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BSc (hons) Software Engineering

IS and DB Project

Global Tickets Ltd

Version 1.0

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# **Normalisation**

**<Talk about normalisation here>**

## **Relational Data Analysis for BOOKING**

| UNF | 1NF | 2NF | 3NF |
| --- | --- | --- | --- |
| Booking ID  Booking Date  Booking Total  (Customer ID)  Customer Name  Customer Address  Customer Postcode  Customer Telephone  (Attraction ID)  Attraction Name\*  Attraction Description  Attraction Type  Attraction City  Attraction Country  Ticket Type  Ticket Price  Ticket Quantity  Ticket Date | **Attraction ID\***  **Attraction Name**  **Attraction Description**  **Attraction Type**  **Attraction City**  **Attraction Country**  **Ticket Type**  **Ticket Price** | **Attraction ID\***  **Attraction Name**  **Attraction Description**  **Attraction Type**  **Ticket Type**  **Ticket Price** | **Attraction ID\***  **Attraction Name**  **Attraction Description**  **Attraction Type**  **Attraction City**  **Attraction Country**  **Ticket Type**  **Ticket Price** |
| **Booking ID**  **Attraction ID\***  **Ticket Type\***  **Ticket Date**  **Ticket Quantity**  **Booking Date**  **Booking Total**  **(Customer ID)**  **Customer Name**  **Customer Address**  **Customer Postcode**  **Customer Telephone** | **Booking ID**  **Attraction ID\***  **Ticket Type\***  **Ticket Date**  **Ticket Quantity**  **Booking Date**  **Booking Total**  **(Customer ID)**  **Customer Name**  **Customer Address**  **Customer Postcode**  **Customer Telephone** | **Booking ID\***  **Attraction ID\***  **Ticket Type\***  **Ticket Date**  **Ticket Quantity**  **(Ticket Total)** |
| **Booking ID**  **Booking Date**  **Booking Total**  **Customer ID\*** |
| **Customer ID**  **Customer Name**  **Customer Address**  **Customer Postcode**  **Customer Telephone** |

## **Relational Data Analysis for Attraction Catalogue**

| UNF | 1NF | 2NF | 3NF |
| --- | --- | --- | --- |
| Attraction Name  (Attraction ID)  Attraction Description  Attraction Type  Attraction City  Attraction Country  Ticket Type  Ticket Price | **(Attraction ID)**  **Attraction Name**  **Attraction Description**  **Attraction Type**  **Attraction City**  **Attraction Country**  **Ticket Type**  **Ticket Price** | **(Attraction ID)**  **Attraction Name**  **Attraction Description**  **Attraction Type**  **(Location ID)\*** | **(Attraction ID)**  **Attraction Name**  **Attraction Description**  **Attraction Type ID\***  **(Location ID)\*** |
| **Attraction ID\***  **Ticket Type\***  **Ticket Price** | **Attraction ID\***  **Ticket Type ID\***  **Ticket Price** |
| **(Location ID)**  **Attraction City**  **Attraction Country** | **(Location ID)**  **Attraction City**  **Attraction Country** |
| **(Ticket Type ID)**  **Ticket Type** |
| **(Attraction Type ID)**  **Attraction Type** |

## **RDA Commentary and FootNotes**

**In this section the documents have been normalised to third normal form based on the scenario given. We have based much of the normalisation on assumptions from the information provided.**

**In the relational database analysis above:**

**\* - An asterisks notes a foreign key**

**\_ - Underlining notes a primary key**

**() - Brackets note a new ID attribute added to identify some other attributes**

**<NOTE TO SELF: ERD OF NORMALISED DATA HERE (as well as additional items)>**

# **Database Design & MYSQL Implementation Introduction**

**In this part of the report, we will be looking at the database design for Global Tickets Ltd and will be implementing the database in MySQL. We will start by showing the amended system ERD along with some notes about changes, followed by a data dictionary and then the SQL queries inputted and the outputs produced in MySQL Workbench from these queries.**

