

My Cover Page

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W2044381

5COSC020W Database Systems

Individual Coursework Full Part A Complete

Tutorial Group: Tuesday's 4pm- 6pm

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Q1. Critical Evaluation and Reflective Commentary

I have noticed several key issues in the EERD provided in document A.2, especially regarding the actual Semantics involved and conceptual clarity of the EERD. These two key issues restrict the diagrams' effectiveness in conveying the data for the Racket minister Project provided.

1) Absence of Specialization (Entity Identification):

The lack of implementing Specialization, for example the key distinction between unsupervised and supervised sessions, are clearly absent from the EERD. With my EERD you can clearly see that it specifies that the instructors are involved in supervised sessions, but not in the unsupervised sessions as stated in the brief. However, with the document provided to us, it treats both supervised and unsupervised sessions the same without taking into consideration that one lacks instructors and the other hosts the instructors. Entity specialization should be used to make this key differentiation between both entities as it could affect both the data model itself and the key business processes that are intertwined within.

2) The Clear Misrepresentation of Relationships:

There are several relationships in the model provided that do not accurately depict how the entities truly should interact with each other. From the document provided I can see that they go for a simpler structure to represent the session booking system compared to how the real one and how it should really be implemented. It does not consider how players can block book multiple unsupervised sessions, not clearly expressed in Document A.2. It should be further developed to really track the recommendation chain for future incentive; however, it shows a simpler relationship.

3) Imprecise Multiplicities Involved:

I can see that many of the relationships in the provided EERD clearly leave out the multiplicity constraints and exhibit misinterpreted multiplicities. A key example here that I can see of error is the relationship between Playing Sessions and Court, these two lack any clear multiplicity which causes clear confusion because as a key important that is stated in the brief, that multiple Playing Sessions can be booked on a different Courts, but not at the same time. This EERD clearly fails to capture these key

restrictions provided to us, which would lead to utter confusion in how the booking system handles the scheduling.

4) The Defining of poor attributes:

The simplicity of the attributes provided in the Document does not clearly convey the depth of data it needs to describe. They have gone for a simpler approach with the attributes, which could lead to a loss of data integrity and overall meaning. A key example is the clear misrepresentation of the equipment assigned to the Courts. This EERD does not reflect or even include the descriptive attributes of the equipment's; condition of the equipment, the equipment type, equipment brand, equipment quantity (which is even key when relating to the maintenance log). These attributes should be well defined to track the changes over time and to clearly capture the data model in a more descriptive way.

My ERRD Difference

1) The Absence of Specialization (Entity Identification):

From both the brief and my inquiring to the managing director of Racketminister, I was able to identify the key main entities that would be needed to build his EERD. These entities include Person, Player, Caretaker, Park Caretaker, Court Caretaker, Maintenance log, Instructor, Equipment, Court, Park, Pickleball, Tennis, Multipurpose, Playing Session, Unsupervised Playing Session, Supervised Playing Session, Booking and Recommendation. I had to make sure each entity had a clear function and were objects that could be embodied in the real world but at the same time there were important ideas towards the system. A key example I want to state is the Recommendation entity I included in the ERRD, which clearly represents the potential for future incentives in the system's grand scheme.

Moreover, in terms of specialization and clearly seeing the absence of it on the Document provided. I introduced it through Playing Sessions, I understood that they can be specialized further into two streams, Unsupervised and Supervised. The court's specialization was also incorporated and through thorough research and questioning, we have seen the sports have differences and we have chosen to highlight this through specializing them into three strands Tennis, Pickleball and Multipurpose. Also, I made a clear distinction between Park Caretaker and Court Caretaker to highlight the key differences in their duties and field of work. This inclusion of specialization really makes our overall design mimic real world situations in which playing sessions demand various levels of monitoring, different caretakers

oversee both different maintenance tasks and assigned areas, different courts provide different concepts and attributes.

1) The imprecise usage of Multiplicities and Clarity through the Relationships:

To illustrate the complexity of the Booking System, I included a ternary relationship where needed, for example between Player, Playing Session, and Court. In addition to this I verified the multiplicities complied with the company guidelines and were accurate. Through the brief I understood that a Playing Session occurs on a single court at a time (one to many), but a player can attend numerous Playing Sessions and each of these Playing Sessions can contain multiple Players (Many to Many).

In addition to this I added in a ternary relationship between Player, Playing Session, and Court to really capture the fact that a player attends a particular practice that takes place on a certain court. The ability to trace which player attended which session on which court is made possible by the ternary relationship between the three entities.

3)Descriptive Attributes:

Through the lack of descriptive attributes, I made clear from the start that the Company wants a more colorful and data rich diagram to represent their scheme. I was able to attain this through attaching and filling each entity with well-defined attributes needed to attain pertinent data. A clear example would be the Player entity, which includes a diverse type of attributes associated to it; First Name, Last Name, Contact Info, Membership Type, Preferred Sport, Medical History, Booking History, Discount Type, Skill Type. Also, for the Maintenance Log I added Equipment Count, Equipment Condition, Equipment Description, Maintenance Date, Maintenance Type.... Through my usage of Primary Keys for every entity, this allows each entity to be uniquely identified in the EERD, which creates distinction and clarity for the model. Also, I understand that with Specialization there is a concept of inheritance that must be considered where the sub-class of the entity inherits the attributes, so they do not need their own ID to be inside as an attribute.

Question 2: Entities

Entity Data Dictionary Table

Entity Name	Brief Explanation
W2044381_Person	This represents a generalized entity for individuals that are involved in the system. This could be players, Instructors or Caretakers. This entity captures the common attribute of First name, Last Name, DOB and Contact Details, where it could be further specialized into distinct roles.
W2044381_Player	This entity represents the people who are partaking in racket- based sports like tennis, pickleball or both. This entity stores attributes like Medical History, Preferred Sport, Membership Type, Discount Type, Skill Type etc.....
W2044381_Instructor	This entity would represent the individuals responsible and involved in the sessions, supervising these sessions for Racket minster. Instructors may offer one-to-one coaching or lead group sessions. This entity stores key information about the instructor's qualifications, their schedule, and the sessions they will be overseeing. Some Key attributes are Instructor ID, Qualification, Schedule, Hourly Rate.
W2044381_Caretaker	This entity represents the individuals responsible for the maintenance of the parks and courts. This would branch out into two strands using specialization, one being a Park Caretaker responsible for maintaining the Parks, and a Court Caretaker responsible for the Courts. Some key attributes I have assigned to this entity would be Caretaker ID, Shift times, Assigned Area, Specialization, Leave Status.
W2044381_Park Caretaker	This is an entity that is formed through Specialization branching off the Caretake entity. This represents the Caretakers responsible for the key maintenance and preservation of the Parks. Some key attributes would be Park Maintenance and Assigned Parks.
W2044381_Court Caretaker	This entity also branched off the Caretaker entity through Specialization. This entity represents and has been created to really capture the other type of Caretakers the scheme would be having. These Caretakers would be responsible for the maintenance of the Courts. Their attributes would be Court Maintenance and Assigned Courts.
W2044381_Park	This entity represents the physical Parks where these racket-based sport courts are located. Parks may contain multiple facilities for both Players and Caretakers. This entity stores relevant information about the Parks location, facilities, and operational details, and is managed by specific Caretakers to uphold this smooth operation. Key attributes would be Park ID, Park name, Location, Facilities, Weather Conditions, Park Opening Times, and Number of Courts.
W2044381_Court	Now, this entity represents the individual sport courts that are in the parks where racket-based sports like tennis and pickleball can be played in. This entity stores information about the Court Type, Condition, Size, and is used to schedule Playing Sessions. Courts would also be specialized in different sports or multipurpose. Some attributes associated to this entity would be Court ID, Court Type, Condition, Court Availability, Court Size. The Court entity is crucial for organizing

