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| Business Template  [**Political Campaign**](https://elearn.epam.com/asset-v1:RD_CEE+SE161_T2+0923+type@asset+block@dae_db_hw_3.PNG) |
| **Logo / Image** |

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# Business Description

## Business background

During election cycles, an independent commission collects extensive information on political campaign activities. This data includes voter demographics, donor contributions, volunteer assignments, campaign events, financial records, survey results, and any issues encountered. Currently, much of this information is scattered across multiple spreadsheets and paper files, making it difficult to maintain consistent, high-quality records

## Problems. Current Situation

1. Data Fragmentation :

Donor, volunteer, and event details are maintained in disparate systems, hindering comprehensive analysis.

1. Inefficient Tracking of Roles and Assignments:

There is no centralized mechanism to track volunteer roles and tasks, leading to scheduling conflicts and duplication of efforts.

1. Unreliable Financial Oversight:

Contributions and expenses are often not tied to specific events in a uniform manner, complicating financial reporting and compliance checks.

1. Limited Issue Management:

Problems that arise at events are not centrally recorded, resulting in repeated mistakes and difficulty prioritizing resolutions.

1. Underutilized Voter Feedback:

Survey results are not effectively linked to voter records, limiting deeper insight into voter sentiment and demographics.

## the Benefits of implementing a database. Project Vision

By creating a well-structured relational database in 3rd Normal Form (3NF):

* Single Source of Truth: Unified, consistent data on donors, voters, volunteers, and events.
* Enhanced Financial Visibility: Easily track contributions and expenses at a granular level, ensuring transparency and regulatory compliance.
* Streamlined Volunteer Management: Quickly identify volunteer roles, schedules, and assignments to better allocate manpower.
* Improved Issue Resolution: Centralize problems logged at campaign events, track severity, and measure resolution times.
* Deeper Voter Insights: Integrate survey results with voter demographics, enabling targeted outreach and data-driven decisions.

# Model description

## Definitions & Acronyms

* PK (Primary Key): Unique identifier for each row in a table.
* FK (Foreign Key): References a primary key in another table, establishing relationships.
* 1–M (One-to-Many): One record in the parent entity can be related to multiple records in a child entity.
* M–N (Many-to-Many): Requires a “bridge” (junction) table to link records from both entities.
* 3NF (Third Normal Form): A database normalization standard that eliminates transitive and partial dependencies, reducing redundancy.
* Survey: A structured set of questions aimed at collecting voter feedback.
* Volunteer\_Role: A defined position or function (e.g., Phone Banker, Event Staff) that a volunteer can occupy.

## Logical Scheme

A diagram of a computer

AI-generated content may be incorrect.

## Objects

Table Description

This data model contains **13 tables** related to various aspects of the campaign: voters, donors, volunteers, contributions, events, surveys, and issues. Each table’s fields are described in detail below.

|  |  |  |  |
| --- | --- | --- | --- |
| Table Name | Field name | Field Description | Data Type |
| Donor | Donor\_ID | Unique donor identifier. PK | INT |
| First\_Name | Donor’s first name | VARCHAR(50) |
|  | Last\_Name | Donor’s last name | VARCHAR(50) |
|  | Email | Email address | VARCHAR(100) |
|  | Phone | Phone number | VARCHAR(20) |

Comments on table relationships

1–M relationship from Donor to Contribution (a donor can have multiple contributions).

Example with data

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name 1 | Field name 2 | Field name 3 | Field name N |
| Donor\_ID | First\_Name | Last\_Name | Email |
| 1001 | Jane | Doe | jane@example.com |

Table 2: Contribution

|  |  |  |  |
| --- | --- | --- | --- |
| Table Name | Field name | Field Description | Data Type |
| Contribution | Contribution\_ID | Unique contribution identifier. PK | INT |
| Donor\_ID | References the Donor who made the contribution. FK | INT |
|  | Event\_ID | References the Campaign\_Event (optional). FK | INT (nullable) |
|  | Contribution\_Date | Date of contribution | DATE |
|  | Amount | Monetary amount contributed | DECIMAL(10,2) |

Comments on table relationships

1–M from Donor to Contribution.

Optional link to Campaign\_Event.

Example with data

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name 1 | Field name 2 | Field name 3 | Field name N |
| Contribution\_ID | Donor\_ID | Event\_ID | Amount |
| 5001 | 1001 | 200 | 150.00 |

Table 2: Contribution

|  |  |  |  |
| --- | --- | --- | --- |
| Table Name | Field name | Field Description | Data Type |
| Contribution | Contribution\_ID | Unique contribution identifier. PK | INT |
| Donor\_ID | References the Donor who made the contribution. FK | INT |
|  | Event\_ID | References the Campaign\_Event (optional). FK | INT (nullable) |
|  | Contribution\_Date | Date of contribution | DATE |
|  | Amount | Monetary amount contributed | DECIMAL(10,2) |

Comments on table relationships

1–M from Donor to Contribution.

Optional link to Campaign\_Event.

