CS206 – Database Design

Acme   
Donation   
Centers  
Database

Columbia Basin College  
  
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#### Acme Donation Centers Database

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**Acme Donation Centers Database**

**1) Industry & Background**

## ► **Background**

This relational database is being developed for a small non-profit group, Acme Donation Centers (ADC) to automate their record and information keeping.

The people who will be using this database will be the employees of ADC.

ADC uses donations from the community to assemble volunteers to pack and distribute donations as well as have volunteers participate in other activities.

With this, ADC currently must keep track of volunteer, event, and employee information to organize these activities.

ADC has tracked volunteer information using excel worksheets. Because all the information is currently kept is forms, reports, and spreadsheets. The main task is to relate all the information in one main database.

The organization currently has about ten employees. The level of education is

undisclosed but there is little to no technical skill. Based on this information

the database will need to be fully automated and user friendly.

► **Enhancements Provided**

One of the enhancements provided by the database is the faster access to information. It gives ADC the ability to relate employees and volunteers to completed events and activities, their information, and the times they worked.   
It also keeps track of medical concerns, who needs training, and those with missing volunteer forms.

This also gives ADC ability to expand for future additions to the database including locations.

All event, volunteer, and employee information is located in the database. Access to the information is only available to employees.

**2) Requirements**

► **Objective**

The objective of the project is to give the employees the ability to efficiently track and record the information of volunteers and events including but not limited to:

1. Contact.
2. Address.
3. Medical Concerns.
4. Liability Information.
5. Event Details.

## ► **Database Size**

1. One Event/Activity may have many Employees/Volunteers.
2. One Employee/Volunteers may have many Events/Activities.
3. There are three Event subtypes to one Event supertype.
4. One Emergency Contact may have many Volunteers.
5. One Address may have many Volunteers.
6. One Volunteer may have many Events.
7. One Volunteer may have many Activities.
8. One Employee may have many Events.
9. One Employee may have many Activities.
10. One Event may be one and only one of three Event subtypes.

# 3) Conceptual & Logical Designs

## ► **Entities**

|  |  |
| --- | --- |
| **Entity** | **Entity/Business Notes** |
| **Activities** | Assumes one unique activity per ID. This attaches identification to keep track of activities. |
| **ActivityEmp** | Combines ActivityID from Activities to assign them with EmployeeID from Employee. This creates a bridge between the two entities. |
| **Address** | Assumes only one address per volunteer, one address can be assigned to many volunteers, allowing multiple volunteers to live at the same address. |
| **Deliveries** | Assumes only one delivery event per EventID. Accepts data of Deliveries made and description of the delivery event. This entity, along with Foodbox and Fundraise, is a subtype of Events. This table is dependent on the Events table. |
| **Emergency Contact** | Keeps track of emergency contact information for Volunteers. One emergency contact may have many volunteers |
| **Employee** | Assumes that each employee has one address, phone number, hiring date, and rate of pay. Each employee may participate in many events or activities. |
| **Employee Events** | This creates a bridge between employee and events. Many employees may participate in many events. Each event allows for timecard tracking by employee. |
| **Event Participate** | This creates a bridge between volunteer and events. Many employees may participate in many events. Each event allows for timecard tracking by volunteers. |
| **Entity** | **Entity/Business Notes** |
| **Events** | Assumes one unique event per ID. This attaches identification to keep track of events. This assumes that each event has one date, time, address, and accepts notes of each event. |
| **Food Box** | Assumes only one Foodbox event per EventID. Accepts data of Foodboxes made and description of the delivery event. This entity, along with Deliveries and Fundraise, is a subtype of Events. This table is dependent on the Events table. |
| **Fundraise** | Assumes only one Fundraise event per EventID. Accepts data of Fundraise event and the dollar amount raised. This entity, along with Deliveries and FoodBox, is a subtype of Events. This table is dependent on the Events table. |
| **Phone** | Assumes only one phone per volunteer. One volunteer may have many phone numbers. This attaches a phone to a volunteer as well as phone type. |
| **Volunteer** | Stores basic volunteer information and assigns tracking ID. This assumes that each employee has one name, date of birth, place of employment, email, training date, liability form filed, address, and contact information. This entity allows for attachment of medical data such as name and type. |
| **Volunteer Interest** | Stores interest information. Volunteers are required to fill out a form when they first register where they select which events/activities they will want to participate in. Keeping track of interests will allow for more efficient placement of volunteer activities. |