	and managing sports sessions, ensuring that players have access to properly maintained courts suited to their sport of choice (e.g., tennis, pickleball, or multipurpose courts).
W2044381_ Maintenance Log	This entity represents the records of the maintenance activities performed on the courts and equipment. This entity stores information about when the maintenance took place, what was even done, and the current condition of the court and equipment after the maintenance is done. This helps the Facilities to be kept in good condition and more importantly is safe for use. Some key attributes would be Maintenance ID, Maintenance Status, Equipment Count, Next Maintenance date, Equipment Condition...
W2044381_ Equipment	This entity represents the different equipment items allocated to courts for usage in play. This entity maintains track of information about the kind, quantity, brand, and state of the equipment. Certain equipment (like nets, balls, and rackets) may be unique to each court and must be regularly maintained to guarantee players may use them.
W2044381_ Tennis	This entity is a product of specialization from the Court entity to represent the specific courts designed and designated for playing tennis. This entity is a product of the Court entity, it is established to really capture the attributes that are unique for tennis courts such as net height, court length, and serve area size. This ensures that the unique specifications required for tennis are effectively managed and maintained. The attributes for this entity would be Net Height, Court Length, Server Area Size, and Line Marking Type.
W2044381_ Pickleball	This entity, like the Tennis entity, is a product of Specialization and another branch falling off the Court entity. This is made to highlight the specific attributes assigned to the Pickleball Courts that are unique to them and different to the Tennis Courts. Some key attributes would be; Net Width, Ball Type, Paddle storage Type. For example, Ball type is an attribute to really show how pickleball can be played with different Ball Types which is unique to the sport and different to tennis.
W2044381_ Multipurpose	Through the understanding I got from the brief some courts can be multipurpose where both tennis and Pickleball can be played on it. The Multipurpose entity is another entity that falls under the Court entity through specialization, which allows these courts to be adaptable for various sports. This Captures the Specific attributes that are assigned, especially reflecting the key idea of the flexibility of the Court, such as adjustable Net Height and dual Line Markings for different games.
W2044381_ Playing Session	This entity represents a Schedule Sport Session where players participate on a court. The Playing Session entity includes details such as the Session Type (Supervised or Unsupervised Sessions), Session Duration, the Maximum number of players allowed, and the cost. Sessions can be specific to sport like tennis or pickleball and may take place on different courts.
W2044381_ Unsupervised Playing Session	This entity is made through the Specialization of Playing Session to really show the difference between the two types of Sessions a player can book. This is a type of Playing Session where there are no

	Instructors present, allowing players to play independently. This entity stores information like Player Count.
W2044381_ Supervised Playing Session	This entity, like Unsupervised Sessions, is a formed entity of the Playing Session entity through Specialization. This entity represents the Sessions accompanied by an instructor. This entity Captures additional details like Instructor name and Max Number of Instructors. This Session cannot be run without Instructors.
W2044381_ Player Referral&Incentives	This entity reflects the process of players getting recommended or referred to join the Racketminster Project. This entity captures especially valuable information such as the Referred player, referral player, referral date, referral status, and the incentive awarded.
W2044381_ Booking	The booking entity represents the action of a player reserving a spot in a playing session. The player who made the reservation, the session they are reserving, the date of the booking, and the booking's status are all recorded by the booking entity. This organization oversees the coordination of session availability and makes sure that players can guarantee their spot in particular sessions.
W2044381_BlockBooking	This Block Booking entity represents the action of a Player Reserving multiple Unsupervised Sessions as once, this may be due to their regular occurrence to the Court and hobby. This is an Option given to the Players if they would like to book multiple Unsupervised Sessions in one sitting.

Q3) Specializations

Specialization Data Dictionary Table

This Table below is a record of the Specializations for Racketminster

General Entity	Specialized Entity	Brief Explanation
W2044381_ Person ----->	W2044381_ Player	The specialized player entity is an entity that falls from the person entity. This entity represents the people partaking in these racket-based sports and booking in their sessions.
W2044381_ Person ----->	W2044381_ Instructor	This Specialized entity represents the people that

		would be responsible and involved in supervising these sessions for Racket minster.
W2044381_ Person ----->	W2044381_ Caretaker	This Specialized entity represents the individuals involved in the preservation and maintenance of the parks and courts, and this was further specialized into Park Caretakers and Court Caretakers.
W2044381_ Caretaker ----->	W2044381_ Park Caretaker	The Park Caretaker entity is a product of specialization from the Caretaker entity. These are the specific care takers responsible for the preservation and maintenance of the Parks.
W2044381_ Caretaker ----->	W2044381_ Court Caretaker	This is another specialized entity from the Caretaker entity. This represents the specific Caretakers responsible for maintaining the Courts. Things like managing the equipment and the maintenance of these courts to uphold the value of safety for both the players and instructors.
W2044381_ Court ----->	W2044381_ Tennis	This entity is a product of specialization from the Court entity to represent the specific courts designed and designated for playing tennis. This entity is a product of the Court entity, it is established to really capture the attributes that are unique for tennis courts such as net height, court length, and serve area size.
W2044381_ Court ----->	W2044381_ Pickleball	This entity, like the Tennis entity, is a product of Specialization and another branch falling off the Court entity. This is made to highlight the specific attributed assigned to the Pickleball Courts that are unique to them and different to the Tennis Courts.

W2044381_ Court ----->	W2044381_ Multipurpose (Sports)	Through the understanding I got from the brief some courts can be multipurpose where both tennis and Pickleball can be played on it. The Multipurpose entity is another entity that falls under the Court entity through specialization, which allows these courts to be adaptable for various sports.
W2044381_ Playing Session ----->	W2044381_ Supervised (Session)	This entity, like Unsupervised Sessions, is a formed entity of the Playing Session entity through Specialization. This entity represents the Sessions accompanied by an instructor. This entity Captures additional details like Instructor name and Max Number of Instructors. This Session cannot be run without Instructors.
W2044381_ Playing Session ----->	W2044381_ Unsupervised (Session)	This entity is made through the Specialization of Playing Session to really show the difference between the two types of Sessions a player can book. This is a type of Playing Session where there are no Instructors present, allowing players to play independently. This entity stores information like Player Count.

Q4) Relationships & Multiplicities

Relationships & Multiplicities Data Dictionary Table

Entity Name	Multiplicity	Relationship	Multiplicity	Entity Name	Brief Justification for each relationship
W2044381_ <u>Person</u>	<u>1..1</u>	<u>{Optional,Or} Specialization</u> <u>Classified into</u> <u>≥</u>	<u>0..1</u>	W2044381_ <u>Player</u>	<p><u>(0..1) for 0 this means some People may not be Players. A Person could be a Caretaker or Instructor or any other role without being involved in a Playing Session. The player role here is optional for the Person's entity.</u></p> <p><u>(0..1) for 1 it means each Person is associated with at most one player not multiple. A Person can be a player, but they can only be associated with one player.</u></p> <p><u>(1..1) 1 means that each player corresponds to exactly one record in the Person entity. Every Player is a Person so every Player would inherit the Persons attributes such as name, contact info etc.</u></p> <p><u>(1..1) 1 means a Player cannot exist without being associated to the Person. You cannot have a player without basic person Information like their name, contact info etc.</u></p>
W2044381_ <u>Person</u>	<u>1..1</u>	<u>{Optional,Or} Specialization</u> <u>Classified into></u>	<u>0..1</u>	W2044381_ <u>Instructor</u>	<p><u>(0..1) the 0 here essentially means not every person has to be an instructor. Some people might fall into other roles like a Caretaker or player or anything else, but not everyone must be an instructor.</u></p> <p><u>(0..1) The 1 here means a person may or may not be an instructor. However, if they are an instructor, it would be recorded as one record in the instructor entity.</u></p> <p><u>(1..1) The left 1 here means every instructor must be a person, this is due to the mere fact instructor is a specialization of person, meaning</u></p>

