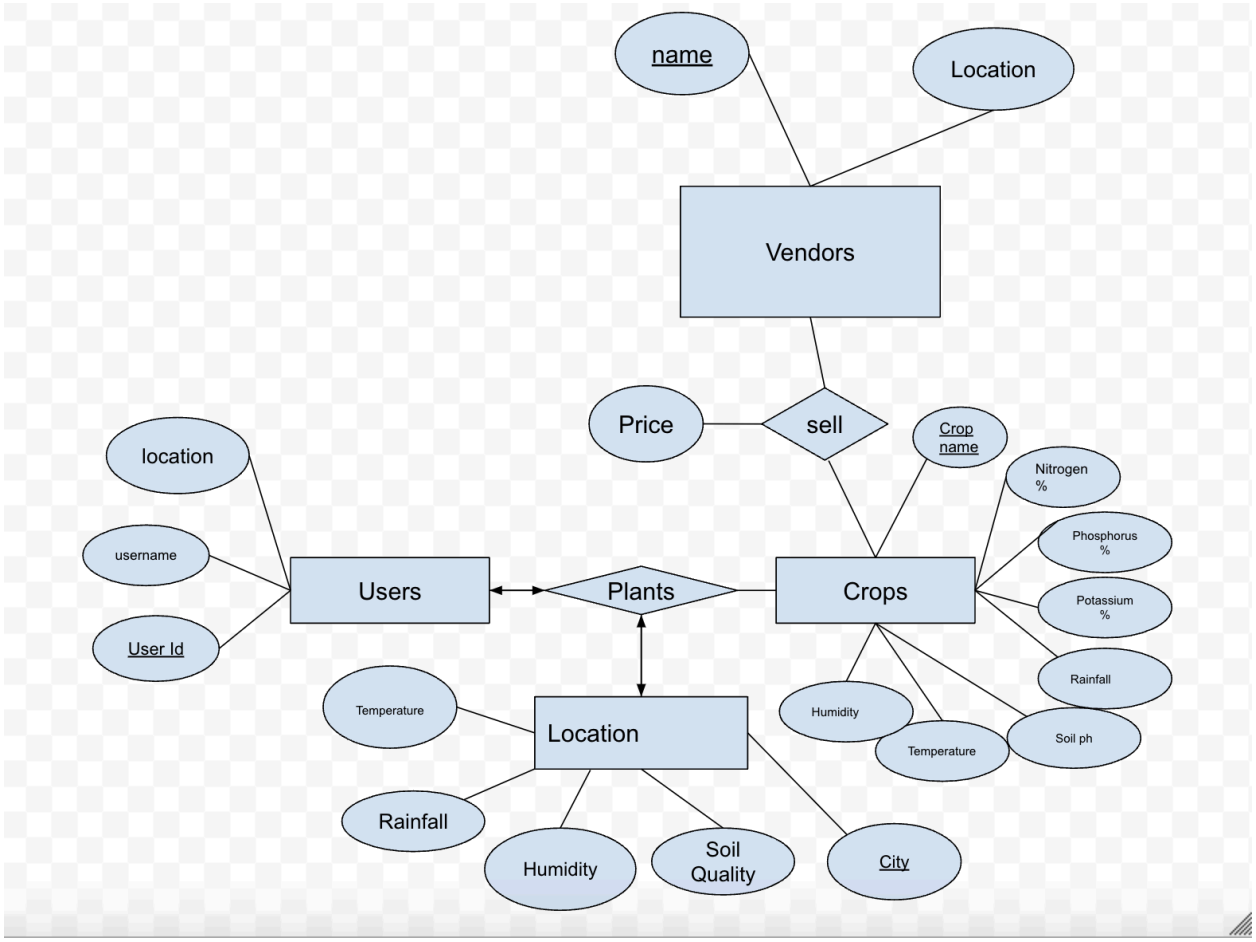
Project Stage 2



2) Assumptions

- Entities:
  - User
    - The User Table has attributes userID, username, and location. The primary key is userID and we chose that as the primary key because it uniquely identifies each of the other records in the table. We chose to model User as an entity because our design needs to keep track of different user account information.
  - Vendors
    - The Vendors Table has attributes name (primary key), and location. We have a Vendors entity because each vendor can sell crops for a different price.
  - Crops
    - Crops have the attributes Crop name (primary key), Nitrogen %, Phosphorous %, Potassium %, Soil pH, Temperature, Humidity, Rainfall.
  - Locations

        - Locations have a primary key of city and other attributes are soil quality, humidity, rainfall, and temperature. Location is a separate entity from crops because each crop can be grown in a different location and each location has different weather conditions.
- Relationships:
    - Vendors and Crops (many to many relationship)
        - In our application, we will determine the prices of crops by getting data from various vendors such as Walmart. The relationship is many to many because a single vendor can sell multiple crops, and a single crop can be sold by multiple vendors. The sells relationship has a price attribute which is the price of a crop at a specific vendor.
    - Users, Locations, and Crops
        - These entities have a three way relationship on the relation plants. A plant is a crop planted by the user, and each plant is associated with a user, location, and type of crop. Users can have multiple crops, and crops can be associated with many users. A location can be associated with many crops, and a crop type can be planted in multiple locations.

4)

Relationships

Userid → username, user_location
Crop_name → Nitrogen, Phosphorus, Potassium, Soil PH, Temperature, Humidity, Rainfall
city → Temperature, Humidity, Rainfall, Soil Quality
Vendor_name → vendor_location
Vendor_name, crop_name → price

UserID → crop_name
crop_name → vendor_name
UserID → city

Minimal Basis

(by transitive clause)
UserId → Nitrogen, Phosphorus, Potassium, Soil PH, Temperature, Humidity, Rainfall
Userid → username, user_location
Userid → vendor_name, location
Userid → price

UserId is a superkey, so schema is in 3NF

5)
User(UserID: INT [PK], Username: VARCHAR(), Location: VARCHAR())

Location(City: VARCHAR() [PK], Temperature: DECIMAL, Rainfall: DECIMAL, Humidity: DECIMAL)

Crops(CropName: VARCHAR() [PK], Rainfall: DECIMAL, Temperature: DECIMAL, Humidity: DECIMAL, Nitrogen: DECIMAL, Phosphorus: DECIMAL, Potassium: DECIMAL, SoilPH: INT)

Vendors(Name:VARCHAR() [PK], Location:VARCHAR(),

Plants(CropName: VARCHAR() [FK to Crops.CropName], UserID: INT [FK to Users.UserID], Location: VARCHAR() [FK to Location.City])

Sells(VendorName: VARCHAR() [PK], CropName: VARCHAR() [PK], Price: DECIMAL)