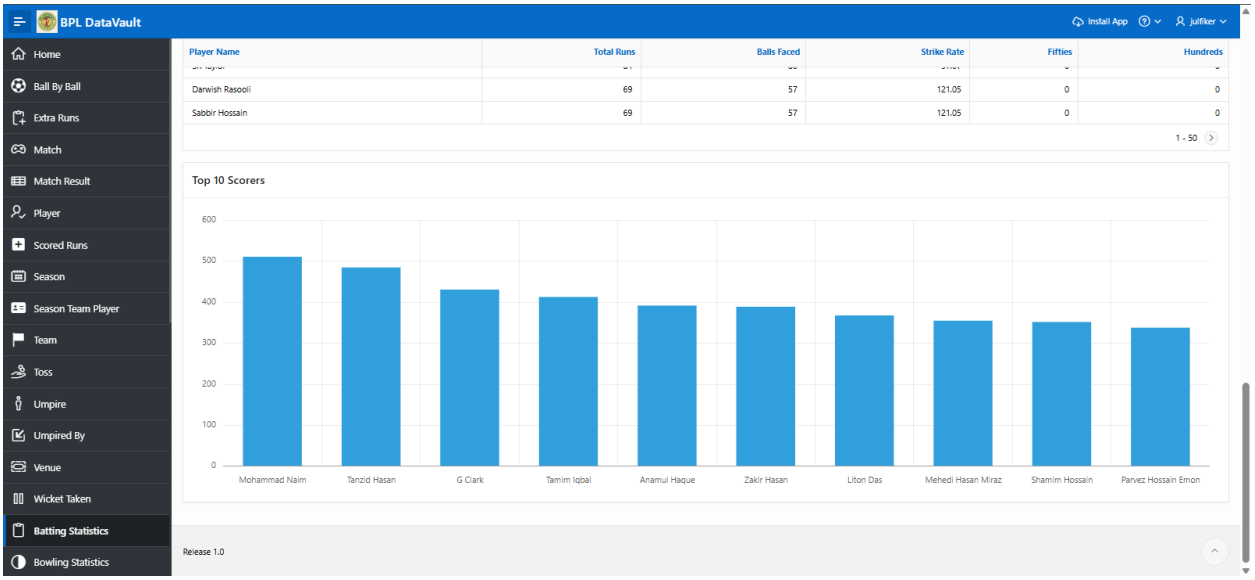
Page Number and Name	Query Type	Report description
30. Batting Statistics	Multi-table and Aggregate	This page is based on Query, Displays the Batting statistics of all players , And a bar chart of top 10 run scorers.
31. Bowling Statistics	Multi-table and Aggregate	This page is based on Query. Displays all bowlers ever bowled in IPL ,and their career Statistics . Added a bar chart to Show top ten bowlers.
32. Team Statistics Over season	Multi-table and Aggregate	Team Statistics Over ALL Season
33. Chased Above 180 runs	Multi-table and Aggregate	ALL matches chased over 180 runs scored in first innings
34. Batting average per venue	Multi-table and Aggregate	Batting average in each venue

35. Highest innings in a match	Multi-table and Aggregate	Highest total in a match
36. Bowlers with most wickets	Multi-table and Aggregate	Bowlers who got most wickets in each season
37. Most sixes in each season	Multi-table and Aggregate	Batters who hit most sixes in each season
38. Top win ratio	Multi-table and Aggregate	Top5 Teams with most win ratio across season
39. Toss Impact in a match	Multi-table and Aggregate	Toss Impact in a match across all seasons. Toss' decision led to winning records.
40. Most MOTM	Aggregate	Most MOTM in each season
41. Match Wasted in D/L method	Aggregate	Match Wasted in D/L method in each season

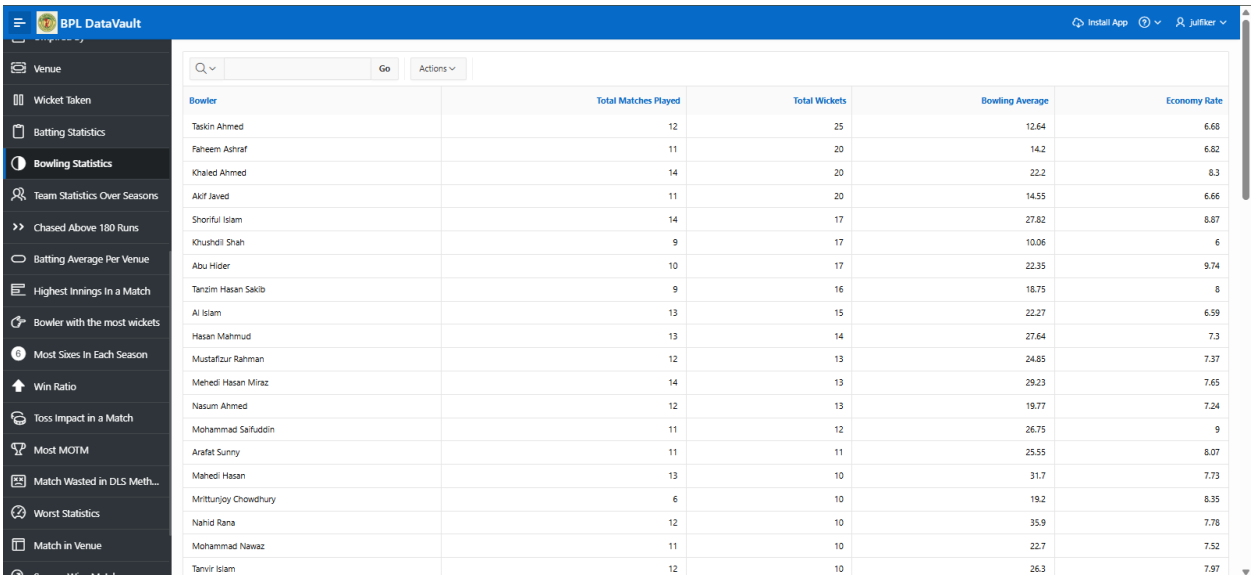
Page30: This page is based on Query, Displays the Batting statistics of all players , And a bar chart of top 10 run scorers.



