**CS331- Project Assignment**

**Problem Description**

Project 3

Selecting an All-Star Team

Problem Description

In Canada, the national intercollegiate football championship game, the Vanier Cup, is played toward the end of November at the SkyDome in Toronto. A committee of Canadian Intercollegiate Athletic Association (CIAU) head coaches selects the team, deeming the players selected to be the best university football players in the country. A lot of work goes into the selection of the team. Here is roughly the way it works.

Each of the four conferences in the CIAU (the Atlantic, the Ontario-Quebec, the Ontario, and the West) selects an all-stars team. The all-Canadian team is then selected from players of these four all-star teams.

Below we describe the selection of all-stars team in the Ontario- Quebec Conference:

Up to 1995, all-star selection in the Ontario-Quebec Intercollegiate Football Conference was accomplished through a head coaches’ meeting on the Sunday before the conference semifinal play-off game. Each team nominates any player believed to be deserving of membership on the all-star team. Each coach and assistant coach, members of CIAU, evaluates each nominee on a scale from 1 to 10. Only the players that get the highest score would make the all-star team. This system had two drawbacks. First, coaches involved in the play-off games of the next Sunday lose a day of game planning. Second, there were assistant coaches who felt this “horse-trading” season was not very objective.

The objective of this project is to build a database decision support system that will facilitate the process.

Database Design

We present the main entity types of this database. For each entity type, we provide some of the corresponding attributes. Use this information in order to: (a) Build an Enhanced ER diagram; (b) Transform the Enhanced E-R diagram to a relational database. Identify the primary key(s) and the foreign key(s) for each relation. Draw the relational integrality constraints; (c) For each of the relations created, indicate its normal form. If the relation is not in the 3NF, decompose it into 3NF relations.

1. *Championship teams:* The main attributes are team identification number, team name, coach name, name of the university it represents, rank of the team in the current season, number of games they won and the number of games they lost in the current season, etc.
2. *Players:* The main attributes are social security number, name, address, birth date, current position in the team, name of the university he represents, number of years with the team, number of years with the university (freshman, sophomore, junior, or senior), number of times he made the all-star team, etc.
3. *Coach:* The main attributes are social security number, name, address, birth date, name of the university he represents, number of years of coaching in the current university, total number of years of coaching, number of times the team he leads won a championship, number of times he took a team to the semifinals, etc.
4. *Assistant coach:* The main attributes are social security number, name, address, birth date, name of the university he represents, number of years working as assistant coach in the current university, total number of years working as assistant coach, current specialization (e.g., defensive coordinator, offensive coordinator, etc.), etc.
5. *All-star game:* The main attributes are date and place of the event, winning team, name of the coach of the winning team, name of the players of the winning team, final result (the score) of the game, etc.
6. *All-star team nominees:* The main attributes are social security number, name, address, birth date, current position in the team, name of the university he represents, number of years with the team, number of years with the university (freshman, sophomore, junior, or senior), number of times he made the all-star team, etc. Access Application Development

Application Development

***please note*** *you will not be asked to implement all of the following queries, forms or reports during the Project. These are only to add some details on how the system can be use. During the project implementation you will be assigned a specific set of queries to implement.*

The following are some of the queries, forms, and reports one can create in order to increase the functionality of the database:

**Queries:**

1. The first step in this selection process is to identify the nominees from each team. A football team has 7 positions: quarterback, running backs, inside receivers, wide receivers, center players, guards, and tackles.   
   *Create a query that for each position lists the names of the candidates and the total score from the evaluation process. Group this information by position. Within each group sort the candidates based on their total score.*
2. To facilitate the process of selecting the all-star game players from the nominees of each position, *create a query that finds the name and SSN of the top five nominees for each position. In the same query present the name of the university the player represents, the number of years playing, and the total score from the evaluation process. Sort the candidates based on their total score.*
3. A different approach that can be used to rank the players is the following: for each player find the median (the value of the middle observation) of the evaluation scores, and then rank the players based on the median. This approach has shown to reduce biased rankings. *This query, for each team position, ranks the candidates based on the median of the evaluation score*.
4. Create the following search queries:
   1. This query prompts the user for the name of a team and presents the name of its players, the name of its coach, and the rank of the team.
   2. Create a query that prompts for the name of a team and provides a list of the games this team played and the corresponding results.
   3. Create a query that prompts for the name of a coach and provides a list of the teams he coached.
   4. Create a query that prompts for a date and presents the name of teams that played on that date, the name of team they played against, and the final result of the game.
   5. Create a query that prompts for a year and presents the name of the players that made the all-star team that year and the result of the game.