					<p><u>all instructors are people. We cannot have a person who is not human be an instructor; it is not logically possible.</u></p> <p><u>(1..1) The right 1 here means there is precisely one matching record in the Person entity for every Instructor. An instructor is always a person, and there is never a situation in which they do not exist. There are never any duplicate instructors.</u></p>
W2044381_ <u>Person</u>	<u>1..1</u>	<u>{Optional,Or} Specialization Classified into ≥</u>	<u>0..1</u>	W2044381_ <u>Caretaker</u>	<p><u>(0..1) This 0 here indicates to us that not every Person is a Caretaker. A person could be an Instructor, Player or fall into another Category or role. This emphasizes the fact that to fall into the Caretaker role is optional and not the only option there is.</u></p> <p><u>(0..1) The 1 here means a person may or may not be a Caretaker. If a Person, however, is a Caretaker, it would be recorded as 1 record corresponding in the Caretaker entity, if not an entry would not exist for them.</u></p> <p><u>(1..1) 1 shows us that not every Person is a Caretaker. A Person could fall into many different roles like a Caretaker, Instructor, or other existing roles in the scheme. A Person becoming or being a Caretaker is not the only role available that a Person could fall into.</u></p> <p><u>(1..1) 1 This tells us that for every Caretaker there is one person. A Caretaker is a Specialization off person so it would inherit all its key attributes highlighting to us that every Caretaker must be a person. Even logically, every Caretaker must be a Person.</u></p>

W2044381_ Caretaker	<u>1..1</u>	{Mandatory, and} Specialization used here Specialized into> Caretaker Type	<u>0..1</u>	W2044381_ Park Caretaker	<p><u>(0..1) The 0 here shows us that not every Caretaker is a Park Caretaker. We have already established that a Caretaker may be responsible for the Courts instead of the parks, there are two types of Caretakers; Park Caretakers and Court Caretakers.</u></p> <p><u>(0..1) This here indicates that a Caretaker may or may not be Specialized as a Park Caretaker. There are 2 options we are trying to highlight. They could fall under as a Park Caretaker or a Court Caretaker.</u></p> <p><u>(1..1) The left 1 indicates that every Park Caretaker must be a Caretaker. Logically we should know already but Park Caretaker is a specialization of Caretaker. It is impossible for a Park Caretaker to not be a Caretaker; it is in the name.</u></p> <p><u>(1..1) The right 1 here shows us that every Park Caretaker is a Caretaker. A Park Caretaker cannot be anything else than a Caretaker it is in the name.</u></p>
W2044381_ Caretaker	<u>1..1</u>	{Mandatory, and} Specialization used here Specialized into> Caretaker Type	<u>0..1</u>	W2044381_ Court Caretaker	<p><u>(0..1) 0 here indicates to us not every Caretaker has to be a Court Caretaker, they can have another option of being a Park Caretaker which has different responsibilities and requirements.</u></p> <p><u>(0..1) 1 here indicates to us that a Caretaker may or may not be specialized as a Court Caretaker. There is an option that the Caretake can be a Park Caretaker instead.</u></p> <p><u>(1..1) The left 1 indicates here to us that every Court Caretaker must be a Caretaker. There is no other option otherwise they cannot be a Park Caretaker. This is even seen through the</u></p>

					<p><u>specialization a Park Caretaker falls under Caretaker.</u></p> <p><u>(1..1) The right 1 here represents that for each Court Caretaker there is exactly one Caretaker. There cannot be one Park Caretaker and 2 Caretakers, they are linear for every Park Caretaker there is One Caretaker.</u></p>
W2044381_ <u>Park</u>	<u>1..*</u>	<u>Overseen and maintained by ></u>	<u>0..*</u>	W2044381_ <u>Park Caretaker</u>	<p><u>(0..*) The 0 here indicates to us that a Park Caretaker may not be assigned a Park. This could be because they are sick, temporarily inactive, on break or assigned a Court.</u></p> <p><u>(0..*) * here indicated that a Park Caretaker may be assigned and responsible for 1 or many parks, this could be due to larger parks needing more staff available to complete the maintenance in the smoothest way possible.</u></p> <p><u>(1..*) the 1 here indicates that every Park must be assigned or tended to by at least 1 Park Caretaker. This is a requirement from the company to insure the swiftness of operation.</u></p> <p><u>(1..*) * here presents to us that each park can have many Park Caretakers tending to it. This may be due to the size of the park; one Park Caretaker may not be enough so multiple needs to be assigned to it to both speed up and better the maintenance results.</u></p>
W2044381_ <u>Court</u>	<u>1..1</u>	<u>Situated In ></u>	<u>1..*</u>	W2044381_ <u>Park</u>	<p><u>(1..*) The 1 here clearly indicates to us that for every park there is a minimum of one court that exists inside of it. This is a clear requirement of the project, as without a court inside of a park (that could be used for racket-based sports) why would a park like this be selected and what would its use be to racketminster?</u></p>

					<p><u>(1..*)</u> * This many symbols here shows that for every park there can be many Courts. This is great for the project through the availability of Courts it can boost the number of matches and sessions available to our Players.</p> <p><u>(1..1)</u> The left 1 here indicates to us that each Court is located in exactly one Park. A Court cannot be located anywhere else due to the relationship we have here. In theory, there are no Courts without Parks.</p> <p><u>(1..1)</u> The right 1 here shows us that a Court can be associated with one park. A Court cannot be shared with multiple Parks, this is a clear impossibility as we if this were possible, they would be separate Courts.</p>
W2044381_ <u>Court</u>	<u>1..1</u>	<p>{Optional , And}</p> <p>Specialization used here</p> <p>Court Types></p>	<u>0..1</u>	W2044381_ W2044381_ <u>Tennis</u>	<p><u>(0..1)</u> The 0 here indicates to us that a Court may or may not be a tennis court. A court is not allocated or even has a Tennis Court. This could be because it could have a Pickleball Court not Tennis. Not all Courts have a Tennis Court></p> <p><u>(0..1)</u> The 1 here indicates that if a Court is a Tennis Court it can only be one Tennis Court. Not all Courts are Tennis Courts, they could be Pickleball, or Multipurpose where it could be.</p> <p><u>(1..1)</u> The left 1 here indicates to us that for every court there must be at least one Court Type assigned to it, so for tennis, pickleball, multiple purpose. Otherwise, it is not classed as a court if there is not sport Courts inside or contained in it.</p> <p><u>(1..1)</u> The right 1 here indicates that every Court must have at most 1 Classified Court. Each Court must be Classified as one</p>