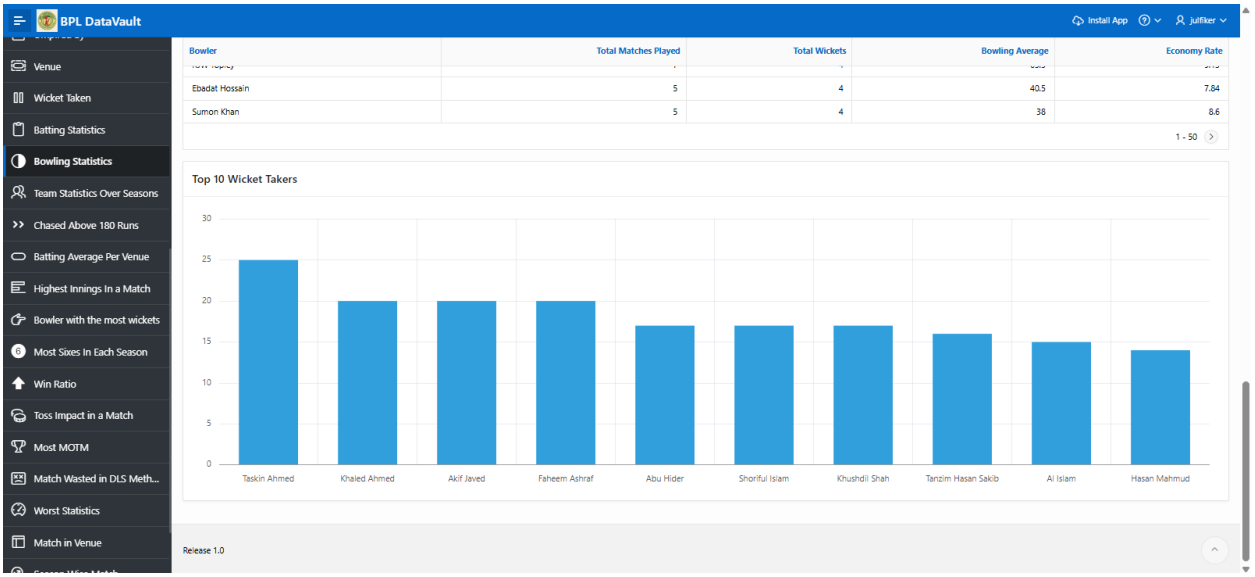
Player Name	Total Runs	Balls Faced	Strike Rate	Fifties	Hundreds
Mohammad Naim	511	368	138.86	3	1
Tanzid Hasan	485	359	135.1	4	1
G Clark	431	283	152.3	1	1
Tamim Iqbal	413	324	127.47	4	0
Anamul Haque	392	309	126.86	2	1
Zakir Hasan	389	287	135.54	3	0
Liton Das	368	270	136.3	2	1
Mehedi Hasan Miraz	355	283	125.44	2	0
Shamim Hossain	352	227	155.07	2	0
Parvez Hossain Emon	338	265	127.55	2	0
Yasir Ali Chowdhury	336	226	148.67	2	0
DJ Malan	316	215	146.98	3	0
Mahidul Islam Ankon	316	186	169.89	1	0
Towhid Hridoy	312	246	126.83	1	0
Saif Hassan	306	272	112.5	2	0
Iftikhar Ahmed	305	266	114.66	1	0
Khushdil Shah	298	181	164.64	2	0
WG Bosisto	298	239	124.69	2	0
RP Burl	293	212	138.21	1	0
Rony Talukdar	286	219	130.59	3	0



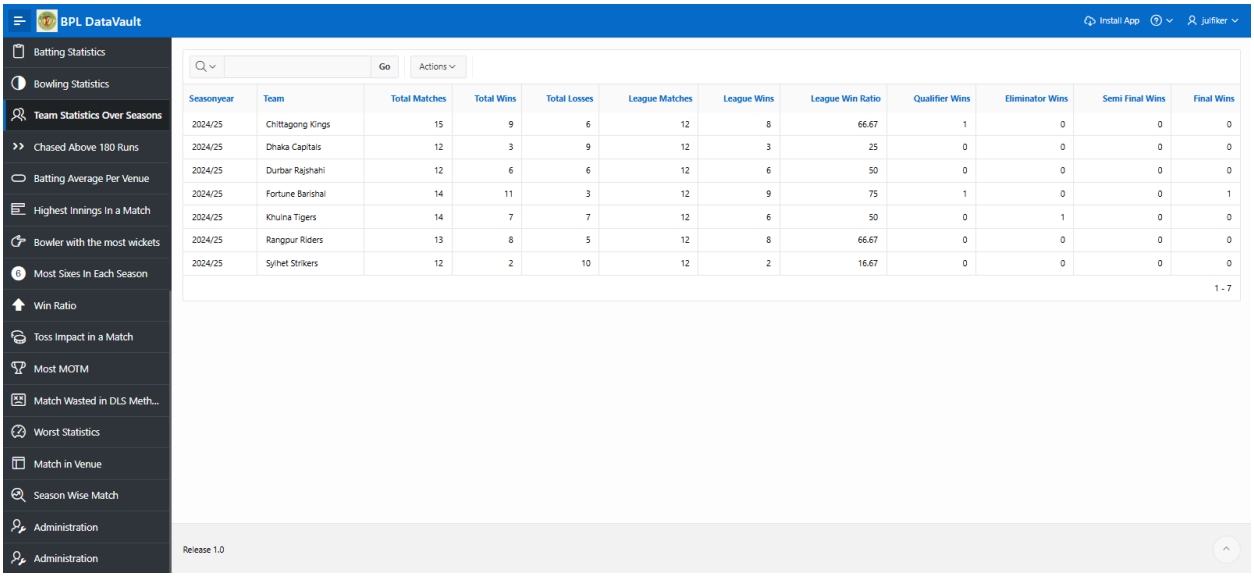
Page31: This page is based on Query. Displays all bowler ever bowled in BPL and their career Statistics . Added a bar chart to Show top ten bowlers.



Bowler	Total Matches Played	Total Wickets	Bowling Average	Economy Rate
Taskin Ahmed	12	25	12.64	6.68
Faheem Ashraf	11	20	14.2	6.82
Khaled Ahmed	14	20	22.2	8.3
Akif Javed	11	20	14.55	6.66
Shoriful Islam	14	17	27.82	8.87
Khushdil Shah	9	17	10.06	6
Abu Hider	10	17	22.35	9.74
Tanzim Hasan Sakib	9	16	18.75	8
Al Islam	13	15	22.27	6.59
Hasan Mahmud	13	14	27.64	7.3
Mustafizur Rahman	12	13	24.85	7.37
Mehedi Hasan Miraz	14	13	29.23	7.65
Nasum Ahmed	12	13	19.77	7.24
Mohammad Saifuddin	11	12	26.75	9
Arafat Sunny	11	11	25.55	8.07
Mahedi Hasan	13	10	31.7	7.73
Mrittunjoy Chowdhury	6	10	19.2	8.35
Nahid Rana	12	10	35.9	7.78
Mohammad Nawaz	11	10	22.7	7.52
Tanvir Islam	12	10	26.3	7.97



