Disaster Site Resources Locator

Phase I: Conceptual Design

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I. Entity Relationship Documentation

A. Entities

1. User Entity

The *User* entity table contains the following attributes

- Unique *user ID*
- Composed attribute of a User's name
    - First Name
    - Last Name
- *username* corresponding to a unique login identification composed by a string of characters
    - Refer to **APPENDIX A** to see constraints of a *username*
- *password* to gain access to the system
    - Refer to **APPENDIX B** to see constraints of a *password*
- Date of birth
- Composed attribute of address of the user divided by
    - Street 1
    - Street 2
    - City
    - Country
    - Zip Code
- A multivariate attribute for the *phone number*
- User's *gender*
- User's *email*
- A boolean attribute that shows the account participation status
    - Enabled
    - Disabled
- A *timestamp* attribute that specifies the time and date of creation of the account

The primary key of the *User* entity is the **user ID**

1.1 Admin Entity

This entity inherits from the *User* entity

1.2 System Manager

This entity inherits from the *User* entity

1.3 Supplier

This entity inherits from the *User* entity

1.4 Consumer

This entity inherits from the *User* entity

2. Organization Entity

The *Organization* entity table contains the following attributes

- Unique *organization ID*
- Organization name
- Organization Address as a composed attribute
    - Street 1
    - Street 2
    - City
    - Country
    - Zip Code
- A multivariate attribute for the *phone number*
- Organization's *email*
- A boolean attribute that shows the account participation status
    - Enabled
    - Disabled

- A *timestamp* attribute that specifies the time and date of creation of the organization

The primary key of the *Organization* entity is the **organization ID**

2.1 Organization Administrator

This entity inherits from the *Organization* entity

2.2 Consumer Organization Representative

This entity inherits from the *Organization* entity

3. Resource Entity

The *Resource* entity table contains the following attributes
- Unique *resource ID*
- Resource quantity
- Resource price
- Resource location as a composed attribute
  - Latitude
  - Longitude
- Resource Status
- A boolean attribute that shows if the resource is for sale: IsForSale

The primary key of the *Resource Type* entity is the **resource ID**

3.1 Water

This entity inherits from the *Resource* entity and contains the following attributes
- Water Type
- Expiration Date

3.2 Medications

This entity inherits from the *Resource* entity and contains the following attributes
- Medication Type

- Medication Name
- Expiration Date

3.3 Baby Food

This entity inherits from the *Resource* entity and contains the following attributes

- Baby Food Type
- Baby Food Name
- Expiration Date

3.4 Canned Food

This entity inherits from the *Resource* entity and contains the following attributes

- Canned Food Type
- Canned Food Name
- Expiration Name

3.5 Dry Food

This entity inherits from the *Resource* entity and contains the following attributes

- Dry Food Type
- Dry Food Name
- Expiration Date

3.6 ICE

This entity inherits from the *Resource* entity and contains the following attributes

- Ice Type

3.7 Fuel

This entity inherits from the *Resource* entity and contains the following attributes

- Fuel Type

3.8 Medical Devices

This entity inherits from the *Resource* entity and contains the following attributes

- Device Type
- Device Name

3.9 Heavy Equipments

This entity inherits from the *Resource* entity and contains the following attributes

- Equipment Type
- Fuel Type

3.10 Tool

This entity inherits from the *Resource* entity and contains the following attributes

- Tool Name
- Power Type

3.11 Clothing

This entity inherits from the *Resource* entity and contains the following attributes

- Piece of Clothing
- Size
- Gender
- Color

3.12 Power Generator

This entity inherits from the *Resource* entity and contains the following attributes

- Generator Type
- Fuel Type
- Power Generated

3.13 Batteries

This entity inherits from the *Resource* entity and contains the following attributes

- Battery Type

4. Order Entity

The *Order* entity table contains the following attributes

- Unique *order* ID
- Resource quantity
- Price
- A *timestamp* attribute that specifies the order time and date

The primary key of the *Order* entity is the **order ID**

5. Measurement Entity

Is the table that contains the information and the metrics that can be used by each resource.

