University of British Columbia, Vancouver
Department of Computer Science

CPSC 304 Project Cover Page

Milestone #: 2

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Group Number: 139

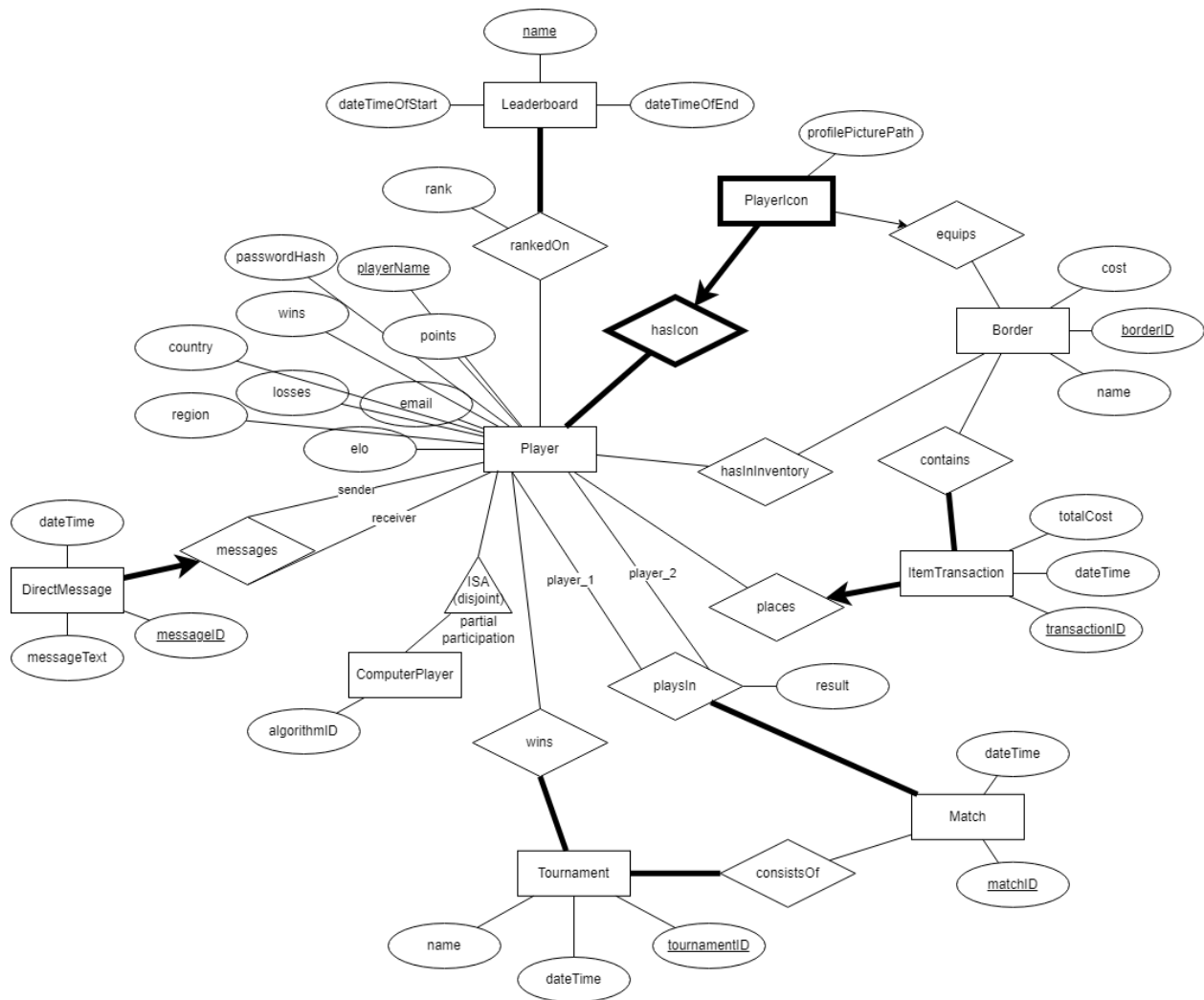| Name	Student Number	CS Alias (Userid)	Preferred E-mail Address
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By typing our names and student numbers in the above table, we certify that the work in the attached assignment was performed solely by those whose names and student IDs are included above. (In the case of Project Milestone 0, the main purpose of this page is for you to let us know your e-mail address, and then let us assign you to a TA for your project supervisor.)

In addition, we indicate that we are fully aware of the rules and consequences of plagiarism, as set forth by the Department of Computer Science and the University of British Columbia

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Summary

A multiplayer competitive rock-paper-scissors website, tracking user data, match history, ranked leaderboard, while supporting direct messages between players, as well as a simple store for in-game items.

