University of Puerto Rico - Mayaguez Campus
Department of Electrical and Computer Engineering
ICOM 5016 - Introduction to Database Systems
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Term Project – Backend System for Disaster Site Resources Locator
Phase I – Conceptual Design

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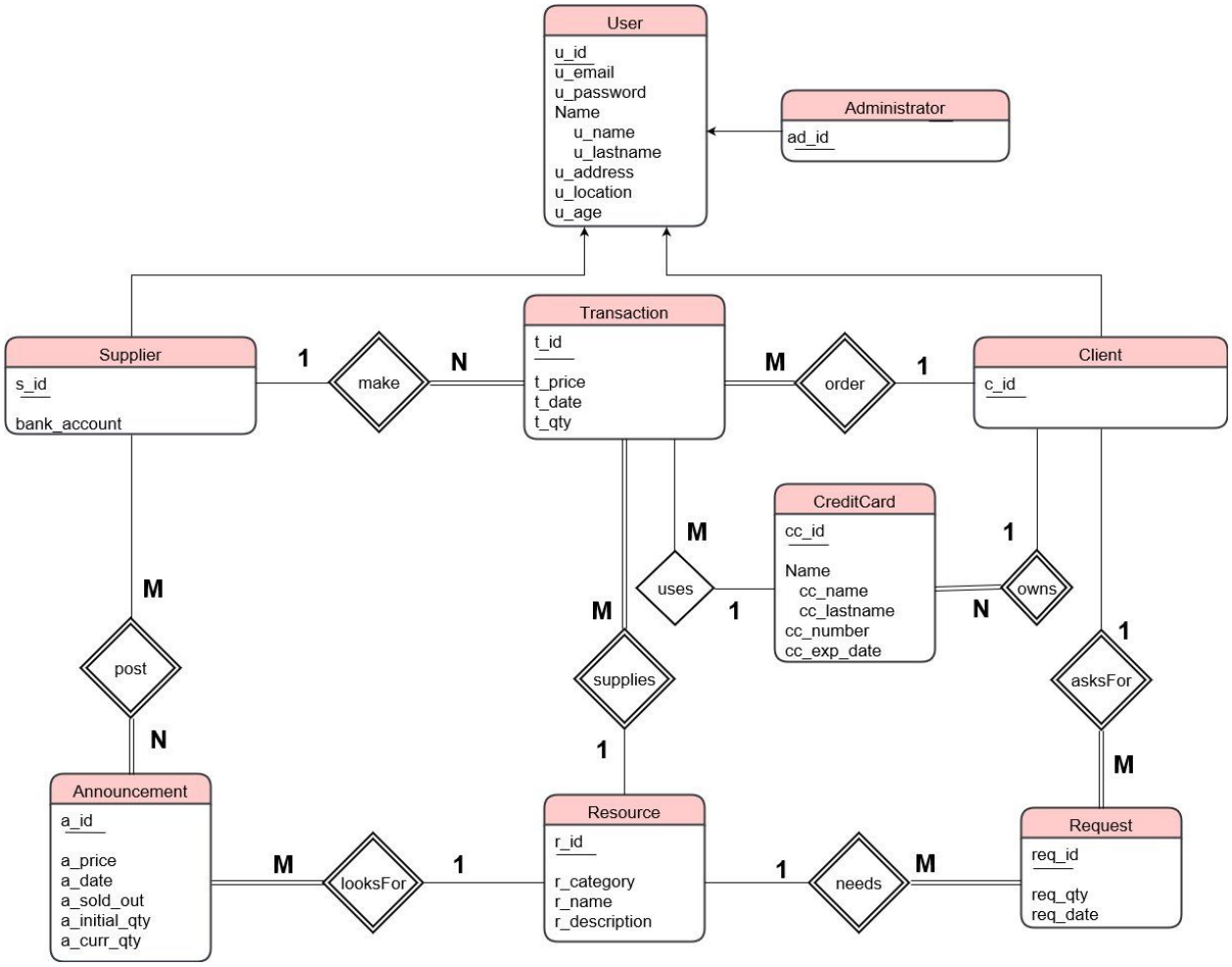
Entity-Relationship Model



