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| **PROJECT ON**  FIT-N-FINE |

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| Developed By  Name: Gbojuwo Daniel  Ehimhen Fidelis Orasotie  Osimi Philip  Adeyemi Sofiat  Reg No:  NIIT |

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| **FIT-N-FINE**  (Project Title) |

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| Batch Code :  Start Date : 25-03-2022 End Date : 12-04-2022  Name of the Coordinator : Mr. Akinwale Ibrahim  Name of Developer : Gbojuwo Daniel  Ehimhen Fidelis Orasotie  Osimi Philips  Adeyemi Sofiat  Date of Submission : 13-04-2022 |

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| NIIT  CERTIFICATE  This is to certify that this report titled FIT-N-FINE embodies the original work done by Gbojuwo Daniel, Ehimhen Fidelis Orasotie , Osimi Philips and Adeyemi Sofiat in partial fulfillment of their course requirement at NIIT  **ACKNOWLEDGEMENT** |

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| We have benefitted a lot from the feedback and suggestions given to us by Mr. Akinwale Ibrahim, our seniors and other faculty members |

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| **SYSTEM ANALYSIS** |

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| **System Summary:** FIT-N-FINE Health Club is a body building fitness club dedicated to providing customers with gym facilities and a fitness coach to get their preferred body shape.  FIT-N-FINE health club maintains strong customer details and payment details. When Payment is made either through cash or through card, it is being detailed in the system for record purposes |

**TABLES**

**ENTITIES**

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| **Number of Entities**: 8  **Names of Entities**:   1. Members 2. Facility 3. Feed Backs 4. Staffs 5. Plan 6. Plan Details 7. Bookings 8. Payments |

**Attributes:**

The Various entities and their attributes are listed in the following table.

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| **Entity** | **Attributes** |
| Members | Member ID  First Name  Last Name  Booking ID  Facility ID  Plan ID  Phone Number  Email Address  House Address  Staff ID  Payment ID  Feedback Type |
| Facility | Facility ID  Facility Name  Facility Capacity  Facility Type  Staff ID  Member ID  Feedback Type  Booking ID |
| Feedbacks | Feedback Type  Feedback Details  Reference No  Member ID  Facility ID  Plan ID  Staff ID |

**ATTRIBUTES**

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| Staff | Staff ID  First Name  Last Name  Title  Member ID  Feedback Type  Phone Number  Email Address  Address |
| Booking | Booking ID  Date  Time  Booking Status  Plan ID  Facility ID  Member ID  Payment ID nh0 |
| Plan | Plan ID  Plan Type  Plan Fee  Member ID  Payment ID  Feedback Type |
| Plan Details | Plan ID  Member ID  Date  Time |
| Payments | Payment ID  Payment Amount  Payment Mode ID  Payment Mode  Payment Date  Plan ID  Member ID  Booking ID  Credit Card No  Cardholder’s Name  Credit Card Expiry Date |

**TABLES**

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| **Members (Entity) Facility( Entity) Staff (Entity)**   |  | | --- | | **Members** | | Member ID | | First Name | | Last Name | | Booking ID | | Facility ID | | Plan ID | | Phone Number | | Email Address | | Address | | Staff ID | | Payment ID |  |  | | --- | | **Facility** | | Facility ID | | Facility Name | | Facility Capacity | | Facility Type | | Staff ID | | Member ID | | Feedback Type | | Booking ID |  |  | | --- | | **Staff** | | Staff ID | | First Name | | Last Name | | Member ID | | Phone Number | | Title | | Email Address | | Address | | Feedback Type |     **Payments ( Entity)** **Bookings(Entity)** **Feedbacks(Entity**   |  | | --- | | **Bookings** | | Booking ID | | Booking Status | | Name | | Date | | Plan ID | | Facility ID | | Member ID | | Payment ID |  |  | | --- | | **Payments** | | Payment ID | | Payment Amount | | Payment Mode | | Payment Mode ID | | Payment Date | | Plan ID | | Member ID | | Booking ID | | Credit Card Number | | Card Holder’s Name | | Credit Card Expiry Date |  |  | | --- | | **Feedbacks** | | Feedback Type | | Feedback Details | | Reference Number | | Member ID | | Facility ID | | Staff ID | | Plan ID |      |  | | --- | | **Plans Details** | | Plan Detail ID | | Plan ID | | Date | | Time |  |  | | --- | | **Plans** | | Plan ID | | Plan Type | | Plan Fee | | Payment ID | | Member ID | | Feedback Type | | Plan Detail ID |   **Plans (Entity) Plan Details (Entity)** |  |