ER Diagram

Fix from Milestone 1:

- ISA relationship is fixed as we were missing the necessary constraints

Changes from Milestone 1:

- separate date and time attributes have been merged into dateTime to use the DATE or TIMESTAMP data types within oracledb
- Leaderboard entity attributes changed from {season, year, date, time} to {name, dateTimeOfStart, dateTimeOfEnd}
    - merging date and time to dateTime makes season, year no longer a *minimal* key as we would have the FD dateTime -> season, year
    - having both year and dateTime is redundant and the normalization required isn't very interesting nor useful
- additional attributes country and region are added to Player in order to introduce functional dependencies and have a meaningful normalization process
    - country is often displayed on a user profile in other applications in the domain of online gaming (ie. Magnus Carlsen is listed under Norway on chess.com)
    - region is one of North America, Europe, Asia, Oceania, etc
    - adding these attributes introduces insertion, update and deletion anomalies to be solved through normalization

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Schema and Functional Dependencies

1. Player(<u>playerName</u>: VARCHAR PRIMARY KEY, email: VARCHAR NOT NULL UNIQUE, passwordHash: CHAR(64) NOT NULL, country: VARCHAR, region: VARCHAR, wins: INT NOT NULL, losses: INT NOT NULL, points: INT NOT NULL, elo: INT NOT NULL)
   - candidate key: (email)
   - functional dependencies:
     - playerName -> email, passwordHash, country, region, wins, losses, points, elo
     - email -> playerName, passwordHash, country, region, wins, losses, points, elo
     - country -> region
   - other constraints:
     - wins, losses, points, elo >= 0

2. ComputerPlayer(<u>playerName</u>: VARCHAR PRIMARY KEY, email: VARCHAR, passwordHash: CHAR(64), country: VARCHAR, region: VARCHAR, wins: INT NOT NULL, losses: INT NOT NULL, points: INT NOT NULL, elo: INT NOT NULL, algorithmID: INT NOT NULL)
   - functional dependencies:
     - playerName -> email, passwordHash, country, region, wins, losses, points, elo
     - email -> playerName, passwordHash, country, region, wins, losses, points, elo
     - country -> region
   - other constraints:
     - wins, losses, points, elo >= 0

3. Match(<u>matchID</u>: CHAR(8) PRIMARY KEY, dateTime: DATE NOT NULL)
   - functional dependencies:
     - matchID -> dateTime

4. Tournament(<u>tournamentID</u>: CHAR(8) PRIMARY KEY, dateTIME: DATE NOT NULL, name: VARCHAR NOT NULL)
   a. functional dependencies:
      i. tournamentID -> name, dateTime
      ii. name, dateTime -> tournamentID

5. Leaderboard (<u>leaderboardName</u>: VARCHAR PRIMARY KEY, dateTimeOfStart: DATE NOT NULL, dateTimeOfEnd: DATE NOT NULL)
   a. functional dependencies:
      i. leaderboardName -> dateTimeOfStart, dateTimeOfEnd

6. Border(<u>borderID</u>: CHAR(8) PRIMARY KEY, cost: INT NOT NULL, name: VARCHAR NOT NULL UNIQUE)
   - candidate key: (name)
   - functional dependencies:
     - borderID -> cost, name
     - name -> cost, borderID
   - additional constraints:
     - cost >= 0

7. PlayerMessagesDirectMessage (<u>messageID</u>: CHAR(8) PRIMARY KEY, **playerName1**: VARCHAR NOT NULL, **playerName2**: VARCHAR NOT NULL, messageText: VARCHAR NOT NULL, dateTime: DATE NOT NULL)
   a. foreign keys: (playerName1), (playerName2)
   b. Functional dependencies:
      i. messageID -> playerName1, playerName2, messageText, dateTime
   c. other constraints:
      i. playerName1 != playerName2

8. PlayersPlayInMatch(playerName1: VARCHAR, playerName2: VARCHAR, <u>matchID</u>: CHAR(8) PRIMARY KEY, result: INT NOT NULL)
   - foreign keys: (playerName1), (playerName2), (matchID)
   - functional dependencies:
     - matchID -> playerName1, playerName2
   - other constraints:
     - playerName1 != playerName2

9. TournamentConsistsOfMatch (**<u>tournamentID</u>**: CHAR(8), **<u>matchID</u>**: CHAR(8))
   a. primary key: (tournamentID, matchID)
   b. foreign keys: (tournamentID), (matchID)

10. PlayerWinsTournament (<u>tournamentID</u>: CHAR(8), <u>playerName</u>: VARCHAR)
    a. primary key: (playerName, tournamentID)
    b. foreign keys: (playerName), (tournamentID)

