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INFSCI 1599 Intermediate Programming with Python

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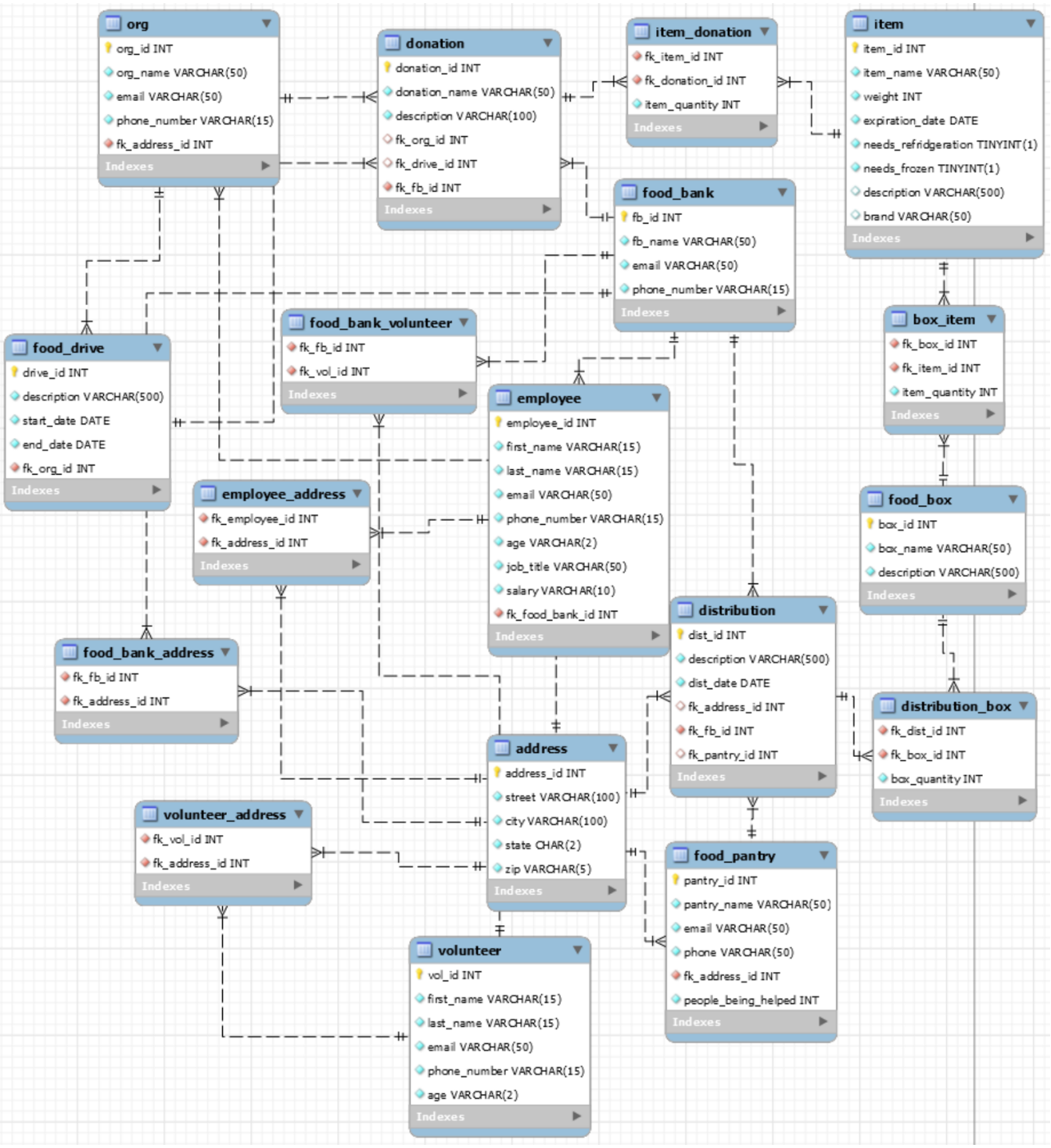
Introduction/Abstract

The target audience for this database project is food banks, which are organizations that provide food to people in need. The purpose of the database is to help food banks better manage their operations, including the receipt and distribution of food donations. The benefits of using this database include improved organization, increased efficiency, and the ability to track and manage food inventory more effectively. This database can help food banks save time and money, as it can be used to automate many of the tasks involved in managing food donations. Additionally, because the database is designed to be accessible and user-friendly, it can be easily implemented by food banks, even if they do not have the resources to hire a team of developers to create custom software solutions.