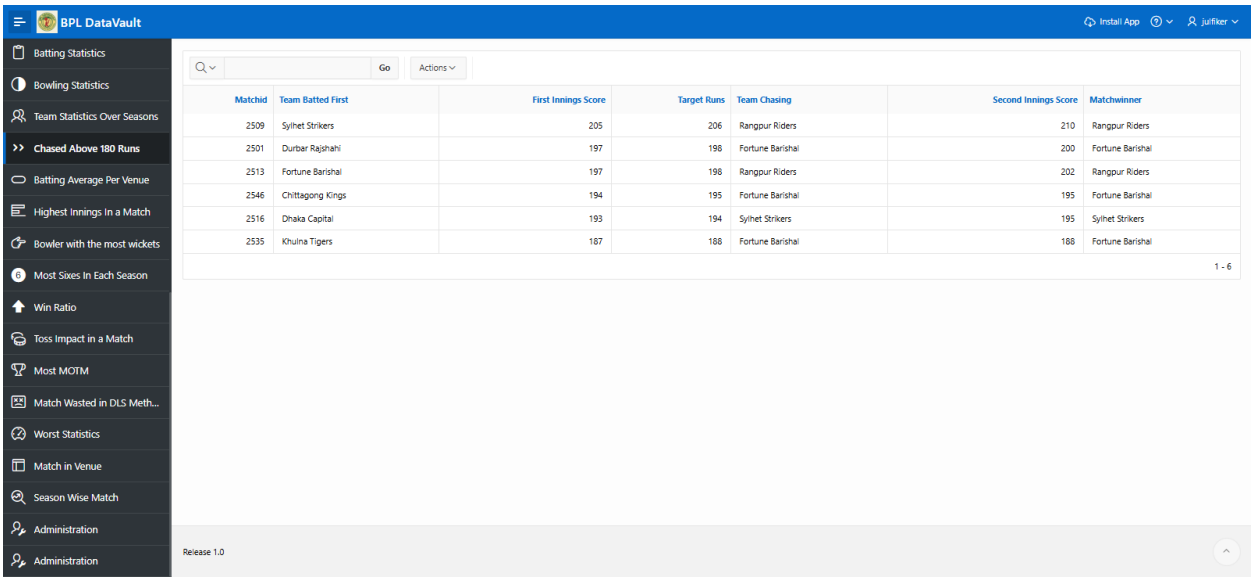
page32: Team Statistics Over ALL Season



Seasonyear	Team	Total Matches	Total Wins	Total Losses	League Matches	League Wins	League Win Ratio	Qualifier Wins	Eliminator Wins	Semi Final Wins	Final Wins
2024/25	Chittagong Kings	15	9	6	12	8	66.67	1	0	0	0
2024/25	Dhaka Capitals	12	3	9	12	3	25	0	0	0	0
2024/25	Durbar Rajshahi	12	6	6	12	6	50	0	0	0	0
2024/25	Fortune Barishal	14	11	3	12	9	75	1	0	0	1
2024/25	Khulna Tigers	14	7	7	12	6	50	0	1	0	0
2024/25	Rangpur Riders	13	8	5	12	8	66.67	0	0	0	0
2024/25	Sylhet Strikers	12	2	10	12	2	16.67	0	0	0	0

1 - 7

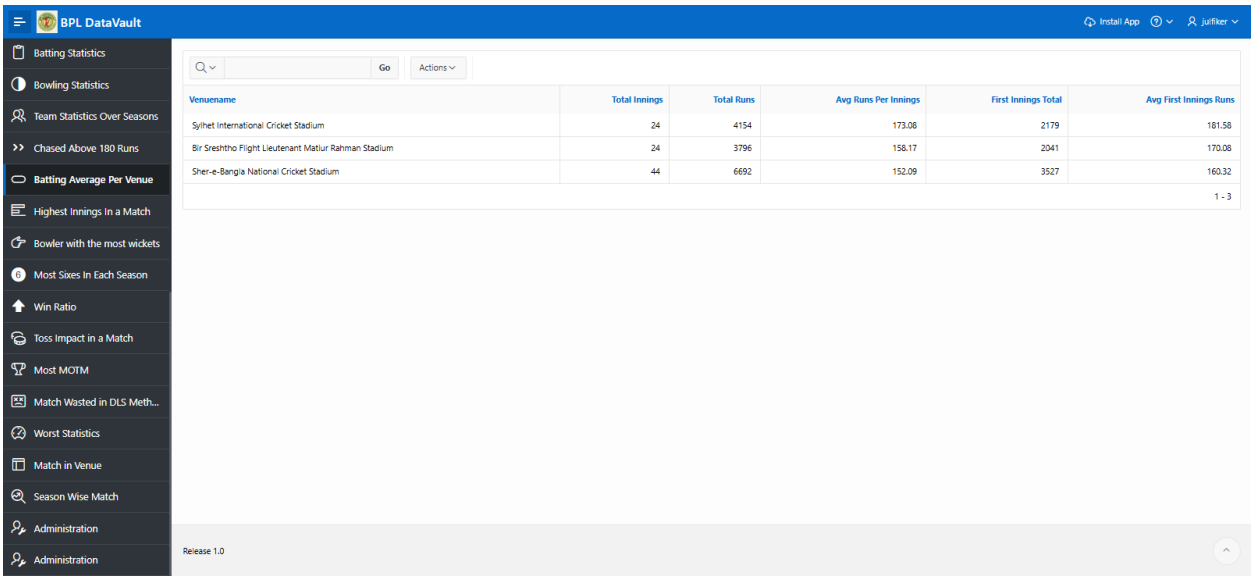
Page33: ALL matches chased over 180 runs scored in first innings



