Chitkara University Institute of Engineering & Technology

CASE STUDY
OF
FOOTBALL LEAGUE MANAGEMENT
IN
RELATIONAL DATABASE DESIGN

CASE STUDY IN RELATIONAL DATABASE DESIGN

Football League Management Database

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ABSTRACT

The objective of this thesis is to manage the statistics of football league tournament in university. One case study “Football League Management” is presented. Input for this case study is taken from its informal specification to a relational schema using entity-relationship modelling and its translation to relational model, to database schema, to implementation of the database, to interactive SQL querying of the installed database (SQL/Oracle).

ACKNOWLEDGEMENTS

I would like to express my gratitude to all those who made it possible to complete this thesis, in particular to my super visor Mrs. Sarita Simaiya, I would also like to thank my family for their understanding and continuous support.

Chapter 1
Introduction

- **Database Management System**

  Database management systems are software which are used to store, retrieve and run queries on data or basically managing the data. For example: - MySQL, Oracle etc are very popular commercial database which is used in different applications. It provides an interface to perform various operations like database creation, storing data in it, updating data, creating a table in the database and lot more. It provides protection and security to the database and also maintains data consistency in the case of multiple users.

- **Relational Database Management System**

  A relational database management system (RDBMS) is a collection of programs and capabilities that enables the user and others to create, update, administer and otherwise interact with a relational database. RDBMS stores data in the form of tables, with most commercial relational database management systems using Structured Query Language (SQL) to access the database. The RDBMS is the most popular database system among organizations across the world. It provides a dependable method of storing and retrieving large amounts of data while offering a combination of system performance and ease of implementation.

- **ER Diagram**

  ER Diagram stands for Entity Relationship Diagram, also known as ERD is a diagram that displays the relationship of entity sets stored in a database. In other words, ER diagrams help to explain the logical structure of databases. ER diagrams are created based on three basic concepts: entities, attributes and relationships.ER Diagrams contain different symbols that use rectangles to represent entities, ovals to define attributes and diamond shapes to represent relationships. At first look, an ER diagram looks very similar to the flowchart. However, ER Diagram includes many specialized

symbols, and its meanings make this model unique. The purpose of ER Diagram is to represent the entity framework infrastructure.

Following are the main components and its symbols in ER Diagrams:

* Rectangles: This Entity Relationship Diagram symbol represents entity types.
* Ellipses: Symbol represent attributes.
* Diamonds: This symbol represents relationship types.
*Lines: It links attributes to entity types and entity types with other relationship types.
* Primary key: attributes are underlined.
* Double Ellipses: Represent multi-valued attributes.

ER Diagram Symbols:


: -- Entity


: -- Attribute


: -- Relationship


: -- Weak Entity


: -- Multivalued Attribute


: -- Weak Relationship

- **Brief introduction of Case Study**

This is a Football League Management System Database. It helps in managing the records of different seasons of different leagues of a Football Tournament. The database holds the data of previous seasons and leagues, as well as manages the ongoing league details also. Some of the tables in the league database are:

League: The league table manages the details of the league such as name, seasons, no. of teams, no. of matches etc. The league table manages the history of different seasons so that one can retrieve whatever data is needed.

Teams: This table holds the data of all the teams and their players along with the season and league they played and their number of goals.

Players: This table stores the details of the players and their positions.

Fixtures: The fixtures table holds the data of the ongoing football league and contains the details of results of all the matches.

Team Standings: This table manages the positions and the points of the playing teams of an ongoing league and it keeps getting updated after every match.

Player Standings: The totals no. of goals and assists scored by a player are stored in this table.

Season Winners: It holds the records of the winning teams of all the previous seasons of every league.

- **Objective of the Case Study**

1. Automation of the process of data handling during any football league tournament in university.
2. Management of day to day changing statistic of a Football tournament.
3. Increase in efficiency and decrease in the chance of anomaly in statistic management.
4. Easier and faster availability of information.