11. PlayerRankedOnLeaderboard (**<u>playerName</u>**: VARCHAR, **<u>leaderboardName</u>**: VARCHAR, rank: INT NOT NULL)
    a. primary key: (playerName, leaderboardName)
    b. foreign keys: (playerName), (leaderboardName)
    c. Functional dependencies:
       i. leaderboardName, playerName -> rank
       ii. leaderboardName, rank -> playerName
    d. other constraints:
       i. rank >= 1

12. HasInInventory(<u>playerName</u>: VARCHAR, <u>borderID</u>: CHAR(8))
    - primary key: (playerName, borderID)
    - foreign keys: (playerName), (borderID)

13. ItemTransactionContainsBorder (<u>borderID</u>: CHAR(8), <u>transactionID</u>: CHAR(8)
    a. primary key: (borderID, transactionID)
    b. foreign keys: (borderID), (transactionID)

14. Places_ItemTransaction(<u>transactionID</u>: CHAR(8) PRIMARY KEY, totalCost: INT NOT NULL, dateTime: DATE NOT NULL, **playerName**: VARCHAR)
    a. foreign key: playerName
    b. functional dependencies:
        i. transactionID -> dateTime, totalCost, playerName
    - other constraints:
        - total cost >= 0

15. PlayerIcon(playerName: VARCHAR PRIMARY KEY, profilePicPath: VARCHAR NOT NULL, borderID: CHAR(8))
    - functional dependencies:
        - playerName -> profilePicPath, borderID
    - foreign keys: (playerName), (borderID)

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Normalization

The table Player is not in BCNF or 3NF and must be normalized.

Player(playerName: VARCHAR, email: VARCHAR, passwordHash: CHAR(64), country: VARCHAR, region: VARCHAR, wins: INT, losses: INT, points: INT, elo: INT)

- primary key: (playerName)
- candidate key: (email)
- functional dependencies:
    - playerName -> email, passwordHash, country, region, wins, losses, points, elo
    - email -> playerName, passwordHash, country, region, wins, losses, points, elo
    - country -> region

Decompose on FD country -> region

    R1(playerName, email, passwordHash, **country**, wins, losses, points, elo)

    R2(country, region)

Both relations are now in BCNF. PK is underlined, FK is bolded, for each relation. Thus we have:

Player(playerName: VARCHAR PRIMARY KEY, email: VARCHAR UNIQUE, passwordHash: CHAR(64) NOT NULL, **country**: VARCHAR, wins: INT NOT NULL, losses: INT NOT NULL, points: INT NOT NULL, elo: INT NOT NULL)

- candidate key: (email)
- foreign key: (country)
- functional dependencies:
    - playerName -> email, passwordHash, country, wins, losses, points, elo
    - email -> playerName, passwordHash, country, wins, losses, points, elo
- other constraints:
    - wins, losses, points, elo >= 0

CountryRegion(country: VARCHAR PRIMARY KEY, region: VARCHAR)

- functional dependencies:
    - country -> region
- constraints:
    - region is NOT NULL

From the new Player table, we will also have a new ComputerPlayer table:

ComputerPlayer(playerName: VARCHAR PRIMARY KEY, email: VARCHAR, passwordHash: CHAR(64), country: VARCHAR, region: VARCHAR, wins: INT NOT NULL, losses: INT NOT NULL, points: INT NOT NULL, elo: INT NOT NULL, algorithmID: INT NOT NULL)

- functional dependencies:
    - playerName -> email, passwordHash, country, region, wins, losses, points, elo
    - email -> playerName, passwordHash, country, region, wins, losses, points, elo
    - country -> region
- constraints:
    - wins, losses, points, elo >= 0 and NOT NULL

All other tables are in BCNF or 3NF

SQL DDL and INSERT Statements

*Note: many constraints requiring assertions such as total participation or an int requiring a CHECK(>=0) will be implemented at a later milestone when it is covered in lecture (@205 on PIazza)

