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**Backend System for Disaster Site Resources Locator  
Phase 3**

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## Objective

The objective of this project is to design, implement and use an application backed by a database system. The application will be used to manage resources on a disaster site, such as in Puerto Rico during the aftermath of Hurricane María. As part of the first phase of this project we were tasked with the creation of the Entity-Relationship diagram which will govern the design of the system. In the second phase of the project the database is connected to the application, while the third phase involves the implementation of post and put operations.

## Description

The following section describes each of the relationships and entities of the Entity-Relationship diagram, which is included in the appendix.

### Entities

SalesRecord - Represents a sales record for an individual supplier

- sid - Provides a supplier's identification number
- earnings - Provides the earnings for a particular supplier
- sales - Provides the sales for a particular supplier

Supplier - Represents a supplier

- sid - Provides a supplier's identification number
- sname - Provides a supplier's name
- spassword - Provides a supplier's password
- sregion - Provides a supplier's current region
- sphone - Provides a supplier's current phone number
- saddress - Provides a supplier's current address

CreditCard - Represents a credit card

- sid - Provides a client's identification number
- ccnum - Provides a credit card number
- expdate - Provides a credit card's expiration date
- limit - Provides a credit card's limit
- cvv - Provides a credit card's Card Verification Value

Client - Represents a client

- cid - Provides a client's identification number
- cname - Provides a client's name
- cpassword - Provides a client's password
- region - Provides a client's current region
- address - Provides a client's current address

Resources - Represents a resource

- rid - Provides a resource's identification number
- sid - Provides a supplier's identification number
- qty - Provides the resource's quantity

User - Represents a user

- uid - Provides a user's identification number
- uname - Provides a user's name
- upassword - Provides a user's password

Water - Represents a bottled water resource

- rid - Provides a resource's identification number
- price - Provides a water bottle's price
- bottlesize - Provides a water bottle's size
- brand - Provides a water bottle's brand

Ice - Represents an ice pack resource

- rid - Provides a resource's identification number
- price - Provides an ice pack's price
- bagsize - Provides an ice pack's size

Food - Represents a food resource

- rid - Provides a resource's identification number
- name - Provides a food's name
- price - Provides a food's price
- ftype - Provides a food's type
- expdate - Provides a food's expiration date

FirstAid - Represents a first aid resource

- rid - Provides a resource's identification number
- brand - Provides the first aid resource's brand name
- price - Provides a resource's price
- medcondition - Provides the medical condition that the resource treats

Clothes - Represents any type of clothing

- rid - Provides a resource's identification number
- price - Provides a resource's price
- color - Provides the color of the clothes
- size - Provides the size of the clothes
- gender - Provides a suggested gender for the clothes
- piece - Provides a clothing piece's type

Tools - Represents a tool resource

- rid - Provides a resource's identification number
- name - Provides a tool's name
- brand - Provides a tool's brand name

- price - Provides a tool's price

Fuel - Represents a fuel resource

- rid - Provides a resource's identification number
- ftype - Provides the fuel's type
- price - Provides the fuel's price
- containersize - Provides the fuel's container size
- brand - Provides a fuel's brand name

Battery - Represents a battery resource

- rid - Provides a resource's identification number
- price - Provides a battery's price
- voltage - Provides the battery's voltage value
- type - Provides a battery's type

Generator - Represents a generator resource

- rid - Provides a resource's identification number
- price - Provides a generator's price
- brand - Provides a generator's brand name
- fueltype - Provides a generator's fuel type
- powerrating - provides a generator's power rating

HeavyEquip - Represents a heavy equipment resource

- rid - Provides a resource's identification number
- make - Provides the heavy equipment's make
- condition - Provides the heavy equipment's condition
- function - Provides the heavy equipment's function
- price - Provides the heavy equipment's price

Purchase - Represents a purchase

- purchaseid - Provides a purchase's identification number
- cid - Provides a client's identification number
- sid - Provides a supplier's identification number
- rid - Provides a resource's identification number
- qty - Provides a purchase quantity
- total - Provides a purchase total
- cnum - Provides a purchase's card number

Request - Represents a resource request

- requestid - Provides a request's identification number
- cid - Provides a client's identification number
- rid - Provides a resource's identification number
- qty - Provides a request's quantity

Reservation - Represents a reservation

- reservationid - Provides the reservation's identification number

- cid - Provides a client's identification number
- sid - Provides a supplier's identification number
- rid - Provides a resource's identification number
- qty - Provides a reservation's quantity

## Relationships

### Supplier-*Has*-SalesRecords

A supplier has only one sales record. *Has* represents the relationship between these two entities.

### Supplier-*Supplies*-Resources

A supplier's job is to provide one or more types of resources. A resource may be provided by one or more suppliers. Also, a supplier may provide more than one resource. *Supplies* relates the information for a single resource to a single supplier.

### Client-*Makes a*-Purchase-Request-Reservation-*For*

Aside from purchasing resources, a client may reserve/request a resource, or reserve/request many different resources. Also, a single resource may be reserved by different clients. *Makes a* relates the information of a particular client to a specific purchase, request or reservation. *For* relates the previous information to a particular resource.

### Client-*Owns*-CreditCard

A client may own more than one credit card. *Owns* represents the relationship between these two entities.