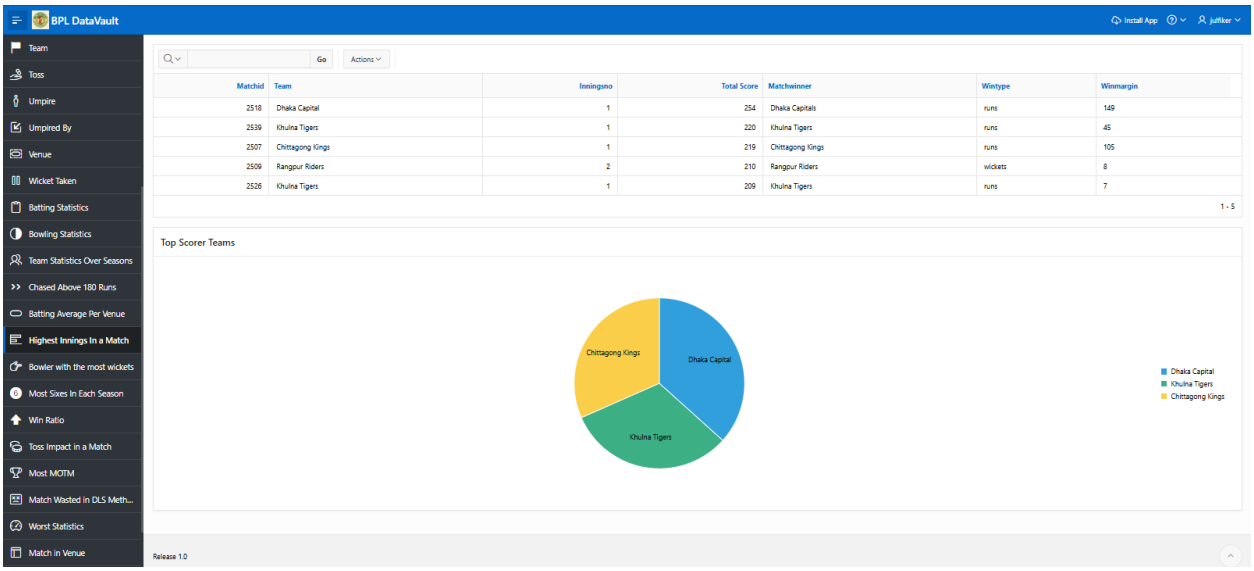
Matchid	Team Batted First	First Innings Score	Target Runs	Team Chasing	Second Innings Score	Matchwinner
2509	Sylhet Strikers	205	206	Rangpur Riders	210	Rangpur Riders
2501	Durbar Rajshahi	197	198	Fortune Barishal	200	Fortune Barishal
2513	Fortune Barishal	197	198	Rangpur Riders	202	Rangpur Riders
2546	Chittagong Kings	194	195	Fortune Barishal	195	Fortune Barishal
2516	Dhaka Capital	193	194	Sylhet Strikers	195	Sylhet Strikers
2535	Khulna Tigers	187	188	Fortune Barishal	188	Fortune Barishal

1 - 6

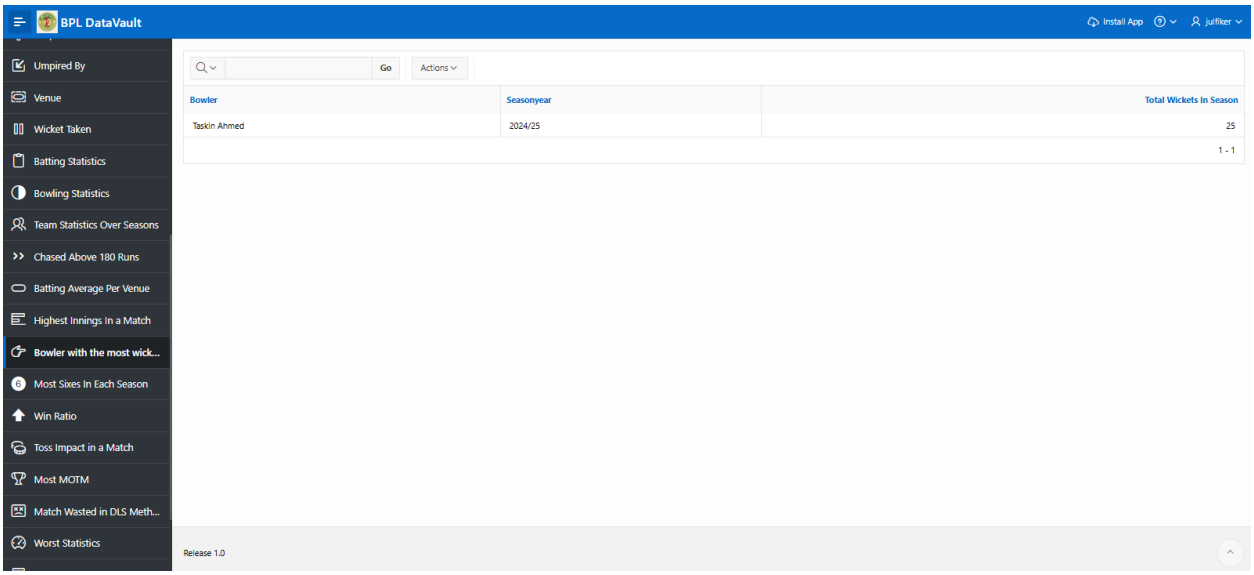
Page34: Batting average in each venue



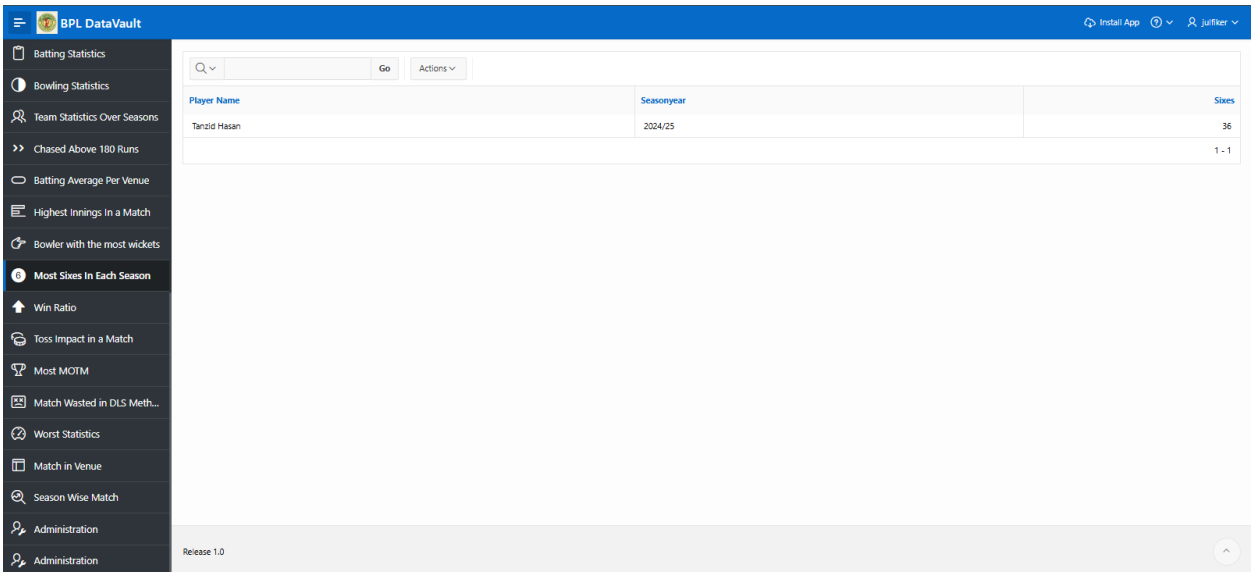
Page35: Top 5 Highest innings in a match



