[TELEPHONE DIRECTORY (DBMS)]

Project submitted to the
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for the partial fulfillment of the requirements to award the degree of

Bachelor of Technology
In
Computer Science and Engineering
School of Engineering and Sciences

Submitted by

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1. ABSTRACT

Creating a telephone directory involves compiling and organizing a comprehensive list of individuals, businesses, and organizations along with their associated contact information within a specific geographic area. Let's expand upon the process and components involved:

Compilation of Data:

Gathering contact information: This process involves collecting names, addresses, and phone numbers from various sources such as public records, business directories, and user submissions.

Verification and validation: Ensuring the accuracy and validity of the collected data through verification processes to minimize errors and discrepancies.

Organization and Structuring:

Categorization: Grouping entries based on categories such as residential listings, business listings, emergency contacts, government agencies, and services.

Alphabetical sorting: Arranging entries alphabetically by name within each category for easy reference.

Geographic segmentation: Optionally organizing entries based on geographic regions or area codes to facilitate localized searches.

Design and Presentation:

Layout and formatting: Designing a clear and user-friendly layout for both print and digital versions, incorporating features such as headers, columns, and pagination.

Indexing: Including an index or table of contents to facilitate quick navigation and lookup of specific entries.

Additional information: Optionally including supplementary information such as maps, advertisements, emergency instructions, and community resources.

Publication and Distribution:

Print publication: Printing physical copies of the telephone directory for distribution to residents, businesses, and public institutions within the designated area.

Online availability: Digitizing the directory and making it accessible through online platforms, websites, and mobile applications for convenient access anytime, anywhere.

Updates and maintenance: Regularly updating the directory with new listings, changes in contact information, and corrections to ensure its accuracy and relevance over time.

User Accessibility and Utility:

Search functionality: Implementing search features in digital versions to enable users to quickly find specific entries by name, address, or phone number.

Cross-referencing: Providing cross-referencing capabilities to link related entries or entities, such as businesses associated with specific individuals or organizations.

User interaction: Allowing users to submit feedback, corrections, and additional listings to improve the directory's comprehensiveness and accuracy.

Adaptation to Technological Advances:

Integration with modern communication technologies: Incorporating features such as click-to-call functionality, interactive maps, and integration with social media platforms for enhanced user experience.

Data security and privacy: Implementing measures to protect users' personal information and comply with data privacy regulations, particularly in online and digital versions of the director

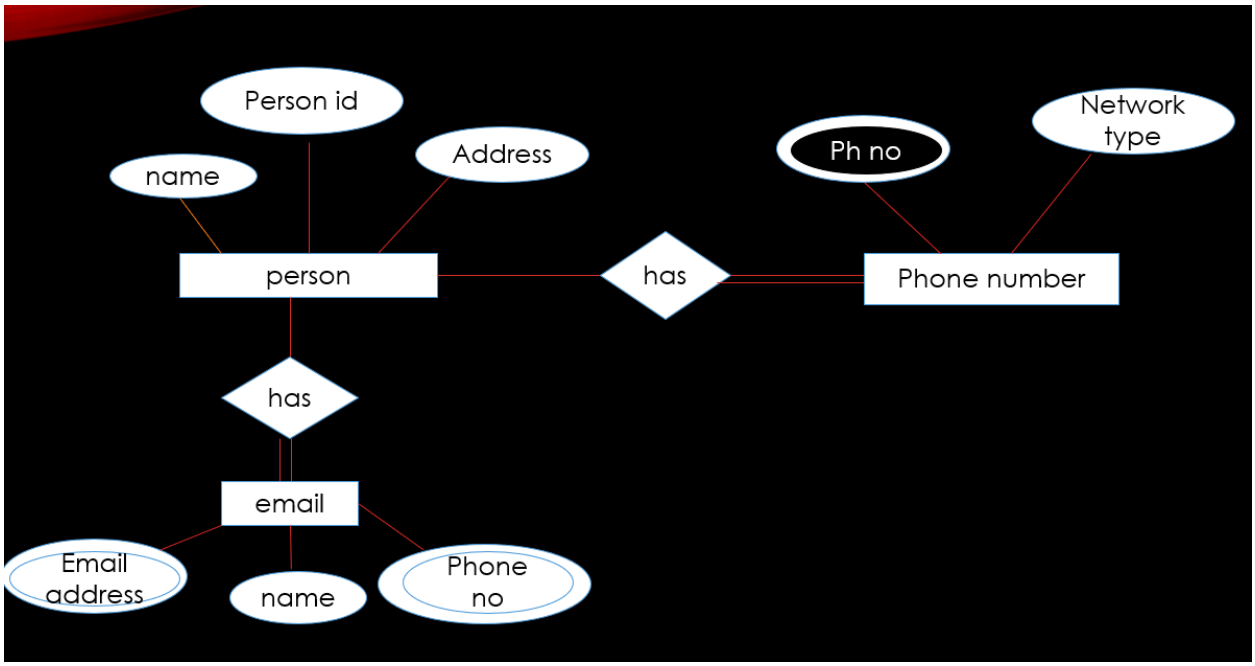
2. DESCRIPTION

A telephone directory, whether in its traditional printed form or as a digital database, stands as a quintessential repository of contact information, embodying the intricate web of connections within a community or a specific geographic area. At its core, it serves as a vital tool for individuals, businesses, and organizations alike, facilitating seamless communication and fostering connectivity in both personal and professional spheres.