1 CountryRegion, Player

```
CREATE TABLE CountryRegion(
    country VARCHAR(90) PRIMARY KEY,
    region VARCHAR(32) NOT NULL
);

INSERT INTO CountryRegion(country, region)
VALUES ('England', 'Europe');

INSERT INTO CountryRegion(country, region)
VALUES ('Korea', 'Asia');

INSERT INTO CountryRegion(country, region)
VALUES ('France', 'Europe');

INSERT INTO CountryRegion(country, region)
VALUES ('Germany', 'Europe');

INSERT INTO CountryRegion(country, region)
VALUES ('Canada', 'North America');

CREATE TABLE Player(
    playerName VARCHAR(32) PRIMARY KEY,
    email VARCHAR(320) NOT NULL UNIQUE,
    passwordHash CHAR(64) NOT NULL,
    country VARCHAR(90),
    wins INT DEFAULT 0 NOT NULL,
    losses INT DEFAULT 0 NOT NULL,
    points INT DEFAULT 0 NOT NULL,
    elo INT DEFAULT 1500 NOT NULL,
    FOREIGN KEY (country)
        REFERENCES CountryRegion(country)
        ON DELETE SET NULL
);
```
(should be ON UPDATE CASCADE but Oracle does not support it)

```
INSERT INTO Player(playerName, email, passwordHash, country, wins, losses, points, elo)
VALUES ('Harry Potter', 'roonilwazlib@hogwarts.edu',
'401357cf18542b4117ca59800657b64cce2a36d8ad4c56b6102a1e0b03049e97', 'England', 42,
42, 3742, 1579);

INSERT INTO Player(playerName, email, passwordHash, country, wins, losses, points, elo)
VALUES ('Ronald Weasley', 'lavenderxoxo@hogwarts.edu',
'5986b6102a1e0b03049e9700657b64cce2a36d8ad4c5401357cf18542b4117ca', 'England', 97,
0, 6978, 3197);

INSERT INTO Player(playerName, email, passwordHash, country, wins, losses, points, elo)
VALUES ('Hermione Granger', 'hermionegranger@hogwarts.edu',
'a59800657b64cce2a36d8a401357cf18542b4117cd4c56b63049e97102a1e0b0', 'England', 37,
55, 2555, 1442);

INSERT INTO Player(playerName, email, passwordHash, country, wins, losses, points, elo)
VALUES ('Neville Longbottom', 'mimbulusmimbletonia@hogwarts.edu',
'f18542b41401357c17ca5a1e0b03049e979800657b64cce2a36d8ad4c56b6102', 'England', 65,
34, 4323, 1978);

INSERT INTO Player(playerName, email, passwordHash, country, wins, losses, points, elo)
VALUES ('Severus Snape', 'thehalfbloodprince@hogwarts.edu',
'ca59856b6102a1e0b03049e9700657b64cce2a36d8ad4401357cf18542b4117c', 'England', 75,
17, 5946, 2678);

INSERT INTO Player(playerName, email, passwordHash, country, wins, losses, points, elo)
VALUES ('Magnus Carlsen', 'mc@norwegianemail.com',
'b03049e9700657b64cce2a36856b6102a1e04117cd8ad4401357cf18542bca59', NULL, 1000, 0,
9001, 9001);
```

2 ComputerPlayer

```
CREATE TABLE ComputerPlayer(
    playerName VARCHAR(32) PRIMARY KEY,
    email VARCHAR(320),
    passwordHash CHAR(64),
    country VARCHAR(90),
    wins INT DEFAULT 0 NOT NULL,
    losses INT DEFAULT 0 NOT NULL,
    points INT DEFAULT 0 NOT NULL,
    elo INT DEFAULT 1500 NOT NULL,
```

```
    algorithmID INT NOT NULL,
    FOREIGN KEY (country)
        REFERENCES CountryRegion(country)
        ON DELETE SET NULL
);
```
(should be ON UPDATE CASCADE but Oracle does not support it)

```
INSERT INTO ComputerPlayer(playerName, email, passwordHash, country, wins, losses,
points, elo, algorithmID)
VALUES ('Sophon', 'katana@threebody.net',
'2b4117ca598006401357cf185457b64cce2a36d8ad4c52a1e0b03049e976b610', 'Trisolaris',
3, 0, 30, 1619, 3001);
```

```
INSERT INTO ComputerPlayer(playerName, email, passwordHash, country, wins, losses,
points, elo, algorithmID)
VALUES ('Hal 9000', '2001@aspaceodyssey.com',
'2b4117ca598006401357cf185457b64cce2a36d8ad4c52a1e0b03049e976b610', 'England',
12, 1, 10, 1515, 9000);
```

```
INSERT INTO ComputerPlayer(playerName, email, passwordHash, country, wins, losses,
points, elo, algorithmID)
VALUES ('Skynet', 'capitalism@thepentagon.com',
'2b4117ca598006401357cf185457b64cce2a36d8ad4c52a1e0b03049e976b610', 'Murrica',
0, 99, 0, 50, 4733);
```

```
INSERT INTO ComputerPlayer(playerName, email, passwordHash, country, wins, losses,
points, elo, algorithmID)
VALUES ('Rock Solid', NULL, NULL, NULL, 3, 9, 10, 1515, 0);
```

```
INSERT INTO ComputerPlayer(playerName, email, passwordHash, country, wins, losses,
points, elo, algorithmID)
VALUES ('Paper Thin', NULL, NULL, NULL, 3, 9, 10, 1515, 1);
```

```
INSERT INTO ComputerPlayer(playerName, email, passwordHash, country, wins, losses,
points, elo, algorithmID)
VALUES ('Snip Snip', NULL, NULL, NULL, 3, 9, 10, 1515, 2);
```