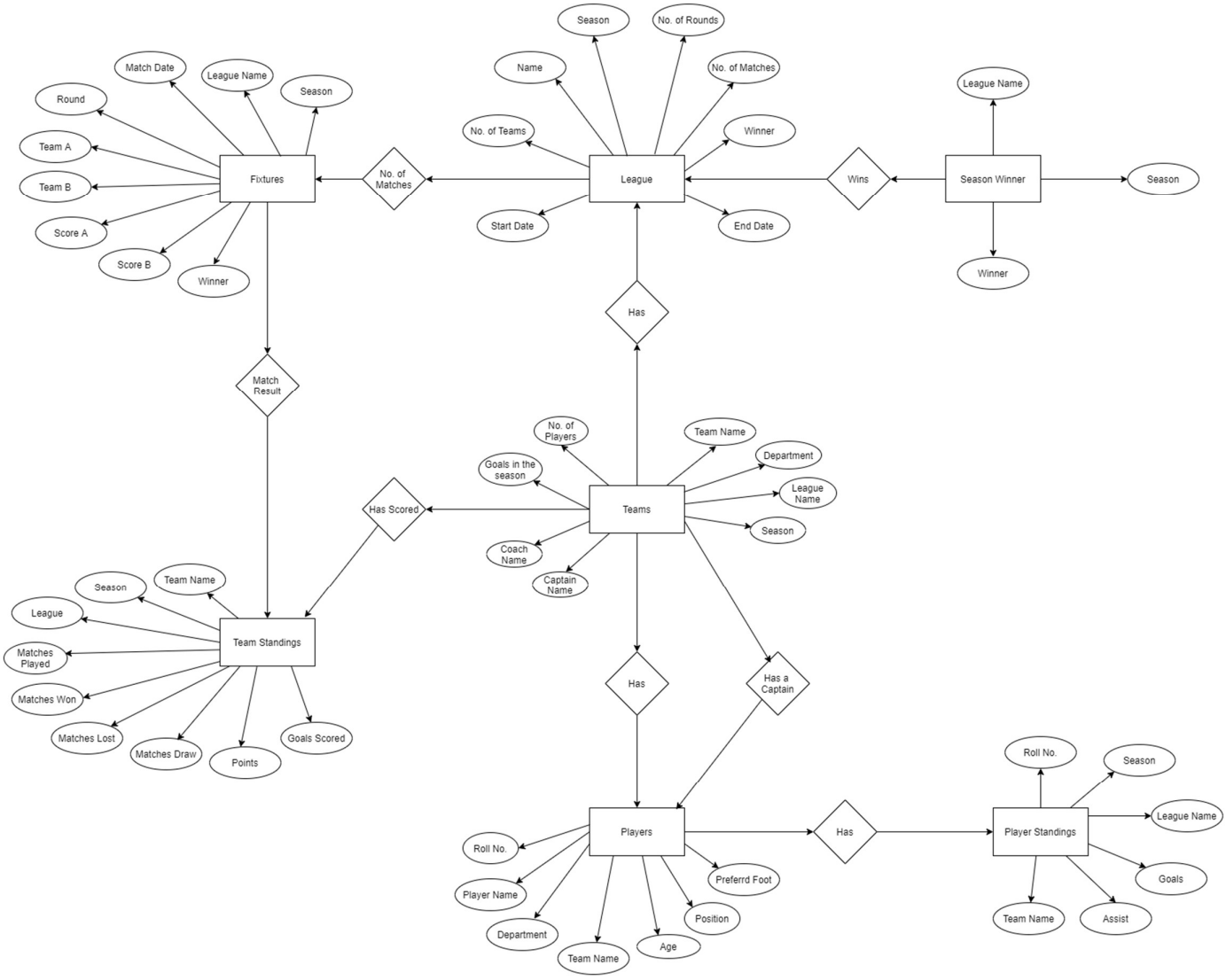
Chapter 2

Football League Management System

2.1 Case Study Informal Description

The Football League Management Database helps in managing the records and history of all the seasons of all the football leagues held in the college as well as maintains the record of an ongoing league. It has tables of fixtures, leagues, player details, team details etc. The player standings and team standings table show the records of an ongoing league and gets updated after every match. This database management system helps in easily managing the data without and data duplicacy and problem.