**Forms:**

1. Create a user sign-in form together with a registration form for new users.
2. Create the following data entry forms that are used for database administrative functions: players, teams, games, coaches, etc. These forms allow the user to add, update, and delete information about players, teams, games, coaches, etc.
3. Create a form that allows the user to browse through the information about the coaches. Create a subform that presents for the selected coach all the all-star games s/he participated in, the name of the teams s/he represented on these games, and the final score of the games he participated in. Include in the same form a command button that, when clicked-on, calculates and presents the number of the players trained by this coach.
4. Create a form that allows the user to browse through the information about the assistant coaches. Create a subform that presents for the selected assistant coach the all-star games s/he participated in, the name of the teams s/he represented on these games, and the final score of the games s/he participated in. Include a command button that, when clicked-on, presents a list of the universities this assistant coach worked for.
5. Create a form that allows the user to choose from a combo box the name of a player. Create a subform that presents for the selected player the following information: social security number, name, address, name of the team he plays for, and name of his coach. Include in this form a command button that, when clicked-on, calculates and presents the player’s total score. Include another command button that when clicked-on lists all the all-star games this player participated in.
6. Create a form that allows the user to choose from a list box an all-star game. For the selected game, present in a subform the following information: the name of the players who made the team, and, for each player, the position he played and the name of the university he represented. Include a command button that, when clickedon, presents the result of the game.
7. Create a form that allows the user to browse through the name of the teams participating in this championship. For each team, present the name of the university it represents, the name of its coach, and the rank of the team in the current season. Include a command button that, when clicked on, lists the names of the players on this team. Include another command button that, when clicked on, lists the games the team played in the current season, the name of the team played against, and the result of the game.

**Reports:**

1. Create a report that presents the following information about the all-star team nominees: social security number, name, position played, name of the team he represents, name of the university he represents, name of his coach, and his total score collected during the evaluation process. Include in this report for each player the average and the median of his score. Have this information grouped by position, and within each group sort the information by total score.
2. In the process of choosing the players, it is helpful to see the distribution of the scores each player received. Use the chart wizard to present the distribution of the scores each player received during the evaluation process.
3. Create a report that includes the following information about each player of the allstar team: social security number, name, birthday, name of the university he represents, and his position in the all-star game.
4. Create a report that includes the following information about the result of the all-star game: date and place of the event, the final result of the game, the name of the team that won, the name of the coach, assistant coaches, and players of the team.
5. Create a report that presents historical results of the all-star games (winning team, score, and name of the coach) in the last 10 years.

Java Application Development

This database application can be used by coaches, assistant coaches, players, and fans.

In the following figure we present a tentative layout of the system.

Welcome Screen

Search the Database

Browse the Database

Statistics, Data Mining

Updates

Present Results

Exit the Database

In the welcome screen, the user can choose one of the four options presented. We give details about the forms or set of forms to be included in each option; however, you are encouraged to add other forms you find important.

***Search:*** The user can search the database to retrieve information about players, teams, coaches, etc. We suggest that the search queries and forms already created in the Access Application Development section be included in here.

***Browse:*** The user can browse the database to learn more about players, teams, coaches

etc.

***Statistics and data mining:*** This option provides various statistics, and performs data analysis. The following are some examples:

1. List the score that each nominee received in the evaluation process.
2. For each team, list the total number of wins in a championship during the last ten years.
3. List the number of participating teams/players in the football championship during the last ten years.

***Update:*** The update form requires an administrator login name and password. This form allows the user to add/delete/update the information kept in this database about players, teams, coaches, etc.

**Reference**

W.J. Hurley, “An efficient, objective technique for selecting an all-star team,” Interfaces

28(2): 51-57, 1998.