Example with data

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name 1 | Field name 2 | Field name 3 | Field name N |
| Contribution\_ID | Donor\_ID | Event\_ID | Amount |
| 5001 | 1001 | 200 | 150.00 |

Table 3: Campaign\_Event

|  |  |  |  |
| --- | --- | --- | --- |
| Table Name | Field name | Field Description | Data Type |
| Campaign\_Event | Event\_ID | Unique event identifier. PK | INT |
| Event\_Name | Name of the event | VARCHAR(100) |
|  | Event\_Date | Date of the event | DATE |
|  | Location | Physical or virtual location | VARCHAR(100) |
|  | Budget | Budget allocated for the event | DECIMAL(10,2) |

Comments on table relationships

1–M with Contribution (optional), Expense, Problem, and Survey.

M–N with Volunteer (via Volunteer\_Event).

Example with data

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name 1 | Field name 2 | Field name 3 | Field name N |
| Event\_ID | Event\_Name | Event\_Date | Budget |
| 200 | Rally A | 2025-02-01 | 5000.00 |

Table 4: Volunteer

|  |  |  |  |
| --- | --- | --- | --- |
| Table Name | Field name | Field Description | Data Type |
| Volunteer | Volunteer\_ID | Unique volunteer identifier. PK | INT |
| First\_Name | Volunteer’s first name | VARCHAR(50) |
|  | Last\_Name | Volunteer’s last name | VARCHAR(50) |
|  | Email | Contact email | VARCHAR(100) |
|  | Phone | Contact phone number | VARCHAR(20) |

Comments on table relationships

M–N with Volunteer\_Role via Volunteer\_Assignment.

M–N with Campaign\_Event via Volunteer\_Event.

Example with data

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name 1 | Field name 2 | Field name 3 | Field name N |
| Volunteer\_ID | First\_Name | Last\_Name | Email |
| 3001 | Alice | Johnson | alice@example.org |

Table 5: Volunteer\_Role

|  |  |  |  |
| --- | --- | --- | --- |
| Table Name | Field name | Field Description | Data Type |
| Volunteer\_Role | Role\_ID | Unique role identifier. PK | INT |
| Role\_Name | Name of the volunteer role (e.g. “Phone Banker”) | VARCHAR(50) |
|  | Role\_Description | Additional description of responsibilities | VARCHAR(255) |

Comments on table relationships

M–N with Volunteer (via Volunteer\_Assignment).

Example with data

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name 1 | Field name 2 | Field name 3 | Field name N |
| Role\_ID | Role\_Name | Role\_Description | (none) |
| 4001 | Phone Banker | Calls potential voters | (null) |

Table 6: Volunteer\_Assignment (Bridge)

|  |  |  |  |
| --- | --- | --- | --- |
| Table Name | Field name | Field Description | Data Type |
| Volunteer\_Assignment (Bridge) | Volunteer\_ID | References Volunteer. Part of PK. FK → Volunteer\_ID | INT |
| Role\_ID | References Volunteer\_Role. Part of PK. FK → Role\_ID | INT |
|  | Start\_Date | Date assignment began | DATE |
|  | End\_Date | Date assignment ended (NULL if ongoing) | DATE |

Comments on table relationships

Implements M–N between Volunteer and Volunteer\_Role.

Composite PK: (Volunteer\_ID, Role\_ID).

Example with data

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name 1 | Field name 2 | Field name 3 | Field name N |
| Volunteer\_ID | Role\_ID | Start\_Date | End\_Date |
| 3001 | 4001 | 2025-01-10 | 2025-02-10 |

Table 7: Volunteer\_Event (Bridge)

|  |  |  |  |
| --- | --- | --- | --- |
| Table Name | Field name | Field Description | Data Type |
| Volunteer\_Event | Volunteer\_ID | References Volunteer. Part of PK. FK → Volunteer\_ID | INT |
| Event\_ID | References Campaign\_Event. Part of PK. FK → Event\_ID | INT |
|  | Assigned\_Task | Specific assignment or role at the event | VARCHAR(100) |
|  | Hours\_Assigned | Hours allotted for this volunteer at the event | DECIMAL(4,2) |

Comments on table relationships

Implements M–N between Volunteer and Campaign\_Event.

Composite PK: (Volunteer\_ID, Event\_ID).

Example with data

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name 1 | Field name 2 | Field name 3 | Field name N |
| Volunteer\_ID | Event\_ID | Assigned\_Task | Hours\_Assigned |
| 3001 | 200 | Ticket Checking | 4.00 |

Table 8: Problem

|  |  |  |  |
| --- | --- | --- | --- |
| Table Name | Field name | Field Description | Data Type |
| Problem | Problem\_ID | Unique problem identifier. PK | INT |
| Event\_ID | References Campaign\_Event. FK → Event\_ID | INT |
|  | Problem\_Description | Short summary of the problem | VARCHAR(255) |
|  | Date\_Reported | Date the problem was reported | DATE |
|  | Severity | E.g. Low, Medium, High, Critical | VARCHAR(20) |
|  | Resolved\_Flag | Boolean: whether the problem is resolved | BOOLEAN |
|  | Resolution\_Desc | How the problem was resolved (if applicable) | VARCHAR(255) |
|  | Resolution\_Date | Date the problem was resolved (NULL if unresolved) | DATE |

Comments on table relationships

1–M from Campaign\_Event to Problem.