					<u>Certain type of Court. If it is a Tennis Court, it cannot be used for basketball as an example.</u>
<u>W2044381_Court</u>	<u>1..1</u>	{Optional , And} Specialization used here Court Types>	<u>0..1</u>	<u>W2044381_Pickleball</u>	<p><u>(0..1) The 0 here indicates to us that not every Court is a Pickleball Court. The Court can be of use for Tennis or even multipurpose, which is a blend of the 2 sports. This highlights the options for the players, not every Court is used or has Pickleball.</u></p> <p><u>(0..1) The 1 here indicates to us that if there is a Pickleball Court it would be designated specifically for Pickleball unless it is of Multipurpose. The Court cannot be called anything else, if it is a Pickleball Court it is a Pickleball Court.</u></p> <p><u>(1..1) The Left 1 here tells us that every Court must be exactly one type of Court (either Tennis, Pickleball or Multipurpose). This really Captures that there cannot be any other options there are only three types available to the players.</u></p> <p><u>(1..1) The Right 1 here indicates to us that a Court can only belong to one type at a time. A Court cannot be a Pickleball Court and Tennis Court unless it is a Multipurpose Court Specifically. This is because it is clearly impossible, a Pickleball Court cannot be a Tennis Court at the same time.</u></p>
<u>W2044381_Court</u>	<u>1..1</u>	{Optional , And} Specialization used here Court Types>	<u>0..1</u>	<u>W2044381_Multipurpose</u>	<u>(0..1) 0 here indicates to us that a Court may or may not be a Multipurpose Court. A Multipurpose Court would contain both Tennis and Pickleball. A Tennis Court is different from it because it does not have a Pickleball Court like a Multipurpose Court. An example is a House is different from a room, rooms make up a house</u>

					<p><u>however they are not the same.</u> <u>Not all Courts would be Multipurpose.</u></p> <p><u>(0..1) The 1 here indicates to us when a Court is classed as Multipurpose even though it accommodates both Tennis and Pickleball. It is still classed as one Court; it cannot be multiple Courts it is just one Court.</u></p> <p><u>(1..1) The left 1 here indicates every Court must have a specific type. It can either be Tennis, Pickleball or Multipurpose. There are no other options, these are the only racket based or even sport that the project is providing.</u></p> <p><u>(1..1) A Court Can only belong to one specific Court type at a Time. Either Tennis, Multipurpose or Pickleball. It cannot be multi-typed at one time, except Multipurpose Courts, which offer the flexibility option to the Players to play both sports. However, in this case Multipurpose is classed as one Court.</u></p>
<u>W2044381_Court</u>	<u>1.. *</u>	<u>Overseen and Maintained By -----></u>	<u>0.. *</u>	<u>W2044381_Court Caretaker</u>	<p><u>(0..*) The 0 here indicates to us a Court Caretaker may not be assigned or allocated to a Court. This could be due to Sick leave or may be even assigned to do another job not concerning a Court.</u></p> <p><u>(0..*) The * sign here tells us that many Courts may be assigned and allocated to a Court Caretaker to maintain. This could be due to lack of staff, or the Court Caretaker may finish early on their assigned Court and help with the others.</u></p> <p><u>(1..*) The 1 here indicates that a Court must have at least one Court Caretaker assigned to it and responsible for its maintenance. This is to uphold and keep the smooth operation flowing without</u></p>

					<p><u>any faults and delays reaching the sessions.</u></p> <p><u>(1..*) The * sign here tells us that for every Court there could be multiple Court Caretakers assigned to them. This could be due to the size of the Courts; one Court Caretaker may not be enough so they might require 2 or multiple.</u></p>
W2044381_ Equipment	0..*	Assigned to ----->	1..*	W2044381_ Court	<p><u>(1..*) The 1 here indicates to us that every Court must have at least one piece of equipment inside of it. Otherwise, the Court is just a Court, and it cannot be played on, (even if that means one player is playing) so it would be of no use to the Project and Players.</u></p> <p><u>(1..*) The * sign here tells us that a Court can have multiple equipment pieces available (like balls, nets, rackets). This must happen to allow matches and multiple players and instructors to either play against each other or for the instructor to train the player or players.</u></p> <p><u>(0..*) 0 here shows us that some equipment may not even be assigned to a Court, or it could even be shared between Courts so at one time a Court may not even have any equipment inside of it.</u></p> <p><u>0..* The * sign here indicates to us that equipment can be assigned to multiple Courts. This could be due to a lack of Equipment on a certain Court and a Court may have spares it could be shared. To keep the fluidity of Play Equipment can be shared between Courts.</u></p>
W2044381_ Equipment	1..1	Maintained In ----->	0..*	W2044381_ Maintenance History	<p><u>(0..*) The 0 here indicates to us that some Equipment may not have a Maintenance History for multiple reasons. It could be new,</u></p>

					<p><u>it may not require Maintenance, it could be lost, or even worse stolen by the Players.</u></p> <p><u>(0..*) The * sign here tells us that one piece equipment may have multiple maintenance records as it may require multiple repairs over its lifetime due to accidental damages caused by either players or instructors.</u></p> <p><u>(1..1) The left 1 here indicates to us that for every Maintenance log there is a minimum of one item being logged in. Every time someone puts in a log it is made for a specific piece of equipment. This ensures that you cannot have a Maintenance History without at least one piece of equipment.</u></p> <p><u>(1..1) The right 1 here indicates that each Maintenance History is related to at most one specific piece of equipment. You cannot have a Maintenance log with more than one equipment. Every time someone puts in a log it is for a specific piece of equipment.</u></p>
<u>W2044381_Caretaker</u>	<u>1..*</u>	<u>Maintained and Logged by</u> <u>-----></u>	<u>0..*</u>	<u>W2044381_Maintenance History</u>	<p><u>(0..*) The 0 here indicates that some Caretakers, not all Caretakers, may not have any Maintenance History Records. This could be because they are new to the job and may not have performed any form of maintenance before.</u></p> <p><u>(0..*) The * sign here indicates that a one Caretaker may have done multiple Maintenance logs before, this may be overtime of them working and doing more Maintenance jobs throughout their career.</u></p> <p><u>(1..*) The 1 here shows that each Maintenance logs must be associated and assigned to at least</u></p>

					<p><u>one Caretaker. There cannot be a Maintenance log without a Caretaker who wrote it. We cannot have any records without a Caretaker.</u></p> <p><u>(1..*) The * sign here indicates to us that a Caretaker may perform multiple Maintenance logs, so one Caretaker has multiple Maintenance logs assigned to them that they have completed.</u></p>
<u>W2044381_Instructor</u>	<u>0..*</u>	<u>Sesson Supervision</u> ----->	<u>0..*</u>	<u>W2044381_Playing Session</u>	<p><u>(0..*) 0 here indicates to us that an instructor may or may not be assigned to a Playing Session, this considers the fact that there are no Instructors in the Unsupervised Sessions. There would be Instructors in the Supervised Sessions, however in Unsupervised Sessions there is no supervision or attendance of Instructors.</u></p> <p><u>(0..*) * here indicated that an instructor may be responsible for many Playing Sessions, they may oversee multiple Supervised Playing Sessions.</u></p> <p><u>(0..*) The 0 here indicates to us that a Playing Session may or may not have an instructor. This is considering the fact Unsupervised Sessions do not have any Instructors, but Supervised Sessions do.</u></p> <p><u>(0..*) The * here indicates to us that a Playing Session may have multiple Instructors present overseeing the same session. But take in mind that a Supervised Session must have at least one Instructor present but can have multiple at the same time.</u></p>

