



DALHOUSIE UNIVERSITY

CSCI 3901: Software Development Concepts

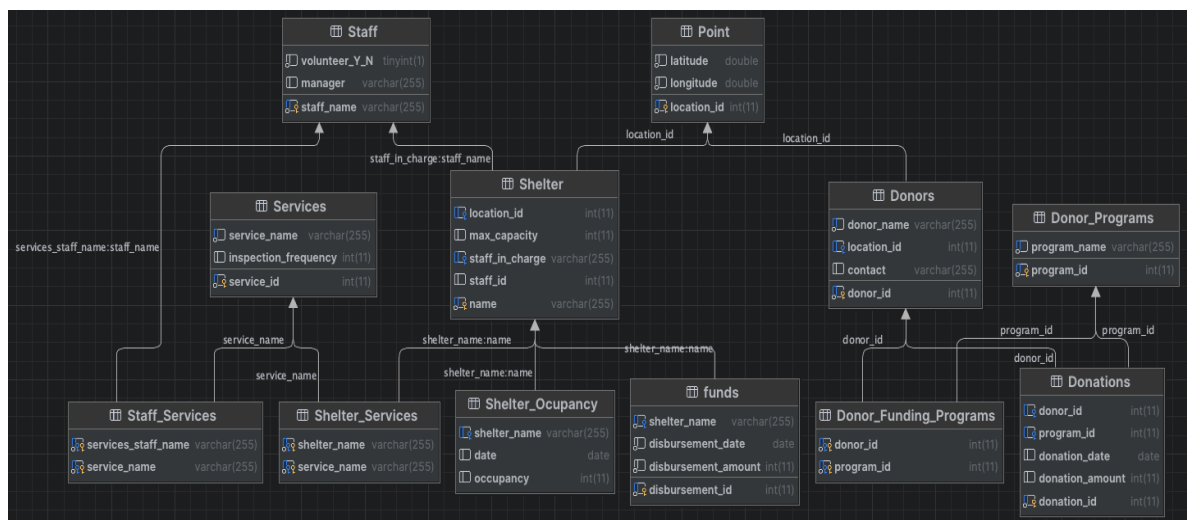
Final Project

Name: Abhishek Latawa

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Database Design

ERD Diagram



Database Queries Involved

Create Table Queries:

```
CREATE TABLE Point (  
    location_id INT AUTO_INCREMENT PRIMARY KEY,  
    latitude DOUBLE NOT NULL,  
    longitude DOUBLE NOT NULL  
);
```

```
CREATE TABLE Shelter (  
    name VARCHAR(255) NOT NULL primary key,  
    location_id INT,  
    max_capacity INT,  
    staff_in_charge VARCHAR(255),  
    staff_id INT,  
    FOREIGN KEY (location_id) REFERENCES Point(location_id)  
ON DELETE CASCADE,  
    FOREIGN KEY (staff_in_charge) REFERENCES  
Staff(staff_name)  
);
```

```
CREATE TABLE Services (  
    service_id INT AUTO_INCREMENT PRIMARY KEY,  
    service_name VARCHAR(255) NOT NULL,  
    inspection_frequency INT  
);
```

```
CREATE TABLE Shelter_Services (  
    shelter_name VARCHAR(255) not null ,  
    service_name VARCHAR(255) not null ,  
    PRIMARY KEY (shelter_name, service_name),  
    FOREIGN KEY (shelter_name) REFERENCES Shelter(name),  
    FOREIGN KEY (service_name) REFERENCES  
Services(service_name)  
);
```

```
CREATE TABLE Shelter_Ocupancy (
    shelter_name VARCHAR(255) ,
    date DATE ,
    occupancy INT,
    FOREIGN KEY (shelter_name) REFERENCES Shelter(name)
);
```

```
CREATE TABLE Staff (

    staff_name VARCHAR(255) PRIMARY KEY NOT NULL,
    volunteer_Y_N BOOLEAN NOT NULL,
    manager VARCHAR(255)

);
```

```
CREATE TABLE Staff_Services (

    services_staff_name VARCHAR(255),
    service_name VARCHAR(255),
    PRIMARY KEY (services_staff_name,service_name),
    FOREIGN KEY (services_staff_name) REFERENCES
Staff(staff_name),
    FOREIGN KEY (service_name) REFERENCES
Services(service_name)

);
```

```
CREATE TABLE Donors (
    donor_id INT PRIMARY KEY AUTO_INCREMENT,
    donor_name VARCHAR(255) UNIQUE NOT NULL,
    location_id INT,
    contact VARCHAR(255),
    FOREIGN KEY (location_id) references Point (location_id)
);
```

```
CREATE TABLE Donor_Funding_Programs (
    donor_id INT,
    program_id INT,
    PRIMARY KEY (donor_id, program_id),
    FOREIGN KEY (donor_id) REFERENCES
Donors(donor_id),
```

```

                                FOREIGN KEY (program_id) REFERENCES
Donor_Programs(program_id)
);

```

```

CREATE TABLE Donor_Programs (
    program_id INT PRIMARY KEY AUTO_INCREMENT,
    program_name VARCHAR(255) UNIQUE NOT NULL
);

```

```

CREATE TABLE Donations (
    donation_id INT PRIMARY KEY AUTO_INCREMENT,
    donor_id INT,
    program_id INT,
    donation_date DATE,
    donation_amount INT,
    FOREIGN KEY (donor_id) REFERENCES Donors(donor_id),
    FOREIGN KEY (program_id) REFERENCES
Donor_Programs(program_id)
);

```

```

create table funds (
    disbursement_id int auto_increment primary key,
    shelter_name VARCHAR(255) not null,
    disbursement_date date not null,
    disbursement_amount int not null,
    foreign key (shelter_name) references Shelter(name) on
delete cascade on update cascade
);

```

Reporting Data Methods Queries

-- Set<String> shelterAtCapacity(int threshold)

```

SELECT s.name
FROM Shelter s
    JOIN Shelter_Ocupancy so ON s.name = so.shelter_name
WHERE so.date = (
    SELECT MAX(date)
    FROM Shelter_Ocupancy
    WHERE shelter_name = s.name
)

```

```
AND so.occupancy >= (s.max_capacity * ? / 100);
```

```
---- Set<String> occupancyVariance( String startDate, String endDate, int  
threshold)
```

```
SELECT  
    s.name  
FROM  
    Shelter s  
    JOIN  
    Shelter_Ocupancy o ON s.name = o.shelter_name  
WHERE  
    o.date BETWEEN '2023-11-26' AND '2023-12-09'  
GROUP BY  
    s.name,max_capacity  
HAVING  
    (MAX(o.occupancy) - MIN(o.occupancy)) / s.max_capacity * 100  
>= ?;  
--  
-----  
-----
```

```
-- void donorReport( String startDate, String endDate, PrintWriter outstream )
```

```
-- void donorReport( String startDate, String endDate, PrintWriter outstream  
)  
  
SELECT d.donor_name,dp.program_name, SUM(do.donation_amount) AS  
total_donations  
FROM latawa.Donations do  
JOIN latawa.Donor_Programs dp on dp.program_id = do.program_id  
JOIN latawa.Donors d on do.donor_id = d.donor_id  
WHERE do.donation_date BETWEEN '2023-12-01' AND '2023-12-10'  
GROUP BY d.donor_name,dp.program_name;
```