The *Measurement* entity table contains the following attributes

- Unique *measurement* ID
- Unit type

The primary key of the *Order* entity is the **measurement ID**

6. Senate Region Entity

Is the table that contains all the 8 senate regions that will be used for statistics.

The *Senate Region* entity table contains the following attributes

- Unique *senate region* ID
- Senate region name

The primary key of the *Order* entity is the **senate region ID**

7. City Entity

Is the table that contains all the 78 municipalities of Puerto Rico that will be used for statistics.

The *City* entity table contains the following attributes

- Unique *city ID*
- City Name
- City Abbreviation

The primary key of the *Order* entity is the **city ID**

B. Relationships

For the *Disaster Site Resources Locator*, there are thirteen relationships between entities. The relationships are:

1. An admin **Administers users**
2. An admin **manages** System Managers and a System Manager **manages** an admin
3. A supplier **submits** a resource to the system
4. A resource **is measured by** a specific unit of measurement
5. A resource **is from senate region**
6. A City **belongs to senate region**
7. A consumer can submit **requests** of resources in the system
8. A consumer **buys** a requested resource
9. A consumer **reserves** a requested resource
10. An Organization Representative **manages organization representatives** in the system
11. An Organization Representative **represents** an Organization registered in the system
12. An Organization Administrator **administers organization**
13. **A resource is ordered** by a consumer

1. "*Administers users*" Relation

The properties of the relationship **Administers users** include

- Relates the entities *Users* and *Admin*
- The relationship is many-to-many

2. "*manages*" Relation

The properties of the relationship *manages* include

- Relates the entities *Admin* and *System Manager*
- The relationship is many-to-many

3. "*submits*" Relation

The properties of the relationship *submits* include

- Relates the entities *Supplier* and *Resource*
- The relationship is many-to-many

4. "*is measured by*" Relation

The properties of the relationship *is measure by* include

- Relates the entities *Resource* and *Measurement*
- The relationship is many-to-many

6. "*is from senate region*" Relation

The properties of the relationship *is from senate region* include

- Relates the entities *Resource* and *SenateRegion*
- The relationship is many-to-many

7. "*belongs to senate region*" Relation

The properties of the relationship *belongs to senate region* include

- Relates the entities *Senate Region* and *City*
- The relationship is many-to-one (*many resource Cities) to one Senate Region)*

8. "*requests*" Relation

The properties of the relationship **requests** include

- Relates the entities **Consumer** and **Resource**
- The relationship is many-to-one (*many resource requests (possibly zero) to one request submission*)

9. "*buys*" Relation

The properties of the relationship **buys** include

- Relates the entities **Consumer** and **Resource**
- The relationship is many-to-one (*many resource to buy(possibly zero) to one resource type*)

10. "*reserves*" Relation

The properties of the relationship **reserves** include

- Relates the entities **Consumer** and **Resource**
- The relationship is many-to-one (*many resource availability tickets (possibly zero) to one resource type*)

11. "*manages organization representatives*" Relation

The properties of the relationship **manages organization representatives** include

- Relates the entities **Organization Representative** and **Organization Administrator**
- The relationship is many-to-one

12. "*represents*" Relation

The properties of the relationship **represents** include

- Relates the entities **Organization** and **Organization Representative**
- The relationship is many-to-many

13. "*administers organization*" Relation

The properties of the relationship **administers organization** include

- Relates the entities *Organization Administrator* and *Organization*
- The relationship is one-to-one

II. REST API

A. Login

Description: Login is used for authentication of users with authorized credentials

Route: /login

B. Organization

Description: Show all the organizations in the system

Route: /organization

Description: Register a new organization in the system

Route: /organization

Description: Get a specific organization by their ID in the system

Route: /:orgID

Description: Show all the organization representatives of a specific organization in the system

Route: /:orgID/representatives

Description: Add an organization representative to a specific organization in the system