**<FINAL ERD AMMENDED HERE; COMMENTARY TOO>**

## **Final Normalised Data**

1. **Customer\_Account(Customer\_ID, Customer\_Name, Customer\_Address, Customer\_Postcode, Customer\_Telephone)**
2. **Employee(*Employee\_ID, Employee\_Name, Employee\_Role, Manager\_ID*\*)**
3. **Attraction\_Type(*Attraction\_Type\_ID, Attraction\_Type*)**
4. **Ticket\_Type(*Ticket\_Type\_ID*, Ticket\_Type)**
5. **Location(*Location\_ID, City, Country*)**
6. **Booking\_Details(*Booking\_ID Booking\_Date, Booking\_Total\_Cost, Customer\_ID\**)**
7. **Tickets\_On\_Booking(*Booking\_ID\*, Attraction\_ID\*, Ticket\_Type\_ID\*, Ticket\_Date, Ticket\_Quantity, Ticket\_Total\_Cost*)**
8. **Attraction\_Catalogue(*Attraction\_ID, Attraction\_Name, Attraction\_Description, Attraction\_Type\_ID\*, Location\_ID*)**
9. **Attraction\_Price\_List(*Attraction\_ID\*, Ticket\_Type\_ID\*, Ticket\_Price*)**
10. **Customer\_Enquiry(*Enquiry\_ID, Enquiry\_Description, Enquiry\_Notes, Enquiry\_Date, Customer\_ID*\*, Employee\_ID\*)**
11. **Login(*Login\_ID\*, Login\_Username, Login\_Password, Login\_User\_Type*)**

