# Objectives

This assessment task focuses on the following Learning Outcomes:

* Analyse and model business database requirements using EER diagrams
* Design the logical relational model based on conceptual database design
* Implement and maintain a relational database using SQL

# Project Specification

RareFitness is an Australian owned chain that supports the fitness needs of the community across the Western Sydney region. The club offers a range of fitness equipment, programs and personal training sessions for individuals to achieve their health and fitness goals. RareFitness prides itself on their world-class facilities, and expert professionals. Customers of RareFitness say that they trust the personal trainers because they provide an excellent fitness service that meets their needs.

The club employs a good number of skilled personal trainers, admin staff and a few receptionists to run everyday activities. At present, over 2000 members are registered with the fitness club. Members are required to provide personal details such as name, date of birth, address, etc. to register to the club. Each member registration process is administered by an admin staff. Only registered members can access the club facilities and book sessions with personal trainers.

The club is open to its members from 6am to 10pm, 7 days a week. Members can book an appointment with a personal trainer any time during this trading hour. However, A personal trainer works for a maximum of 8 hours per day. The

availability and scheduling of personal trainers is manually done by the admin staffs. They use physical notebooks and diaries to record the availability of each trainer and prepare weekly roster for them.

Each customer is officially registered with one personal trainer at the time they become a member of the club. A member is required to make an appointment to attend a one-to-one session with a personal trainer. All the member and appointment records are stored manually by the receptionists.

To make an appointment, a member should contact a receptionist by phone or in person. The member provides his/her member identification number, and the receptionist provides a list of available time slots to choose from. The appointment is usually booked with the member’s registered trainer. In case the trainer is unavailable, the member can make an appointment with any available trainer. The date and time of the booked session are given to the member as an appointment confirmation. A member can also cancel a booked appointment by contacting a receptionist.

Members are expected to report their arrival to the receptionist at least 15 mins prior to the training session. The receptionist asks for the member’s identification number and confirms that the member has been checked in. During the session, the trainer manually records session outcomes such as details of fitness plan, meal plan to member’s record.

To keep an updated record of current members, the receptionists periodically de-register the members who has already left the fitness club.

With the growing demand of personal trainers by the members, the admin staffs of the club are working around the clock to manage the appointments. Recently, the top management has contacted you to create a database system to facilitate the appointment management process of the club. The purpose of the database is to record member details of the fitness club and the appointment details with their personal trainers.

# Task Specification

Read the case study and create a database for RareFitness to record details of their members, available exercises, sessions, personal trainers, and appointments. Students can use SQL Server or Microsoft Access database management system software.

# Task 1: designing fitnessdb (creating tables, fields, setting relationships and entering data) (35 marks)

1. Create a new Blank Database and save it as [StudentID]\_FITNESSDB.
2. Now create the tables for the database.
3. You need to create the database tables (**Member, Appointments, TrainerAvailability, SessionDetails, and Exercise)** as specified below. **You must decide the appropriate data type for each field.**

**Member table: (4 marks)**

**Field Name**

**Data Type**

**Description**

MemberID

Member Identification Number

Surname

Member Surname

Firstname

Member First name

|  |  |  |
| --- | --- | --- |
| Address |  | Member address |
| Suburb |  | Member Suburb |
| State |  | Member State |
| Post code |  | Member Post code |
| Phone |  | Member Phone |
| DOB |  | Member date of birth |

## Exercise table: (4 marks)

|  |  |  |
| --- | --- | --- |
| **Field Name** | **Data Type** | **Description** |
| ExerciseID |  | Exercise Number |
| Name |  | Exercise Name |
| Category |  | Exercise category |
| Equipment |  | Equipment to be used to do the exercise |

## SessionDetails table: (4 marks)

|  |  |  |
| --- | --- | --- |
| **Field Name** | **Data Type** | **Description** |
| MemberID |  | Member Identification Number |
| ExerciseID |  | Exercise Number |
| SessionType |  | Type of session like hands on, telephonic update etc. |
| NumberOfSessions |  | Session number |

## Appointment table: (4 marks)

|  |  |  |
| --- | --- | --- |
| **Field Name** | **Data Type** | **Description** |
| PTID |  | Personal Trainer Identification Number |
| MemberID |  | Member Identification Number |
| Time |  | Time of Appointment |
| AppointmentDate |  | Date of Appointment |
| Status |  | Status of appointment: whether pending, cancelled or completed |

## PersonalTrainerAvailability table: (4 marks)

|  |  |  |
| --- | --- | --- |
| **Field Name** | **Data Type** | **Description** |
| PTID |  | Personal Trainer Identification Number |
| PTFirstname |  | Personal Trainer firstname |
| PTSurname |  | Personal Trainer Surname |
| AvailableTime |  | Time of Availability |
| AvailabilityDate |  | Date of Availability |
| FeesPerHour |  | Fees per hour |

4. Now that the table design is complete. Please enter the data into the tables (as given below). Each table data entry is out of **2 marks**.