3 Match

```
CREATE TABLE Match(
    matchID CHAR(8) PRIMARY KEY,
    dateTime DATE
);

INSERT INTO Match(matchID, dateTime)
VALUES ('DjUfi8H7', TO_DATE('1995-02-13 11:42:37', 'YYYY-MM-DD HH24:MI:SS'));

INSERT INTO Match(matchID, dateTime)
VALUES ('J8Kff3Ia', TO_DATE('1995-02-18 12:31:23', 'YYYY-MM-DD HH24:MI:SS'));

INSERT INTO Match(matchID, dateTime)
VALUES ('I8HNDb6A', TO_DATE('1995-01-03 09:12:12', 'YYYY-MM-DD HH24:MI:SS'));

INSERT INTO Match(matchID, dateTime)
VALUES ('Ji9Ohb6F', TO_DATE('1995-01-23 18:24:23', 'YYYY-MM-DD HH24:MI:SS'));

INSERT INTO Match(matchID, dateTime)
VALUES ('8Ju7j7ad', TO_DATE('1995-01-13 17:12:43', 'YYYY-MM-DD HH24:MI:SS'));
```

4 Tournament

```
CREATE TABLE Tournament(
tournamentID CHAR(8) PRIMARY KEY,
dateTime DATE,
name VARCHAR(320) NOT NULL
);

INSERT INTO Tournament(tournamentID, dateTime, name)
VALUES('100', TO_DATE('1995-01-03 09:12:12', 'YYYY-MM-DD HH24:MI:SS'), 'Spring Qualifiers');

INSERT INTO Tournament(tournamentID, dateTime, name)
VALUES('159', TO_DATE('1996-02-03 10:12:12', 'YYYY-MM-DD HH24:MI:SS'), 'Fall Qualifiers');

INSERT INTO Tournament(tournamentID, dateTime, name)
VALUES('20008', TO_DATE('1999-04-06 10:12:12', 'YYYY-MM-DD HH24:MI:SS'), 'Mid-Season
Invitational');
```

```
INSERT INTO Tournament(tournamentID, dateTime, name)
VALUES('11111111', TO_DATE('2010-04-06 10:12:12', 'YYYY-MM-DD HH24:MI:SS'), 'Summer
Qualifiers');

INSERT INTO Tournament(tournamentID, dateTime, name)
VALUES('1A2B3C4D', TO_DATE('2020-03-05 10:12:12', 'YYYY-MM-DD HH24:MI:SS'), 'World
Championship');
```

5 Leaderboard

```
CREATE TABLE Leaderboard(

  leaderboardName VARCHAR(32) PRIMARY KEY,

  dateTimeOfStart DATE,

  dateTimeOfEnd DATE

);

INSERT INTO Leaderboard(leaderboardName, dateTimeOfStart, dateTimeOfEnd)

VALUES('2023Fall', TO_DATE('2023-09-01 00:00:00', 'YYYY-MM-DD HH24:MI:SS'),
TO_DATE('2023-11-30 23:59:59', 'YYYY-MM-DD HH24:MI:SS'));

INSERT INTO Leaderboard(leaderboardName, dateTimeOfStart, dateTimeOfEnd)

VALUES('2023Summer', TO_DATE('2023-06-01 00:00:00', 'YYYY-MM-DD HH24:MI:SS'),
TO_DATE('2023-08-31 23:59:59', 'YYYY-MM-DD HH24:MI:SS'));

INSERT INTO Leaderboard(leaderboardName, dateTimeOfStart, dateTimeOfEnd)

VALUES('2023Spring', TO_DATE('2023-03-01 00:00:00', 'YYYY-MM-DD HH24:MI:SS'),
TO_DATE('2023-05-31 23:59:59', 'YYYY-MM-DD HH24:MI:SS'));

INSERT INTO Leaderboard(leaderboardName, dateTimeOfStart, dateTimeOfEnd)

VALUES('2022Winter', TO_DATE('2022-12-01 00:00:00', 'YYYY-MM-DD HH24:MI:SS'),
TO_DATE('2023-02-28 23:59:59', 'YYYY-MM-DD HH24:MI:SS'));

INSERT INTO Leaderboard(leaderboardName, dateTimeOfStart, dateTimeOfEnd)
```

```
VALUES('2022Fall', TO_DATE('2022-09-01 00:00:00', 'YYYY-MM-DD HH24:MI:SS'),
TO_DATE('2022-11-30 23:59:59', 'YYYY-MM-DD HH24:MI:SS'));
```