## ► **Relational Schema Mapping**

Volunteer (VolunteerID, FirstName, LastName, DoB, PlaceOfEmply, MedicalConcerns, Email, TrainingDate, LiabalityForm,

Email, PreferContact, AddressID, EContactID)

Phone (VolunteerID, PhoneID, PhoneNum, Type)

Address (AddressID, Street, City, Zip, State)

EmergencyContact (EContactID, ContactFirst, ContactLast, Contact Phone,)

VolunteerInterest (VolunteerID, ActivityID)

Activities (ActivityID, ActivityName, ActivityType, Description)

ActivityEmp (EmployeeID, ActivityID)

Employee (EmployeeID, FirstName, LastName, DateOfHire, Street, City, State, Zip, HomePhone, Salary)

EmployeeEvents (EmployeeID, EventID, TimeIn, TimeOut)

Events (EventID, Date, EventTime, Street, City, State, Zip, Notes)

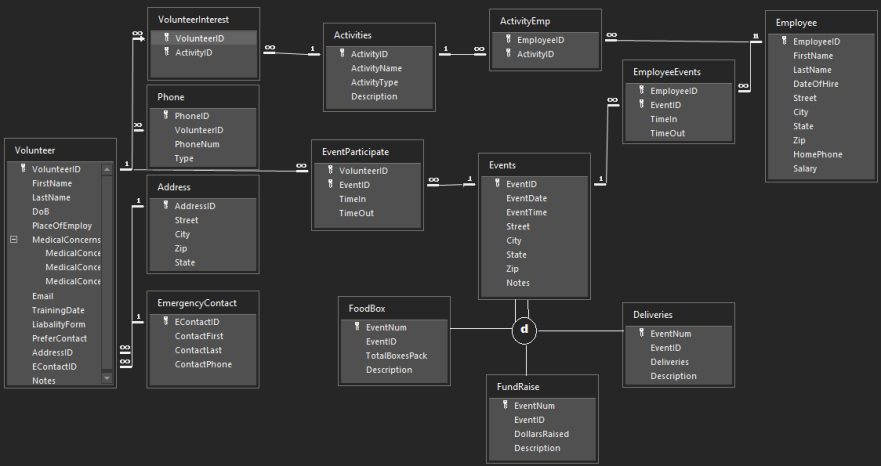
FoodBox (FEventID, TotalBoxesPack, Description)

FundRaise (REventID, DollarsRaised, Description)

Deliveries (DEventID, Deliveries, Description)

EventParticipate (VolunteerID, EventID, TimeIn, TimeOut)

## ► **ERD Diagram**



# 4) Physical Design

## **Tables**

### 1. Activities

* ActivityID
* Primary key
* ActivityName

### 2. ActivityEmp

* ActivityID
* Foreign Key
* EmployeeID
* Foreign Key

### 3. Address

* AddressID
* Primary Key
* Street
* City
* Zip

### 4. Deliveries

* EventNum
* Primary Key
* EventID
* Deliveries
* Description

### 5. Emergency Contact

* EContactID
* Primary Key
* ContactFirst
* ContactLast

### 6. Employee

* EmployeeID
* Primary Key
* FirstName
* LastName
* DateOfHire
* Street
* City
* State
* Zip
* HomePhone
* Salary

### 7. Employee Events

* EmployeeID
* Primary Key
* EventID
* Foreign Key
* TimeIn
* TimeOut

### 8. Events Participate

* VolunteerID
* Foreign Key
* EventID
* Foreign Key
* TimeIn
* TimeOut

### 9. Events

* EventID
* Primary Key
* EventDate
* EventTime
* Street
* City
* State
* Zip
* Notes

