Nicholas Ramella, Herat Zaveri, Harsh Patel

Ananya Dass

CS331 Database Management

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Deliverable 1

Goals:

The goal of this phase of the project is to have a clear outline of the database we will create in order to have a working system that flows even when making any changes. The system should only store data that is relevant and necessary for the system to work. We want to build the diagram as a roadmap for us to eventually build the PhotoShop database application.

Assumptions:

- Every landscape must have a location.

- Every photo must have a photographer.

- Each location has a location ID that uniquely identifies it.

- The landscapes are not collages and can only contain one location each.

- Every portrait must have a model.

- We have the SSN of the models and photographers.

- Many photographers can influence many other photographers.

- Each photo must have a unique id.

- Only a single customer can own the rights to a photograph.

Constraints

    Participation/Cardinality:

        Total Participation

            Every landscape must have a location

            Every portrait must have a model

            Every photo must have a photographer

Cardinality

    Landscape:Location -> 1:N (a landscape can contain one location, but a location can appear in many photos)

    Portrait:Model -> N:M (many models can appear in many portraits)

    Photographer:Photo -> 1:N (a photographer can take many photos but a photo can only be taken by one photographer)

    Influenced:Influencer -> N:M (many photographers can influence many other photographers)

    Customer:Photo -> 1:N (a customer can buy many photos but a photo can only be bought by one customer)

Entities and Attributes

Photographer:

    Photographer SSN: Integer, NOT NULL, Unique Value, Primary Key

    Address (multivalued)

        ZipCode: Integer

        Street Address: String

        State: String

    Nationality: String

    Birth-date: Date

    Name (multivalued):

        First Name: String

        Last Name: String

        Middle Initial: Character

    Short Biography: String

Customer:

    Username: String, NOT NULL, Unique Value, Primary Key

    Password: String

    Name (multivalued):

        First Name: String

Last Name: String

Middle Initial: Character

Address (multivalued)

ZipCode: Integer

Street Address: String

State: String

Billing Address (multivalued)

ZipCode: Integer

Street Address: String

State: String

Type: String

Photo:

Photo ID: Integer, NOT NULL, Unique Value, Primary Key

Style of Photo: String, Domain(Landscape, Portrait, Abstract)

Resolution: String

Shutter Speed: String

F-stop: String

Price: Integer

Type: String, Domain(Color, Black and White)

Film: String

Photographer SSN: Integer, FOREIGN KEY (Photographer)

Location:

Location ID: Integer, NOT NULL, Unique Value, Primary Key

Place Name: String

Country: String

Short Description: String

Model:

Model SSN: Integer, NOT NULL, Unique Value, Primary Key

Short Bio: String

Sex: Character

Birth-Date: Date

Name: String

Abstracts:

Photo ID: Integer, FOREIGN KEY (Photo)

Comment: String

Taken At

Photo ID: Integer, FOREIGN KEY (Photo)

Location ID: Integer, FOREIGN KEY (Location)

Models For:

Photo ID: Integer, FOREIGN KEY (Photo)

Model SSN: Integer, FOREIGN KEY (Model)

Agency: String

Taken By:

Photo ID: Integer, FOREIGN KEY (Photo)

Photographer SSN: Integer, FOREIGN KEY (Photographer)

Date of Shooting: Date

Purchased:

Username: String, FOREIGN KEY (Customer)

Photo ID: Integer, FOREIGN KEY (Photo)

Date: Date

Credit Card: Integer

Total Amount (Derived Value): Integer

Influence:

Influenced: Integer, FOREIGN KEY (Photographer SSN)

Influencer: Integer, FOREIGN KEY (Photographer SSN)

Difficulties Faced

One of the difficulties we faced was deciding on what attributes to use as primary keys for each entity. For many entities in our ER diagram the attributes provided in the project outline were not unique and we needed to come up with our own attributes to add in order to have a primary key. For models and photographers we added a MSSN and PSSN respectively to the entities, assuming we can obtain the SSNs of the models and photographers. Each photo has a unique Photo ID, that identifies the copyright of the photo since once the photo is bought the customer owns the rights to that photo. In order to figure out what the primary key should be for Location was especially difficult as we were unsure which value to use. Address is multivalued and thus can not be the primary key. We decided to use a new attribute called "Location ID" which is an arbitrary number meant to distinguish between the different locations in our database. We also were unsure on how to represent the fact that some photographers in our database do not have any photos. We decided to just have the min value of photos taken by photographers set to 0.