Name: Levi Sutton

Assignment: 6

1. *Convert this data model to a database design. Specify tables, primary keys, and foreign keys. Using Figure 6-43 as a guide, specify column properties. Duplicate the following table as needed to complete database design.*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **OWNER** | | | | | |
| **Column Name** | **Data Type** | **Key** | **Required** | **Default Value** | **Remarks** |
| OwnerID | Integer | Primary Key | Yes | None | Surrogate (1, 1) |
| LastName | Char(35) |  | Yes | None |  |
| FirstName | Char(35) |  | Yes | None |  |
| Address | Char(35) |  | Yes | None |  |
| City | Char(35) |  | Yes | None |  |
| State | Char(2) |  | Yes | ‘GA’ |  |
| ZIP | Char(10) |  | Yes | None |  |
| Phone | Char(12) |  | Yes | None |  |
| Email | VarChar(100) |  | Yes | None |  |
| BankName | Char(50) |  | No | None |  |
| BankAccountNumber | Integer |  | No | None |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **BOAT** | | | | | |
| **Column Name** | **Data Type** | **Key** | **Required** | **Default Value** | **Remarks** |
| CoastGuardRegNumber | Char(35) | Primary Key | Yes | None |  |
| BoatName | Char(50) |  | Yes | None |  |
| BoatMake | Char(50) |  | No | None |  |
| BoatModel | Char(50) |  | No | None |  |
| Length | Decimal(5, 2) |  | Yes | None |  |
| Beam | Decimal(5, 2) |  | Yes | None |  |
| NumberOfBerths | Integer |  | Yes | None |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SCHEDULED\_MAINTENANCE** | | | | | |
| **Column Name** | **Data Type** | **Key** | **Required** | **Default Value** | **Remarks** |
| MaintenanceID | Integer | Primary Key | Yes | None | Surrogate (1, 1) |
| CoastGuardRegNumber | Integer |  | Yes | None |  |
| MaintenanceItem | VarChar(100) |  | Yes | “Charter Prep.” |  |
| RequiredDate | DateTime |  | Yes | None |  |
| ScheduledDate | DateTime |  | No | None |  |
| CompletedDate | DateTime |  | No | None |  |
| Cost | Decimal(12, 2) |  | No | None |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **EQUPMENT** | | | | | |
| **Column Name** | **Data Type** | **Key** | **Required** | **Default Value** | **Remarks** |
| ItemIDTabNumber | Integer | Primary Key | Yes | None | Surrogate (1, 1) |
| ItemNumber | VarChar(50) |  | Yes | None |  |
| ItemSerialNumber | VarChar(100) |  | Yes | None |  |
| ItemMake | Char(50) |  | Yes | None |  |
| ItemModel | Char(50) |  | Yes | None |  |
| NumberOfItems | Integer |  | Yes | None |  |
| ItemCost | Decimal(12, 2) |  | Yes | None |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CUSTOMER** | | | | | |
| **Column Name** | **Data Type** | **Key** | **Required** | **Default Value** | **Remarks** |
| CustomerID | Integer | Primary Key | Yes | None | Surrogate (1, 1) |
| LastName | Char(50) |  | Yes | None |  |
| FirstName | Char(50) |  | Yes | None |  |
| Address | Char(50) |  | Yes | None |  |
| City | Char(50) |  | Yes | ‘Canton’ |  |
| State | Char(2) |  | Yes | ‘GA’ |  |
| ZIP | Char(10) |  | Yes | ‘30140’ |  |
| Phone | Char(12) |  | Yes | None |  |
| Email | VarChar(100) |  | Yes | None |  |
| CreditCardNumber | Char(19) |  | Yes | None |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CHARTER** | | | | | |
| **Column Name** | **Data Type** | **Key** | **Required** | **Default Value** | **Remarks** |
| CharterID | Integer | Primary Key | Yes | None | Surrogate (1, 1) |
| CoastGuardRegNumber | Char(35) |  | Yes | None |  |
| CustomerID | Integer |  | Yes | None |  |
| DepartureDate | DateTime |  | Yes | None |  |
| ReturnDate | DateTime |  | Yes | None |  |
| NumberInParty | Integer |  | Yes | None |  |
| BoatCost | Decimal(9, 2) |  | Yes | None |  |
| EquipmentCost | Decimal(9, 2) |  | Yes | None |  |
| TotalCost | Decimal(9, 2) |  | Yes | None |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **LOG** | | | | | |
| **Column Name** | **Data Type** | **Key** | **Required** | **Default Value** | **Remarks** |
| CharterID | Integer | Primary Key | Yes | None |  |
| EntryNumber | Integer | Primary Key | Yes | None |  |
| EntryDate | Date |  | Yes | None |  |
| EntryTime | Time |  | Yes | None |  |
| EntryLocation | VarChar(50) |  | Yes | None |  |
| Weather | VarChar(100) |  | Yes | ‘Cloudy with a chance of rain’ |  |
| DepartingFrom | Char(35) |  | Yes | None |  |
| SailingTo | Char(35) |  | Yes | None |  |