2.2 Case Study Logical Model



2.3 Case Study Physical Schema

TABLE FIXTURES

Column	Null?	Type
SEASON	NOT NULL	NUMBER
LEAGUE_NAME	NOT NULL	VARCHAR2(50)
MATCH_DATE	NOT NULL	DATE
ROUND	NOT NULL	NUMBER
TEAMA	NOT NULL	VARCHAR2(20)
TEAMB	NOT NULL	VARCHAR2(20)
SCORE_A	NOT NULL	NUMBER
SCORE_B	NOT NULL	NUMBER
WINNER	NOT NULL	VARCHAR2(20)

TABLE TEAM_STANDING

Column	Null?	Type
TEAM_NAME	NOT NULL	VARCHAR2(50)
LEAGUE_NAME	NOT NULL	VARCHAR2(20)
SEASON	NOT NULL	NUMBER
MATCHES_PLAYED	NOT NULL	NUMBER
WON	NOT NULL	NUMBER
DRAW	NOT NULL	NUMBER
LOST	NOT NULL	NUMBER
POINTS	NOT NULL	NUMBER
GOALS_SCORED	NOT NULL	NUMBER

TABLE LEAGUE

Column	Null?	Type
LEAGUE_NAME	NOT NULL	VARCHAR2(50)
SEASON	NOT NULL	NUMBER
NO_OF_TEAMS	NOT NULL	NUMBER
START_DATE	NOT NULL	DATE
END_DATE	NOT NULL	DATE
TOTAL_MATCHES	NOT NULL	NUMBER
TOTAL_ROUNDS	NOT NULL	NUMBER

TABLE PLAYERS

Column	Null?	Type
ROLL_NO	NOT NULL	VARCHAR2(10)
PLAYER_NAME	NOT NULL	VARCHAR2(20)
DEPT	NOT NULL	VARCHAR2(20)
TEAM_NAME	NOT NULL	VARCHAR2(20)
AGE	NOT NULL	NUMBER
POS	NOT NULL	VARCHAR2(10)
FOOT	NOT NULL	VARCHAR2(5)

TABLE SEASON_WINNER

Column	Null?	Type
LEAGUE_NAME	NOT NULL	VARCHAR2(20)
SEASON	NOT NULL	NUMBER
WINNER	NOT NULL	VARCHAR2(20)