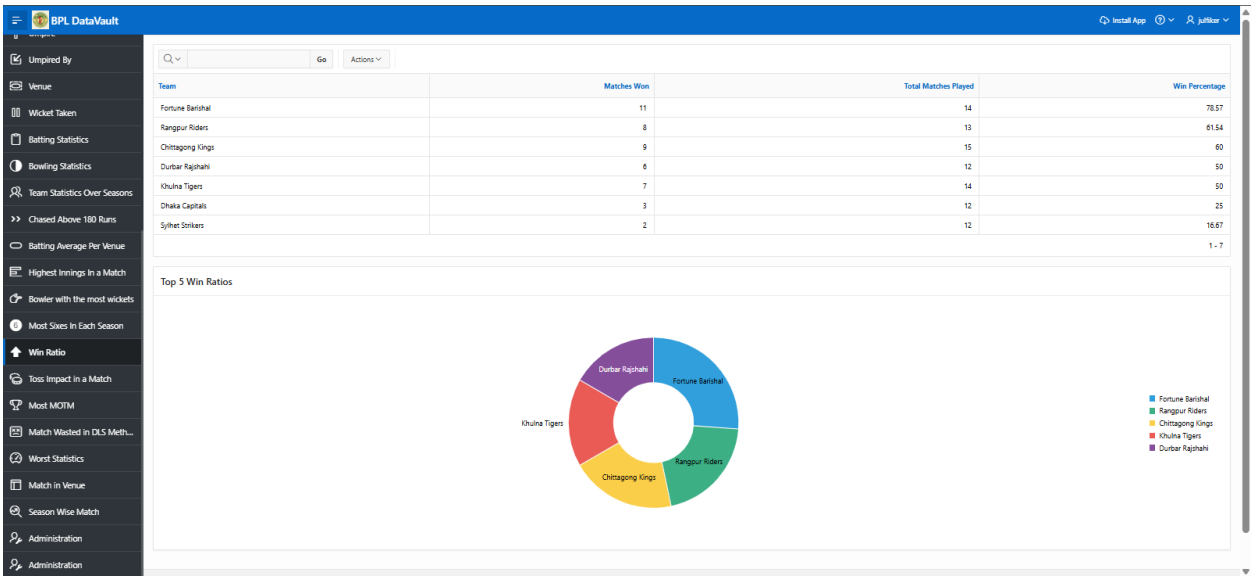
Page36: Bowler with most wickets



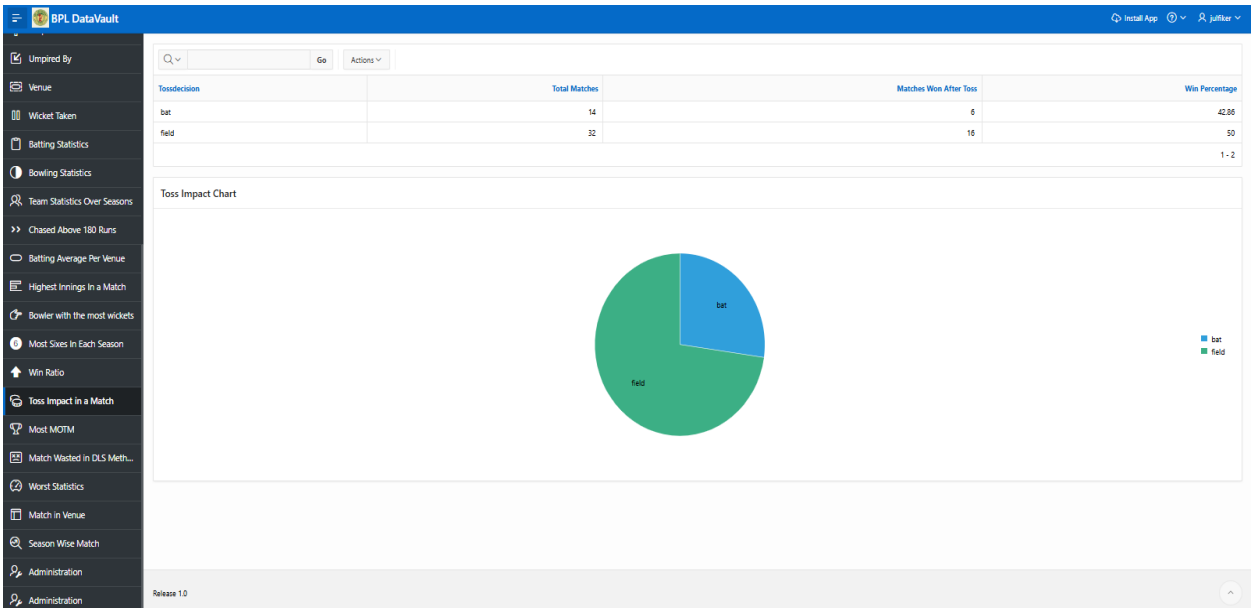
Page37: Most sixes hit by a player in each season



