**SQL Project for Purdue Golf Club**

**Background:** Boilermaker Golf Course is a local business known for excellent golf courses and rental clubs. The management team is seeking information systems consulting to create a database that will track customers, club rental equipment, courses, and course hole data. The main project objective is to provide excellent consulting services to Boilermaker Golf Course that cater directly to their need for a database management system. This includes designing the system to be effective and sustainable over time. It is important to include all current information in the model as well as future information after the database is fully implemented. The database system should be simple to execute and valuable to a variety of departments, such as finance, marketing, and operations.

Another goal is to design the system to include all necessary information used to make decisions now and in the future. This includes adding specific attributes and relationships. The database system must include information on customers, courses, rental clubs, and course holes. Additionally, this information must be easy to update as changes are expected to occur with scoring and customer metrics. Overall, a central goal is to use SQL to navigate custom databases to draw key conclusions and offer valuable business insights.

**Data Modeling: Entity Relationship Diagram (ERD)**

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**Sample Code:**

1. **Relational Data Model: Dependency Analysis**

Customer\_ID → Age, Score, First\_Name, Last\_Name, Street, City, State, Zip\_Code, Membership\_Type, Handicap, Course ID(**FK**)

Clubs\_ID → Cost, Hours

Course\_ID → Number\_of\_Holes, Available\_Hours, Par\_Score

Hole\_ID → Yards\_to\_Pin, Par, Pin\_Location, Course ID(**FK**)

Customer\_ID(**FK**), Clubs\_ID(**FK**)

1. **Relational Schema: Normalization in 3NF, table framework**

Customer (Customer\_ID, Age, First\_Name, Last\_Name, Street, City, State, Zip\_Code, Membership\_Type, Handicap, Course\_ID(**FK**))

Clubs (Clubs\_ID, Cost, Hours)

Course (Course\_ID, Number\_of\_Holes, Available\_Hours, Par\_Score)

Holes (Hole\_ID, Yards\_to\_Pin, Par, Pin\_Location, Course\_ID(**FK**))

Rents (Clubs\_ID**(FK)**, CustomerID**(FK)**)

1. **Table Creating:**

Create table Project\_Customer (

Customer\_ID INT,

Customer\_First VARCHAR(100),

Customer\_Last VARCHAR(100),

Membership\_Type VARCHAR(100),

Street VARCHAR (100),

City VARCHAR (100),

State VARCHAR (100),

Zip NUMERIC(5,0)

Age INT,

Handicap INT,

Course\_ID INT,

Score INT,

Primary Key (Customer\_ID)

);

Create table Project\_Course (

Course\_ID INT,

Number\_of\_Holes INT,

Available\_Hours INT,

Par\_Score INT,

Primary Key (Course\_ID)

);

Create table Project\_Holes(

Hole\_ID INT,

Par INT,

Yards\_To\_Pin INT,

Pin\_Location INT,

Course\_ID INT,

Primary Key (Hole\_ID)

);

Create table Project\_Clubs(

Clubs\_ID INT,

Customer\_ID INT,

Cost INT,

Hours INT,

Primary Key (Clubs\_ID)

);

Create table Project\_Rents(

Customer\_ID INT,

Clubs\_ID INT,

Primary Key (Customer\_ID, Clubs\_ID)

);

**4. Sample queries**

**Query 1: Count the total number of members and the average age with each membership type.**

This query allows Boilermaker Golf Course to understand the customer makeup of each membership type. It displays the average age and the total number of members within each membership type. It is clear that there are fewest members of the bronze membership type and that the average age of the silver membership type is oldest. Marketing promotions and ads can be catered to each age group. Also, Boilermaker Golf Course can perhaps release a coupon for silver membership to gain more members.

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**Query 2: Find the average time it takes to complete one hole in each course. Show the four courses that take the most amount of time per hole on average.**

This query shows which courses have holes that take a longer amount of time on average to complete. The number of holes and the average hours per hole are displayed for each course. This information can allow Boilermaker Golf Course to alter the course layout of courses 12, 10, 14 and 11 if they see fit. Another option is to allow customers more time to complete these holes. This will increase efficiency with the flow of customers throughout the courses.

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**Query 3: List the first and last names of customers who scored above par. Also show Course\_ID.**

In golf, a score below par is most desireable. This query shows customers who scored above par, and therefore have room to improve their golf skills. The first and last names of customers are given along with the course they played and the strokes they scored above par. Boilermaker Golf Course could recommend golf lessons to this specific group of people because they scored far above par. This Course\_ID also shows which courses may be more difficult for customers scoring above par.

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**Query 4: Show each course with a total count of holes with yards to pin greater than average.**

This query shows the courses with the most amount of holes qualifying with a greater than average yards to pin. The course and the number of holes are also given. For example, course 9 has six holes with a large number of yards to pin. If a customer struggles with longer holes, then course 9 would not be a good recommendation for them.

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**Query 5: How many clubs are being rented for each course?**

The below query shows which courses have the highest and the lowest amount of clubs rented. Courses 9 and 10 both have 10 sets of clubs rented out to customers. Courses 1, 8, and 21 have the fewest amount of clubs rented out at 2 sets. Perhaps Boilermaker Golf Course could run a discount promotion for clubs rented for courses 1, 8. And 21. Prices of renting clubs could also be revised with this query. Perhaps the courses with high club demand could be set at a slightly higher rental price.

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**Query 6: Which membership type spends the most amount of money on clubs and how many clubs does each type rent?**

Each membership type spends varying amounts on club rentals. This query shows that the gold membership type spends the most on club rentals while the silver membership type spends the least. The total cost and the total clubs rented are shown for each membership type. The bronze membership type rents the most amount of clubs; however, they may rent less costly clubs than the gold membership type. Boilermaker Golf Course can use this information to determine special deals and incentives for each membership type.

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**Query 7: Show the Customer\_ID, First\_Name and Last\_Name of customers with a first name ending with “A” or a last name starting with “M”.**

This query allows Boilermaker Golf Course to look up specific customer names with ease. For example, if a customer had a question about their customer\_ID or about the clubs that they rented, this query can quickly look it up using their name. This query shows customers with a first name ending with ‘A’ or a last name starting with ‘M.’

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**Query 8: How many holes are located in the front, center and back of each course?**

This query can be used to understand the golf course layout when making a map of the course and greens. Many holes are placed in different locations on each course. This query shows how many holes are placed in each section of each course.

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**Query 9: Show the customer ID of customers with a handicap below average. Order by handicap ascending.**

This query shows the handicap of each customer. The lower the handicap score is better the golfer is, therefore customers with a very low handicap may be targeted for an advanced golf competition event hosted by Boilermaker Golf Course.

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**Query 10: Which state beginning with “I” rents the most amount of clubs?**

This query shows that Illinois rents more clubs than Indiana at 41 clubs. This is useful in forecasting club rentals into the future. If Boilermaker Golf Course targets more Illinois customers, they can likely expect a higher demand for club rentals. This query will also tell management if certain states prefer to not rent clubs.

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