Beyond its practical utility, the telephone directory serves as a testament to the interconnected fabric of society, embodying the collective tapestry of relationships that define a community. In its pages, one discovers not only contact details but also a reflection of the vibrant diversity and richness of human interaction. From the corner bakery to the multinational corporation, each listing serves as a thread in the intricate weave of social cohesion, fostering communication, collaboration, and camaraderie.

In essence, whether in its traditional printed form or as a digital marvel of modern technology, the telephone directory remains an indispensable tool, bridging distances, forging connections, and nurturing the bonds that unite us all. As society continues to evolve, so too will the telephone directory, adapting to the ever-changing landscape of communication while steadfastly preserving its timeless role as a beacon of connectivity in an increasingly interconnected world.

3. ER DIAGRAM


Person id
name
Address
person
has
Ph no
Network type
Phone number
has
email
Email address
name
Phone no

4. DESCRIPTION FOR ER DIAGRAM

❖ **Entities and Attributes:**

PERSON Entity:

Name: This attribute denotes the name of the individual. It could encompass the first name, last name, and any additional titles or suffixes.

Person ID: This attribute serves as a unique identifier for each person in the database. It ensures that each entry is distinct and facilitates efficient retrieval and management of information.

Address: This attribute refers to the physical location where the individual resides or conducts business. It typically includes components such as street address, city, state, and postal code.

EMAIL Entity:
Email_Address: This attribute stores the email address associated with a person. It serves as a primary means of electronic communication and enables individuals to correspond with one another efficiently.

PHONE NUMBER Entity:
PhoneNo: This attribute represents the telephone number associated with a person. It could include both landline and mobile numbers.

Phone Type: This attribute specifies the type of phone number, such as home, work, mobile, or fax. It provides additional context regarding the purpose or usage of the phone number.

Relationship with EMAIL Entity:
Each PERSON entity can have one or more associated EMAIL entities.

This relationship signifies that a person can possess multiple email addresses. For example, an individual may have separate email addresses for personal correspondence, work-related communication, and online subscriptions.

Relationship with PHONE NUMBER Entity:
Similarly, each PERSON entity can have one or more associated PHONE NUMBER entities.
This relationship indicates that a person may have multiple phone numbers. These phone numbers could include landline numbers, mobile numbers, and additional lines for specific purposes like business or fax communication.

Notations: Here, each rectangle represents an entity: PERSON, EMAIL, and PHONE NUMBER. The ovals within the rectangles denote attributes: Person_ID, Name, Email_Address, and PhoneNo. The relationships 'has' between PERSON and EMAIL, and between PERSON and PHONE NUMBER, are depicted by the diamond shapes. This visualization provides a clear representation of the database structure, making it easier to understand the entities, attributes, and relationships involved.

5. TABLES FROM ER DIAGRAM

ATTRIBUTES	DESCRIPTION
Person ID	Unique identifier for each person
Name	Full name of the person
Address	Residental address of the person
Phone Number	Contact phone no of person

Phone NUMBER TABLE

ATTRIBUTES	DESCRIPTION
Phone no	Contact of a person
Network type	The network a person using

EMAIL TABLE

ATTRIBUTES	DESCRIPTIVE
Phone no	Contact of a person
Email id	Persons email id
name	A name for particular email id

6. DESCRIPTION OF TABLES

PERSON TABLE:
Person ID: This field serves as a unique identifier for each person within the system. It acts as a primary key and facilitates the association of other information with a specific individual.
Phone No: This field stores the contact phone number of the customer. It provides a means of communication and contact between the system and the individual.
Name: This field captures the full name of the customer. It enables the system to identify and address individuals by their names.
Address: This field holds the residential address of the customer. It provides essential location information for communication and service delivery purposes.

PHONE NUMBER TABLE:
Phone No: This field stores the contact phone number for the customer, similar to the PERSON table. It serves as a primary key in this table.
Network Type: This field indicates the network utilized by the person associated with the phone number. It could include categories such as GSM, CDMA, VoIP, etc.
Person ID: This field links the phone number to the corresponding person in the PERSON table. It establishes a relationship between the two tables, allowing for the retrieval of additional information about the person.

EMAIL TABLE:
Phone No: Similar to the other tables, this field stores the contact phone number for the customer.

Name: This field captures the full name of the customer, providing additional identification information.
Email ID: This field stores the email address associated with the person ID. It enables the system to communicate with individuals via email and associate email addresses with specific individuals.