## Member table

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Fields** | **Member1** | **Member2** | **Member3** | **Member4** | **Member5** | **Member6** |
| MemberID | 1 | 2 | 3 | 4 | 5 | 6 |
| Surname | Mason | McDowell | Schmidt | Hall | Johnson | Adams |
| Firstname | Glen | Lyndall | Belinda | Glenda | Gary | Loretta |
| Address | 78 Mark St | 37  Perimeter Rd | 24 Oxford  St | 2 Second  Ave | 88 Forest  Rd | 29 Smith St |
| Suburb | Castle Hill | Epping | Lidcombe | Sydney | Lidcombe | North Sydney |
| State | NSW | NSW | NSW | NSW | NSW | NSW |
| Post code | 2154 | 2122 | 2141 | 2000 | 2141 | 2060 |
| Phone | 9567 8902 | 9253 4345 | 9493 6278 | 9500 1112 | 9678 4072 | 9253 4338 |
| DOB | 12th June  1979 | 16th Feb  1992 | 27th March  1989 | 21st  October  1987 | 10th April  1982 | 14th July  1970 |

## Exercise table

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Fields** | **Exercise1** | **Exercise2** | **Exercise3** | **Exercise4** | **Exercise5** | **Exercise6** |
| ExerciseID | 1 | 2 | 3 | 4 | 5 | 6 |
| Name | Bent Over row | Skull crusher press | Barbell  Back  Squats | Glute Ham  Raise | Alternate side lunge | Ham string curl |
| Category | Upper Body | Upper Body | Lower Body | Lower Body | Full Body | Lower Body |
| Equipment | Dumbbell | Dumbbell | Barbell | Glute Ham Raise machine | None | Ham string machine |

## SessionDetails table

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Fields** | **Session1** | **Session2** | **Session3** | **Session4** | **Session5** | **Session6** |
| MemberID | 1 | 2 | 3 | 4 | 5 | 1 |
| ExerciseID | 1 | 6 | 3 | 1 | 5 | 4 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SessionType | Hands On | Telephone Update | Hands On | Hands On | Hands On | Telephone Update |
| NumberOfSes  sions | 43 | 21 | 67 | 34 | 12 | 2 |

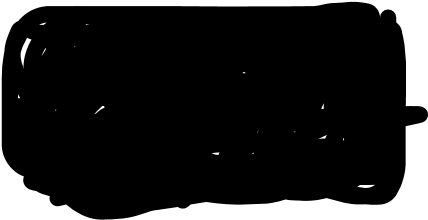
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## Appointment table

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Fields** | **Appoint1** | **Appoint2** | **Appoint3** | **Appoint4** | **Appoint5** | **Appoint6** |
| PTID | 6 | 2 | 6 | 1 | 5 | 4 |
| MemberID | 3 | 2 | 1 | 5 | 4 | 4 |
| Time | 5 am | 9 am | 1 pm | 6 am | 7 pm | 5.30 am |
| Appointmen tDate | 15th October  2019 | 18 th August  2019 | 10th  December 2019 | 30th March  2020 | 18th June 2019 | 25 th April 2020 |
| Status | Completed | Cancelled | Pending | Cancelled | Completed | Pending |

## PersonalTrainerAvailability table

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Fields** | **Trainer1** | **Trainer2** | **Trainer3** | **Trainer4** | **Trainer5** | **Trainer6** |
| PTID | 1 | 2 | 3 | 4 | 5 | 6 |
| PTFirstname | Ambrose | Tom | Michael | Rohan | Golnaz | Tina |
| PTSurname | Burong | Hanks | Fernandes | Seam | Beferm | Munim |
| AvailableTime | 6 am to  10 am | 5 pm to 9 pm | 9 am to 1 pm | 3 pm to 7 pm | 6 am to 3 pm | 4 pm to 10 pm |
| AvailabilityDays | Monday, Thursday | Monday  to Friday | Friday to  Sunday | Tuesday and Saturday | Thursday and Sunday | Monday to Saturday |
| FeesPerHour | $50 | $45 | $60 | $43 | $62 | $80 |



1. Now that you have created the tables for the database, the next step is to create the relationships between the tables. **(5 marks)**
2. You have now completed setting up your database.

# Task 2: QUERIES (28 marks)

## A. You are now going to create queries: (4 marks each)

1. Find the first name, surname, suburb and phone (sort in ascending order) of all the Members that live in Lidcombe suburb (do not show suburb in answer). Save the query as “Members from Lidcombe”.
2. Find the first name (sort in descending order) and surname of all the Members that live in a postcode that ends with the digit “0”. Save the query as “Postcode”.
3. Find the name (sort in ascending order) of all the Exercises that are of Lower Body category and use an Equipment that has the word “Ham” in it. Save the query as “HamLowerBody”.
4. Find all the Session details (MemberID [in ascending order], ExerciseID [in ascending order] and session type) for those Sessions that have number of sessions more than 20. Save the query as “Popular Members”.