Route: /:orgID/add_representative

C. Providers

Description: Get a list of the providers registered in the system

Route: /providers

D. Register

Description: Save the registry of the creation of a new user with its role

Route: /register

E. Resources

Description: Show the different types of resources that the system supports

Route: /types

Description: Get the attributes of a specific resource type in the system

Route: /:type/attributes

Description: Search all available resources, that match the entered keyword, submitted in the system by a provider

Route: /available/:provider/:keyword

Description: Search resources being requested by a specific user in the system

Route: /requests/:userID/:keyword

Description: Update the status of a request submitted by a user in the system

Route: /:id/update-status

Description: Add a given resources entered by the provider to the system

Route: /add

Description: Add user request for a given resource in the system

Route: /add/request

Description: Reserve a given resource in the system

Route: /reserve

Description: Buy a given resource in the system

Route: /buy

F. Statistics

Description: Statistics will be shown on a dashboard page with resources in need, resources available and matching between need and availability

Route: /statistics

G. User

Description: Get the information about all users in the system, only Admin and System Manager are authorized to view

Route: /users

Description: Get information about a specific user in the system, using its Id

Route: /:id

Description: Get all available roles in the system

Route: /roles

Description: Get the requests of a given resource submitted by a specific user in the system

Route: /:id/requests

APPENDICES
APPENDIX A

Requirements and Supported Characters in Account Username

Property	Description
Allowed Characters	- Lower and upper case letters (a-z, A-Z) - Digits (0-9) - Periods (.)
Forbidden Characters	- Ampersand (&) - Equals sign (=) - Underscore (_) - Apostrophe ('), - Dash (-), plus sign (+), comma (,) - Brackets (<,>) - More than one period (.) in succession
Length	- Minimum length of 5 characters - Maximum length of 18 characters

APPENDIX B

Requirements and Supported Characters in Account Password

Property	Description
Allowed Characters	- Lower and upper case letters (a-z, A-Z) - Digits (0-9) - Periods (.) @ # $ % ^ & * - _ ! + = [ ] { } | \ : ' , . ? / ` ~ " ( ) ;
Length	- Minimum length of 8 characters - Maximum length of 80 characters

APPENDIX C

System Supported User Roles and Descriptions

Roles	Description
1. System Administrator	- Add Managers - Enable/Disable requester, supplier, and organization accounts - Add new resource types - Edit resource type data - Deactivate resource types - Cancel resource requests - Cancel resource availability - Visibility of all the submitted resource requests and resource availability tickets - View of all the available inventory by resource type - View sold resources by resource type - View reserved resources by resource type
2. Manager	- Enable/Disable requester, supplier, and organization accounts - Add new resource types - Edit resource type data - Deactivate resource types - Cancel resource requests - Cancel resource availability - Visibility of all the submitted resource requests and resource availability tickets - View of all the available inventory by resource type

- View sold resources by resource type
- View reserved resources by resource type

3. Individual Supplier

- Submit resources to the system
- Withdraw resource availability ticket. (This will only remove items that have not been bought or reserved.)

4. Requester

- Submit resource request ticket
- Withdraw resource request ticket

5. Supplier Organization Administrator

- Can create an organization
- Update organization information
- Can add representatives to the organization
- All the permissions of an individual supplier

6. Supplier Organization Representative

- Related to an organization
- All the permissions of an individual supplier

APPENDIX D
Resource Supported Status

Status	Description
1. Available	Resources of ticket still available
2. Cancelled	Ticket was cancelled by System Administrator
3. Exhausted	Resources of ticket depleted
4. Withdrawn	Remaining resources of the ticket were withdrawn by the supplier

APPENDIX E

Request Supported Status

Status	Description
1. Unfulfilled	Resources have not been bought or reserved
2. Cancelled	Ticket was cancelled by System Administrator
3. Fulfilled	Resources have not been bought or reserved
4. Withdrawn	Request ticket was withdrawn by the requestor