Caring Hearts Home Care Assistance

Database Design and Proposal

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Executive Summary

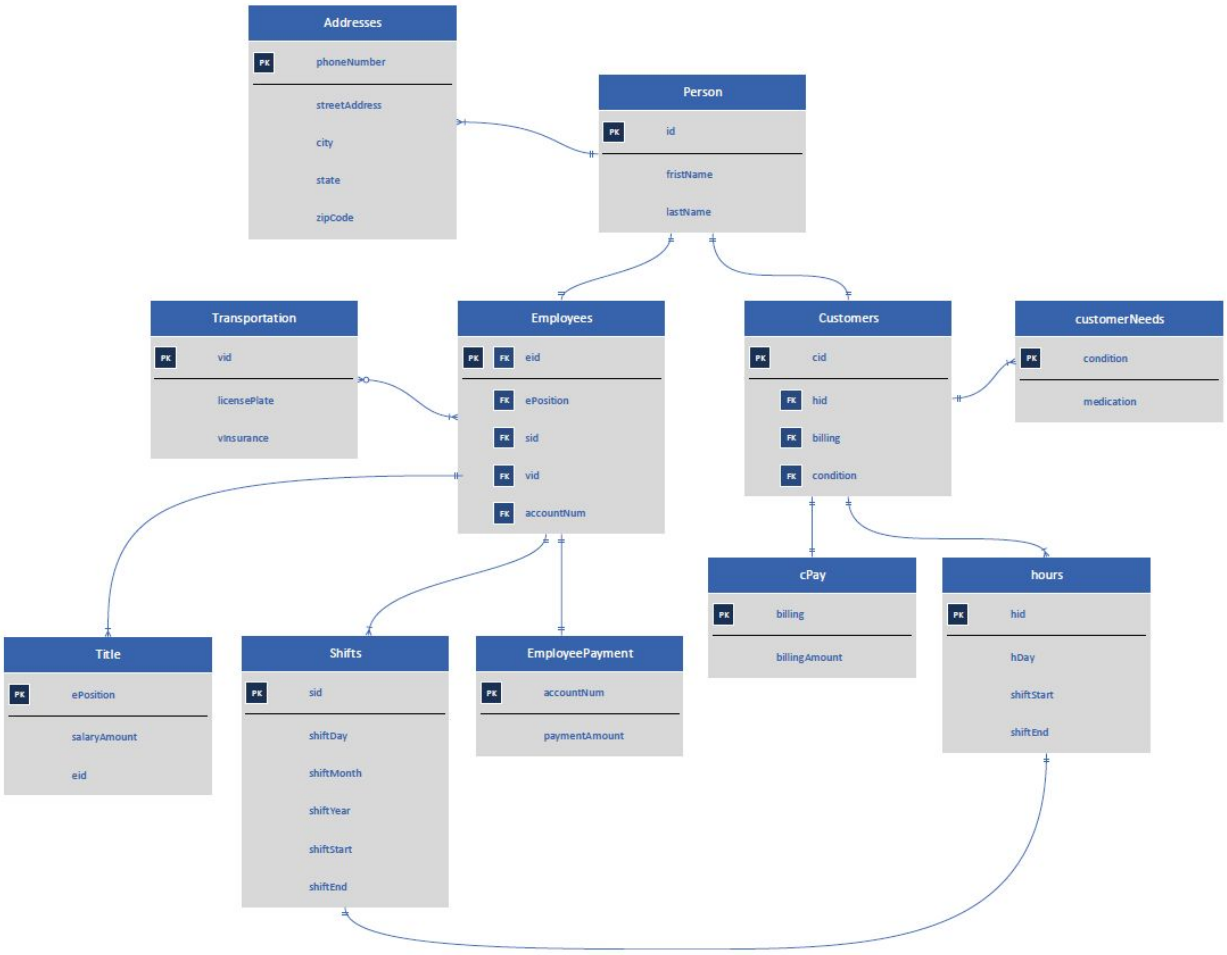
Overview

The healthcare industry is very large and profitable. Senior care is very popular and very expensive. In 2014 senior care was estimated to be a 180 billion dollar industry and predicted to grow to 300 billion by 2020. Caring Hearts Home Care assistance is a company in Pennsylvania providing in home medical and non medical care. Their main focus is caring for their customers but they also need a good system to keep track of their employees and customers.