E-R Model


org
org_id INT
org_name VARCHAR(50)
email VARCHAR(50)
phone_number VARCHAR(15)
fk_address_id INT
Indexes
donation
donation_id INT
donation_name VARCHAR(50)
description VARCHAR(100)
fk_org_id INT
fk_drive_id INT
fk_fb_id INT
Indexes
item_donation
fk_item_id INT
fk_donation_id INT
item_quantity INT
Indexes
item
item_id INT
item_name VARCHAR(50)
weight INT
expiration_date DATE
needs_refridgeration TINYINT(1)
needs_frozen TINYINT(1)
description VARCHAR(500)
brand VARCHAR(50)
Indexes
food_bank
fb_id INT
fb_name VARCHAR(50)
email VARCHAR(50)
phone_number VARCHAR(15)
Indexes
box_item
fk_box_id INT
fk_item_id INT
item_quantity INT
Indexes
food_bank_volunteer
fk_fb_id INT
fk_vol_id INT
Indexes
food_drive
drive_id INT
description VARCHAR(500)
start_date DATE
end_date DATE
fk_org_id INT
Indexes
employee
employee_id INT
first_name VARCHAR(15)
last_name VARCHAR(15)
email VARCHAR(50)
phone_number VARCHAR(15)
age VARCHAR(2)
job_title VARCHAR(50)
salary VARCHAR(10)
fk_food_bank_id INT
Indexes
employee_address
fk_employee_id INT
fk_address_id INT
Indexes
food_box
box_id INT
box_name VARCHAR(50)
description VARCHAR(500)
Indexes
distribution
dist_id INT
description VARCHAR(500)
dist_date DATE
fk_address_id INT
fk_fb_id INT
fk_pantry_id INT
Indexes
food_bank_address
fk_fb_id INT
fk_address_id INT
Indexes
distribution_box
fk_dist_id INT
fk_box_id INT
box_quantity INT
Indexes
address
address_id INT
street VARCHAR(100)
city VARCHAR(100)
state CHAR(2)
zip VARCHAR(5)
Indexes
volunteer_address
fk_vol_id INT
fk_address_id INT
Indexes
food_pantry
pantry_id INT
pantry_name VARCHAR(50)
email VARCHAR(50)
phone VARCHAR(50)
fk_address_id INT
people_being_helped INT
Indexes
volunteer
vol_id INT
first_name VARCHAR(15)
last_name VARCHAR(15)
email VARCHAR(50)
phone_number VARCHAR(15)
age VARCHAR(2)
Indexes

Business Rules

Entity 1	Entity 2	Cardinality on Entity 1 side	Cardinality on Entity 2 side	Business Rule(s)
Food Bank	Volunteer	1..*	1..*	A food bank may have one or many volunteers. A volunteer must be associated with at least one food bank.
Food Bank	Employee	1	1..*	A food bank may have one or many employees. An employee must be working for only one food bank.
Food Bank	Donation	1	1..*	A food bank may have one or many donations. A donation must be associated with only one food bank.
Food Bank	Distribution	1	1..*	A food bank may have one or many distributions. A distribution must be associated with only one food bank.
Address	Food Bank	1..*	1..*	A food bank may have one or many addresses. An address must be associated with at least one food bank.
Address	Volunteer	1..*	1..*	A volunteer may have one or many addresses. An address must be associated with at least one volunteer.
Address	Employee	1..*	1..*	An employee may have one or many addresses. An address must be associated with at least one employee.
Address	Organization	1	1..*	An organization may have one or many addresses. An address must be associated with only one organization.

Address	Distribution	1	1..*	An address may have one or many distributions. A distribution must be associated with only one address.
Address	Food Pantry	1	1	A food pantry may only have one address. An address must be associated with only one food pantry.
Donation	Organization	0..*	1	An organization may have one or many donations. A donation must be associated with none or one organization.
Donation	Food Drive	0..*	1	A food drive may have one or many donations. A donation must be associated with none or one food drive.
Donation	Item	1..*	1..*	An item may have one or many donations. A donation may have one or many items.
Food Drive	Organization	1..*	1	An organization may have one or many food drives. A food drive must be associated with an organization.
Distribution	Food Pantry	1..*	1	A food pantry may have one or many distributions. A distribution must be associated with only one food pantry.
Item	Food Box	1..*	1..*	An item may have one or many food boxes. A food box must be associated with at least one item.
Distribution	Food Box	1..*	1..*	A distribution may have one or many food boxes. A food box must be associated with at least one item.

Closing Section

I found it most difficult to come up with an idea. Once I had settled on the food bank idea, it was still a bit challenging to come up with all of the necessary tables. Once coming up with all of the database design, the coding part became easier. The python project was enjoyable thanks to the past assignments we've done in class. While doing the python part, I realized I had not used UUIDs for primary keys, instead opting for auto-incrementing. By the time I found this out, the database was complete so I made the decision to not change the primary keys.