**<DATA DICTIONARY HERE>**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| DATA DICTIONARY Attraction\_Type |  |  | |  |  |  |  |
| Attribute Name | Key Type | FK Table | FK Column | | Data Type | Length | Constraint |
| Att\_TypeID | **PK** |  |  | | **INT** | **10** | **PRIMARY KEY** |
| Att\_Type |  |  |  | | **VARCHAR** | **50** | **NOT NULL** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| DATA DICTIONARY CustomerAccount |  |  |  |  |  |  |
| Attribute Name | **Key Type** | **FK Table** | **FK Column** | **Data Type** | **Length** | **Constraint** |
| customer\_ID | **PK** |  |  | **INT** | **10** | **PRIMARY KEY** |
| custFirstName |  |  |  | **VARCHAR** | **30** | **NOT NULL** |
| custOtherName |  |  |  | **VARCHAR** | **30** |  |
| custSurname |  |  |  | **VARCHAR** | **30** | **NOT NULL** |
| custAddress |  |  |  | **VARCHAR** | **50** | **NOT NULL** |
| custPCode |  |  |  | **VARCHAR** | **8** | **NOT NUL** |
| custCity |  |  |  | **VARCHAR** | **30** |  |
| custCountry |  |  |  | **VARCHAR** | **100** | **NOT NULL** |
| CustDOB |  |  |  | **DATE** | **dd-mm-yyyy** |  |
| custEmail |  |  |  | **VARCHAR** | **50** | **UNIQUE, NOT NULL** |
| custTel |  |  |  | **VARCHAR** | **11** |  |
| custMob |  |  |  | **VARCHAR** | **11** |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| DATA DICTIONARY TicketType |  |  | |  |  |  |  |
| Attribute Name | Key Type | FK Table | FK Column | | Data Type | Length | Constraint |
| tktTypeID | **PK** |  |  | | **INT** | **10** | **PRIMARY KEY** |
| tktType |  |  |  | | **VARCHAR** | **50** | **NOT NULL** |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| DATA DICTIONARY EmployeeAcount |  |  | |  |  |  |  |
| Attribute Name | Key Type | FK Table | FK Column | | Data Type | Length | Constraint |
| EmployeeID | **PK** |  |  | | **INT** | **10** | **PRIMARY KEY** |
| empFirstname |  |  |  | | **VARCHAR** | **30** | **NOT NULL** |
| empOthername |  |  |  | | **VARCHAR** | **30** |  |
| empSurname |  |  |  | | **VARCHAR** | **30** | **NOT NULL** |
| EmpDOB |  |  |  | | **DATE** | **dd-mm-yyyy** |  |
| empStartDate |  |  |  | | **DATE** | **dd-mm-yyyy** |  |
| empRole |  |  |  | | **VARCHAR** | **20** |  |
| empSalary |  |  |  | | **DOUBLE** | **(8,2)** | **CHECK(empSalary<10000)** |
| empEmail |  |  |  | | **VARCHAR** | **50** | **UNIQUE** |
| empTel |  |  |  | | **VARCHAR** | **11** |  |
| ManagerID | **FK** | EmployeeAcount | **employeeID** | | **INT** | **10** | **FOREIGN KEY** |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| DATA DICTIONARY Location |  |  | |  |  |  |  |
| Attribute Name | Key Type | FK Table | FK Column | | Data Type | Length | Constraint |
| LocationID | **PK** |  |  | | **INT** | **10** | **PRIMARY KEY** |
| City |  |  |  | | **VARCHAR** | **50** | **NOT NULL** |
| country |  |  |  | | **VARCHAR** | **50** | **NOT NULL** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| DATA DICTIONARY Booking\_Details |  |  |  |  |  |  |
| Attribute Name | Key Type | FK Table | FK Column | Data Type | Length | Constraint |
| BookingID | **PK** |  |  | **INT** | **10** | **PRIMARY KEY** |
| BookingDate |  |  |  | **DATE** | **dd-mm-yyyy** |  |
| BookingTotalCost |  |  |  | **DOUBLE** | **(8,2)** | **CHECK(bookingTotalCoat>0)** |
| CustomerID | **PK,FK** | **CustomerAccount** | **CustomerID** | **INT** | **10** | **FOREIGN KEY,**  **PRIMARY KEY** |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| DATA DICTIONARY Attraction\_Catalogue |  |  | |  |  |  |  |
| Attribute Name | Key Type | FK Table | FK Column | | Data Type | Length | Constraint |
| attractionID | **PK** |  |  | | **INT** | **10** | **PRIMARY KEY** |
| AttName |  |  |  | | **VARCHAR** | **50** | **NOT NULL** |
| AttDescript |  |  |  | | **VARCHAR** | **500** | **NOT NULL** |
| Att\_TypeID | **FK** | **Attraction\_Type** | **Att\_TypeID** | | **INT** | **10** | **FOREIGN KEY** |
| LocationID | **FK** | **Location** | **LocationID** | | **INT** | **10** | **FOREIGN KEY** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| DATA DICTIONARY TicketsOnBooking |  |  |  |  |  |  |
| Attribute Name | Key Type | FK Table | FK Column | Data Type | Length | Constraint |
| BookingID | **PK, FK** | **Booking\_Details** | **BookingID** | **INT** | **10** | **PRIMARY KEY,**  **FOREIGN KEY** |
| AttractionID | **PK,FK** | **Attaction\_Catalogue** | **attractionID** | **INT** | **10** | **PRIMARY KEY, FOREIGN KEY** |
| TktTypeID | **FK** | **TicketType** | **Tkt\_TypeID** | **INT** | **10** | **FOREIGN KEY** |
| TicketDate |  |  |  | **DATE** | **dd-mm-yyyy** |  |
| ticketQty |  |  |  | **INT** | **10** | **NOT NULL** |
| tktTotalCost |  |  |  | **DOUBLE** | **(8,2)** | **CHECK (tktTotalCost >0)** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| DATA DICTIONARY AttractionPriceList |  |  |  |  |  |  |
| Attribute Name | Key Type | FK Table | FK Column | Data Type | Length | Constraint |
| AttractionID | **PK,FK** | **Attraction\_Catalogue** | AttractionID | **INT** | **10** | **PRIMARY KEY, FOREIGN KEY** |
| Tkt\_TypeID | **PK,FK** | **Ticket\_Type** | Tkt\_TypeID | **INT** | **10** | **PRIMARY KEY, FOREIGN KEY** |
| Ticket\_Price |  |  |  | **DOUBLE** | **(8,2)** | **NOT NULL** |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| DATA DICTIONARY Customer\_Enquiry |  |  | |  |  |  |  |
| Attribute Name | Key Type | FK Table | FK Column | | Data Type | Length | Constraint |
| EnquriyID | **PK** |  |  | | **INT** | **10** | **PRIMARY KEY** |
| eqyDescription |  |  |  | | **VARCHAR** | **500** | **NOT NULL** |
| eqyNote |  |  |  | | **VARCHAR** | **500** |  |
| eqyDate |  |  |  | | **DATE** | **dd-mm-yyyy** |  |
| CustomerID | **FK** | **CustomerAccount** | **CustomerID** | | **INT** | **10** | **FOREIGN KEY** |
| EmployeeID | **FK** | **EmployeeAccount** | **EmployeeID** | | **INT** | **10** | **FOREIGN KEY** |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| DATA DICTIONARY Login |  |  | |  |  |  |  |
| Attribute Name | Key Type | FK Table | FK Column | | Data Type | Length | Constraint |
| LoginID | **PK** |  |  | | **INT** | **10** | **PRIMARY KEY** |
| LoginUsername |  |  |  | | **VARCHAR** | **50** | **NOT NULL** |
| LoginPassword |  |  |  | | **VARCHAR** | **15** | **NOT NULL** |
| LoginUserType |  |  |  | | **VARCHAR** | **30** | **NOT NULL** |