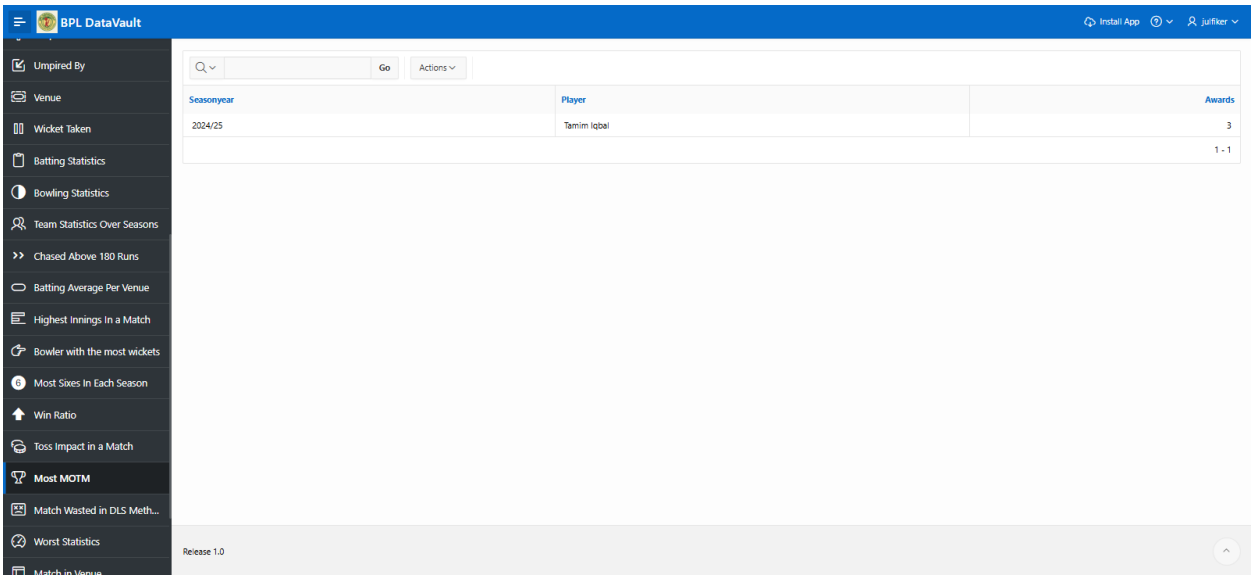
Page 38: Win ratio of all team



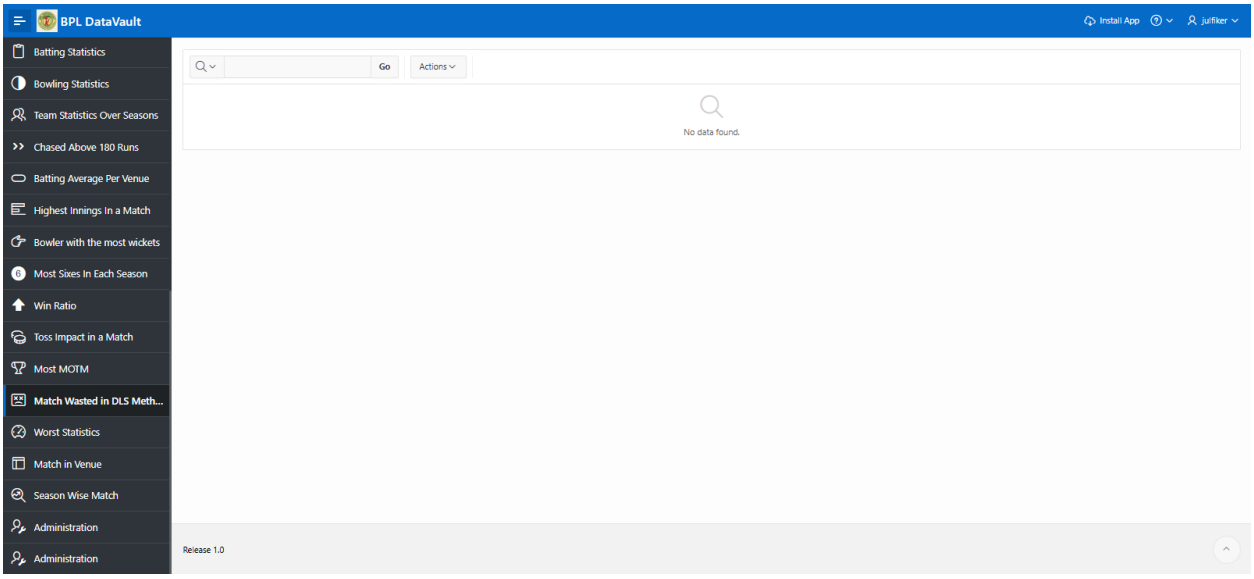
Page39: Toss Impact in a match



Page40: Most Man of the match award

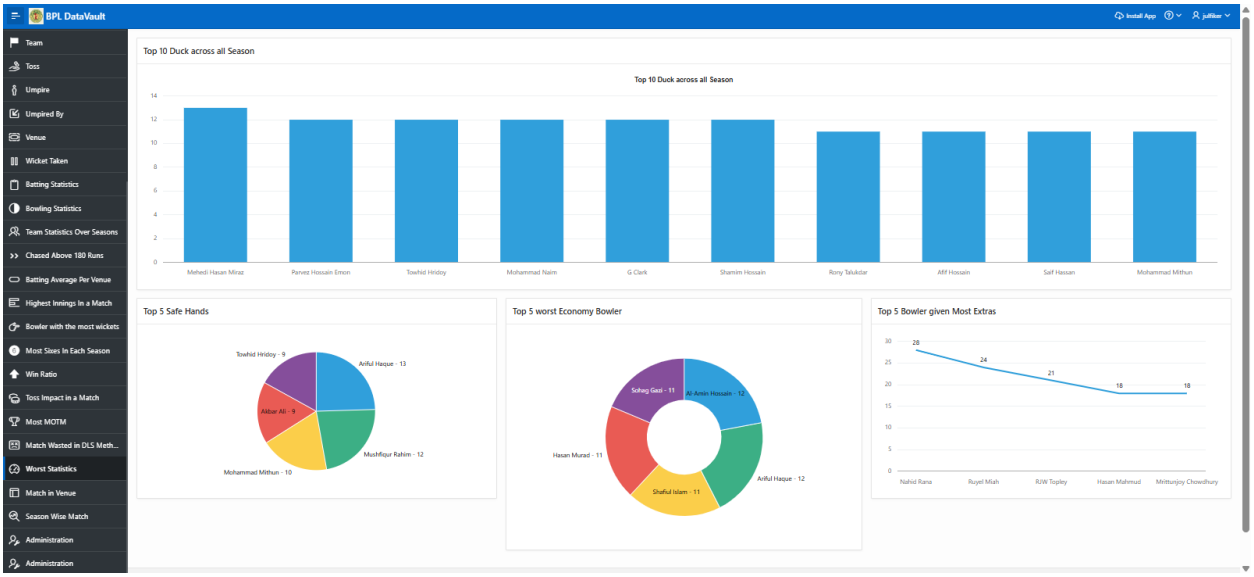


Page41: Matches which end up in D/L method



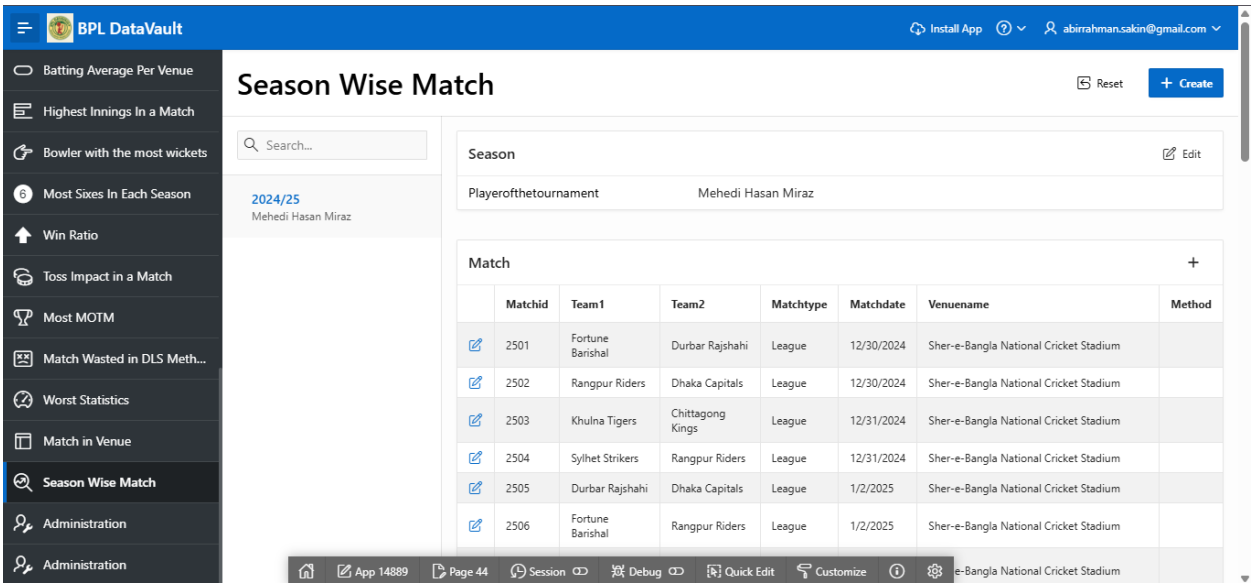
Page number & Charts	Chart description
42. Worst Statistics	Worst Records: Top10 Batters with most DUCKs Top 5 Safe hands Top 5 Bowlers with extra runs Top5 Bowlers with worst economy

Page42: Worst Records

