DATABASE MANAGEMENT SYSTEMS

COP 5725

Soccer Pro

Phase - 3

DATABASE DESIGN

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GROUP - 19

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STRONG ENTITIES:

Registered_user:

Schema:
Registered_user (User_id (Primary key) number, User_name string , Gender string, Nationality string, Age number)

Create query:

```
CREATE TABLE Registered_user (
   User_id INTEGER,
   User_name VARCHAR2(30) NOT NULL,
   Gender VARCHAR2(6) NOT NULL,
   Nationality VARCHAR2(20) NOT NULL,
   Age INTEGER NOT NULL CHECK (Age >= 0 AND Age<120),
   PRIMARY KEY (User_id)
);
```

Description:
This table stores the data of a user. User_id is the primary key here. Its related to all other tables through the "searches" relation. There is a check on the age of a user.

Country:

Schema:
Country (country_id (primary key) number , country_name string)

Create query:

```
CREATE TABLE Country (
   Country_id INTEGER,
   Country_name VARCHAR2(20) UNIQUE NOT NULL,
   PRIMARY KEY (Country_id) );
```

Description:

This table stores the country data. Country_id is the primary key. Also, the country name should be unique and not null. This is the identifying entity of league.

Team:

Schema:

Team (team_id (primary key) number, team_long_name string, team_short_name string, country_name string)

Create query:

```
CREATE TABLE Team (
    Team_id INTEGER,
    Team_long_name VARCHAR2(20) NOT NULL,
    Team_short_name VARCHAR2(3) NOT NULL,
    Country_name VARCHAR2(20) NOT NULL REFERENCES,
    Country(Country_name),
    PRIMARY KEY (Team_id)
);
```

Description:

This table stores the team data. Team_id is the primary key. This entity is related to league entity by an m:n relationship. All the other attributes are not null. Team names should be unique.

Player:

Schema:

Player (Player_id(primary key) number, player_name string, Birthday date , Height number, Weight number, Team_id(FK) number)

Create query:

```
CREATE TABLE Player (
    Player_id INTEGER,
    Player_name VARCHAR2(30) NOT NULL,
    Birthday DATE NOT NULL,
    Height NUMERIC (5,2) NOT NULL CHECK (Height > 0 AND Height< 230.00),
    Weight  INTEGER NOT NULL CHECK (Weight > 0 AND Weight < 300),
    Team_id INTEGER NOT NULL REFERENCES Team(Team_id),
    PRIMARY KEY (Player_id)
);
```

Description:

This table stores the player data. Here Player_id is the primary key, and Team_id is the foreign key which references the table team. Also, there are checks on height and weight as you can see in the query.

Matches:

Schema:

Matches (match_id(primary key) number, Away_team_goal number, Home_team_goal number, possession string, corner number,cross number, Stage number, Date date, Season string , card string, Foul_commit string, Home_team_positioning string, Away_team_positioning string, league_id(fk) number, Country_id(fk) number)

Create query:

```
CREATE TABLE Matches (
    Match_id INTEGER,
    Away_team_goal INTEGER,
    Home_team_goal INTEGER,
    Possession VARCHAR2(100),
    Corner INTEGER,
```

```
    Cross INTEGER,
    Stage INTEGER NOT NULL,
    Date_ DATE NOT NULL,
    Season VARCHAR2(10) NOT NULL,
    Card VARCHAR2(100),
    Foul_commit VARCHAR2(100),
    Home_team_positioning VARCHAR2(100),
    Away_team_positioning VARCHAR2(100),
    League_id INTEGER NOT NULL REFERENCES League(League_id),
    Country_id INTEGER NOT NULL REFERENCES Country(Country_id),
    PRIMARY KEY (Match_id)
  );
```

Description:

This table stores the match data. It has three composite attributes of fixture, team_positioning and booking. Match_id is the primary key. Match is related to league. League_id and Country_id are the foreign keys here, which are the primary key of league table.

WEAK ENTITIES:

League:

Schema:

League (League_id (primary key) number , League_name string, country_id(primary key) number)

Create query:

```
CREATE TABLE League (
    League_id INTEGER,
    League_name VARCHAR2(20) NOT NULL,
    Country_id INTEGER NOT NULL REFERENCES Country(Country_id),
    PRIMARY KEY (League_id));
```

Description:

League is a weak entity which has the identifying relationship with a country. Here league_id is the partial key which combined with the country_id is the primary key.

