

Problem Statement

VDASH: University Volunteer Database

Because of COVID and the limitations of in-person and virtual environments, the scope of volunteering opportunities and programs have drastically changed over the course of the past year. Many once popular volunteering opportunities requiring physical demands are now restricted with limitations the number of volunteers and viable activities. Some organizations have completely disbanded volunteer programs in an effort to mitigate the spread of covid. Nevertheless, this shift to a more technologically proficient and dependant world has allowed many new virtual opportunities to surface. Unfortunately, these are often hidden within the depths of the millions of Google Search results. This not only makes it harder for VCU students to find community outreach opportunities, but it also makes it increasingly difficult for many organizations - both at and outside of VCU - to find volunteers to help them fulfill their goals and prevent people or organizations from receiving the help they need.

The Center for Health and Human Rights (CHHR) is a nonprofit organization that works to engage in community education and service and provide advocacy and policy analysis on matters of health and human rights. Because of the COVID, the executive council of the VCU Chapter of CHHR wants to create an online database for their members and other VCU students to easily find and sign up for virtual and/or in-person community outreach and service activities in the Richmond area in an organized and straightforward manner.

The volunteer database will be restricted to student orgs, off-campus organizations, and university-level students, including both those who do not attend VCU, since many non-VCU students stayed at home in Richmond this semester and are still seeking volunteer opportunities.

Volunteer Opportunities

Given the magnitude of volunteer opportunities out there, we want our volunteers to be able to sort through possible opportunities easily and in an organized manner. Nowadays, different types of volunteer activities will have unique COVID restrictions, ranging from social distancing to a full-body protective gear, depending on the nature of the activity. Accordingly, volunteers will vary in their ability to participate in in-person activities, based on preexisting health conditions or other concerns. In order to make it easy for volunteers to sort by these restrictions, opportunities will be organized by type. A volunteer opportunity can be either virtual, in-person, or donations. If organizations have both in-person and virtual versions of the same activity, these will be listed as unique activities within the database.

All volunteer opportunities will be posted with a full outline of the name, a description of responsibilities, event start and end dates (either a date value or NULL), link to the event details, restrictions (including age or necessary skills), and the number of remaining volunteer spots such that prospective volunteers get a full understanding of the opportunity before signing up. Additionally, each volunteer opportunity must have one organizer and one organization, both of which volunteers should be able to see the contact info of, in case of any questions or concerns. For example, a "Food Pantry

Distribution Volunteer” opportunity would be managed by Jane Doe (organizer) and the Colonial Heights Food Pantry (organization). In the case where a volunteer opportunity has multiple organizations (e.g. CHHR and Communities in Schools (CIS) collaborate on a school yard clean-up initiative), the student org or host organization will only be listed or a separate temporary collab organization (e.g. CHHR-CIS) must be created.

In-Person

In-person opportunities are any activity that includes an in-person component. These may include anything from food pantry distribution to COVID testing, but these activities may pose a serious health risk to its volunteers. Accordingly, these may have extra restrictions (e.g. COVID vaccine requirement) and will also list any COVID precautions in place (e.g. social distancing, hazmat suit) to prevent the spread of the virus.

Virtual

Virtual activities are completely online and may require specific technological requirements, such as reliable internet, laptop, webcam, etc.

Donations

After the recent downturn of the economy and massive job loss over the past year, we have seen the demand of donations skyrocket within many organizations that work with underprivileged populations. Donation drives require that volunteers purchase and drop off supplies at a specific location within a specific time range and may have specific instructions for cleaning or delivering the donated products.

Users

This database can be accessed by three types of users: admin, organizers, and volunteers. Note that while an individual can be an admin, organizer, and a volunteer at once, a user can only be one, not multiple of these roles, meaning that an individual with multiple roles must have multiple users for security reasons. Each user has a unique ID associated with a profile that includes their basic information, including contact email, number, and birthday.

Admin

The volunteer database admin can approve volunteer opportunities submitted by organizers, making them public to all prospective volunteers. The admin users include the members of the CHHR executive board and are organized by their position on the board (President, Secretary, etc.).

Organizer

Organizers must be members of an organization, either a student org or an off-campus organization, that are leading a volunteer opportunity. They have the ability to create, modify, or remove a volunteer opportunity.

Volunteer

Each volunteer may be enrolled at an accredited university, and only volunteers can sign up for volunteer opportunities. Only the address and unique name of the university will be stored. Volunteers will have extra language, skills (e.g. CPR or EMT certified), and vaccinated (Yes/No) attribute. This allows organizers to have more insight into the skill sets of the volunteers signed up for their events.

