**Question A**

Owner

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Type** | **Key** | **Null Status** | **Remarks** |
| Owner ID | INT | Primary Key | NOT NULL | Surrogate Key IDENTITY (1,1) |
| CompanyName | VARCHAR(50) | No | NOT NULL |  |
| LastName | VARCHAR(20) | Alternate Key | NOT NULL |  |
| FirstName | VARCHAR(20) | Alternate Key | NOT NULL |  |
| Address | VARCHAR(50) | No | NULL |  |
| City | VARCHAR(20) | No | NULL |  |
| State | VARCHAR(10) | No | NULL |  |
| ZIP | VARCHAR(5) | No | NULL |  |
| Phone | VARCHAR(10) | No | NULL |  |
| Email | VARCHAR(30) | Alternate Key | NULL |  |
| BankName | VARCHAR(30) | No | NULL |  |
| BankAccountNumber | VARCHAR(30) | Alternate Key | NULL |  |

Boat

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Type** | **Key** | **Null Status** | **Remarks** |
| CoastGuardRegNumber | INT | Primary Key | NOT NULL | Surrogate Key IDENTITY (1,1) |
| BoatName | VARCHAR(30) | Alternate Key | NOT NULL |  |
| BoatMake | VARCHAR(30) | No | Null |  |
| BoatModel | VARCHAR(30) | No | Null |  |
| BoatType | VARCHAR(30) | No | Null |  |
| Length | NUMERIC(4) | No | Null |  |
| Beam | NUMERIC(4) | No | Null |  |
| NumberOfBerths | INT | No | Null |  |

Scheduled Maintenance

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Type** | **Key** | **Null Status** | **Remarks** |
| MaintenanceID | INT | Primary Key | Not NULL | Surrogate Key IDENTITY (1,1) |
| MaintenanceItem | VARCHAR(30) | No | Null |  |
| RequireDate | DATE | No | Null |  |
| ScheduledDate | DATE | No | Null |  |
| CompleteDate | DATE | No | Null |  |
| Cost | Numeric(5) | No | Null |  |
| CostGuardRegNumber | INT | Foreign Key | Not NULL |  |

Customer

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Type** | **Key** | **Null Status** | **Remarks** |
| CustomerID | INT | Primary Key | NOT NULL | Surrogate Key IDENTITY (1,1) |
| LastName | VARCHAR(20) | Alternate Key | NOT NULL |  |
| FirstName | VARCHAR(20) | Alternate Key | NOT NULL |  |
| Address | VARCHAR(50) | No | NULL |  |
| City | VARCHAR(20) | No | NULL |  |
| State | VARCHAR(10) | No | NULL |  |
| ZIP | VARCHAR(5) | No | NULL |  |
| Phone | VARCHAR(10) | No | NULL |  |
| Email | VARCHAR(30) | Alternate Key | NULL |  |
| CreditCardNumber | VARCHAR(30) | Alternate Key | NULL |  |

Charter

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Type** | **Key** | **Null Status** | **Remarks** |
| CharterID | INT | Primary Key | NOT NULL | Surrogate Key IDENTITY (1,1) |
| DepartureDate | DATE | No | NULL |  |
| ReturnDate | DATE | No | NULL |  |
| NumberInPantry | INT | No | NULL |  |
| BoatCost | NUMERIC(4) | No | NULL |  |
| EquipmentCost | NUMERIC(4) | No | NULL |  |
| TotalCost | NUMERIC(6) | No | NULL |  |
| CustomerID | INT | Foreign Key | NOT NULL |  |

Equipment

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Type** | **Key** | **Null Status** | **Remarks** |
| ItemIDTabNumber | INT | Primary Key | NOT NULL | Surrogate Key IDENTITY (1,1) |
| ItemNumber | VARCHAR(20) | Alternate Key | NOT NULL |  |
| ItemSerialNumber | VARCHAR(20) | Alternate Key | NOT NULL |  |
| ItemMake | VARCHAR(20) | No | NULL |  |
| ItemModel | VARCHAR(20) | No | NULL |  |
| NumberOfItems | INT | No | NULL |  |
| ItemCost | NUMERIC(4) | No | NULL |  |

Log

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Type** | **Key** | **Null Status** | **Remarks** |
| CharterID | INT | Primary Key, Foreign Key | NOT NULL | Surrogate Key IDENTITY (1,1) |
| EntryNumber | INT | Primary Key | NOT NULL | Surrogate Key IDENTITY (1,1) |
| EntryDate | DATE | No | NULL |  |
| EntryTime | DATE | No | NULL |  |
| EntryLocation | VARCHAR(20) | No | NULL |  |
| Weather | VARCHAR(20) | No | NULL |  |
| DepartingFrom | VARCHAR(20) | No | NULL |  |
| SailingTo | VARCHAR(20) | No | NULL |  |

**Question D**

Diagram

Description automatically generated

**Question E**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PARENT** | **CHILD** |  | **ON UPDATE** | **ON DELETE** |
| OWNER | BOAT\_OWNER | OwnerID in BOAT\_OWNER must exist in OwnerID in OWNER | NO | YES |
| BOAT | BOAT\_OWNER | CoastGuardRegNumber in BOAT\_OWNER must exist in CoastGuardRegNumber in BOAT | YES | YES |
| OWNER | EQUIPMENT\_OWNER | OwnerID in EQUIPMENT\_OWNER must exist in OwnerID in OWNER | NO | YES |
| EQUIPMENT | EQUIPMENT\_OWNER | ItemIDTagNumber in EQUIPMENT\_OWNER must exist in ItemIDTagNumber in EQUIPMENT | YES | YES |
| CHARTER | CHARTER\_EQUIPMENT | CharterID in CHARTER\_EQUIPMENT must exist in CharterID in CHARTER | NO | YES |
| EQUIPMENT | CHARTER\_EQUIPMENT | ItemIDTagNumber in CHARTER\_EQUIPMENT must exist in ItemIDTagNumber in EQUIPMENT | YES | YES |
| BOAT | SCHEDULED\_ | CoastGuardRegNumber in SCHEDULED\_ | YES | NO |
| MAINTENANCE | MAINTENANCE must exist in CoastGuardRegNumber in BOAT |
| CUSTOMER | CHARTER | CustomerID in CHARTER must exist in CustomerID in CUSTOMER | NO | NO |
| CHARTER | LOG | CharterID in LOG must exist in CharterID in CHARTER | NO | YES |