Team attributes:

Schema:

Team_attributes (BuildUp_play_speed number, BuildUp_play_dribbling number, Buildup_play_passing number, BuildUp_play_positioning number, Defence_aggression number, Defence_team_width number, Defence_defender_line number, Team_id(primary_key) number)

Create query:

```
CREATE TABLE Team_attributes (
    BuildUp_play_speed INTEGER,
    BuildUp_play_dribbling INTEGER,
    Buildup_play_passing INTEGER,
    BuildUp_play_positioning VARCHAR2(10),
    Defence_aggression INTEGER,
    Defence_team_width INTEGER,
    Defence_defender_line VARCHAR2(10),
    Team_id INTEGER NOT NULL REFERENCES Team(Team_id),
    PRIMARY KEY(Team_id)
);
```

Description:

Team attributes is a weak entity which is dependent on team. It has no partial key as such, hence, Team_id is the foreign key as well as the primary key of this relationship. All the attributes here are not null.

Player attributes:

Schema:

Player_Attributes(preferred_foot string, Attack_work_rate number,Date date,Overall_Rating number,Defensive_Work_rate number,Tackle number, GK_Diving number,GK_handling number,GK_positioning number,GK_Kicking number,GK_reflexes number, Heading_accuracy number, Stamina number, Free_kick_accuracy number,Passing number, Finishing number, Sprint_speed number, Ball_control number, Penalties number, Player_ID(primary key)number)

Create query:

```
CREATE TABLE Player_Attributes(
    preferred_foot VARCHAR2(5) NOT NULL,
    Attack_work_rate INTEGER,
    Date_ DATE NOT NULL,
    Defensive_Work_rate INTEGER,
    Tackle INTEGER,
    GK_Diving INTEGER,
    GK_handling INTEGER,
    GK_positioning INTEGER,
    GK_Kicking INTEGER,
    GK_reflexes INTEGER,
    Heading_accuracy INTEGER,
    Stamina INTEGER,
    Free_kick_accuracy INTEGER,
    Passing INTEGER,
    Finishing INTEGER,
    Sprint_speed INTEGER,
    Ball_control INTEGER,
    Penalties INTEGER,
    Player_id INTEGER REFERENCES Player(Player_id),
    PRIMARY KEY (Player_id));
```

Description:

This table player attributes is a weak entity which is dependent on the player. It has no partial key as such, hence, player_id is the foreign key as well as the primary key of this relationship.

RELATIONSHIPS:

Searches:

Schema:

Search (Search_id (primary_key) number,User_id number, Match_id number, Player_id number, Team_id number, League_id number)

Create query:

```
CREATE TABLE Search (
    Search_id INTEGER,
    User_id INTEGER NOT NULL REFERENCES Registered_user(User_id),
    Match_id INTEGER NOT NULL REFERENCES Matches(Match_id),
    Player_id INTEGER NOT NULL REFERENCES Player(Player_id),
    Team_id INTEGER NOT NULL REFERENCES Team(Team_id),
    League_id INTEGER NOT NULL REFERENCES League(League_id),
    PRIMARY KEY (Search_id)
);
```

Description:

Searches is an n-ary relationship between user and all other strong entities like player, team , league and matches. The primary key of this relation is the relationship attribute called search id. It consists of foreign key to each of the referencing entity.

Participates in:

Schema:

Participates_in(team_id number, League_id (both are composite primary key) number)
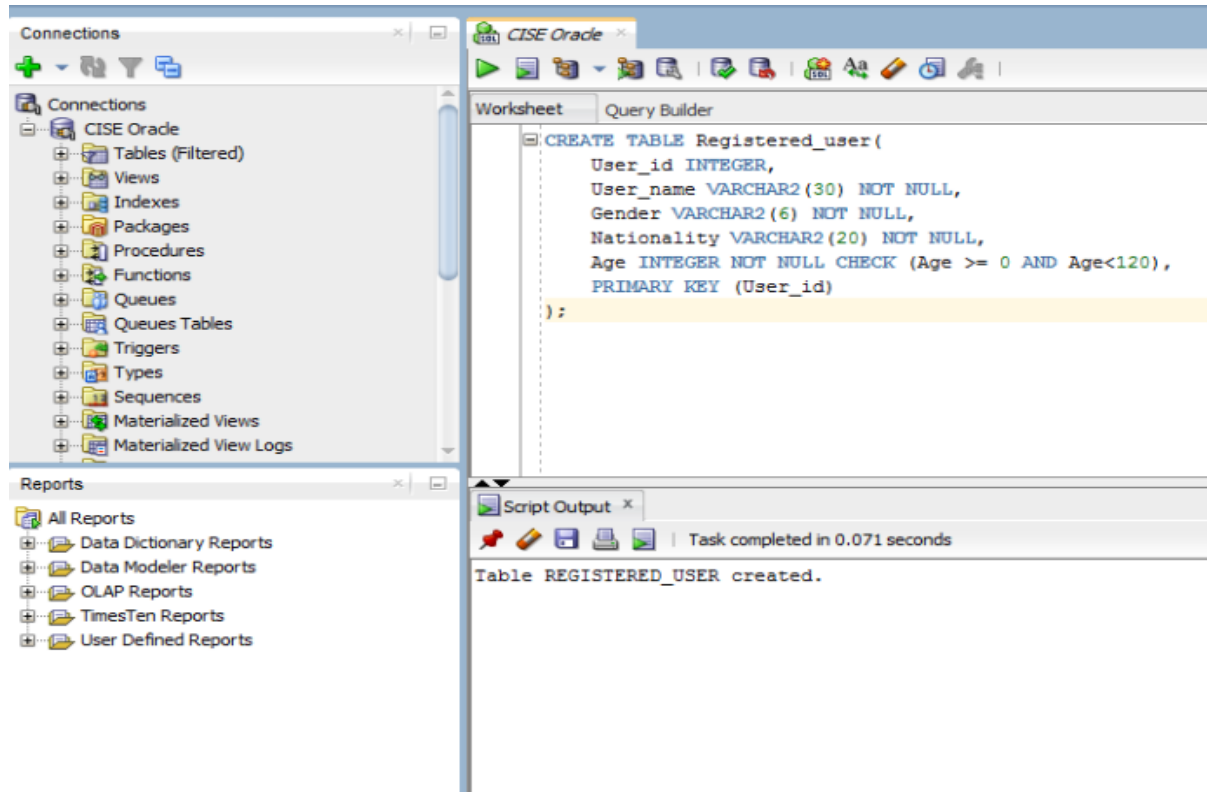
Create query:

```
CREATE TABLE Participates_in (
    Team_id INTEGER REFERENCES Team(Team_id),
    League_id INTEGER REFERENCES League(League_id),
    PRIMARY KEY (Team_id, League_id)
);
```

Description:

This is an m:n relationship between teams and leagues. A team can participate in multiple leagues and a league has multiple teams competing. Here team_id and league_id both combined is a primary key.

The snap shots of the create queries executed on the oracle database are as follows. They have been executed in this sequence so as to conform to the foreign key constraints.

Connections

- Connections
  - CISE Oracle
    - Tables (Filtered)
    - Views
    - Indexes
    - Packages
    - Procedures
    - Functions
    - Queues
    - Queues Tables
    - Triggers
    - Types
    - Sequences
    - Materialized Views
    - Materialized View Logs

Reports

- All Reports
  - Data Dictionary Reports
  - Data Modeler Reports
  - OLAP Reports
  - TimesTen Reports
  - User Defined Reports

CISE Oracle

Worksheet | Query Builder

```sql
CREATE TABLE Country(
    Country_id INTEGER,
    Country_name VARCHAR2(20) NOT NULL,
    PRIMARY KEY (Country_id)
);
```

Script Output

Task completed in 0.055 seconds

```
Table REGISTERED_USER created.


Table COUNTRY created.
```

```
CREATE TABLE Team(
     Team_id INTEGER,
     Team_long_name VARCHAR2(20) NOT NULL,
     Team_short_name VARCHAR2(3) NOT NULL,
     Country_name VARCHAR2(20) NOT NULL REFERENCES Country(Country_name),
     PRIMARY KEY (Team_id)
);
```

Task completed in 0.051 seconds

Table TEAM created.


```
CREATE TABLE League(
     League_id INTEGER,
     League_name VARCHAR2(20) NOT NULL,
     Country_id INTEGER NOT NULL REFERENCES Country(Country_id),
     PRIMARY KEY (League_id)
);
```

Task completed in 0.051 seconds

Table LEAGUE created.

Connections

- Connections
  - CISE Oracle
    - Tables (Filtered)
    - Views
    - Indexes
    - Packages
    - Procedures
    - Functions
    - Queues
    - Queues Tables
    - Triggers
    - Types
    - Sequences
    - Materialized Views
    - Materialized View Logs

Reports

- All Reports
  - Data Dictionary Reports
  - Data Modeler Reports
  - OLAP Reports
  - TimesTen Reports
  - User Defined Reports

CISE Oracle — Worksheet

```
CREATE TABLE Player(
    Player_id INTEGER,
    player_name VARCHAR2(30) NOT NULL,
    Birthday DATE NOT NULL,
    Height NUMERIC(5,2) NOT NULL CHECK (Height > 0 AND Height< 230.00),
    Weight  INTEGER NOT NULL CHECK (Weight > 0 AND Weight < 300),
    Team_id INTEGER NOT NULL REFERENCES Team(Team_id),
    PRIMARY KEY (Player_id)
);
```

Script Output

Task completed in 0.07 seconds

Table PLAYER created.