1. *Describe how you have represented weak entities, if any exist.*

- There exists 2 weak entities. The table: SCHEDULE\_MAINTENCANCE has a surrogate primary key, which means the table is a non-ID dependent table. The LOG ttable is an ID-dependent entity and table that is dependent on CharterID, which is the primarkey for the CHARTER table.

1. *Describe how you have represented supertype and subtype entities, if any exist.*

- There is no supertype and subtype entites for the database design.

1. *Document your minimum cardinality enforcement using referential integrity actions for required parents, if any, and the form in Figure 6-29(b) for required children, if any using following table. Add rows to table as needed.*

Child Tables:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **BOAT\_OWNER** | | | | | |
| **Column Name** | **Data Type** | **Key** | **Required** | **Default Value** | **Remarks** |
| OwnerID | Integer | Primary Key | Yes | None |  |
| CoastGuardRegNumber | Char(35) | Primary Key | Yes | None |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **EQUIP\_OWNER** | | | | | |
| **Column Name** | **Data Type** | **Key** | **Required** | **Default Value** | **Remarks** |
| OwnerID | Integer | Primary Key | Yes | None |  |
| ItemIDTabNumber | Integer | Primary Key | Yes | None |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CHARTER\_EQUIPMENT** | | | | | |
| **Column Name** | **Data Type** | **Key** | **Required** | **Default Value** | **Remarks** |
| CharterID | Integer | Primary Key | Yes | None |  |
| ItemIDTabNumber | Integer | Primary Key | Yes | None |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Relationship** | | **Referential Integrity Constraint** | **Cascading Behavior** | |
| **PARENT** | **CHILD** |  | **ON UPDATE** | **ON DELETE** |
| OWNER | BOAT\_OWNER | OwnerID in BOAT\_OWNER must be existent in OwnerID in OWNER | No | Yes |
| BOAT | BOAT\_OWNER | CoastGuardRegNumber in BOAT\_OWNER must be existent in CoastGuardRegNumber in BOAT | Yes | Yes |
| OWNER | EQUIP\_OWNER | OwnerID in EQUIP\_OWNER must be existent in OwnerID in OWNER | No | Yes |
| EQUIPMENT | EQUIP\_OWNER | ItemIDTagNumber in  EQUIP\_OWNER must be existent in ItemIDTagNumber in EQUIPMENT | Yes | Yes |
| CHARTER | CHARTER\_EQUIPMENT | CharterID in  CHARTER\_EQUIPMENT must be existent in CharterID in CHARTER | No | Yes |
| EQUIPMENT | CHARTER\_EQUIPMENT | ItemIDTagNumber in  CHARTER\_EQUIPMENT must be existent in ItemIDTagNumber in EQUIPMENT | Yes | Yes |
| BOAT | SCHEDULED\_MAINTENANCE | CoastGuardRegNumber in SCHEDULED\_MAINTENANCE must be existent in CoastGuardRegNumber in BOAT | Yes | No |
| CUSTOMER | CHARTER | CustomerID in CHARTER must be existent in CustomerID in CHARTER | No | No |
| CHARTER | LOG | CharterID in LOG must be existent in CharterID in CHARTER | No | Yes |