TABLE TEAMS

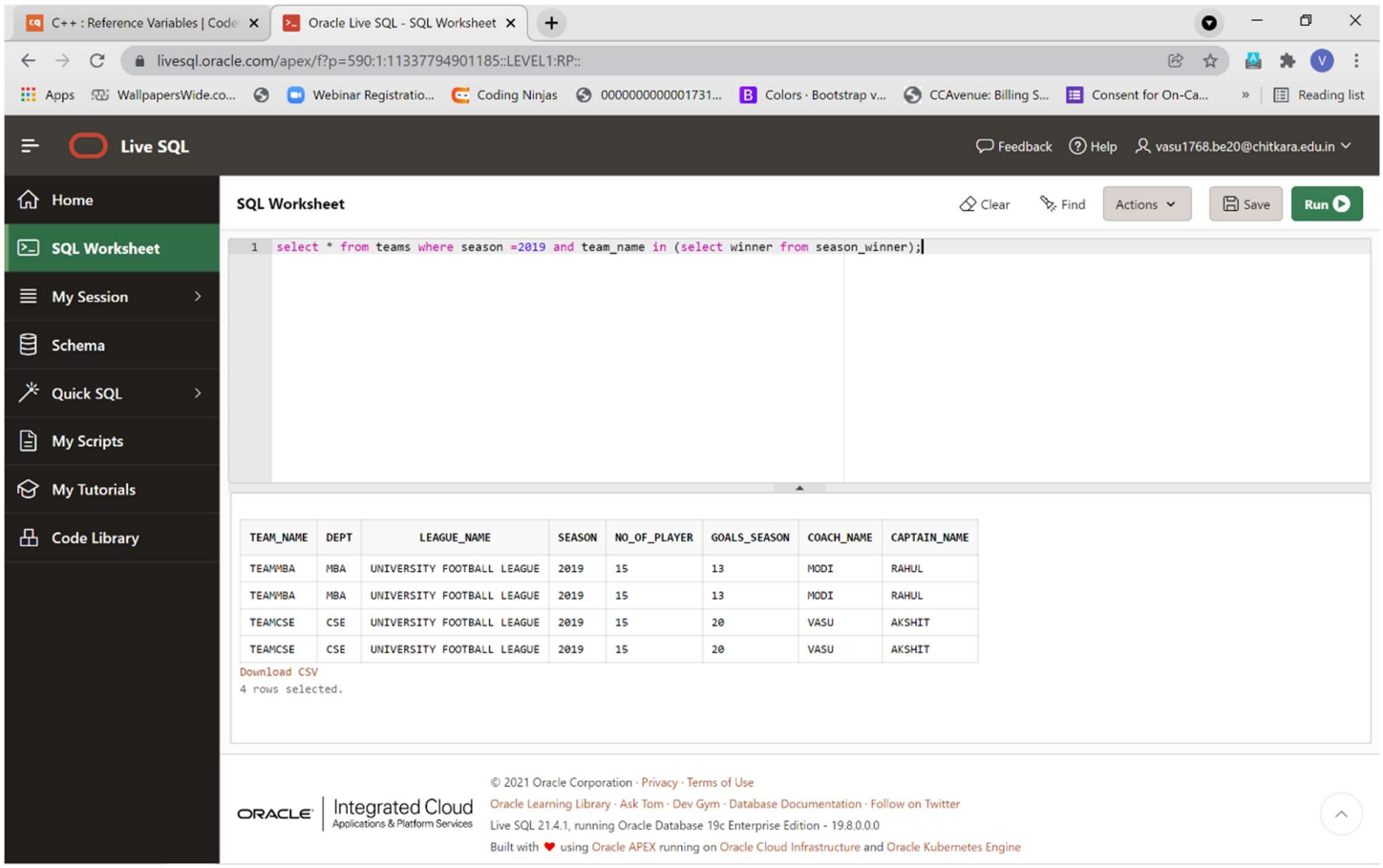
Column	Null?	Type
TEAM_NAME	NOT NULL	VARCHAR2(50)
DEPT	NOT NULL	VARCHAR2(20)
LEAGUE_NAME	NOT NULL	VARCHAR2(20)
SEASON	NOT NULL	NUMBER
NO_OF_PLAYER	NOT NULL	NUMBER
GOALS_SEASON	NOT NULL	NUMBER
COACH_NAME	NOT NULL	VARCHAR2(20)
CAPTAIN_NAME	NOT NULL	VARCHAR2(20)

