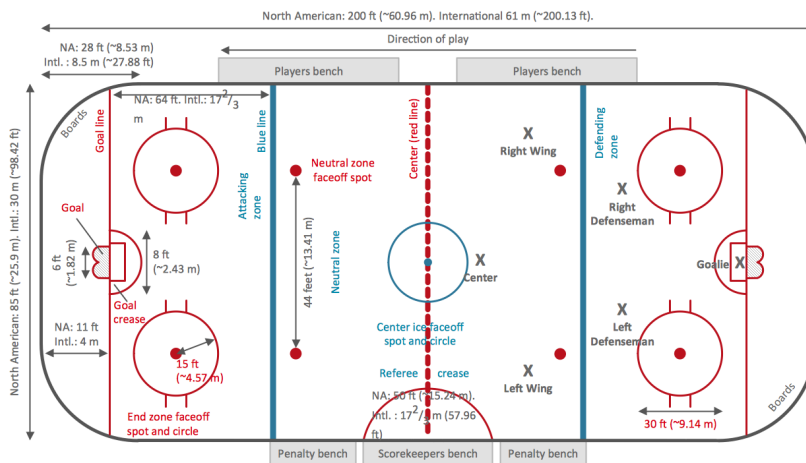


NHL Relational Schema

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Ice hockey is played in an arena with details as shown in the following figure. At any given time there will be up to 6 players from each team on the ice: a goalie, two defense, and three forward player. The forward players are left-wing, right-wing, and center. The defense players are not generally identified by whether they are left or right at the starting point. When both teams have the full number of players on the ice, they are described as having “even” strength. However, players who commit infractions will be sent to the penalty box (bench) for a short period of time, resulting in reduced strength for that team during that time period. The full team, however, comprises more than just six players. The full team complement for any given game is roughly three times that amount, so that the players are only on the ice for about one quarter to a third of the total game-play time, with the exception of the goalie who is often there for most, if not all, of the game.



<https://hockeyanswered.com/how-many-players-are-on-the-ice-in-hockey-regulation-penalties-and-ot/> contains a nice summary of this information.

Relational Schema

The NHL relational schema comprises over a dozen relations describing teams, players, games, *etc.* The following schema is a subset of the full schema and is needed for Assignment 1 Task 3. It comprises 10 relations: TeamInfo, PlayerInfo, Game, GamePlays, GameGoals, GamePenalties, GamePlaysPlayers, GameOfficials, GameScratches, and GameShifts. The detailed information about each of these is as follows:

TeamInfo (teamID, franchiseID, city, name, abbreviation)

TeamInfo contains information about NHL hockey teams. The teamID is a unique identifier of the team, while franchiseID is an identifier of the franchise that owns the particular team. Each team is located in a city, has a name, and a three-letter abbreviation.

PlayerInfo (playerID,
 firstName,
 lastName,
 nationality,
 birthCity,
 primaryPosition,
 birthDate,
 birthStateProvince,
 height,
 heightInCM,
 weight,
 shootsCatches)

PlayerInfo contains information about the various hockey players. The playerID is a unique identifier of the player. Most of the attributes are self-explanatory by name. However, it should be noted that nationality is a statement of player's country of birth (or at least very early upbringing). Many players will have multiple nationalities. Height is in feet and inches, hence the heightInCM attribute. Weight is in pounds. Finally, shootsCatches is a statement of whether the player is left-handed or right-handed.

e.g., a player born in Canada but playing for a US team and living in the US is likely to acquire US citizenship.

Game (gameID,
 season,
 gameType,
 dateTimeGMT,
 awayTeamID,
 homeTeamID,
 awayGoals,
 homeGoals,
 outcome,
 homeRinkSideStart,
 venue,
 venueTimeZoneID,
 venueTimeZoneOffset,
 venueTimeZoneTZ)

Game contains summary information about each game. The gameID is a unique identifier for each game. The season is an 8-digit number

that identifies the season in which the game was played. For example, the current season is the 2021/22 season, and so it is identified with the number “20212022”. The gameType is one of regular season, playoffs, or allstars. The dateTimeGMT is the date and time (in GMT) when the game started. The venueTimeZoneOffset is then the time offset from GMT where the actual game is played. Other attributes should be largely self-explanatory, with the exception of the homeRinkSideStart. This is either left or right and should be understood as the side of the arena on which the home team starts the game.

```
GamePlays (playID,
           gameID,
           teamIDfor,
           teamIDagainst,
           playType,
           secondaryType,
           x,
           y,
           period,
           periodType,
           periodTime,
           periodTimeRemaining,
           dateTime,
           goalsAway,
           goalsHome,
           description)
```

GamePlays is data with respect to the various plays that occurred during the game. The playID is a unique identifier for each game play. The location of the play is given in (x,y) coordinates which are feet measured from the arena center.

```
GameGoals (playID,
           strength,
           gameWinningGoal,
           emptyNet)
```

Some game plays are goals. Such plays have additional information.

```
GamePenalties (playID,
               penaltySeverity,
               penaltyMinutes)
```

Some game plays are penalties. Such plays have additional information.

```
GamePlaysPlayers (playID,
                  gameID,
                  playerID,
                  playerRole)
```

Game plays involve a variable number of players. This relation identifies the players involved in any given play and their role in that play.

```
GameOfficials (gameID,
               officialName,
               officialType);
```

Each game has some officials who may be referees or linesmen.

```
GameScratches (gameID,
               teamID,
               playerID)
```

Each team has more players on the team than are actually permitted to be part of any given game. Those who are not part of a game are scratches for that game.

```
GameShifts (gameID,
            playerID,
            period,
            start,
            end)
```

Per the above description of hockey, most of the players are not on the ice at any given time. Those on the ice are doing a “shift” on the ice. The game itself lasts for 60 minutes of play time, divided into three 20-minute periods. In the event of a tie, there will be additional periods.