Connections

- Connections
  - CISE Oracle
    - Tables (Filtered)
    - Views
    - Indexes
    - Packages
    - Procedures
    - Functions
    - Queues
    - Queues Tables
    - Triggers
    - Types
    - Sequences
    - Materialized Views
    - Materialized View Logs

Reports

- All Reports
  - Data Dictionary Reports
  - Data Modeler Reports
  - OLAP Reports
  - TimesTen Reports
  - User Defined Reports

CISE Oracle — Worksheet

```
CREATE TABLE Matches(
    Match_id INTEGER,
    Away_team_goal INTEGER,
    Home_team_goal INTEGER,
    Possession VARCHAR2(100),
    Corner INTEGER,
    Cross INTEGER,
    Stage INTEGER NOT NULL,
    Date_ DATE NOT NULL,
    Season VARCHAR2(10) NOT NULL,
    Card VARCHAR2(100),
    Foul_commit VARCHAR2(100),
    Home_team_positioning VARCHAR2(100),
    Away_team_positioning VARCHAR2(100),
```

Script Output   Script Output 1

Task completed in 0.07 seconds

Table MATCHES created.

```sql
CREATE TABLE Search(
    Search_id INTEGER,
    User_id INTEGER NOT NULL REFERENCES Registered_user(User_id),
    Match_id INTEGER NOT NULL REFERENCES Matches(Match_id),
    Player_id INTEGER NOT NULL REFERENCES Player(Player_id),
    Team_id INTEGER NOT NULL REFERENCES Team(Team_id),
    League_id INTEGER NOT NULL REFERENCES League(League_id),
    PRIMARY KEY (Search_id)
);
```

Task completed in 0.074 seconds

Table SEARCH created.


```sql
CREATE TABLE Participates_in(
    Team_id INTEGER REFERENCES Team(Team_id),
    League_id INTEGER REFERENCES League(League_id),
    PRIMARY KEY (Team_id, League_id)
)
```

Task completed in 0.082 seconds

Table SEARCH created.

Table PARTICIPATES_IN created.

Connections

- Connections
  - CISE Oracle
  - Oracle NoSQL Connections
  - Database Schema Service Connections

Reports

- All Reports
  - Data Dictionary Reports
  - Data Modeler Reports
  - OLAP Reports
  - TimesTen Reports
  - User Defined Reports

CISE Oracle

Worksheet | Query Builder

```sql
CREATE TABLE Team_attributes(
    BuildUp_play_speed INTEGER,
    BuildUp_play_dribbling INTEGER,
    Buildup_play_passing INTEGER,
    BuildUp_play_positioning VARCHAR2(10),
    Defence_aggression INTEGER,
    Defence_team_width INTEGER,
    Defence_defender_line VARCHAR2(10),
    Team_id INTEGER NOT NULL REFERENCES Team(Team_id),
    PRIMARY KEY(Team_id)
);
```

Script Output × | Script Output 1 ×

Task completed in 0.051 seconds

Table TEAM_ATTRIBUTES created.

Connections

- Connections
  - CISE Oracle
    - Tables (Filtered)
    - Views
    - Indexes
    - Packages
    - Procedures
    - Functions
    - Queues
    - Queues Tables
    - Triggers
    - Types
    - Sequences
    - Materialized Views
    - Materialized View Logs

Reports

- All Reports
  - Data Dictionary Reports
  - Data Modeler Reports
  - OLAP Reports
  - TimesTen Reports
  - User Defined Reports

CISE Oracle

Worksheet | Query Builder

```sql
CREATE TABLE Player_Attributes(
    preferred_foot VARCHAR2(5) NOT NULL,
    Attack_work_rate INTEGER,
    Date_ DATE NOT NULL,
    Defensive_Work_rate INTEGER,
    Tackle INTEGER,
    GK_Diving INTEGER,
    GK_handling INTEGER,
    GK_positioning INTEGER,
    GK_Kicking INTEGER,
    GK_reflexes INTEGER,
    Heading_accuracy INTEGER,
    Stamina INTEGER,
    Free_kick_accuracy INTEGER,
```

Script Output ×

Task completed in 0.069 seconds

Table PLAYER_ATTRIBUTES created.