TABLE PLAYER_STANDING

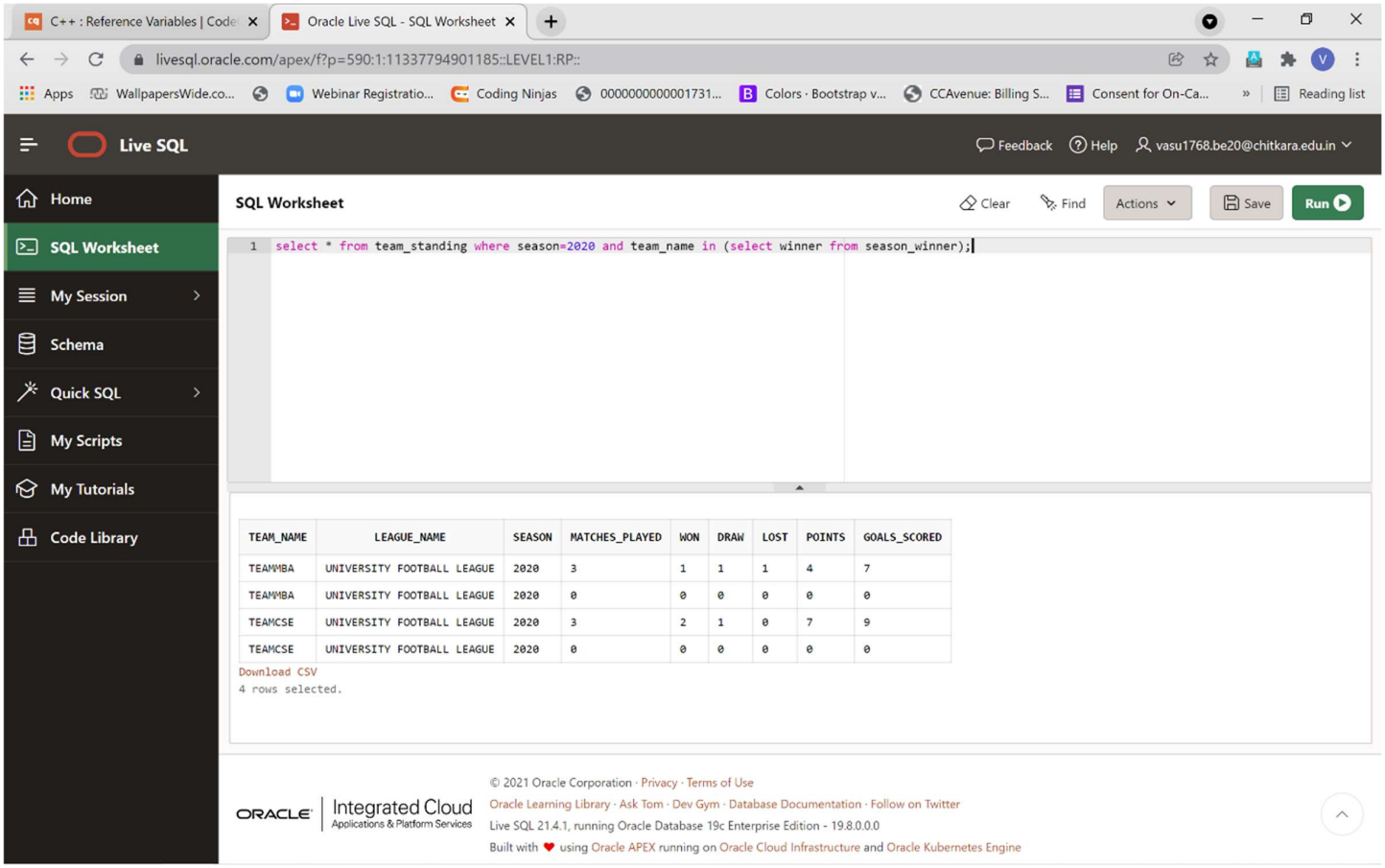
Column	Null?	Type
ROLL_NO	-	VARCHAR2(20)
SEASON	NOT NULL	NUMBER
LEAGUE_NAME	NOT NULL	VARCHAR2(20)
GOALS	NOT NULL	NUMBER
ASSIST	NOT NULL	NUMBER
TEAM_NAME	NOT NULL	VARCHAR2(20)