6 Border

```
CREATE TABLE Border(
    borderID CHAR(8) PRIMARY KEY,
    cost INT NOT NULL,
    name VARCHAR(32) NOT NULL UNIQUE
);

INSERT INTO Border(borderID, cost, name)
VALUES ('A2C4E6G8', 500, 'Tears of Autumn');

INSERT INTO Border(borderID, cost, name)
VALUES ('E6G8A2C4', 500, 'Winter Venom');

INSERT INTO Border(borderID, cost, name)
VALUES ('4E6A2G8C', 500, 'Summer Euphoria');

INSERT INTO Border(borderID, cost, name)
VALUES ('2C6G4EA8', 500, 'Spring Death');

INSERT INTO Border(borderID, cost, name)
VALUES ('GA2C4E68', 4000, 'Hot Property');
```

7 PlayerMessagesDirectMessage

```
CREATE TABLE PlayerMessagesDirectMessage(
 messageID CHAR(8) PRIMARY KEY,
 playerName1 VARCHAR(32) NOT NULL,
 playerName2 VARCHAR(32) NOT NULL,
 messageText VARCHAR(320) NOT NULL,
 dateTime DATE,
 FOREIGN KEY (playerName1)
   REFERENCES Player(playerName)
```

```
    ON DELETE CASCADE,
  FOREIGN KEY (playerName2)
    REFERENCES Player(playerName)
    ON DELETE CASCADE
);
```

(should be ON UPDATE CASCADE but Oracle does not support it)

```
INSERT INTO PlayerMessagesDirectMessage(messageID, playerName1, playerName2,
messageText, dateTime)
VALUES('10101010', 'Harry Potter', 'Hermione Granger', 'Nice to meet you',
TO_DATE('2020-02-02 20:20:20', 'YYYY-MM-DD HH24:MI:SS'));

INSERT INTO PlayerMessagesDirectMessage(messageID, playerName1, playerName2,
messageText, dateTime)
VALUES('01010101', 'Harry Potter', 'Ronald Weasley', 'See you tomorrow', TO_DATE('2012-11-22
03:40:05', 'YYYY-MM-DD HH24:MI:SS'));

INSERT INTO PlayerMessagesDirectMessage(messageID, playerName1, playerName2,
messageText, dateTime)
VALUES('10001000', 'Hermione Granger', 'Ronald Weasley', 'Good game', TO_DATE('2006-08-17
19:01:25', 'YYYY-MM-DD HH24:MI:SS'));

INSERT INTO PlayerMessagesDirectMessage(messageID, playerName1, playerName2,
messageText, dateTime)
VALUES('11001100', 'Ronald Weasley', 'Harry Potter', 'Maybe next time', TO_DATE('2011-10-11
10:11:10', 'YYYY-MM-DD HH24:MI:SS'));

INSERT INTO PlayerMessagesDirectMessage(messageID, playerName1, playerName2,
messageText, dateTime)
VALUES('10000001', 'Ronald Weasley', 'Hermione Granger', 'Have a good night',
TO_DATE('2018-06-30 15:45:30', 'YYYY-MM-DD HH24:MI:SS'));
```

8 PlayersPlayInMatch

```
CREATE TABLE PlayersPlayInMatch(
    playerName1 VARCHAR(32) NOT NULL,
    playerName2 VARCHAR(32),
    matchID CHAR(8) PRIMARY KEY,
    result INT NOT NULL,
```

```
    FOREIGN KEY (playerName1)
      REFERENCES Player(playerName)
      ON DELETE SET NULL,
    FOREIGN KEY (playerName2)
      REFERENCES Player(playerName)
      ON DELETE SET NULL,
    FOREIGN KEY (matchID)
      REFERENCES Match(matchID)
      ON DELETE CASCADE
);
```

(should be ON UPDATE CASCADE but Oracle does not support it)

```
INSERT INTO PlayersPlayInMatch(playerName1, playerName2, matchID, result)
VALUES ('Ronald Weasley', 'Harry Potter', 'DjUfi8H7', 1);

INSERT INTO PlayersPlayInMatch(playerName1, playerName2, matchID, result)
VALUES ('Harry Potter', 'Ronald Weasley', 'J8Kff3Ia', 2);

INSERT INTO PlayersPlayInMatch(playerName1, playerName2, matchID, result)
VALUES ('Ronald Weasley', 'Hermione Granger', 'I8HNDb6A', 1);

INSERT INTO PlayersPlayInMatch(playerName1, playerName2, matchID, result)
VALUES ('Ronald Weasley', 'Severus Snape', 'Ji9Ohb6F', 1);

INSERT INTO PlayersPlayInMatch(playerName1, playerName2, matchID, result)
VALUES ('Draco Malfoy', 'Severus Snape', '8Ju7j7ad', 2);
```

