ICT285 Database

Assessment 2

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# Revised ERD and Schema

A diagram of a company

AI-generated content may be incorrect.

In response to the new business requirement for service expansion, the ERD was revised to prevent significant data integrity issues. The previous design would have required storing suburb names as text attributes in multiple tables, leading to widespread data redundancy. This is problematic because it creates update anomalies. For instance, changing a suburb's name would require an inefficient and error prone search across the entire database. To resolve this, I created a central SUBURB entity to act as a single source of truth, and its primary key is used as a foreign key in the CUSTOMER, RESTAURANT, and DRIVER\_SUBURB tables. This structure guarantees referential integrity, ensuring that location data remains consistent and reliable.

Furthermore, to address feedback from Assignment 1, the model for dietary information has been correctly normalized. A design that stores multiple nutritional labels in a single field within the DISH table would violate First Normal Form (1NF) and make querying for specific dietary needs inefficient. By creating the NUTRITION table to hold unique labels and the DISH\_NUTRITION associative table to link them, the design now properly models the many-to-many relationship between a dish and its nutritional properties. This normalized structure eliminates data redundancy, ensures information is stored consistently, and results in a far more scalable database design.

## Relational Schema

RESTAURANT (RestaurantID, RestaurantName, AboutUsDescription, FoodDescription, **SuburbID, EthnicityID, StyleID**)

SUBURB (SuburbID, SuburbName)

STYLE (StyleID, StyleName)

ETHNICITY (EthnicityID, EthnicityName)

RESTAURANT\_CERTIFICATION (**RestaurantID**, **CertificationID**)

CERTIFICATION (CertificationID, CertificationName)

CUSTOMER (CustomerID, FirstName, LastName, Email, PhoneNumber, DeliveryAddress, RegistrationDate, **SuburbID**)

DRIVER\_SUBURB (**SuburbID**, **DriverID**)

DRIVER (DriverID, FirstName, LastName, PhoneNumber, Status)

ORDER (OrderID, OrderDateTime, RequestedDeliveryTime, ActualDeliveryTime, OrderStatus, **CustomerID**, **RestaurantID**, **DriverID**)

ORDER\_ITEM (**OrderID**, **DishID**, Quantity, Price)

DISH (DishID, DishName, Description, Price, Kilojoules, DeliveryTimeCategory, **RestaurantID**, **CourseTypeID**, **PreparationMethodID**)

COURSE\_TYPE (CourseTypeID, CourseTypeName)

PREPARATION\_METHOD (PreparationMethodID, PreparationMethodName)

DISH\_NUTRITION (**DishID**, **NutritionID**)

NUTRITION (NutritionID, NutritionName)

# Data Dictionary

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| Column characteristics for the RESTAURANT Table | | | | |
| Column Name | **Data Type & Size** | **Default Value** | **Required?** | **Constraints** |
| RestaurantID | NUMBER(4) | None | Yes | Primary Key |
| RestaurantName | VARCHAR(100) | None | Yes | Unique |
| AboutUsDescription | VARCHAR(1000) | None | Yes | None |
| FoodDescription | VARCHAR(500) | None | Yes | None |
| SuburbID | NUMBER(4) | None | Yes | Foreign Key |
| EthnicityID | NUMBER(3) | None | No | Foreign Key |
| StyleID | NUMBER(3) | None | No | Foreign Key |

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| Column characteristics for the SUBURB Table | | | | |
| Column Name | **Data Type & Size** | **Default Value** | **Required?** | **Constraints** |
| SuburbID | NUMBER(4) | None | Yes | Primary Key |
| SuburbName | VARCHAR(50) | None | Yes | Unique |

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| Column characteristics for the STYLE Table | | | | |
| Column Name | **Data Type & Size** | **Default Value** | **Required?** | **Constraints** |
| StyleID | NUMBER(3) | None | Yes | Primary Key |
| StyleName | VARCHAR(50) | None | Yes | Unique |

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| Column characteristics for the ETHNICITY Table | | | | |
| Column Name | **Data Type & Size** | **Default Value** | **Required?** | **Constraints** |
| EthnicityID | NUMBER(3) | None | Yes | Primary Key |
| EthnicityName | VARCHAR(50) | None | Yes | Unique |

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| Column characteristics for the CERTIFICATION Table | | | | |
| Column Name | **Data Type & Size** | **Default Value** | **Required?** | **Constraints** |
| CertificationID | NUMBER(3) | None | Yes | Primary Key |
| CertificationName | VARCHAR(50) | None | Yes | Unique |

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| Column characteristics for the RESTAURANT\_CERTIFICATION Table | | | | | |
| Column Name | **Data Type & Size** | **Default Value** | **Required?** | | **Constraints** |
| RestaurantID | NUMBER(4) | None | Yes | | Primary Key, Foreign key |
| CertificationID | NUMBER(3) | None | Yes | | Primary Key, Foreign key |
| Referential Integrity Rules | | | | | |
| Foreign Key Column | **References Table (PK)** | **ON DELETE Rule & Rationale** | | **ON UPDATE Rule & Rationale** | |
| RestaurantID | RESTAURANT (RestaurantID) | ON DELETE CASCADE: Deleting a restaurant will automatically remove all of its associated certification records. This ensures no certification links are left orphaned in the database. | | ON UPDATE CASCADE: To preserve referential integrity, any update to a parent RestaurantID must automatically cascade to all corresponding child records. | |
| CertificationID | CERTIFICATION  (CertificationID) | ON DELETE CASCADE: Deleting a certification type will automatically remove all records that associate it with any restaurant. This ensures no links exist to a certification that is no longer valid. | | ON UPDATE CASCADE: An update to the parent CertificationID automatically cascades to this record to preserve the relationship's integrity. | |