Organizations

All volunteer opportunities must be run by an organization, but organizations can run multiple opportunities and have multiple organizers running such initiatives. Organization profiles are identified by a unique ID and also include the name, contact email, and a single phone number. Note that we are only allowing one phone number per org to prevent confusion in having volunteers call multiple numbers. Organizations must be either student orgs or off-campus organizations. Student orgs include university chapters of other established organizations, such as the VCU Chapter of the Red Cross.

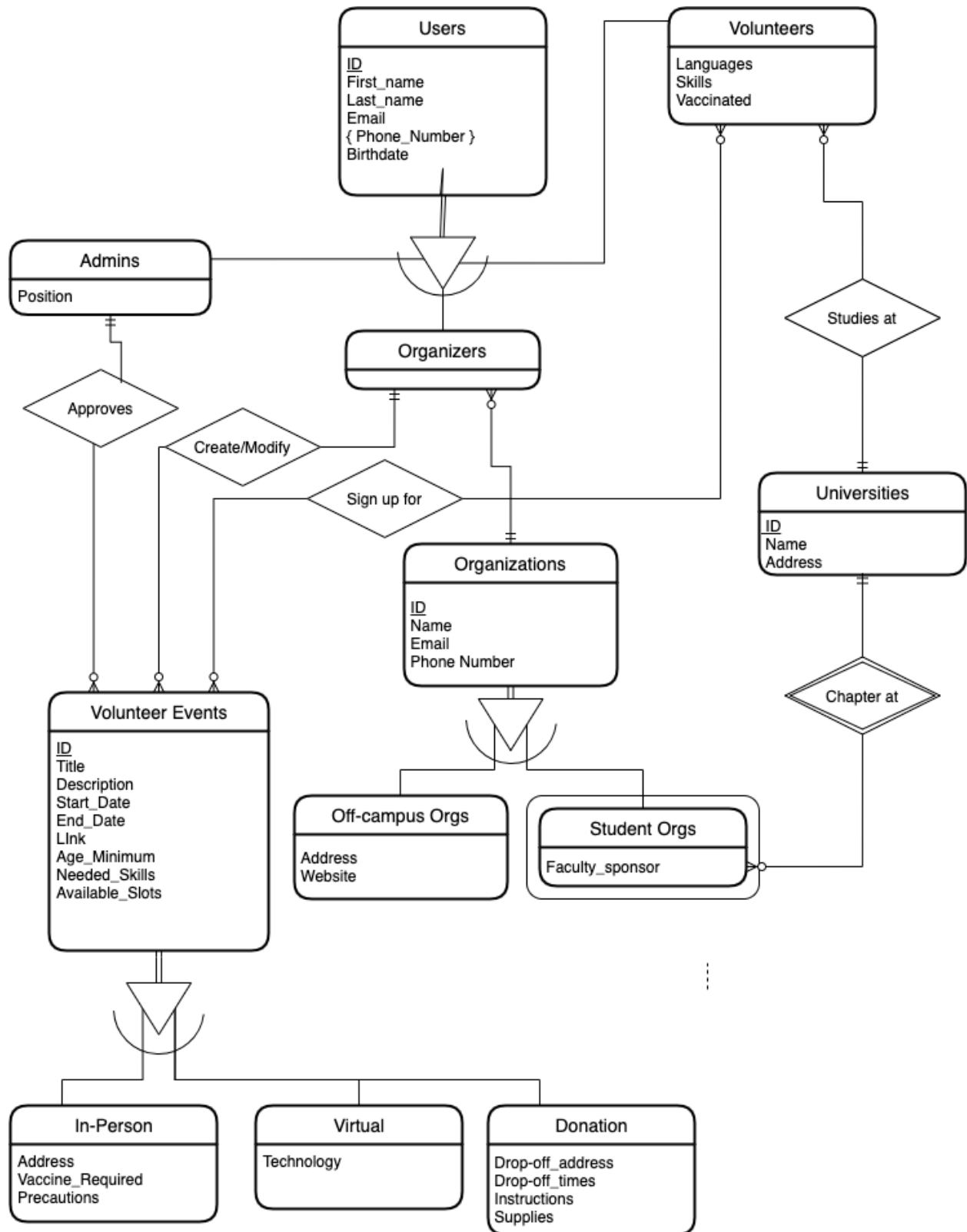
Student Orgs

Each student org must be registered at an accredited university and may have a faculty sponsor. Note that since student orgs are distinct to the university and not all students belong to the same university, a website link will not be stored, and other student orgs details should be accessed through the university portal (i.e. VCU RamsConnect).