2.4 Case Study Interactive Queries and Output Screenshots

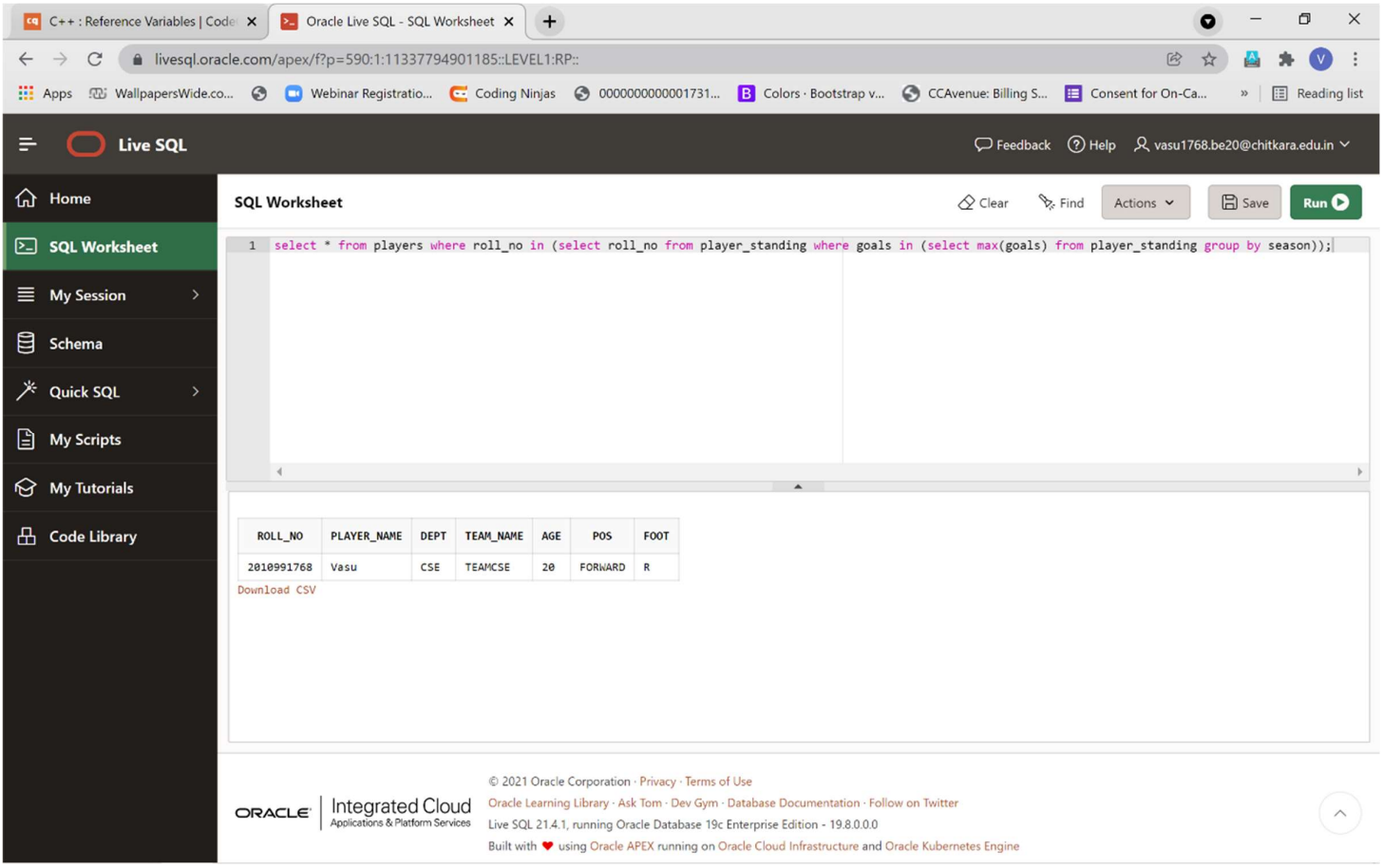
Q1. List the stats of the previous season winners in the season 2019.



