# Introduction

This paper presents the technical documentation for the development of the donor database system for EDU Youth Foundation. It aims to manage donor information, events, and communication efficiently. The report describes the design, implementation, and functionality of the database, hence acting like a guide on how the system works in accomplishing the mission of the organization, which is quality education. The database has been designed to enhance organizational efficiency, facilitate access to data, and enable decision-making within the organization.

This document provides detailed information on how the database has been structured, what functionality it achieves, and how it meets the needs of the organization. This will include discussion on the system architecture, the tools and technologies adopted, the methodology followed in developing the system, and how certain features have been specifically implemented to address the organization's needs. This documentation serves as a reference not only to the current stakeholders but also for any future upgrade and scalability of the system. The intention of this report is to make the database system maximally usable and impactful by providing clear and structured insight into it.

# Database Requirements

## User requirements

* Donor:

The donor will be able to:

* Add their information to the system
* View his information
* View past donations, by date, amount, event, and campaign.
* To requested to delete his account in case they no longer want to participate.
* View events details
* Staff:

The employee can:

* Add new donors to the system
* Modify donors information
* Approve the donor account deletion requests
* View past donations, by date, amount, event, and campaign
* View events details
* Modify events details in case there is any changes

## System Requirements

* Software Requirements:
* **Operating System:** The operating system should be compatible with Windows, macOS, and Linux.
* **Database:** The system should be built using a relational database management system such as MySQL
* Hardware Requirements:
* **Server**: The system needs a web server to host the application.
* **Storage:** The system should have enough free disk space to store information about donors, logs of communications, event files, and records of donations made. This depends on the base size of donors.
* **Backup:** The system should have a reliable backup system for database and file backups to ensure data integrity and recovery.

## Data requirements

# Database Design

## Conceptual Design

**Definition**

Conceptual design is the abstract representation of a system or database that captures the very essence of the data and their interrelationships. It provides explicit concentration on the understanding and determination of the business needs and their translation into an effective logical structure. The conceptual design does not concern itself with the details of technical implementation but, in fact, finds the entities, their attributes, and relationships in a manner that could easily be comprehended by the stakeholders.

**Objective**

The aim of the conceptual design is to bridge the gap between business requirements and technical implementation. It aims to:

1. Clearly define the structure and scope of the data.
2. Identify key data elements and their relationships.
3. Ensure alignment with organizational objectives and user needs.
4. Provide a basis for subsequent logical and physical database designs.

**Components**

The major components of a conceptual design include:

* **Entities:** Represent the major objects or concepts in the system. In my case, donors, events, communication, and donations.
* **Attributes:** Properties or characteristics of the entities. For example, donor name, event date.
* **Relationships:** Links between entities. For example, donors sponsoring events, events having attendees.

## My Conceptual Design

A diagram of a diagram

Description automatically generated

# Mapping

## My attributed with their types

* Donor (Donor ID, ssn, Donor name, Registration date, Email, phone number, Adress, Birth date)
* Staff (Staff ID, ssn, name, salary, level, Phone, Address, email, birth date)
* Event (Event ID, Event name, Event date, Event location)
* Communication (communication ID, Type, Date)
* Donation (Donation ID, Amount, Date)

|  |  |  |
| --- | --- | --- |
| Attribute | Type | Description |
| Entity1: Donor | | |
| Donor ID | Simple, Single-valued | Unique identifier for the donor |
| SSN | Simple, Single-valued | Social Security Number of the donor |
| Donor name | Composite | Consists of first name, middle name, and last name |
| Registration date | Simple, Single-valued | Date the donor registered in the system |
| Email | Simple, Single-valued | Email address of the donor |
| Phone number | Multivalued | A donor may have multiple phone numbers |
| Address | Composite | Includes street, city, state, and zip code |
| Birth date | Simple, Single-valued | Date of birth of the donor |
| Entity2: Staff | | |
| Staff ID | Simple, Single-valued | Unique identifier for the staff member |
| Name | Composite | Consists of first name, middle name, and last name |
| Salary | Simple, Single-valued | Salary of the staff member |
| Level | Simple, Single-valued | Level or position of the staff member |
| Phone | Multivalued | A staff member may have multiple phone numbers |
| Address | Composite | Includes street, city, state, and zip code |
| Email | Simple, Single-valued | Email address of the staff member |
| Birth date | Simple, Single-valued | Date of birth of the staff member |
| Entity3: Event | | |
| Event ID | Simple, Single-valued | Unique identifier for the event |
| Event name | Simple, Single-valued | Name of the event |
| Event date | Simple, Single-valued | Date when the event will take place |
| Event location | Composite | Includes venue name, city, and zip code |
| Entity4: Communication | | |
| Communication ID | Simple, Single-valued | Unique identifier for the communication |
| Type | Simple, Single-valued | Type of communication (e.g., email, call) |
| Date | Simple, Single-valued | Date of the communication |
| Entity5: Donation | | |
| Donation ID | Simple, Single-valued | Unique identifier for the donation |
| Amount | Simple, Single-valued | Amount of the donation |
| Date | Simple, Single-valued | Date when the donation was made |

## Step1: Mapping of Regular (strong) Entity Types

* Donor (Donor ID, ssn, Donor First Name, Donor last name, Registration date, Email, phone number, Adress, Birth date)
* Staff (Staff ID, ssn, name, salary, level, Phone, Address, email, birth date)
* Event (Event ID, Event name, Event date, Event location)

## Step2: Mapping of Weak Entity Types