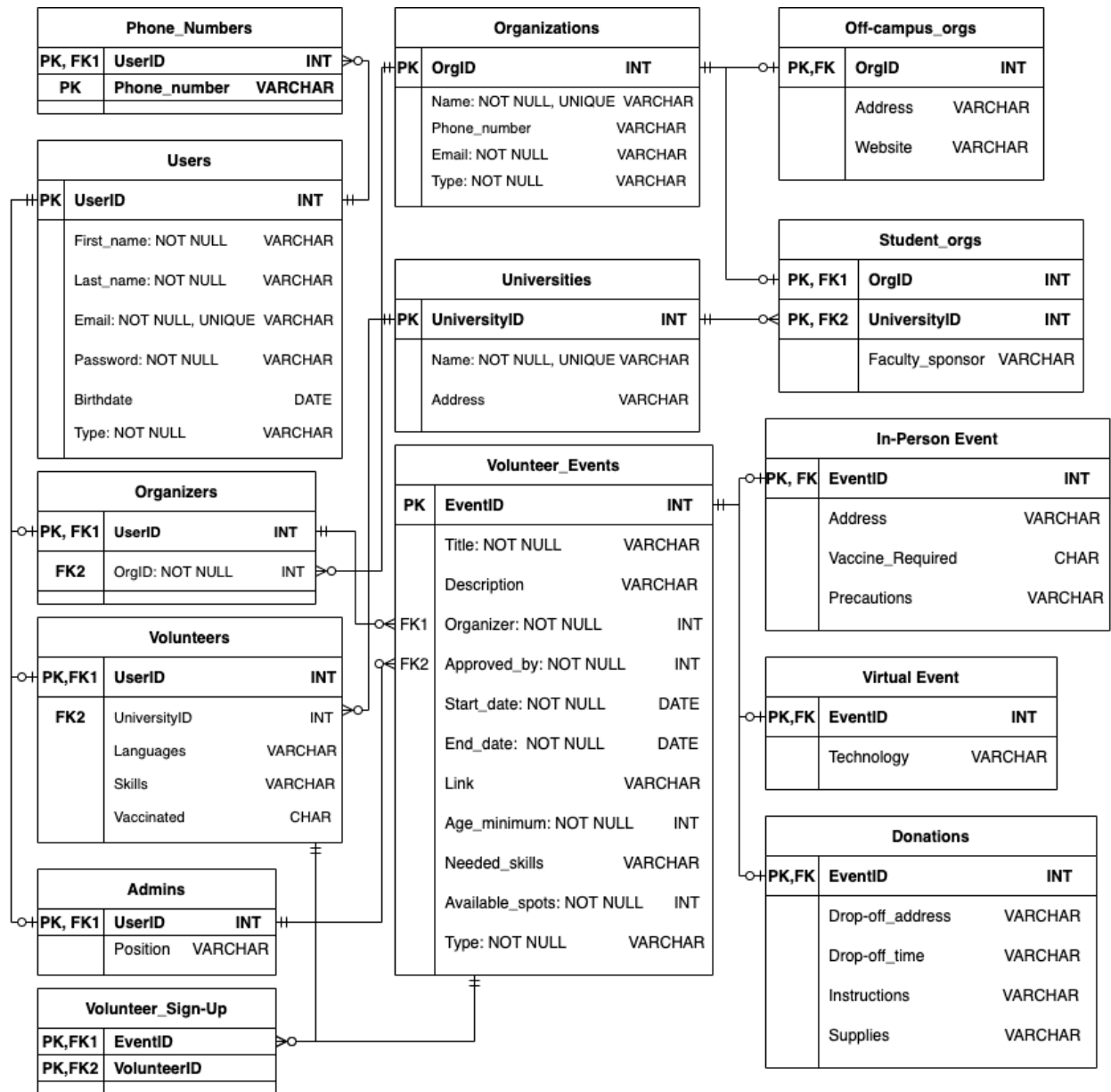
Off-campus Orgs

Other established organizations (e.g. Red Cross) will be stored with the addresses of any headquarter/office locations and the website of the organization, allowing volunteers to find more information about the organization.