Objectives

The main purpose of this is to show how the designed database will help the company operate more efficiently. This database will keep track of home addresses, customer information, employee information, employee salary, customer balance and more. The document will provide an overview but also give specific technical details on the database. Within this documentation there will be charts and sample data sets.

Entity Relationship Diagram



Tables

Person

Purpose:

This was created to hold the key information for the people relevant to the company. The Person table includes both employees and customers. Both customer and employee are people, people are linked to the address class which allows for one location of addresses for everyone in the company.

Create Statement:

```
CREATE TABLE person (
      id        char(4) not null,
      firstName    text not null,
      lastName     text not null,
primary key(id)
);
```

Functional Dependencies:

id ⟼ firstName, lastName

Sample Data:

	id character(4)	firstname text	lastname text
1	p001	Eric	Lewis
2	p002	Carl	Allen
3	p003	Jennifer	Taylor
4	p004	Peter	Young
5	p005	Anna	Thomas
6	p006	Gloria	Nelson
7	p007	Jeffrey	Davis
8	p008	Raymond	Gray
9	p009	Arthur	Hernandez
10	p010	Phyllis	Howard

Addresses

Purpose:

This was created to keep track of both the employee and customer addresses. This is important for future use because it allows the company to check to see what employees are close to clients, minimizing travel costs to the company. It also provides for a flexible, easy to reach directory of customers.

Create Statement:

```
CREATE TABLE addresses (
      phoneNumber    char(10) not null,
      streetAddress text not null,
      city           text not null,
      state          text not null,
      zipCode        char(5) not null,
primary key (phoneNumber)
);
```

Functional Dependencies:

phone Number ⟼ streetAddress, city, state, zipCode

Sample Data:

	phonenumber character(10)	streetaddress text	city text	state text	zipcode character(5)
1	6107248701	739 Forest Avenue	San Antonio	TX	78213
2	5846403073	821 Broad Street	Greenfield	IN	46140
3	7498947343	636 Canterbury Court	Ballston Spa	NY	12020
4	8475979472	570 Victoria Court	Waldorf	MD	20601
5	9374849474	878 Bank Street	Fernandina Beach	FL	32034
6	4359573457	443 2nd Street	Ashburn	VA	20147
7	3460346446	277 Cambridge Drive	Voorhees	NJ	08043
8	9043755746	212 State Street	Ballston Spa	NY	12020
9	2489575836	27 Lincoln Street	Fort Mill	SC	29708
10	8947524974	658 Sycamore Lane	Durham	NC	27703

Employees

Purpose:

This was created to keep track of individual employee positions, shifts, transportation and banking information. This is important because the business heavily relies on employees being able to work efficiently. Having all the essential employee information here allows for quick changes for different customer demand.

Create Statement:

```
CREATE TABLE employees (
      eid          char(4) not null,
      ePosition    text,
      sid          char(4) not null,
      vid          char(4) not null,
      accountNum   char(8) not null,
primary key(eid)
);
```

Functional Dependencies:

eid ⟼ ePosition, sid, vid, accountNum

Sample Data:

	eid character(4)	eposition text	sid character(4)	vid character(4)	accountnum character(8)
1	0001	Nurse	0003	0004	23579511
2	0002	Assistant	0004	0003	71164851
3	0003	Assistant	0002	0001	91294022
4	0004	Nurse	0005	0005	34528824
5	0005	Nurse	0001	0002	66153737

Transportation

Purpose:

This was created to keep track and make sure employees have a way to get to customer homes. This makes sure the car and it's insurance are both under record incase anything happens while an employee is working.