### User-*Is a*-Supplier-*Is a*-Client

A user may be a supplier, a client, or both. *Is a* represents the relationship between these entities.

## Implementation

The Entity-Relationship diagram previously described will be implemented using the following schema.

```
Create Table Admin (  
    AID    bigserial      primary key, --admin id  
    AName varchar(20)    NOT NULL,  
    APassword  varchar(20)  NOT NULL,  
)
```

```
Create Table Client(  
    CID    bigserial      primary key,  
    CName varchar(20)    NOT NULL,  
    CPassword  varchar(20)  NOT NULL,  
    Region varchar(20)    NOT NULL,  
    CAddress  char(20)     NOT NULL,  
)
```

```
Create Table CreditCard (  
    CID    bigint REFERENCES Client(CID),  
    CCNum   char(16)     NOT NULL,  
    ExpDate date        NOT NULL,  
    Climit  float        NOT NULL,  
    CCV     char(3)  
)
```

```
Create Table SalesRecord (  
    Sid    bigint REFERENCES Supplier(SID) unique,  
    Earnings  float NOT NULL, --revenue from all sales  
    Sales     bigint NOT NULL --amount of succesfull sales completed  
)
```

```
Create Table Supplier (  
    SID    bigserial      primary key, --supplier id  
    SName  varchar(20)    NOT NULL, --supplier name  
    SPassword  varchar(20)  NOT NULL FOREIGN KEY REFERENCES User(Password),  
    Region  varchar(20)    NOT NULL, -- supplier city where it is located  
    SPhone char(10)       NOT NULL, --suppliers phone number  
    SAddress  varchar(20)  NOT NULL  
)
```

```
Create Table Resources (  
    RID    bigserial      primary key,  
    SID    bigint REFERENCES Supplier(SID)
```

```
        Qty    bigint NOT NULL
    )
```

```
Create Table Purchases (
    PID    bigserial primary key,
    CID    bigint REFERENCES Client(CID),
    SID    bigint REFERENCES Supplier(SID),
    RID    bigint REFERENCES Resources(RID),
    Qty    bigint NOT NULL,
    Total  float NOT NULL, --Cost of the the purchase
    CCNumchar(16) NOT NULL
)
```

```
Create Table Request (
    RequestID bigserial primary key,
    CID    bigint REFERENCES Client(CID),
    RID    bigint REFERENCES Resources(RID),
    Qty    bigint NOT NULL
)
```

```
Create Table Reservation (
    ReservationID bigserial primary key,
    CID    bigint REFERENCES Client(CID),
    SID    bigint REFERENCES Supplier(SID),
    RID    bigint REFERENCES Resources(RID),
    Qty    bigint NOT NULL
)
```

```
Create Table Water (
    RID    bigint REFERENCES Resources(RID)unique,
    Price  float NOT NULL,
    BottleSize varchar(10) NOT NULL,
    Brand  varchar(20) NOT NULL
)
```

```
Create Table Ice (
    RID    bigint REFERENCES Resources(RID)unique,
    Price  float NOT NULL,
    BagSize varchar(10) NOT NULL
)
```

```
Create Table Food (
    RID    bigint REFERENCES Resources(RID)unique,
    Price  float NOT NULL,
    Ftype  varchar(10) NOT NULL,
```

```
        Expdate      date    NOT NULL,  
        Fname varchar(20)    NOT NULL  
    )
```

```
Create Table FirstAid (  
    RID    bigint REFERENCES Resources(RID)unique,  
    Brand  varchar(20)    NOT NULL,  
    Price  float    NOT NULL,  
    Medcondition  varchar(20)    NOT NULL  
)
```

```
Create Table Clothes (  
    RID    bigint REFERENCES Resources(RID)unique,  
    Price  float    NOT NULL,  
    Color  varchar(10)    NOT NULL,  
    Size   varchar(5)    NOT NULL,  
    Gender char(1) NOT NULL,  
    Piece  varchar(10)    NOT NULL  
)
```

```
Create Table Tools (  
    RID    bigint REFERENCES Resources(RID)unique,  
    Name   varchar(20)    NOT NULL,  
    Brand  varchar(20)    NOT NULL,  
    Price  float    NOT NULL  
)
```

```
Create Table Fuel (  
    RID    bigint REFERENCES Resources(RID)unique,  
    Ftype  varchar(10)    NOT NULL,  
    Price  float    NOT NULL,  
    ContainerSize  integer NOT NULL  
)
```

```
Create Table Battery (  
    RID    bigint REFERENCES Resources(RID)unique,  
    Price  float    NOT NULL,  
    Voltage float    NOT NULL,  
    btype  varchar(5)    NOT NULL  
)
```

```
Create Table Generator (  
    RID    bigint REFERENCES Resources(RID)unique,  
    Price  float    NOT NULL,  
    Brand  varchar(20)    NOT NULL,  
    Ftype  varchar(10)    NOT NULL,
```



```
        PowerRating    integer NOT NULL
    )
```

```
Create Table HeavyEquip (
    RID    bigint REFERENCES Resources(RID)unique,
    Make   varchar(20)    NOT NULL,
    Condition    varchar(20)    NOT NULL,
    Function     varchar(20)    NOT NULL,
    Price    float    NOT NULL
)
```

## **Appendix**