W2044381_ <u>Playing</u> <u>Session</u>	<u>1..1</u>	{ <u>Mandatory,</u> <u>And</u> <u>Specialization</u> <u>Playing</u> <u>Session Types</u> ----->	<u>0..1</u>	W2044381_ <u>Supervised</u> <u>Session</u>	<p><u>(0..1) The 0 here indicates that not every Playing Session is a Supervised Session. A Playing Session can be Unsupervised. This really captures the fact that there is another option rather than a Supervised Session.</u></p> <p><u>(0..1) The 1 here indicates that every Playing Session can have at most one Supervised Session. A Playing Session cannot have multiple Supervised Sessions on it.</u></p> <p><u>(1..1) The left 1 indicates that every playing session must have a minimum of a Supervised Session or Unsupervised Session. You cannot have a Playing Session without a Supervised Session in this case, or even it not being Unsupervised.</u></p> <p><u>(1..1) The right 1 indicated to us that a Playing Session has a maximum of 1 Supervised Session, you cannot have 2 Supervised Sessions on one Playing Session.</u></p>
W2044381_ <u>Playing</u> <u>Session</u>	<u>1..1</u>	{ <u>Mandatory,</u> <u>And</u> <u>Specialization</u> <u>Playing</u> <u>Session Types</u> ----->	<u>0..1</u>	W2044381_ <u>Unsupervised</u> <u>Session</u>	<p><u>(0..1) 0 indicates to us that not every Playing Session is Unsupervised. This is because a Playing Session may be Supervised. There are two options when it comes to the Playing Sessions for people.</u></p> <p><u>(0..1) 1 here shows us that at most a Playing Session can have one Unsupervised Session. A Playing Session cannot have multiple Unsupervised Sessions. For every Playing Session there is either an Unsupervised Session or a Supervised Session.</u></p> <p><u>(1..1) The left 1 here indicates to us for every Unsupervised Session there is a Playing Session. These are key because the Unsupervised entity is a specialization of Playing Session.</u></p>

					<p><u>(1..1) The left 1 here indicates that for every Unsupervised Session there is at most one Playing Session. Here we have really dwelled on the importance of specialization, you cannot have 2 Playing Session in one Unsupervised Session it makes no sense logically.</u></p>
W2044381_ <u>Unsupervised Session</u>	<u>0..1</u>	<u>Recursive Relationship</u> <u>Previous session to Next Session</u>	<u>0..*</u>	W2044381_ <u>Unsupervised Session</u>	<p><u>(0..*) The 0 here indicates an Unsupervised Session may not lead to another Unsupervised Session. This could be individuals that went on a one-off occasion or tried it out and did not enjoy the session itself.</u></p> <p><u>(0..*) The * sign here indicates that an Unsupervised Session may be followed by another Unsupervised Session. This could be individuals or groups that play as a hobby and have weekly practice sessions, so they are constantly going to the next Playing Session.</u></p> <p><u>(0..1) This shows that an Unsupervised Session may not be linked to another Unsupervised Session from a previous Session. They may move from an Unsupervised Session to a Supervised Session or even never return to Racketminster.</u></p> <p><u>(0..1) This indicates that an Unsupervised Session may be followed up by another Unsupervised Session as a Chain of constant interactions. A Session may be followed up by another Session.</u></p>
W2044381_ <u>Session Referral</u>	<u>0..*</u>	<u>Ternary Relationship</u> <u>(The Participation of Session Referral)</u>	<u>0..1</u>	W2044381_ <u>Unsupervised Session</u>	<p><u>(0..1) The 0 here indicates to us that an Unsupervised Session may not be referred by any Referrer at all. This is since a Referrer may Refer a Player to a Supervised Session or not even to any sort of Session. The minimum here is</u></p>

					<p><u>nothing as there is a Possibility of an Unsupervised Session to not be Referred.</u></p> <p><u>(0..1) The 1 here an Unsupervised Session may be linked to a maximum of one referral.</u></p> <p><u>(0..0) here shows that a Player Referral may not involve any Unsupervised Sessions. A Player can may a Referral, but in some cases, it may not be for an Unsupervised Session, it could be for a Supervised Session.</u></p> <p><u>(0..*) The * sign here indicates to us that a Player Referral can and may involve multiple Unsupervised Sessions. This could be due to constant attendance; the referred Player may enjoy it and attend constantly, or they might even do a Block Booking.</u></p>
W2044381_ <u>Session Referral</u>	<u>0..*</u>	<u>Ternary Relationship</u> <u>(The Participation of Session Referral)</u>	<u>0..1</u>	W2044381_ <u>Supervised Session</u>	<p><u>(0..1) The 0 here shows us that a Supervised Session may not even be referred to by any Referrer at all. This could be since a Session Referral may happen for an Unsupervised Session or a Referral may not even happen.</u></p> <p><u>(0..1) The 1 here indicates to us that a Supervised Session may be associated with at most 1 Player Referral.</u></p> <p><u>(0..*) The 0 here indicates to us that a Player Referral may not involve any sort of Unsupervised Sessions. This is because refer any individual to an Unsupervised Session or even no Sessions. The minimum number of Unsupervised Sessions that a Player Referral may involve is none in this case.</u></p>

					<u>(0..*) The * sign here indicates that a Player Referral can involve many Unsupervised Sessions. A player that gets Referred may make a block booking, or a group may be recommended to attend these, Sessions.</u>
<u>W2044381_ Session Referral</u>	<u>0..*</u>	<u>Ternary Relationship</u> <u>(The Participation of Session Referral)</u>	<u>0..*</u>	<u>W2044381_ Player Referral&Incentives</u>	<u>(0..*) The 0 here indicates to us that a Player Referral may not refer to any Sessions. This is because a Referral may not exist on the System itself. A Referral can be recorded but the type of Session may not have been chosen yet.</u> <u>(0..*) The * sign here indicates that a Player Referral may be linked to multiple Sessions because one Session Referral may be applied to multiple Sessions. This enhances the flexibility of Player Referral in the System.</u> <u>(0..*) The 0 sign here indicates that a Session Referral may not have any Player Referrals. A session may be Referred by an instructor or even a Caretaker, it is not always recommended by a Player</u> <u>(0..*) The * sign here indicates that a Session Referral may have multiple Player Referrals. This is because one Session Referral may be Referred by multiple different Players. These Players could all Refer and recommend the Same exact Session.</u>
<u>W2044381_ Instructor</u>	<u>1..*</u>	<u>Session Leadership</u> <u>-----></u>	<u>1..*</u>	<u>W2044381_ Supervised Session</u>	<u>(1..*) The 1 here indicates that for everyone Supervised Session there must be a minimum of 1 Instructor responsible for the Session. Without 1 Instructor at least present the Session would not be a Supervised Session, and it</u>

					<p>would be automatically classed as an Unsupervised Session.</p> <p>(1..*) The * sign here tells us that a Supervised Session can have multiple Instructors present overseeing it. You may have assistant Instructors present or Instructors that may be undergoing training with another Instructor. There may be multiple Instructors in one Supervised Session.</p> <p>(1..*) Each Instructor must be assigned or overseeing at least ONE Supervised Session. An instructor cannot exist or would even be classed as one of our instructors without leading at least one Supervised Session.</p> <p>(1..*) The * sign here really emphasizes to us how flexible an instructor can be. One Instructor can oversee many Supervised Sessions. Overtime, through different timescales they can manage multiple Supervised Sessions.</p>
W2044381_ Player	1..*	<p><u>Session Participation</u></p> <p>-----></p>	0..*	W2044381_ Playing Session	<p>(0..*) The 0 here indicates to us that a Playing Session may not have any Players attending them. There might be a lot of Cancellations, the weather may have the whole Session cancelled meaning no attendance. A Playing Session can also just have no Players that have signed up for it.</p> <p>(0..*) The * sign here indicates to us that a Playing Session may have multiple Players attending it. For example, a group Session may hold multiple Players.</p> <p>(1..*) The 1 here indicates to us that every Player is involved in at least 1 Playing Session. In this System we have formed a Player may not exist if they are not</p>