7. NORMALIZATION OF TABLE UP TO 3-Nf

The well-normalized structure of the tables mentioned above in the telephone directory database ensures data integrity, efficiency, and scalability. Let's expand upon how normalization contributes to these aspects:

Data Integrity:
By organizing data into separate tables based on logical relationships, normalization reduces data redundancy and ensures that each piece of information is stored only once.

The use of primary keys and foreign keys establishes relationships between tables, enforcing referential integrity and preventing inconsistencies or inaccuracies in the data.

For example, in the PERSON table, the Person ID serves as a unique identifier, ensuring that each person's information is distinct and identifiable. This prevents duplication of records and maintains data accuracy.

Efficiency:
Normalization minimizes data duplication, leading to smaller table sizes and reduced storage requirements. This optimization enhances database performance, resulting in faster query execution and data retrieval.

The well-defined structure of normalized tables simplifies data manipulation operations such as insertion, updating, and deletion, contributing to faster and more efficient database transactions.

For instance, in the PHONE NUMBER table, the separation of network type information from the person's contact details allows for streamlined querying and reporting, improving overall database efficiency.

Scalability:
The normalized structure facilitates database scalability by allowing for the addition of new entities or attributes without significant impact on existing tables or queries.

As the telephone directory database grows over time with the inclusion of new entries or updates, normalization ensures that the database structure remains flexible and adaptable to evolving requirements.

For example, if there is a need to incorporate additional contact methods or demographic information in the future, the normalized design allows for seamless expansion without compromising performance or data integrity.

Overall, the well-normalized structure of the telephone directory database promotes data integrity by reducing redundancy, enhances efficiency through optimized storage and operations, and supports scalability to accommodate future growth and changes. This ensures that the database remains robust, reliable, and responsive to the needs of users and stakeholders over time.

8. CREATION OF DATA IN TABLES

PERSON ID	NAME	PHONENUMBER	ADDRESS
A80025	PUJITHA	9432145678	VIJAYAWADA
GP1126	GREESHMA	7652147896	BANGLORE
KS2274	KUSUMA	8214569871	CHENNAI

PHONE NUMBER	NETWORK TYPE	PERSON ID
9876543210	JIO	A80025
9584712365	AIRTEL	GP1126
9874563215	IDEA	KS2274

EMAIL ADDRESS	NAME	PHONE NUMBER
pujitha@gmail.com	Pujitha	9876543210
Greeshma@gmail.com	Greeshma	9584763210
Kusuma@gmail.com	Kusuma	9874563214

9. SQL Queries on Created Tables

1)Find the network for a specific person

```
Select a .Network type from phone number a inner join
person p on a .Person ID=p .Person ID
Where p .Person ID='AB0025';
```

2) Find the email address for a specific person

```
Select a. email _ address from email a where a.name='
Pujitha ';
```

3)Find the address of specific email_address

```
Select address from person where person ID in(select
Person ID from phone _ number where ph no
In (select ph no from email where email _ address
='pujitha@gmail.com') );
```

4)Find the count of network for Specfic Type

```
Select count(*) from phone _ number where network
='airtel';
```

5)Find the phno of specific person ID

```
Select ph no from person where Person _ ID in(select
Person _ ID from Phone _ number where Person _ ID
=‘KS2725
```

6)Find the names and phone numbers of all persons belonging to a specific network type:

```
SELECT p.Name, pn.Phone_No
FROM Person p
INNER JOIN Phone_Number pn ON p.Person_ID = pn.Person_ID
WHERE pn.Network_Type = 'airtel';
```

7)Find the email addresses of persons whose names start with a specific letter:

```
SELECT Email_Address
FROM Email
WHERE Name LIKE 'P%';
```

10. CREATION OF 5 VIEWS USING THE TABLES

Create view person

```
Create view person _ view as select p.name, p . person
_id , p . Phone _ number , p . address , pn . network _
type from person p join Phone _ number , address and
network _ type;
```

Create view Landline

```
Create view Landline _ Numbers _ View as select name,
person _id , phone _ number, address from person _view
where Network _ Type='landline';
```

Create view Vijayawada

```
Create view Vijayawada _view as select name, person _ id
, phone _ number , address from person _ view where
address like "%Vijayawada%";
```

Create view names

```
Create view names _ view as select name ,person _ id,
Phone _ number , address from person _ view where name
like '%A%';
```

Create view num

```
Create view num _ view as select name ,person _ id ,
phone _ number , address from person _ view where phone
_ number like '%7%';
```

11. REFERENCES

1) **ER MODEL - DU :** https://www.du.ac.in/du/uploads/departments/Operational%20Research/24042020_E-R%20Model.pdf

2) **SQL - W3 Schools :** https://www.w3schools.com/sql/

3) **3NF - Javatpoint :** https://www.javatpoint.com/dbms-third-normal-form#:~:text=Third%20Normal%20Form%20(3NF),be%20in%20third%20normal%20form.

THANK YOU