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| Column characteristics for the CUSTOMER Table | | | | | |
| Column Name | **Data Type & Size** | **Default Value** | **Required?** | | **Constraints** |
| CustomerID | NUMBER(5) | None | Yes | | Primary Key |
| FirstName | VARCHAR(50) | None | Yes | | None |
| LastName | VARCHAR(50) | None | Yes | | None |
| Email | VARCHAR(100) | None | Yes | | UNIQUE |
| PhoneNumber | VARCHAR(20) | None | Yes | | None |
| DeliveryAddress | VARCHAR(255) | None | Yes | | None |
| RegistrationDate | DATE | SYSDATE | Yes | | None |
| SuburbID | NUMBER(4) | None | Yes | | Foreign Key |
| Referential Integrity Rules | | | | | |
| Foreign Key Column | **References Table (PK)** | **ON DELETE Rule & Rationale** | | **ON UPDATE Rule & Rationale** | |
| SuburbID | SUBURB(SuburbID) | ON DELETE RESTRICT: To prevent customer addresses from becoming invalid, a suburb cannot be deleted if any customers are registered as living there. | | ON UPDATE CASCADE: To preserve referential integrity, any modification to a parent SuburbID must automatically propagate to all corresponding customer records, ensuring the data link remains consistent. | |

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| Column characteristics for the DRIVER Table | | | | |
| Column Name | **Data Type & Size** | **Default Value** | **Required?** | **Constraints** |
| DriverID | NUMBER(4) | None | Yes | Primary Key |
| FirstName | VARCHAR(50) | None | Yes | Unique |
| LastName | VARCHAR(50) | None | Yes | None |
| PhoneNumber | VARCHAR(20) | None | Yes | None |
| Status | VARCHAR(20) | ‘Available’ | Yes | CHECK (Status IN ('Available', 'On Delivery', 'Inactive')) |

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| Column characteristics for the DRIVER\_SUBURB Table | | | | | |
| Column Name | **Data Type & Size** | **Default Value** | **Required?** | | **Constraints** |
| SuburbID | NUMBER(4) | None | Yes | | Primary Key, Foreign Key |
| DriverID | NUMBER(4) | None | Yes | | Primary Key, Foreign Key |
| Referential Integrity Rules | | | | | |
| Foreign Key Column | **References Table (PK)** | **ON DELETE Rule & Rationale** | | **ON UPDATE Rule & Rationale** | |
| SuburbID | SUBURB (SuburbID) | ON DELETE CASCADE: Deleting a suburb should automatically remove all its associated driver assignments. | | ON UPDATE CASCADE: If a suburb's ID changes, all related records for customers, restaurants, and drivers must be updated automatically to ensure their location data remains correct and consistent. | |
| DriverID | DRIVER (DriverID) | ON DELETE CASCADE: Deleting a driver's record should automatically remove all of their assignments to work in specific suburbs. | | ON UPDATE CASCADE: If a driver's ID is updated, the change automatically applies to all their linked records to ensure the data remains consistent. | |

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| Column characteristics for the ORDER Table | | | | | |
| Column Name | **Data Type & Size** | **Default Value** | **Required?** | | **Constraints** |
| OrderID | NUMBER(4) | None | Yes | | Primary Key |
| OrderDateTime | NUMBER(4) | CURRENT\_TIMESTAMP | Yes | | None |
| RequestedDeliveryTime | TIMESTAMP | None | Yes | | None |
| ActualDeliveryTime | TIMESTAMP | None | No | | None |
| OrderStatus | VARCHAR2(20) | ‘Pending’ | Yes | | CHECK (OrderStatus IN ('Pending', 'Preparing', 'Delivering', 'Completed', 'Cancelled')) |
| CustomerID | NUMBER(5) | None | Yes | | Foreign Key |
| RestaurantID | NUMBER(4) | None | Yes | | Foreign Key |
| DriverID | NUMBER(4) | None | No | | Foreign Key |
| Referential Integrity Rules | | | | | |
| Foreign Key Column | **References Table (PK)** | **ON DELETE Rule & Rationale** | | **ON UPDATE Rule & Rationale** | |
| CustomerID | CUSTOMER (CustomerID) | ON DELETE CASCADE: Customers with past orders should have their accounts deactivated instead of being permanently deleted to protect historical sales data. | | ON UPDATE CASCADE: | |
| RestaurantID | RESTAURANT (RestaurantID) | ON DELETE CASCADE: A restaurant with previous orders cannot be deleted from the system to maintain accurate historical sales data, | | ON UPDATE CASCADE: | |
| DriverID | DRIVER (DriverID) | ON DELETE SET NULL: If a driver's record is deleted, the DriverID on their past orders is simply cleared to preserve the sales history without linking to a non-existent driver. | | ON UPDATE CASCADE: | |