					<p><u>present and attend at least one Playing Session.</u></p> <p><u>(1..*) The * sign here tells us that a Player may attend multiple Playing Sessions. They might do a block booking and attend these Sessions over a certain time.</u></p>
W2044381_ <u>Player</u>	<u>1..*</u>	<p><u>Completing a Reservation</u></p> <p>-----></p>	<u>0..*</u>	W2044381_ <u>Booking</u>	<p><u>(0..*) here means a Booking may not have any players. This means a Booking can exist without any players linked to it. It may be a newly created Session, but it has not yet been booked by any players.</u></p> <p><u>(0..*) This indicates that a Booking may have multiple players linked to it. This is due to the mere fact that a Playing Session can host multiple players therefore a single Booking may have multiple players on it.</u></p> <p><u>(1..*) This minimum indicates to us that a Player must have at least made one Booking. A Player cannot exist on the System itself without making any Bookings. So, the least Booking one Player can make is one.</u></p> <p><u>(1..*) This Maximum suggests to us that a Player can book several multiple Sessions at a time. This may be due to the company's Block Booking System.</u></p>
W2044381_ <u>Attends</u>	<u>Not needed</u>	<p><u>Ternary Relationship</u></p> <p><u>The Participation of Session Referral</u></p>	<u>1..*</u>	W2044381_ <u>Player</u>	<p><u>(1..*) A Player must attend at least one Playing Session on a Court. Otherwise, the Player would not be logged on to the System as a Player.</u></p> <p><u>(1..*) A Player can attend multiple Playing Sessions overtime. This could be due to the Block Booking process available to our clients.</u></p>
W2044381_ <u>Attends</u>	<u>Not needed</u>	<u>Ternary Relationship</u>	<u>1..1</u>	W2044381_ <u>Court</u>	<p><u>(1..1) A Playing Session would occur on exactly one Court, and this does not change and cannot</u></p>

		<u>The Participation of Session Referral</u>			<p><u>change. You cannot have one Playing Session on two Courts, it is Impossible and not logical.</u></p> <p><u>(1..1) A Playing Session must take place on a Single Court. It is impossible for a Playing Session to take place on 2 or multiple courts, it would go against their mere laws of Physics.</u></p>
<u>W2044381_ Attends</u>	<u>Not needed</u>	<u>Ternary Relationship</u> <u>The Participation of Session Referral</u>	<u>1..*</u>	<u>W2044381_ Playing Session</u>	<p><u>(1..*) A Playing Session must have at least one Player attending the Session. A Playing Session cannot exist without there being no Players attending them.</u></p> <p><u>(1..*) A Playing Session can have multiple Players attending them. This could be due to group sessions that are available to the players. There can be multiple Players that can exist in one Playing Session.</u></p>
<u>W2044381_ Court</u>	<u>1..1</u>	<u>Scheduled On</u> <u>-----></u> <u>Another relationship Used For Also)</u>	<u>0..*</u>	<u>W2044381_ Playing Session</u>	<p><u>(0..*) This indicates to us that a Court may not even host a Playing Session on it. This could be due to severe weather conditions, lack of equipment, or even cancellation due to lack of Player Bookings.</u></p> <p><u>(0..*) This indicates that a Court can host multiple Playing Sessions. Multiple Playing Sessions can occur on a single Court throughout the day due to different timings.</u></p> <p><u>(1..1) This indicates to us that every Playing Session must have a minimum of One court available to be Played on. Without a Court there is no Playing Sessions, therefore the most possible number of Courts to run our scheme would be one Court.</u></p> <p><u>(1..1) This indicates that for every Playing session it is assigned to up</u></p>

					to one Court. A Playing Session cannot Span over multiple Courts this would be unethical and not safe.
W2044381_ <u>Booking</u>	<u>0..*</u>	<u>Session Reservation</u> ----->	<u>1..1</u>	W2044381_ <u>Playing Session</u>	<p>(1..1) Every Booking must be associated with a minimum of one Playing Session. A Booking would be attached to a specific type of Playing Session, for example MONUSSESSION1 could be one.</p> <p>(1..1) This indicates to us that a Booking cannot be linked to multiple or even two Playing Sessions. Each Booking can be associated with a maximum of one Playing Session. Every Booking would apply to a Single Playing Session.</p> <p>(0..*) This allows the possibility of a Playing Session existing however with no bookings yet. This may be because it was recently uploaded or created and there has not been enough time for Players to book it yet.</p> <p>(0..*) This allows multiple Players to book the Same Playing Session. For one Playing Session there may be multiple Booking spots for the Players. This may happen were Players book the Same Playing Session where they are seeking a Group Session.</p>
W2044381_ <u>Player</u>	<u>1..1</u>	<u>Makes</u> ----->	<u>0..*</u>	W2044381_ <u>BlockBooking</u>	(0..*) The 0 here indicates to us that a player can make zero Block Bookings. This leaves the reality of not all Players would want to do Block Booking, they may just prefer booking one Session at a

					<p><u>time rather than committing to multiple Sessions.</u></p> <p><u>(0..*) The * here indicates that a Player can make Many Block Bookings, this Player may be a Regular attendee to the Project or just really interested in the sports and wants to dedicate his time to booking multiple Sessions.</u></p> <p><u>(1..1) The 1 here indicates that every Block Booking must be associated to at least 1 Player. You cannot have a Block Booking without an actual Player making this Booking.</u></p> <p><u>(1..1) For every Block Booking there is a Maximum of one Player making and associated to the Block Booking. Every Block Booking needs a Player, this really highlights the relationship between the two entities.</u></p>
W2044381_ BlockBooking	<u>1..*</u>	<u>This would Include -----></u>	<u>1..*</u>	W2044381_ Unsupervised Session	<p><u>(1..*) Every Unsupervised Session that is a part of the Block Booking scheme, is associated to exactly and a minimum of one Block Booking. You cannot have an Unsupervised Session on Mutiple Block Booking, this would cause chaos and would be unreasonable. There must be at least one Unsupervised Session in a Block Booking.</u></p> <p><u>(1..*) A block booking may contain multiple Unsupervised Sessions. This is to give the option to the Players of selected various timings and dates for their desired Sessions.</u></p> <p><u>(1..*) Every Block Booking must contain at least one Unsupervised Session. This is a Must otherwise the Players would have no Sessions available to book.</u></p> <p><u>(1..*) Every Block Booking may have many Unsupervised Sessions associated with it. This gives the</u></p>

					<u>Players multiple and several options to book from this allows the action of Block Booking without any constraints.</u>
W2044381_ Player	<u>0..*</u>	<u>Player Recommendation -----></u>	<u>0..*</u>	W2044381_PI ayerReferral& Incentives	<p><u>(0..*) Every Player Referral may refer to no Players. However, each referral has a recommender. They may be a referral, but the Player does not commit and join the sessions, or they may not even be any referrals.</u></p> <p><u>(0..*) Every Player Referral may have multiple Players as a Referred Individual. They may be one Individual who recommends multiple Players of an existing Session.</u></p> <p><u>(0..*) Here it indicates to us that not every referral will refer to an existing Player. There may not be any Player Referrals. There may be a recommendation that may occur however to a Non existing Player.</u></p> <p><u>(0..*) A Player can be the referred person for Multiple Referrals at a time. A Player may be recommended to a Playing Session by multiple Individuals. This leaves the opening to a Player being recommended by multiple individuals rather than a maximum of one at a time.</u></p>
W2044381_PI ayerRefferal& Incentives	<u>0..1</u>	<u>Could be Referred to --></u>	<u>0..*</u>	W2044381_ NonPlayer	<p><u>(0..*) One Non-Player may not even be referred at all. This is taken into consideration that they are not a part of the system yet and no one has recommended them at all.</u></p> <p><u>(0..*) This indicates that multiple Players can refer a Non-Player to a Playing Session. One Non player have multiple recommendations given to them by different Players.</u></p> <p><u>(0..1) Each Player Referral & Incentives can refer to non-Players. This is because a Referral</u></p>

					<p><u>may be for either a Player or Non-Player not both. This leaves an optional course and clarity towards these two entities.</u></p> <p><u>(0..1) Each Player Referral & Incentives can refer to at most one non-Player. Highlighting that it could either target a Non player or Player.</u></p>
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Q5) Attributes & Primary Keys

Entity Name	Attributes for each entity & PK	Brief Explanation
W2044381_Person	W2044381_ Person ID {PK} W2044381_ First Name W2044381_ Last Name W2044381_ DOB W2044381_ Contact Info W2044381_ Type of Involvement	Person_ID (PK): An individual's unique identifier that is utilized by all specialized entities (Player, Caretaker, and Instructor). First_Name: The first name of the individual. Last_Name: The last name of the individual.