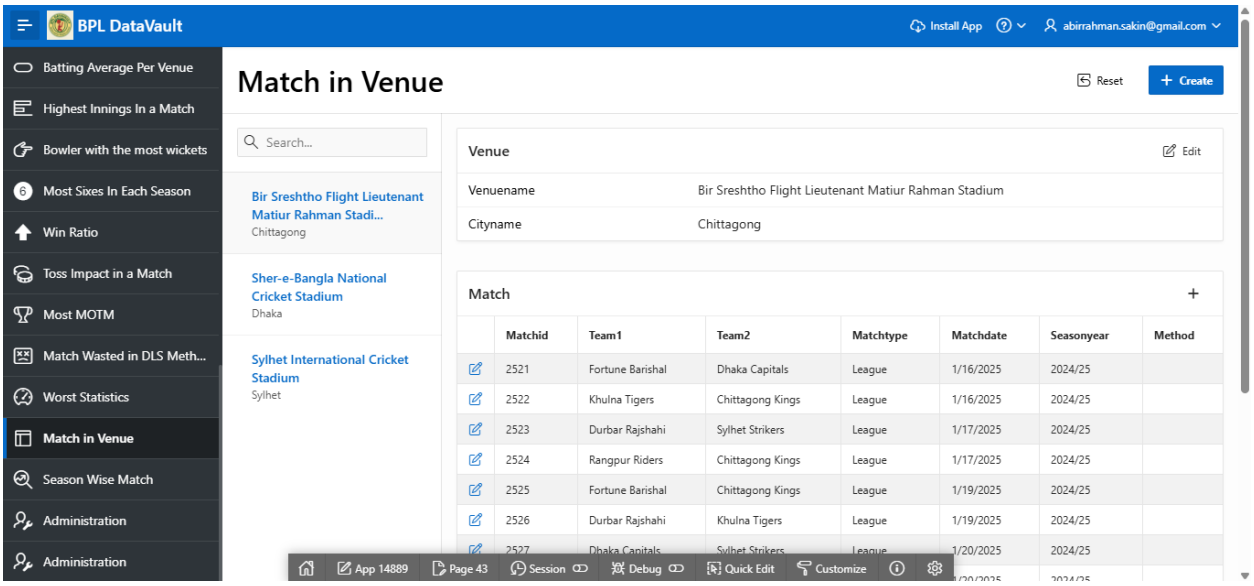


Page & Name	Master(Parent)	Details(Child)
43. Season wise Match	Season	Match
44. Match in Venue	Venue	Match

Page43: Season wise match details



Page 44: Match Statistics in all venues.



Authorization and User Role Assignment:

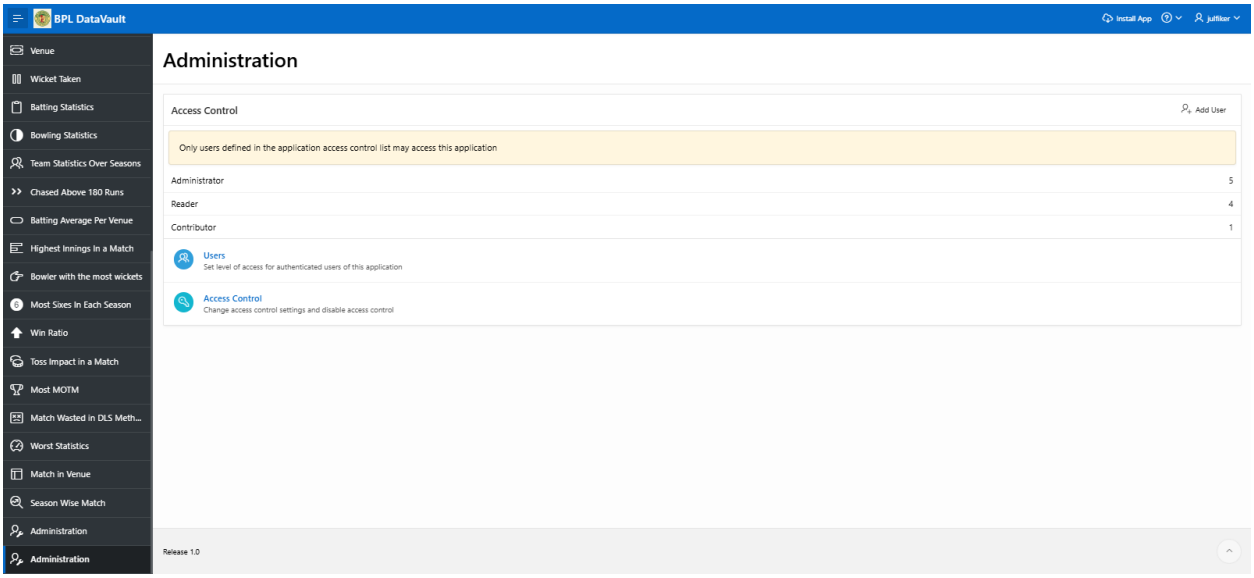
UserName	Password	Role
abirrahman.sakin@gmail.com	#spsakin@329	Administrator
sudeep	sheep	Administrator
julfiker	monkey	Administrator
sakin	lion	Administrator
rashed	rashed	Administrator
thor	loki	Contributor
messi	goat	Reader