### 10. Food Box

* EventNum
* Primary Key
* EventID
* TotalBoxesPack
* Description

### 11. Fundraise

* EventNum
* Primary Key
* EventID
* DollarsRaised
* Description

### 12. Phone

* PhoneID
* Primary Key
* VolunteerID
* PhoneNum
* Type

### 13. Volunteer

* VolunteerID
* Primary Key
* FirstName
* LastName
* DoB
* PlaceOfEmploy
* MedicalConcerns
* Email
* TrainingDate
* LiabilityForm
* PreferContact
* AddressID
* EContactID

### 14. Volunteer Interest

* VolunteerID
* Primary key
* ActivityID
* Primary Key

# ► Queries

## qryDeliveries

This displays the delivery day, total deliveries   
made, and allows for a description to be given.

* EventID
* EventDate
* Deliveries
* Description

## qryEmployeeEvents

Tracks events employees participate in, along   
with the time in, time out, and the event date.

* EmployeeID
* FirstName
* LastName
* TimeIn
* TimeOut
* EventID
* EventDate

## 3. qryFoodBox

Displays the number of food boxes packed,   
the event date, and allows for a description to be given.

* EventID
* EventDate
* TotalBoxesPacked
* Description

## 4. qryFundRaise

Displays the amount of funds raised by a  
fund raiser event, the event date, and   
allows for a description to be given.

* EventID
* EventDate
* DollarsRaised
* Description

## 5. qryVolContractInfo

Displays all contact information of volunteers,   
this includes: Phone number, street, city, zip,   
state, place of employment, and   
emergency contact information.

* VolunteerID
* FirstName
* LastName
* PhoneNum
* Street
* City
* State
* Zip
* PlaceOfEmploy
* ContactFirst
* ContactLast
* ContactPhone

## 6. VolEvent:

Displays the events volunteers participate   
in, their time in, and time out.

* VolunteerID
* FirstName
* LastName
* Time In
* Time Out
* EventID

# ► Forms

## 1. Add a Volunteer Form

* First Name
* Last Name
* Email
* Notes
* Emergency Contact First Name
* Emergency Contact Last Name
* Emergency Contact Phone Number

## 2. Add a Volunteer Subform

* Address
* City
* State
* Zip
* Phone
* Employment

## ► Reports

### 1. Activities Report

* Activity ID
* Activity Name
* Activity Type
* Description

### 2. Deliveries Report

* Event ID
* Event Number
* Deliveries
* Description

### 3. FoodBoxes Report

* Event ID
* Event Number
* Total Boxes Packed
* Description

4. Fundraise Report

* Event ID
* Event Number
* Dollars Raised
* Description

5. Employee Information Report

* Employee ID
* Last Name
* First Name
* Street
* Zip
* City
* State
* Salary
* Date of Hire
* Home Phone

6. Volunteer Contact Report

* Contact First
* Contact Last
* Contact Phone
* First Name
* Last Name
* Phone Number

7. Volunteer Information Report

* Last Name
* First Name
* Phone Number
* Street
* City
* Zip
* State

# 5) Implementation Notes

There is no security for this database. Anyone may have access to the information of volunteers, employees, and event information. Access should be limited to those managing the information such as the employees. The access should be limited to accounts with usernames and a strong encrypted password that expires periodically.

With expansion in mind, the database should be utilized to cover operations across multiple locations. It should be installed onto a small webserver to allow multiple users to access it at the same time. This cost-effective alternative will allow better allocation of financial resources for this non-profit.

Although not included, this database should include the pessimistic locking of records. The pessimistic locking of records does not allow users to make modifications before a transaction or change is completed. Including this would prevent data loss and duplicate records. It will allow for longer deliberation of what changes to keep. However, if a user keeps a record open for long period of time, it will cause issues in accessing the program.

The database is a good foundation for the beginning of efficient record keeping for the company. This, however, is an initial start and will need additions such as security, server, and access maintenance.