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| |  | | --- | | **Members** | | Member ID | | First Name | | Last Name | | Booking ID | | Facility ID | | Plan ID | | Phone Number | | Email Address | | Address | | Staff ID | | Payment ID |  |  | | --- | | **Facility** | | Facility ID | | Facility Name | | Facility Capacity | | Facility Type | | Staff ID | | Member ID | | Feedback Type | | Booking ID |   The tables are already in 1NF as the attributes in each table depends on the primary key. The table structures are shown here.  **TABLES AFTER 1NF**  **Members (Entity) Facility( Entity) Staff (Entity)**   |  | | --- | | **Staff** | | Staff ID | | First Name | | Last Name | | Member ID | | Phone Number | | Title | | Email Address | | Address | | Feedback Type |      |  | | --- | | **Bookings** | | Booking ID | | Booking Status | | Name | | Date | | Plan ID | | Facility ID | | Member ID | | Payment ID |  |  | | --- | | **Feedbacks** | | Feedback Type | | Feedback Details | | Reference Number | | Member ID | | Facility ID | | Staff ID | | Plan ID |   **Payments ( Entity) Bookings(Entity) Feedbacks (Entity)**   |  | | --- | | **Payments** | | Payment ID | | Payment Amount | | Payment Mode | | Payment Mode ID | | Payment Date | | Plan ID | | Member ID | | Booking ID | | Credit Card Number | | Card Holder’s Name | | Credit Card Expiry Date |     **Plans (Entity) Plan Details (Entity)**   |  | | --- | | **Plans Details** | | Plan Detail ID | | Plan ID | | Date | | Time |      |  | | --- | | **Plans** | | Plan ID | | Plan Type | | Plan Fee | | Payment ID | | Member ID | | Feedback Type | | Plan Detail ID | |

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| |  | | --- | | **Members** | | Member ID | | First Name | | Last Name | | Booking ID | | Facility ID | | Plan ID | | Phone Number | | Email Address | | Address | | Staff ID | | Payment ID |  |  | | --- | | **Facility** | | Facility ID | | Facility Name | | Facility Capacity | | Facility Type | | Staff ID | | Member ID | | Feedback Type | | Booking ID |   The tables are already in 2NF as the attributes in each table depends on the primary key. The table structures are shown here.  **TABLES AFTER 2NF**  **Members (Entity) Facility( Entity) Staff (Entity)**   |  | | --- | | **Staff** | | Staff ID | | First Name | | Last Name | | Member ID | | Phone Number | | Title | | Email Address | | Address | | Feedback Type |      |  | | --- | | **Bookings** | | Booking ID | | Booking Status | | Name | | Date | | Plan ID | | Facility ID | | Member ID | | Payment ID |  |  | | --- | | **Feedbacks** | | Feedback Type | | Feedback Details | | Reference Number | | Member ID | | Facility ID | | Staff ID | | Plan ID |   **Payments ( Entity) Bookings(Entity) Feedbacks (Entity)**   |  | | --- | | **Payments** | | Payment ID | | Payment Amount | | Payment Mode | | Payment Mode ID | | Payment Date | | Plan ID | | Member ID | | Booking ID | | Credit Card Number | | Card Holder’s Name | | Credit Card Expiry Date |     **Plans (Entity) Plan Details (Entity)**   |  | | --- | | **Plans Details** | | Plan Detail ID | | Plan ID | | Date | | Time |      |  | | --- | | **Plans** | | Plan ID | | Plan Type | | Plan Fee | | Payment ID | | Member ID | | Feedback Type | | Plan Detail ID | |