Example with data

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name 1 | Field name 2 | Field name 3 | Field name N |
| Problem\_ID | Problem\_Description | Severity | Resolved\_Flag |
| 7001 | Power outage | High | TRUE |

Table 9: Expense

|  |  |  |  |
| --- | --- | --- | --- |
| Table Name | Field name | Field Description | Data Type |
| Expense | Expense\_ID | Unique expense identifier. PK | INT |
| Event\_ID | References Campaign\_Event (optional). FK → Event\_ID | INT (nullable) |
|  | Expense\_Date | Date expense was incurred/paid | DATE |
|  | Expense\_Amount | Monetary amount of the expense | DECIMAL(10,2) |
|  | Category | E.g., “Venue,” “Marketing,” “Travel,” etc. | VARCHAR(50) |
|  | Payee | Name of vendor or individual paid | VARCHAR(100) |

Comments on table relationships

1–M from Campaign\_Event to Expense (if tied to an event).

Example with data

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name 1 | Field name 2 | Field name 3 | Field name N |
| Expense\_ID | Event\_ID | Expense\_Amount | Category |
| 8001 | 200 | 300.00 | Marketing |

Table 10: Survey

|  |  |  |  |
| --- | --- | --- | --- |
| Table Name | Field name | Field Description | Data Type |
| Survey | Survey\_ID | Unique survey ID. PK | INT |
| Event\_ID | References Campaign\_Event (optional). FK → Event\_ID | INT (nullable) |
|  | Survey\_Name | Title/name of the survey | VARCHAR(100) |
|  | Survey\_Date | Date the survey was conducted/activated | DATE |
|  | Target\_Group | E.g., “All voters in District X” | VARCHAR(50) |

Comments on table relationships

1–M from Survey to Survey\_Question.

Example with data

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name 1 | Field name 2 | Field name 3 | Field name N |
| Survey\_ID | Survey\_Name | Survey\_Date | Target\_Group |
| 9001 | Post-Rally | 2025-02-02 | Rally Attendees |

Table 11: Survey\_Question

|  |  |  |  |
| --- | --- | --- | --- |
| Table Name | Field name | Field Description | Data Type |
| Survey\_Question | Question\_ID | Unique question identifier. PK | INT |
| Survey\_ID | References Survey. FK → Survey\_ID, NOT NULL | INT |
|  | Question\_Text | Actual text of the question | VARCHAR(255) |

Comments on table relationships

1–M from Survey\_Question to Survey\_Response.

Example with data

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name 1 | Field name 2 | Field name 3 | Field name N |
| Question\_ID | Survey\_ID | Question\_Text | (none) |
| 9101 | 9001 | How satisfied...? | (null) |

Table 12: Survey\_Response

|  |  |  |  |
| --- | --- | --- | --- |
| Table Name | Field name | Field Description | Data Type |
| Survey\_Response | Response\_ID | Unique survey response ID. PK | INT |
| Question\_ID | References Survey\_Question. FK → Question\_ID, NOT NULL | INT |
|  | Voter\_ID | References Voter (optional). FK → Voter\_ID | INT (nullable) |
|  | Response\_Value | Answer/content to the question | VARCHAR(255) |

Comments on table relationships

1–M from Survey\_Question to Survey\_Response.

Optional link to a Voter (anonymous if NULL).

Example with data

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name 1 | Field name 2 | Field name 3 | Field name N |
| Response\_ID | Question\_ID | Voter\_ID | Response\_Value |
| 9201 | 9101 | 1100 | Very satisfied |

Table 13: Voter

|  |  |  |  |
| --- | --- | --- | --- |
| Table Name | Field name | Field Description | Data Type |
| Voter | Voter\_ID | Unique voter identifier. PK | INT |
| First\_Name | Voter’s first name | VARCHAR(50) |
|  | Last\_Name | Voter’s last name | VARCHAR(50) |
|  | Date\_of\_Birth | Date of birth | DATE |
|  | Address | Street address | VARCHAR(100) |
|  | City | City of residence | VARCHAR(50) |
|  | State | Two-letter state code | CHAR(2) |
|  | Zip\_Code | Postal code | VARCHAR(10) |
|  | Registration\_Date | Date the voter registered | DATE |

Comments on table relationships

1–M from Voter to Survey\_Response (if not anonymous).

Example with data

|  |  |  |  |
| --- | --- | --- | --- |
| Field Name 1 | Field name 2 | Field name 3 | Field name N |
| Voter\_ID | First\_Name | Last\_Name | Party\_Affiliation |
| 1100 | Sarah | Thompson | Independent |