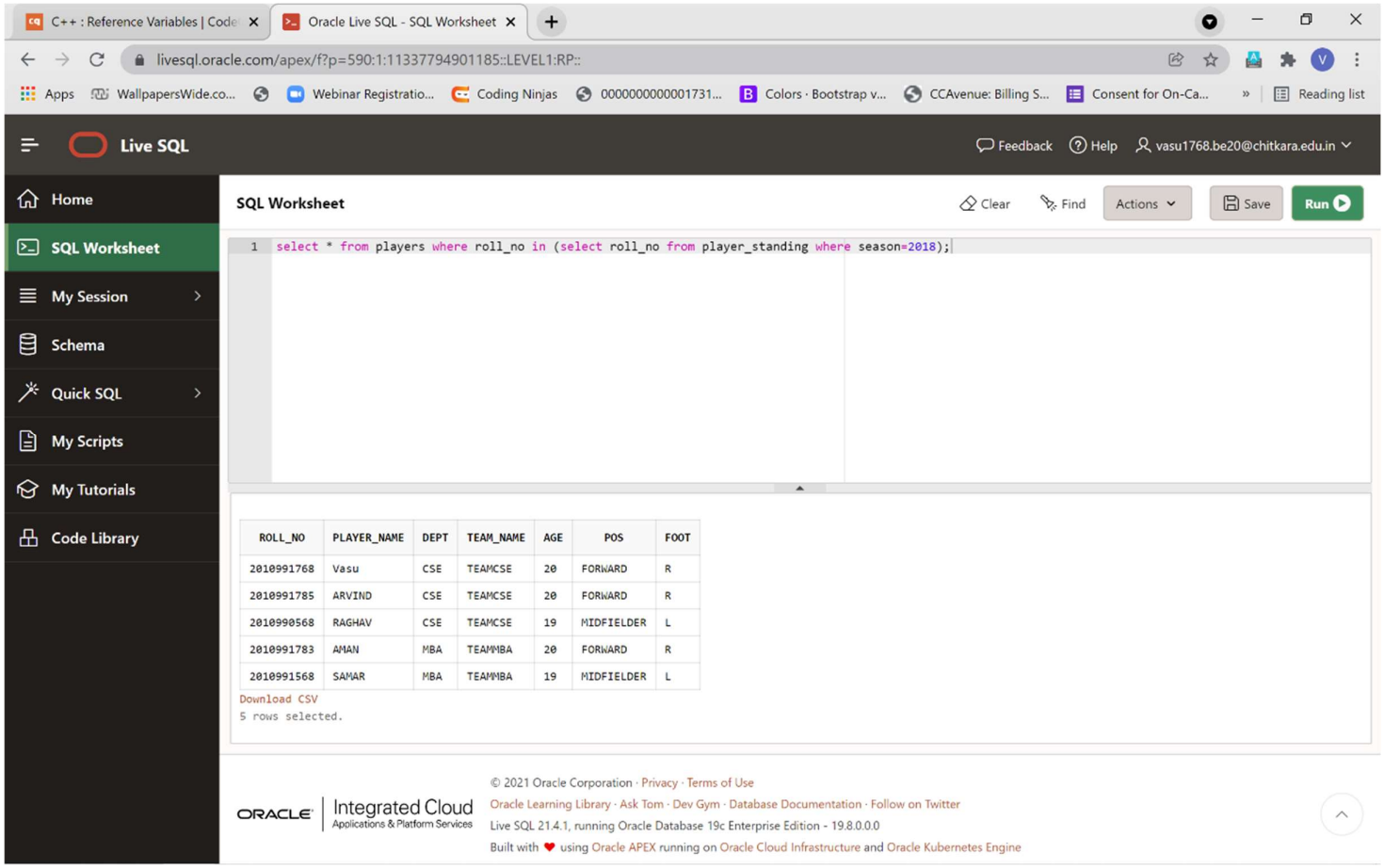
Q2. List the team standing of previous season winners in the season 2020.



Q3. List the stats of top scorer players of previous seasons.



Q4. List the details of players who scored in season 2018.



Chapter 3

Conclusion

To conclude the description about the project. The project, developed using Oracle and MySQL is based on the requirement specification of the user and the analysis of the existing system, with flexibility for future enhancement. this project automates the process of data handling during any football league tournament. To manage day to day changing stats of a sports tournament, database systems like this are of greater scope in coming future. Such programs increase efficiency and decreases the chance of anomaly in data management, also the updating of information becomes so easier.

This kind of management systems makes availability of any kind of Information,

a task of seconds and provides accurate information. Data integrity and data security and reliability are the striking features for such management systems. It provides friendly GUI , which proves to be better when compared to existing system.

Bibliography

www.draw.io

www.codequotient.com

www.geeksforgeeks.com

Oracle SQL Live

Database System Concepts 6th edition By Henry F Korth,

Abraham Silberschatz , S Sudharshan.