9 TournamentConsistsOfMatch

```
CREATE TABLE TournamentConsistsOfMatch(
  tournamentID CHAR(8),
  matchID CHAR(8),
  PRIMARY KEY (tournamentID, matchID),
  FOREIGN KEY (tournamentID)
    REFERENCES Tournament(tournamentID)
    ON DELETE CASCADE,
```

```
  FOREIGN KEY (matchID)
    REFERENCES Match(matchID)
    ON DELETE CASCADE
);
```

(should be ON UPDATE CASCADE but Oracle does not support it)

```
INSERT INTO TournamentConsistsOfMatch(tournamentID, matchID)
VALUES('20008', 'afk886bb');
```

```
INSERT INTO TournamentConsistsOfMatch(tournamentID, matchID)
VALUES('11111111', '13142299');
```

```
INSERT INTO TournamentConsistsOfMatch(tournamentID, matchID)
VALUES('1A2B3C4D', '76543210');
```

```
INSERT INTO TournamentConsistsOfMatch(tournamentID, matchID)
VALUES('20008', 'mndbqpvw');
```

```
INSERT INTO TournamentConsistsOfMatch(tournamentID, matchID)
VALUES('1A2B3C4D', '1514jdqc');
```

10 PlayerWinsTournament

```
CREATE TABLE PlayerWinsTournament(
tournamentID CHAR(8),
playerName VARCHAR(32),
PRIMARY KEY (tournamentID, playerName),
FOREIGN KEY (playerName)
  REFERENCES Player(playerName)
  ON DELETE CASCADE
);
```

(should be ON UPDATE CASCADE but Oracle does not support it)

```
INSERT INTO PlayerWinsTournament(tournamentID, playerName)
VALUES('100', 'Harry Potter');
```

```
INSERT INTO PlayerWinsTournament(tournamentID, playerName)
VALUES('101', 'Tony');
```

```
INSERT INTO PlayerWinsTournament(tournamentID, playerName)
```

VALUES('102', 'Harry Potter');

INSERT INTO PlayerWinsTournament(tournamentID, playerName)
VALUES('103', 'Harry Potter');

INSERT INTO PlayerWinsTournament(tournamentID, playerName)
VALUES('104', 'Harry Potter');

11 PlayerRankedOnLeaderboard

```
CREATE TABLE PlayerRankedOnLeaderboard(
  playerName VARCHAR(32),
  leaderboardName VARCHAR(32),
  rank INT NOT NULL UNIQUE,
  PRIMARY KEY (playerName, leaderboardName),
  FOREIGN KEY (playerName)
    REFERENCES Player(playerName)
    ON DELETE CASCADE,
  FOREIGN KEY (leaderboardName)
    REFERENCES Leaderboard(leaderboardName)
    ON DELETE CASCADE
);
```

(should be ON UPDATE CASCADE but Oracle does not support it)

```
INSERT INTO PlayerRankedOnLeaderboard(playerName, leaderboardName, rank)
VALUES('Harry Potter', '2023Fall', 1);
INSERT INTO PlayerRankedOnLeaderboard(playerName, leaderboardName, rank)
VALUES('Harry Potter', '2022Fall', 2);
INSERT INTO PlayerRankedOnLeaderboard(playerName, leaderboardName, rank)
VALUES('Hermione Granger', '2022Fall', 1);
INSERT INTO PlayerRankedOnLeaderboard(playerName, leaderboardName, rank)
VALUES('Hermione Granger', '2023Spring', 2);
INSERT INTO PlayerRankedOnLeaderboard(playerName, leaderboardName, rank)
VALUES('Ronald Weasley', '2023Spring', 3);
```

12 HasInInventory

```
CREATE TABLE HasInInventory(
    playerName VARCHAR(32),
```

```
   borderID CHAR(8),
   PRIMARY KEY (playerName, borderID),
   FOREIGN KEY (playerName)
      REFERENCES Player(playerName)
      ON DELETE CASCADE,
   FOREIGN KEY (borderID)
      REFERENCES Border(borderID)
      ON DELETE CASCADE
);
```

(should be ON UPDATE CASCADE but Oracle does not support it)

```
INSERT INTO HasInInventory(playerName, borderID)
VALUES ('Harry Potter', '4E6A2G8C');

INSERT INTO HasInInventory(playerName, borderID)
VALUES ('Hermione Granger', 'E6G8A2C4');

INSERT INTO HasInInventory(playerName, borderID)
VALUES ('Ronald Weasley', '4E6A2G8C');

INSERT INTO HasInInventory(playerName, borderID)
VALUES ('Albus Dumbledore', '2C6G4EA8');

INSERT INTO HasInInventory(playerName, borderID)
VALUES ('Severus Snape', 'A2C4E6G8');
```