Create Statement:

```
CREATE TABLE transportation (
      vid            char(4),
      lisensePlate   text,
      vInsurance     int,
primary key(vid)
);
```

Functional Dependencies:

vid ⟼ lisensePlate, vInsurance

Sample Data:

	vid character(4)	lisenseplate text	vinsurance integer
1	0001	AJC 3040	26311081
2	0002	AZH 4897	32082931
3	0003	BFB 9343	61635871
4	0004	DQG 4548	80925748
5	0005	BZM 2874	53347903

Title

Purpose:

Giving a title to someone and describing their position is important in healthcare. There are many different ranks. Some people require a nurse, others simply require a asistant. It is important to distinguish the two.

Create Statement:

```
CREATE TABLE title (
      eid            char(4) not null,
      salaryAmount   int,
      ePosition      text,
primary key(eid)
);
```

Functional Dependencies:

eid ↦ salaryAmount, ePosition

Sample Data:

	eid character(4)	salaryamount integer	eposition text
1	0001	80	Nurse
2	0002	60	Assistant
3	0003	60	Assistant
4	0004	80	Nurse
5	0005	80	Nurse

Shifts

Purpose:

This table was created to keep track of the different shifts that the employees have. Different employees have different shifts. Employees also often have more than one shift so it is important to be able to have the option of more than one shift for an employee.

Create Statement:

```
CREATE TABLE shifts (
      sid          char(4),
      shiftDay     char(2),
      shiftMonth   char(2),
      shiftYear    char(4),
      shiftStart   char(4),
      shiftEnd     char(4),
primary key(sid)
);
```

Functional Dependencies:

sid ⟼ shiftDay, shiftMonth, shiftYear, shiftStart, shiftEnd

Sample Data:

	sid character(4)	shiftday character(2)	shiftmonth character(2)	shiftyear character(4)	shiftstart character(4)	shiftend character(4)
1	0001	01	01	2016	0800	1400
2	0002	15	02	2016	0600	1000
3	0003	20	04	2016	0800	1600
4	0004	08	05	2016	0800	1000
5	0005	10	02	2016	1000	1800

Employee Payment

Purpose:

This table is created so that the company could keep the employees financial information separate from all the other information they have collected.

Create Statement:

```
CREATE TABLE employeePayment (
      accountNum       char(8) not null,
      paymentAmount    int,
primary key(accountNum)
);
```

Functional Dependencies:

accountNum ↦ paymentAmount

Sample Data:

	accountnum character(8)	paymentamount integer
1	23579511	480
2	71164851	240
3	91294022	480
4	34528824	160
5	66153737	640

Customers

Purpose:

This was clearly created to manage and keep track of the numerous customers the company has accumulated. This provides for quick, general and in depth information on customers for the company.

Create Statement:

```
CREATE TABLE customers (
      cid          char(4) not null,
      hid          char(4),
      billing      char(8),
      condition    text,
primary key(cid)
);
```

Functional Dependencies:

cid ⟼ hid, billing, condition

Sample Data:

	cid character(4)	hid character(4)	billing character(8)	condition text
1	0001	0001	95501713	alzheimers
2	0002	0002	84135330	parkinsons
3	0003	0003	39656322	alzheimers
4	0004	0004	26584723	alzheimers
5	0005	0005	42467045	parkinsons

Customer Needs

Purpose:

This table is what the company is around for. The people responsible for keeping the company alive are people who are older suffering from different things. That is why is is very important to have a separate table to keep track of the customer condition and the medication he or she is suppose to take.

Create Statement:

```
CREATE TABLE customerNeeds (
      condition      text not null,
      medication     text,
primary key(condition)
);
```

Functional Dependencies:

condition ↦ medication

Sample Data:

	condition text	medication text
1	Alzheimers	Razadyne
2	Parkinsons	Carbidopa
3	Osteoporosis	Actonel

Hours

Purpose:

This was created to keep track of the time a customer is receiving care. Customers usually have a set amount of time which they are paying for which is why it is good to separate hours and shifts since they are not the same.