Schema Design with E-R Model

```
User(                                   -- user of system (inherit administrator, supplier and client)
u_id serial primary key,                -- user id
u_email varchar(50),                    -- user email
u_password varchar(20),                 -- user password
u_name varchar(20),                     -- user name
u_lastname varchar(20),                 -- user last name
u_address varchar(50),                  -- user address
u_location varchar(25),                 -- user location
u_age int                               -- user age to see if user is older than 18 years old
)

Administrator(                          -- administers the system (inherited from users)
ad_id serial primary key,               -- administrator id
u_id references User(u_id)              -- user id
)

Supplier(                               -- supplies by announcements (inherited from users)
s_id serial primary key,                -- supplier id
u_id references User(u_id),             -- user id
bank_account integer                    -- supplier bank account
)

Client(                                 -- client get donations or purchases (inherited from users)
c_id serial primary key,                -- client id
u_id references User(u_id))             -- user id

Transaction(                            -- transaction made between supplier and client
t_id serial primary key,                -- transaction id
s_id references Supplier(s_id),         -- supplier id
c_id references Client(c_id),           -- client id
t_price float,                          -- transaction price
t_date Date,                            -- transaction date
t_qty int                               -- transaction quantity (of resources)
)

CreditCard(                             -- credit card registered by a supplier (can own more)
cc_id serial primary key,               -- credit card id
cc_name varchar(20),                    -- credit card name
```

```
cc_lastname varchar(20),          -- credit card last name
cc_number integer,                -- credit card number
cc_exp_date Date                  -- credit card expiration date
)

Announcement(                     -- announcement made by a supplier
a_id serial primary key,          -- announcement id
s_id references Supplier(s_id),   -- supplier id
a_price float,                    -- announcement price per unit
a_date Date,                      -- announcement date
a_sold_out boolean,               -- announcement status (if sold out or not)
a_initial_qty int,                -- announcement initial quantity
a_curr_qty int                    -- announcement current quantity
)

Request(                          -- request made by a supplier
req_id serial primary key,        -- request id
c_id references Client(c_id),     -- client id
req_qty int,                      -- request quantity
req_date Date                     -- request date
)

Resource(                         -- resource of system
r_id serial primary key,          -- resource id
r_category varchar(20),           -- resource category (medicine, water, clothing, food, etc)
r_name varchar(20),               -- resource name (aspirin, nikini, t-shirt, etc)
r_description varchar(50)         -- resource description (50 tablets, 6 bottles, medium, etc)
)
```

Relationships

1. **make** - This is a one to many relationship, since an element from entity Supplier is related with more than one element from entity Transaction. A supplier can have many transactions, but a transaction can only be part of one supplier. In this relationship Transaction must have total participation and is declared a weak entity.

2. **needs** - This is a one to many relationship, since an element from entity Resource is related with more than one element from entity Request. A resource can be requested many times, but a request can only be about one resource. In this relationship Request must have total participation and is declared a weak entity.

3. **asksFor** - This is a one to many relationship, since an element from entity Client is related with more than one element from entity Request. A client can have many requests, but a request can only be made by one client. In this relationship Request must have total participation and is declared a weak entity.

4. **order -** This is a many to one relationship, since an element from entity Client is related with more than one element from entity Transaction. A client can have many transactions, but a transaction can only be order by one client. In this relationship transaction must have total participation and is declared a weak entity.

5. **uses -** This is a many to one relationship, since an element from entity Credit Card is related with more than one element from entity Transaction. A credit card can be used many transactions, but a transaction can only be placed with one credit card.

6. **owns -** This is a many to one relationship, since an element from entity Client is related with more than one element from entity Credit Card. A client can own many credit cards, but a credit card can only be owned by one client. In this relationship Credit Card must have total participation and is declared a weak entity.

7. **supplies -** This is a many to one relationship, since an element from entity Resource is related with more than one element from entity Transaction. In this relationship Transaction must have total participation and Transaction is declared a weak entity.

8. **looksFor -** This is a many to one relationship, since an element from entity Resource is related with more than one element from entity Announcement. In this relationship Resource must have total participation and Announcement is declared a weak entity.

9. **post -** This is a many to many relationship, since an element from entity Supplier is related with more than one element from entity Announcement. Likewise, an element from entity Announcement is related with more than one element from entity Supplier. In this relationship Announcement must have total participation and Announcement is declared a weak entity.