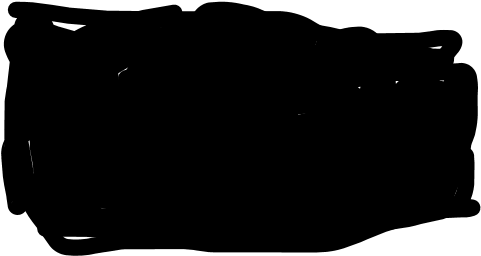
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1. Find all the Surnames and firstnames of members and their trainers whose appointment is pending. Do not show the Status column in the output. Save the query as “Pending Appointments”.
2. Find the names of the exercises which have session type as hands on. Show the names of members and their personal trainers. Sort in ascending order of Exercise names. Save the query as “Hands On”.
3. Find the appointment date, time and Member ID of all members who are with the trainer Golnaz. Do not show the Trainer name in the output. Save the query as “Appointments of Golnaz”. (Ensure that all tables used have required relationships).

# Task 3: Advanced Queries (12 marks)

You are now going to CREATE ACTION and TOTAL QUERIES and USE EXPRESSIONS:

## Create the following queries: (6 marks each)

1. Find the total fees (SUM) of all the personal trainers. Give the name to this column as “Sum Of FeesPerHour”. Save the query as “Total rate”.
2. For this query, we would like you to calculate two additional fields. The first one should be named “TaxApplied”. This field should apply 20% to the FeesPerHour. The second calculated field should be named “FeesAfterTax”. This field should calculate the Fees per hour after deducting tax. Both the calculated fields should show currency format. Include Trainer ID, Trainer firstname, Trainer Surname and FeesPerHour in the query output. Save the query as Tax Applied.

# Task 4: Form (11 marks)

For this task you will need to create a form for the PopularMembers query. You may use any colours and formatting you like, as well as any design. Please ensure that the field "MemberID" is locked so that the Member’s ID number cannot be altered by the user. Save the form as “Popular Members Form”.

# Task 5: Report (14 marks)

For this task you will need to create a query and report. Create a query that will select the Trainer firstname, Trainer surname, Member firstname, Member surname, trainer availability days and exercise category for the trainers where the fees per hour is $50 or less. Save this query as MediumPriced. **(7 marks)**

Now create a report called “MediumPriced Trainers Availability” based on the MediumPriced query that can be used to print a list of all trainers whose charges are medium priced. You may use any colours and formatting you like, as well as any design. Please ensure that grouping is done as per AvailabilityDays. **(7 marks)**

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## Marking Rubrics

|  |  |  |  |
| --- | --- | --- | --- |
| **Task No.** | **Item** | **Marks**  **(Out of)** | **Marking scheme** |
| 1 | **Member table** | **4** | **Design View For each table: 1mark for creating the fields as per mentioned in question, 1 marks for assigning Primary key, 1 mark for data type, 1 mark for description** |
| **Exercise table** | **4** |
| **SessionDetails table** | **4** |
| **Appointment table** | **4** |
| **PersonalTrainerAvailability table** | **4** |
| **Member table** | **2** | **Datasheet View For each table: 1 mark for entering values as given in the question document and 1 mark for entering values in the correct table** |
| **Exercise table** | **2** |
| **SessionDetails table** | **2** |
| **Appointment table** | **2** |
| **PersonalTrainerAvailability table** | **2** |
| **Relationship** | **5** | **0.5 marks for each relationship selection of One to many relationship, 0.5 marks for selecting the option ENFORCE REFERENTIAL INTEGRITY.** |
| 2 | **Query 1** | **4** | **For each query: 1 mark for selecting correct attributes, 1 mark for correct condition/criteria, 1 mark for correct relation, 1 mark for correct name of the query.** |
| **Query 2** | **4** |
| **Query 3** | **4** |
| **Query 4** | **4** |
| **Query 5** | **4** |
| **Query 6** | **4** |
| **Query 7** | **4** |
| 3 | **Advance Query 1** | **6** | For each query: 1 mark for selecting correct attributes, 1 mark for correct  condition/criteria, 1 mark for correct relation, 1 mark for correct name of the query, 1 mark for aggregate function, 1 mark for appropriate Property setting |
| **Advance Query 2** | **6** |
| 4 | **Form** | **11** | 1 mark for selecting Form Object, 1 mark for corect query selection, 1 mark for color choice, 1 mark for locking the field, 1 mark for identifying the correct field to lock, 1 mark for design, 1 mark for formatting, 1 mark for naming the form correctly, 2 marks for proper layout, 1 mark for good readability of the report. |
| 5 | **Report: Creating query** | **7** | For query: 2 marks for selecting correct attributes, 2 marks for correct condition/criteria, 2 marks for correct relation, 1 mark for correct name of the query. |
| **Report: Creating report** | **7** | 1 mark for selecting Report Object, 1 mark for corect query selection, 1 mark for color choice, 1 mark for design, 1 mark for naming the report correctly, 1 mark for proper layout and 1 mark for grouping as per question. |
|  |  | **100** |  |

Drafted By: Divya Leekha