Entity Relationship Diagram



Relational Diagram



Tables

User (UserID: [PK], email: [not null, unique], password: [not null], first_name: [not null], last_name: [not null], birthdate: [not null], Type: [not null]))

Phone_Numbers (UserID, phone_number)
PK(UserID,phone_number)
FK {UserID} references {User.UserID}

Organizer (UserID: [PK], Org)
FK1 {UserID} references {User.UserID}
FK2 {Org} references {Organization.OrgID}

Volunteer (UserID, UniversityID, Languages, Skills, Vaccinated)
PK (UserID)
FK {UserID} references {User.UserID}
FK {UniversityID} references {Universities.UniversityID}

Admin (UserID: [PK], Position)
FK {UserID} references {User.UserID}

Organization (OrgID: [PK], Name: [not null, unique], Phone_number, Email: [not null], Type: [not null]))

University (UniversityID: [PK], Name, Address)

Volunteer_Event (EventID: [PK], Title: [not null], Description, OrganizerID: [not null], ApproverID: [not null], Start_date: [not null], End_date, Link, Age_minimum, Needed_skills, Available_slots, Type: [not null])
FK1 {OrganizerID} references {Organizer.UserID}
FK2 {ApproverID} references {Admin.UserID}

In-person (EventID: [PK], Address, Vaccine_Required, Precautions)
FK {EventID} references {Volunteer_Event.EventID}

Virtual (EventID: [PK], Technology)
FK {EventID} references {Volunteer_Event.EventID}

Donations (EventID: [PK], Drop-off_address, Drop-off_time, Instructions, Supplies)
FK {EventID} references {Volunteer_Event.EventID}

Volunteer_Sign-Up (EventID, VolunteerID)
PK: (EventID, VolunteerID)
FK1 {EventID} references {Volunteer_Event.EventID}

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FK2 {VolunteerID} references {Volunteer.UserID}

Off-campus_org (OrgID: [PK], Address, Website)
FK {OrgID} references {Organization.OrgID}

Student_org (OrgID, UniversityID, Faculty_sponsor)
PK: (OrgID, UniversityID)
FK1 {OrgID} references {Organization.OrgID}
FK2 {UniversityID} references {University.UniversityID}

Functional Dependencies

User (UserID, Email, Password, First_name, Last_name, Birthdate, Type)
F = {UserID → Email, Password, First_name, Last_name, Birthdate, Type}
F = {Email → UserID}
CKs = {UserID, Email}

Phone_Numbers (UserID, phone_number)
F = ∅ (No non-key attributes)
CKs = {(UserID, phone_number)}

Organizer (UserID, Org)
F = {UserID → Org}
CKs = {UserID}

Volunteer (UserID, UniversityID, Languages, Skills, Vaccinated)
F = {UserID → UniversityID, Languages, Skills, Vaccinated}
CKs = {UserID}

Admin (UserID, Position)
F = {UserID → Position}
CKs = {UserID}

Organization (OrgID, Name, Phone_number, Email, Type)
F = {OrgID → Name, Phone_number, Email}
F = {Name → OrgID}
CKs = {OrgID, Name}

University (UniversityID, Name, Address)
F = {UniversityID → Name, Address}
F = {Name → UniversityID}
CKs = {UniversityID, Name}

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Volunteer_Event (EventID, Title, Description, OrganizerID, ApproverID, Start_date, End_date, Link, Age_minimum, Needed_skills, Available_slots, Type)

F = {EventID -> Title, Description, OrganizerID, ApproverID, Start_date, End_date, Link, Age_minimum, Needed_skills, Available_slots, Type}

CKs = {EventID}

In-person (EventID, Address, Vaccine_Required, Precautions)

F = {EventID -> Address, Vaccine_Required, Precaution}

CKs = {EventID}

Virtual (EventID, Technology)

F = {EventID -> Technology}

CKs = {EventID}

Donations (EventID, Drop-off_address, Drop-off_time, Instructions, Supplies)

F = {EventID -> Drop-off_address, Drop-off_time, Instructions, Supplies}

CKs = {EventID}

Volunteer_Sign-Up (EventID, VolunteerID)

F = \emptyset (No non-key attributes)

CKs = {(EventID, VolunteerID)}

Off-campus_org (OrgID, Address, Website)

F = {OrgID -> Address, Website}

CKs = {OrgID}

Student_org (OrgID, UniversityID, Faculty_sponsor)

F = {OrgID, University -> Faculty_sponsor}

CKs = {(OrgID, University)}