13 ItemTransactionContainsBorder

```
CREATE TABLE ItemTransactionContainsBorder(
borderID CHAR(8),
transactionID CHAR(8),
PRIMARY KEY (borderID, transactionID),
FOREIGN KEY (borderID)
  REFERENCES Border(borderID)
  ON DELETE CASCADE,
FOREIGN KEY (transactionID)
  REFERENCES Places_ItemTransaction(transactionID)
  ON DELETE CASCADE
);
```

(should be ON UPDATE CASCADE but Oracle does not support it)

```
INSERT INTO ItemTransactionContainsBorder(borderID, transactionID)
VALUES ('A2C4E6G8', '10001');

INSERT INTO ItemTransactionContainsBorder(borderID, transactionID)
VALUES ('E6G8A2C4', '10002');

INSERT INTO ItemTransactionContainsBorder(borderID, transactionID)
VALUES ('4E6A2G8C', '10003');

INSERT INTO ItemTransactionContainsBorder(borderID, transactionID)
VALUES ('2C6G4EA8', '10004');

INSERT INTO ItemTransactionContainsBorder(borderID, transactionID)
VALUES ('GA2C4E68', '10005');
```

14 Places_ItemTransaction

```
CREATE TABLE Places_ItemTransaction(
  transactionID CHAR(8) PRIMARY KEY,
  totalCost INT NOT NULL,
  dateTime DATE,
  playerName VARCHAR(32),
  FOREIGN KEY (playerName)
  REFERENCES Player(playerName)
  ON DELETE SET NULL
);
```

(should be ON UPDATE CASCADE but Oracle does not support it)

```
INSERT INTO Places_ItemTransaction(transactionID, totalCost, dateTime, playerName)
VALUES('10001', 50, TO_DATE('1999-04-06 10:12:12', 'YYYY-MM-DD HH24:MI:SS'), 'Harry
Potter');

INSERT INTO Places_ItemTransaction(transactionID, totalCost, dateTime, playerName)
VALUES('10002', 100, TO_DATE('2010-04-07 10:12:12', 'YYYY-MM-DD HH24:MI:SS'), 'Harry
Potter');

INSERT INTO Places_ItemTransaction(transactionID, totalCost, dateTime, playerName)
VALUES('10003', 200, TO_DATE('2023-04-08 10:12:12', 'YYYY-MM-DD HH24:MI:SS'), 'Harry
Potter');
```

INSERT INTO Places_ItemTransaction(transactionID, totalCost, dateTime, playerName)
VALUES('10004', 1, TO_DATE('2019-04-07 10:12:12', 'YYYY-MM-DD HH24:MI:SS'), 'Harry Potter');

INSERT INTO Places_ItemTransaction(transactionID, totalCost, dateTime, playerName)
VALUES('10005', 5, TO_DATE('1980-04-06 10:12:12', 'YYYY-MM-DD HH24:MI:SS'), 'Harry Potter');

15 PlayerIcon

```
CREATE TABLE PlayerIcon(
    playerName VARCHAR(32),
    profilePicPath VARCHAR(255),
    borderID CHAR(8),
    FOREIGN KEY (playerName)
        REFERENCES Player(playerName)
        ON DELETE CASCADE,
    FOREIGN KEY (borderID)
        REFERENCES Border(borderID)
        ON DELETE SET NULL
)
```

(should be ON UPDATE CASCADE but Oracle does not support it)

INSERT INTO PlayerIcon(playerName, profilePicPath, borderID)
VALUES ('Harry Potter', 'mnt/c/media/profilePics/wand.jpg', '4E6A2G8C');

INSERT INTO PlayerIcon(playerName, profilePicPath, borderID)
VALUES ('Ronald Weasley', 'mnt/c/media/profilePics/wand1.jpg', '4E6A2G8C');

INSERT INTO PlayerIcon(playerName, profilePicPath, borderID)
VALUES ('Hermione Granger', 'mnt/c/media/profilePics/wand2.jpg', 'E6G8A2C4');

INSERT INTO PlayerIcon(playerName, profilePicPath, borderID)

VALUES ('Neville Longbottom', 'mnt/c/media/profilePics/wand3.jpg', '2C6G4EA8');

INSERT INTO PlayerIcon(playerName, profilePicPath, borderID)
VALUES ('Severus Snape', 'mnt/c/media/profilePics/wand4.jpg', 'A2C4E6G8');