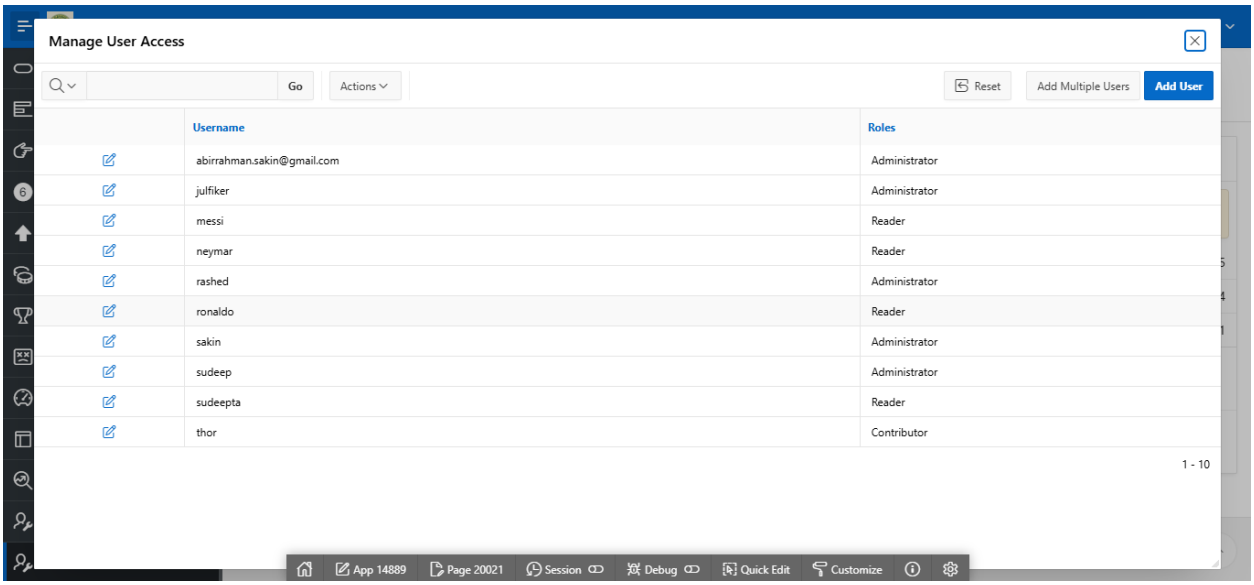
neymar	goat	Reader
ronaldo	goat	Reader

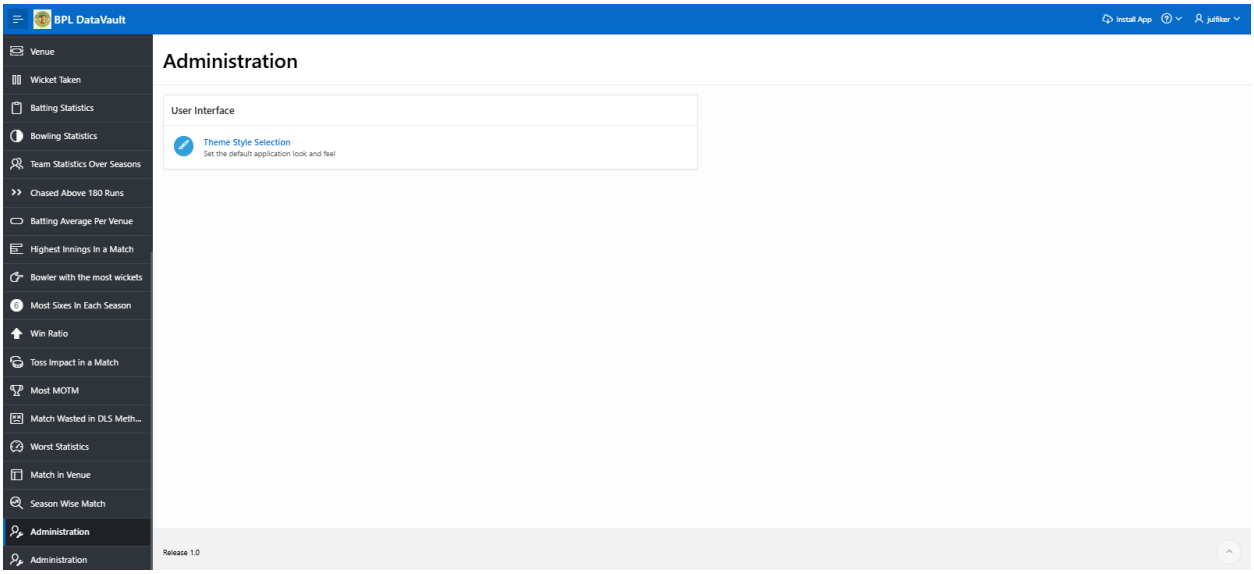
Page-wise Authorization Information

Page number and name	Authorization Level
10000	Administrator
All the pages (expect Create , Delete, Update & Save button)	Reader

Page:1000 [Administration Page]




Manage User Access
Go
Actions
Reset
Add Multiple Users
Add User
Username
Roles
abirrahman.sakin@gmail.com
Administrator
julfiker
Administrator
messi
Reader
neymar
Reader
rashed
Administrator
ronaldo
Reader
sakin
Administrator
sudeep
Administrator
sudeepta
Reader
thor
Contributor
1 - 10
App 14889
Page 20021
Session
Debug
Quick Edit
Customize


BPL DataVault
Install App
julfiker
Venue
Wicket Taken
Batting Statistics
Bowling Statistics
Team Statistics Over Seasons
Chased Above 180 Runs
Batting Average Per Venue
Highest Innings In a Match
Bowler with the most wickets
Most Sixes In Each Season
Win Ratio
Toss Impact in a Match
Most MOTM
Match Wasted in DLS Meth...
Worst Statistics
Match in Venue
Season Wise Match
Administration
Administration
Administration
User Interface
Theme Style Selection
Set the default application look and feel
Release 1.0

Conclusion:

This project was both a challenging and rewarding experience that pushed us to grow both technically and intellectually. It deepened our understanding of database management principles, from designing efficient schemas to writing complex queries and ensuring data integrity. Along the way, we encountered several obstacles that required critical thinking and creative problem-solving, which ultimately strengthened our analytical abilities. Beyond the technical aspects, this journey taught us the importance of patience, persistence, and continuous learning—skills that we will carry forward into future projects and professional endeavors.

The end