Create Statement:

```
CREATE TABLE hours (
      hid          char(4),
      hDay         text,
      shiftStart   char(4),
      shiftEnd     char(4),
primary key(hid)
);
```

Functional Dependencies:

hid ⟼ hday, shiftStart, shiftEnd

Sample Data:

	hid character(4)	hday text	shiftstart character(4)	shiftend character(4)
1	0001	Monday	0800	1400
2	0002	Tuesday	0600	1000
3	0003	Wednesday	0800	1600
4	0004	Thursday	0800	1000
5	0005	Friday	1000	1800

Customer Payment (cPay)

Purpose:

This table was created to be dedicated for customer payments. Customers need to pay for what they get so therefore we created a table for the billing process.

Create Statement:

```
CREATE TABLE cPay (
      billing       char(8) not null,
      paymentAmount int not null,
primary key(billing)
);
```

Functional Dependencies:

billing ⟼ paymentAmount

Sample Data:

	billing character(8)	paymentamount integer
1	95501713	960
2	84135330	480
3	39656322	960
4	26584723	320
5	42467045	1280

Views

EmployeeCustomer

Purpose:

This was created to know exactly what employee is with a specific customer. This is very important because in a profession like this, the company could have lose track of people that are working for them and over schedule them. Being able to see what employe is with a customer it is then easier to schedule times for a nurse to see another patient.

Create Statement:

```
CREATE VIEW employeeCustomer AS
  select eid, cid
  from shifts s, hours h
  where s.sid = h.hid
  order by cid ASC;
```

employeeTrans

Purpose:

This view is created for the purpose of keeping track of employees and how they are getting to their patients. This view matches the employees with their cars and allow for their boss to make sure that their car is registered and the vehicle insurance is current and not expired.

Create Statement:

```
CREATE VIEW employeeTrans AS
  select lisensePlate, vInsurance
  from transportation t, employees e
  where t.vid = e.vid
  order by vid ASC;
```

Reports

Purpose:

This report figures out the total amount of hours during the shift and stores that so that it can be accounted for when the employee gets paid for said number of hours.

Statement:

```
SELECT shiftStart, shiftEnd
FROM shifts
WHERE hours = shiftEnd - ShiftStart;
```

Security

We put in some security measures to ensure that information is not removed or changed by people who are not suppose to change said information. This allows for a solid foundation when it comes to data integrity.

Shifts

This makes it so that on the assistants can manage the shifts within the database.

```
GRANT INSERT ON shifts TO assistants;
```

Transportation

This allows both the nurses and the assistants to modify their transportation method to ensure there is current information on their vehicles in the company database.

```
GRANT SELECT ON, UPDATE ON transportation TO nurses, assistants;
```

Implementation Notes

The following are some simple implementation notes for the database:

- A employee can be found by searching a customer’s hours and finding the employee with the matching hours.
- Hours are inserted into shifts when a new customer is created with new hours. Those hours are then put into an employee's shift depending on their availability.

Known Problems

The following are some issues that could occur when using the database:

- Some known problems are that only Assistants can create new patient hours. This can create scheduling conflicts when nurses want to or need to add certain hours. Communication in organizations is not always perfect.
- Another issue that could occur is when scheduling a time for a nurse or assistant to see a patient the person scheduling it can get the hours for the customer confused since only one customer has a set amount of hours but employees have different shifts for different customers.

Future Enhancements

Here are some things we plan on doing to improve the database:

- Adding employee and customer vacation, if either of the two are going to be a away, making an other table would help keep track of that.
- Adding checkins so that once a caregiver arrives at the residence they can record/register that to keep on record.
- Possibly adding a section where it shows a general progression of the patent to see if the medications they are taking are helping and to see how they have been doing over time.
- A satisfaction table would allow the company and its marketing team to see how the customers feel about the services they offer.