**TABLES AFTER 3NF**

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| In the Payment table, the attribute payment mode depends on Payment Mode ID and not on payment ID. Therefore, for the tables to be in 3NF, we need to create another table, Payment Methods. Also, in the Feedback Table, the attribute Feedback Details depends on Feedback Type and not Reference Number. We need to create a separate table, Feedback Information. In addition, the attributes Cardholder’s Name and Credit Card Expiry Date depend on Credit Card Number and not on payment Mode. Therefore, we need to create another table, Credit Cards. The updated table structures are shown here.   |  | | --- | | **Members** | | Member ID | | First Name | | Last Name | | Booking ID | | Facility ID | | Plan ID | | Phone Number | | Email Address | | Address | | Staff ID | | Payment ID |  |  | | --- | | **Facility** | | Facility ID | | Facility Name | | Facility Capacity | | Facility Type | | Staff ID | | Member ID | | Feedback Type | | Booking ID |  |  | | --- | | **Staff** | | Staff ID | | First Name | | Last Name | | Member ID | | Phone Number | | Title | | Email Address | | Address | | Feedback Type |   **Members (Entity) Facility( Entity) Staff (Entity)**   |  | | --- | | **Bookings** | | Booking ID | | Booking Status | | Name | | Date | | Plan ID | | Facility ID | | Member ID | | Payment ID |  |  | | --- | | **Plans Details** | | Plan Detail ID | | Plan ID | | Date | | Time |   **Plans ( Entity) Bookings(Entity) Plan Details (Entity)**   |  | | --- | | **Plans** | | Plan ID | | Plan Type | | Plan Fee | | Payment ID | | Member ID | | Feedback Type | | Plan Detail ID |   **Plans (Entity) Payment Methods Credit Cards (Entity)**  **(Entity)**   |  | | --- | | **Payments** | | Payment ID | | Payment Amount | | Payment Mode ID | | Payment Date | | Plan ID | | Member ID | | Booking ID | | Credit Card Number |  |  | | --- | | **Payment Methods** | | Payment Mode | | Payment Mode ID |  |  | | --- | | **Credit Cards** | | Credit Card Number | | Card Holder’s Name | | Credit Card Expiry Date | |

The Primary and Foreign keys (wherever applicable) for each table are listed with their respective table names

* **Members**

Primary key: Member ID

Foreign key: Booking ID, Facility ID, Plan ID, Staff ID, Payment ID

* **Facility**

Primary key: Facility ID

Foreign key: Member ID, Booking ID, Staff ID

* **Feedback**

Primary key: Feedback Type

Foreign key: Member ID, Facility ID, Plan ID, Staff ID

* **Staff**

Primary key: Staff ID

Foreign key: Member ID, Feedback Type

* **Bookings**

Primary key: Booking ID

Foreign key: Plan ID, Facility ID, Member ID, Payment ID

* **Plan**

Primary key: Plan ID

Foreign key: Payment ID, Member ID, Feedback Type, Plan Details ID

* **Payments**

Primary key: Payment ID,

Foreign key: Member ID, Plan ID, Booking ID

**PRIMARY AND FOREIGN KEYS**

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| **RELATIONSHIPS BETWEEN FINAL TABLES** |

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| **TABLE AFTER DENORMALIZATION** |

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| When we place the information about credit card in a separate table, the query performance during the generation of payment receipt will get affected due to creation of joins in every payment receipt. Therefore, for optimum performance, we de normalize and place the credit card information back into the payments table. The updated table structures are shown here   |  | | --- | | **Members** | | Member ID | | First Name | | Last Name | | Booking ID | | Facility ID | | Plan ID | | Phone Number | | Email Address | | Address | | Staff ID | | Payment ID |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | | **Staff** | | Staff ID | | First Name | | Last Name | | Member ID | | Phone Number | | Title | | Email Address | | Address | | Feedback Type |  |  | | --- | | **Feedbacks** | | Feedback Type | | Feedback Details | | Reference Number | | Member ID | | Facility ID | | Staff ID | | Plan ID |  |  | | --- | | **Plans** | | Plan ID | | Plan Type | | Plan Fee | | Payment ID | | Member ID | | Feedback Type | | Plan Detail ID |  |  | | --- | | **Bookings** | | Booking ID | | Booking Status | | Name | | Date | | Plan ID | | Facility ID | | Member ID | | Payment ID |  |  | | --- | | **Payments** | | Payment ID | | Payment Amount | | Payment Mode ID | | Payment Date | | Plan ID | | Member ID | | Booking ID | | Credit Card Number |  |  | | --- | | **Facility** | | Facility ID | | Facility Name | | Facility Capacity | | Facility Type | | Staff ID | | Member ID | | Feedback Type | | Booking ID |  |  | | --- | | **Payment Modes** | | Payment Mode | | Payment Mode ID |  |  | | --- | | **Feedback Info** | | Feedback Type | | Feedback Details |  |  | | --- | | **Plan Details** | | Plan Detail ID | | Plan ID | | Date | | Time | | |

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