		<p>DOB: The date of birth of the individual.</p> <p>Contact_Info: The individual's contact information, such as phone number and email address.</p> <p>Type of Involvement specifies the individual's position or roles, including whether they are a player, instructor, caretaker, or a combination of these.</p>
W2044381_ Player	<p>W2044381_ Membership_Type</p> <p>W2044381_ Preferred_Sport</p> <p>W2044381_ Medical History</p> <p>W2044381_ Age Group</p> <p>W2044381_ Booking History</p> <p>W2044381_ Discount Type</p> <p>W2044381_ Skill Level</p> <p>W2044381_ Previous Achievements</p>	<p>Membership_Type: Indicates which kind of membership the player is a member of (standard, premium, guest, etc.).</p> <p>Preferred_Sport: The sport (such as tennis or pickleball) that the player prefers or plays the most.</p> <p>Medical History: Documents any pertinent medical history that may affect the player's ability to participate (e.g., allergies, injuries).</p> <p>Age_Group: Indicates the player's age range, such as junior, adult, or senior.</p> <p>Booking_History: A record of the player's prior session reservations, along with dates and session kinds.</p> <p>Discount_Type: Indicates whether the player is entitled for any discounts, such as promotional or membership-based discounts.</p>

		<p>Skill_Level: in their chosen sport is indicated by their skill level (beginning, moderate, advanced).</p> <p>Previous_Achievements: A list of the players prior successes, such as participation awards or tournament victories.</p>
W2044381_ Instructor	<p>W2044381_ Qualification</p> <p>W2044381_ Schedule</p> <p>W2044381_ Languages Spoken</p> <p>W2044381_ Hourly Rate</p> <p>W2044381_ Types of Training</p>	<p>Qualification: The credentials the teacher possesses, such as degrees or coaching certifications.</p> <p>Schedule: When the instructor is available to lead classes, such as the days and times they are available.</p> <p>Languages_Spoken: The instructor's fluent languages, which are crucial for interacting with players from various backgrounds.</p> <p>Hourly_Rate: The hourly wage that the instructor receives for leading or overseeing classes.</p> <p>Types_of_Training: The coaching or training that the teacher specialises in (e.g., match preparation, fitness training, technical drills).</p>
W2044381_ Caretaker	<p>W2044381_ Shift Times</p> <p>W2044381_ Assigned Area</p> <p>W2044381_ Specilisation</p> <p>W2044381_ Leave Status</p> <p>W2044381_ Last Maintenance</p> <p>W2044381_ Maintenance History</p> <p>W2044381_ Task Assigned</p>	<p>Shift_Times: The caregiver's planned working hours, such as the morning, afternoon, and evening shifts.</p> <p>Assigned_Area: The precise place or infrastructure that the carer oversees (e.g., certain parks, courts).</p> <p>Specialization: Any specific skills the carer possesses, such</p>

		<p>as equipment repair, landscaping, or court upkeep.</p> <p>Leave Status: Shows if the carer is on leave (e.g., active, on leave, vacation).</p> <p>Last_Maintenance: The time and date of the caretaker's most recent maintenance assignment.</p> <p>Maintenance_History: A list of all prior maintenance chores and dates that the caretaker has finished.</p> <p>Task_Assigned: The present responsibilities or tasks that the caretaker oversees, such as cleaning courts, inspecting equipment, and making repairs.</p>
W2044381_ Park Caretaker	W2044381_ Park Maintenance W2044381_ Assigned Parks W2044381_ Park Facility Roles	<p>Park_Maintenance: The general duties (such as cleaning, repairs, and landscaping) that go into keeping the park in good condition.</p> <p>Assigned_Parks: The parks under the caretaker's supervision and upkeep.</p> <p>Park_Facility_Roles: Park locations that fall within the purview of the caretaker (e.g., playgrounds, restrooms, picnic spots).</p>
W2044381_ Court Caretaker	W2044381_ Court_Maintenance W2044381_ Assigned Court W2044381_ Equipment Check W2044381_ Court Surface Maintenance	<p>Court_Maintenance: The duties involved in keeping the court or courts in good condition (e.g., net adjustments, resurfacing, cleaning).</p>

		<p>Assigned_Court: The courts (such as tennis or pickleball courts) that the caretaker oversees.</p> <p>Equipment_Check: The regular examinations or upkeep of court-related sporting goods (such as netting, balls, and racquets).</p>
W2044381_Park	W2044381_Park ID {PK} W2044381_Park Name W2044381_Location W2044381_Facilities W2044381_Weather Condition W2044381_Park Opening Time W2044381_Park Closing Time W2044381_Number Of Courts	<p>Park_ID (PK): A Unique Identifier assigned to every park.</p> <p>Park_Name: The park's name.</p> <p>Location: The park's actual address or location.</p> <p>Facilities: A list of the park's amenities, such as benches, restrooms, and playgrounds.</p> <p>Weather_Condition: The park's current climate, including whether it is sunny, wet, or snowy.</p> <p>Park_Opening_Time: The moment when the park is open to the public.</p> <p>Park_Closing_Time: The hour at which the park is closed to the public.</p> <p>Number_Of_Courts: The total number of courts (such as basketball, pickleball, and tennis courts) in the park.</p>
W2044381_Court	W2044381_Court ID {PK} W2044381_Court Type W2044381_Court Availability W2044381_Court Condition W2044381_Court Size	<p>Court ID {PK}: Unique Identifier for Court.</p>

	<p>W2044381_ Type Nets W2044381_ Number of Courts</p>	<p>Court_Type: The kind of court (basketball, pickleball, tennis, etc.).</p> <p>Court_Availability: The court's present state, such as whether it is booked, available, or undergoing maintenance.</p> <p>Court Condition: The state of the court, such as whether it is excellent, good, or in need of repair.</p> <p>Court_Size: The court's measurements, such as full-size or half-size.</p> <p>Type_Nets: The kind of nets that are utilized on the court, such as pickleball or tennis nets.</p>
W2044381_ Pickleball	<p>W2044381_ Ball Type W2044381_ Paddle Storage Type</p>	<p>BallType: This represents the flexibility of Pickleball. There can be several types of balls used in the Sport which is unlike Tennis.</p> <p>PaddleStorageType: This is the surface area of the Pickleball Paddle which is distinct to this sport.</p>
W2044381_ Tennis	<p>W2044381_ Net Height W2044381_ Court Length W2044381_ Serve Area Size W2044381_ Line Marking Type</p>	<p>Net_Height: This is the height of the net of the Court. This varies and is different to Pickleball in terms of its size.</p> <p>Court_Length: The overall length of the court, such as 78 feet for tennis and 44 feet for pickleball.</p> <p>Serve_Area_Size: The size of the court's service area, which varies depending on the sport (e.g., for pickleball or tennis).</p>

		<p>Line_Marking_Type: The kind of line markings that are utilized on the court, such as dual markings for multipurpose courts that support different sports or solid lines for tennis.</p>
W2044381_ Multipurpose	<p>W2044381_ Adjustable Net W2044381_ Net Adjustment Mechanism W2044381_ Dual Line Markings</p>	<p>Adjustable_Net: Provides a yes/no response indicating if the court has an adjustable net. This makes it possible to adjust the net height according to the sport being played (e.g., pickleball vs. tennis).</p> <p>Net_Adjustment_Mechanism: Explains the mechanism (e.g., manual crank, automated system) that is utilized to change the net height.</p> <p>Dual_Line_Markings: Indicates if the court has lines designated for more than one sport, such as pickleball and tennis. Depending on the markings, this enables the court to be utilized for several sports.</p>
W2044381_ Equipment	<p>W2044381_ Equipment ID {PK} W2044381_ Equipment Type W2044381_ Equipment Brand W2044381_ Equipment Quantity W2044381_ Equipment Condition</p>	<p>Equipment_ID {PK}: A Unique Identifier for Equipment.</p> <p>Equipment_Type: Represents the various kinds and varieties of Equipment there is available on the Courts for use of the Players.</p> <p>Equipment Brand: The Type of Brand, there are various kinds of piece of Equipment's available that the courts have.</p> <p>Equipment Quantity: This is the amount of Equipment that is available and that can be used on the Courts.</p>

		<p>Equipment Condition: The Equipements Condition can change drastically overtime through the damages caused to them. This attribute highlights the importance to the condition of these pieces of Equipment and how it links to the Maintenance History.</p>
<p>W2044381_ Maintenance History</p>	<p>W2044381_ Maintenance ID{PK} W2044381_ Maintenance Status W2044381_ Equipment Count W2044381_ Maintenance Log W2044381_ Maintenance Type W2044381_ Next Maintenance Date W2044381_ Equipment Condition W2044381_ Equipment Description W2044381_ Maintenance Date</p>	<p>Maintenance_ID{PK}: A Unique Identifier for Maintenance History.</p> <p>Maintenance_Status: The present state of the maintenance task (that is, whether it is pending, ongoing, or finished).</p> <p>Equipment_Count: If more than one piece of equipment is being maintained, the number of items engaged in the maintenance activity.</p> <p>Maintenance_Log: A thorough log of all maintenance activities completed, including job descriptions.</p> <p>Maintenance_Type: The kind of maintenance (routine, repair, inspection, etc.) that is being performed.</p> <p>Next_Maintenance_Date: The day when the next service or maintenance inspection is planned.</p>

		<p>Equipment_Condition: The state of the equipment under maintenance, such as good, damaged, or in need of repair.</p> <p>Equipment_Description: An explanation of the equipment (such as a ball machine or tennis net) that is being serviced.</p> <p>Maintenance_Date: The date on which the maintenance was completed.</p>
W2044381_ Playing Session	<p>W2044381_ Playing Session ID {PK}</p> <p>W2044381_ Session Type</p> <p>W2044381_ Session Date</p> <p>W2044381_ Session Cost</p> <p>W2044381_ Session Duration</p> <p>W2044381_ Session Status</p> <p>W2044381_ Focus Session</p> <p>W2044381_ Max Players</p>	<p>Playing_Session_ID {PK}: This is the Unique Identifier for Playing Session.</p> <p>Session_Type: The Playing Sessions fall into two types Supervised and Unsupervised. There are two options for Players to choose from. There is also the option for Group sessions, focus sessions, 1 on 1s etc.</p> <p>Session_Date: The date of the Playing Session the Day, Month and Year.</p> <p>Session_Cost: The Price for booking and reserving a Session.</p> <p>Session_Duration: The Time a Playing Session spans for and how long it would last.</p> <p>Session_Status: The availability of the Playing Session and whether there is booking space for the Players.</p> <p>Focus_Session: The type of Playing Session where the</p>

		<p>instructors would focus on a certain Type of Play or Practice.</p> <p>Max_Players: The Maximum number of Players that are attending these Playing Sessions.</p>
W2044381_ Unsupervised Session	<p>W2044381_ Player Count</p> <p>W2044381_ Player Roles</p>	<p>Player_Count: The number of Players that have attended the Playing Session since there are no Instructors.</p> <p>Player_Roles: The role of the Players that have attended a Playing Session. There could be a group leader, Captain, referee.</p>
W2044381_ Supervised Session	<p>W2044381_ Instructor name</p> <p>W2044381_ Max Instructors</p>	<p>Instructor_name: The name of the instructor that is overseeing the Supervised Session.</p> <p>Max_Instructors: The maximum number of Instructors that are responsible for the Supervised Sessions.</p>
W2044381_ Player Referral	<p>W2044381_ Player Referral ID{PK}</p> <p>W2044381_ Referral Player</p> <p>W2044381_ Referred Player</p> <p>W2044381_ Referral Date</p> <p>W2044381_ Referral Status</p> <p>W2044381_ Incentive Awarded</p>	<p>Player_Referral_ID{PK}: The Unique identifier for Player Referral.</p> <p>Referral_Player: The Player that has recommended another Player about a Playing Session.</p> <p>Referred_Player: The Player that has been recommended for a Playing Session.</p> <p>Referral_Date: The Date that the referral occurred.</p> <p>Referral_Status: The footing of the Referral, the position of status it is at.</p> <p>Incentive_Awarded: The incentives or incentive that is</p>

		rewarded to the person who is referring other people to these Playing Session.
W2044381_Booking	W2044381_Booking ID {PK} W2044381_Booking Type W2044381_Booking Date W2044381_Booking Status W2044381_Payment Status W2044381_Court Assigned W2044381_Special Requirements	<p>Booking_ID{PK}: The Unique Identifier for the Booking entity.</p> <p>Booking_Type: The type of booking the Player wants there are diverse types of Playing Sessions available to the Players.</p> <p>Booking_Date: The Date that the Booking was completed and Recorded on the System.</p> <p>Booking_Status: The Status of the Booking how far has this Booking gone in the process of completing the Booking</p> <p>Payment_Status: The Status of the Payment, how far has the Payment reached until it has gone through, and the booking is completed.</p> <p>Court_Assigned: The Court that is given to the Player or Players when they have completed their Booking process.</p> <p>Special_Requirements: Special requests that a Player or Players may give to help improve their experience with us at Racketminster.</p>
W2044381_BlockBooking	W2044381_BlockBookingID {PK} W2044381_Booking_Date W2044381_Total_Booking_Cost W2044381_BookingStatus W2044381_SpecialRequests	<p>BlockBookingID{PK}: This is the Unique Identifier (Primary Key) for the Block Booking entity.</p> <p>Booking Date: This represents the date at which the Player</p>

		<p>has chosen to book when Block Booking.</p> <p>Total_Booking_Cost: This represents and highlights the actual cost associated with the Booking made by the Player.</p> <p>BookingStatus: This is the position and status of the booking at the stage it is at in Completion.</p> <p>SpecialRequests: This represents any invocations a Player may have for the sessions they are trying to book.</p>
W2044381_NonPlayer	W2044381_NonPlayerID{PK} Contact_Info	<p>NonPlayerID{PK}: This represents and is the Unique Identifier (Primary Key) for the Non-Player entity.</p> <p>Contact_Info: This attribute represents the contact information associated with the non-Player.</p>

This Diagram as well i will upload the PDF version of it.

I have also done a regular Conceptual ERRD on the Audiovizzion scenario given.

I have attached it on blackboard as the PDF EXTENSION NOT PART OF COURSEWORK.