Domain Model Document

for

Fingerprint Voting System

SE322 Software Requirements Analysis

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Revision History

Names	Date	Reason for Changes	Version
Subašić N. et al.	04/01/23	Initial draft.	1.0 – Draft 1
Žiga E. et al.	04/01/23	Aesthetic changes.	1.1 – Approved

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1. Introduction

This document serves to present the domain model for the Fingerprint Voitng System. It provides an overview of the conceptual classes and domain model for a voting system. The conceptual classes include Voter, Voting Device, Voting Location, Server, Location Administrator, Voting Tickets, Fingerprint Authentication, and NFC Card. The relationships between these classes, as well as their attributes and multiplicity, are depicted in the domain model. This information is essential for understanding the functioning and structure of the voting system. The document also includes explanations of the various concepts and their relevance to the system. This will provide a comprehensive understanding of the voting system and its components.

2. List of Conceptual Classes

The table below identifies conceptual classes and considers them in terms of symbols and intensions. Extensions are ignored because they are not of practical interest for creating this domain model.

Conceptual Classes	
Concept's Symbol	Concept's Intension
Voter	An individual who is eligible to participate in an election by casting a vote
Voting Location	A physical location where voters can go to cast their votes in an election
Voting Device	A physical device or machines that voters use to cast their votes in an election
Server	A computer or network of computers that stores and processes data related to the voting process
Location Administrator	A person responsible for managing a voting location and addressing any issues that may arise during the voting process
Voting Tickets	Physical or digital documents that list the different options that a voter can choose from when casting their vote in an election
Fingerprint Scanner	A device used to capture and verify the identity of a voter based on their fingerprint
NFC Card	A card that can be used to access a voting device in case of issues such as a system crash or freeze

Table 2.1 Domain Model

3. The Domain Model

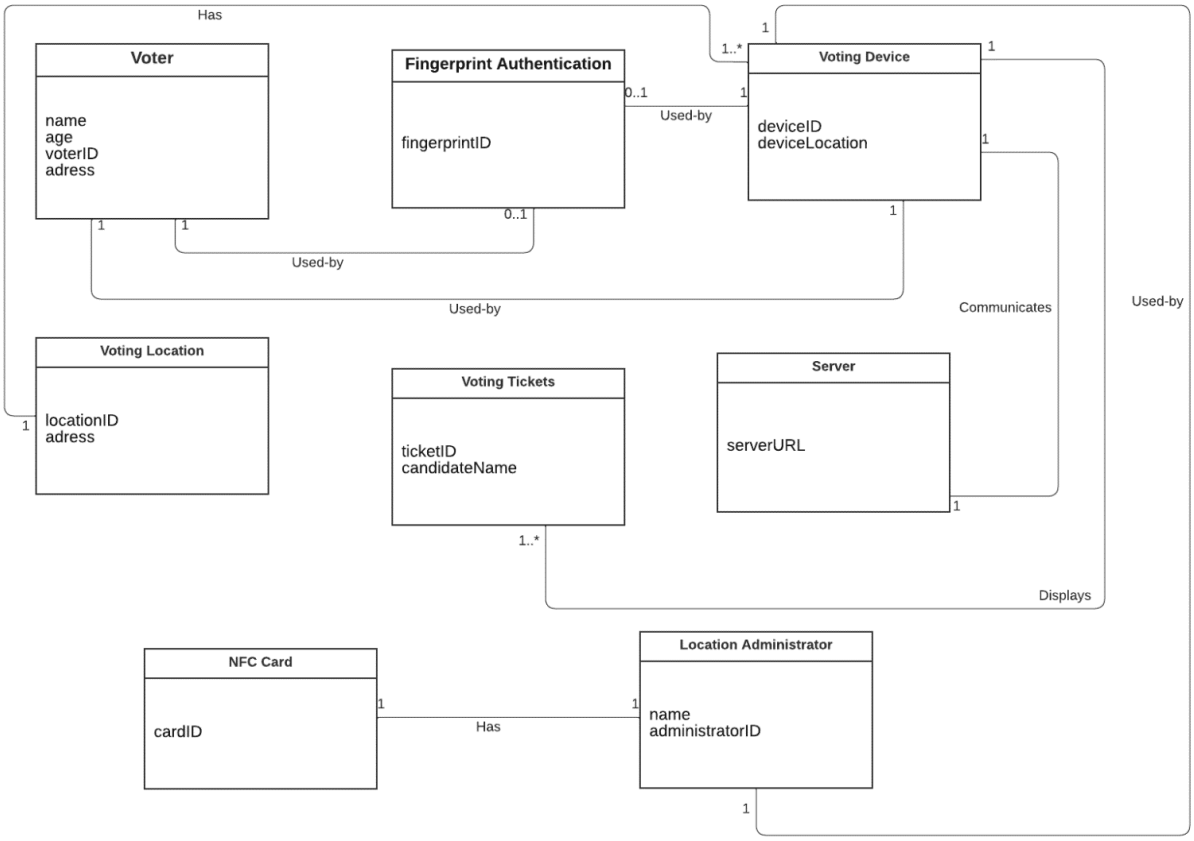

Figure 3.1 Domain Model

4. Description of the Domain Model

This Domain model is represented by the UML class diagram which represents a system for conducting elections. The main classes in this system are: Voter, Voting device, Voting location, Server, Location administrator, Voting tickets, Fingerprint authentication, and NFC card.

- The Voter class represents individuals who are eligible to cast a vote. Each Voter has a name, age, voter ID, and address.
- The Voting device class represents the device that voters use to cast their votes. Each Voting device has a unique device ID and is located at a specific location.
- The Voting location class represents the physical location where voters can go to cast their votes. Each Voting location has a unique location ID and an address
- The Server class represents the server that receives and processes the votes. Each Server has a unique server URL.
- The Location administrator class represents the person responsible for managing the voting location and addressing any issues that may arise. Each Location administrator has a unique administrator ID, a name, and a phone number.

- The Voting tickets class represents the different options that a voter can choose from when casting their vote. Each Voting ticket has a unique ticket ID and is associated with a specific candidate and party.
- The Fingerprint authentication class represents the process of verifying a voter's identity using their fingerprint. Each Fingerprint authentication has a unique fingerprint ID.
- The NFC card class represents a card that can be used to access the voting device in case of issues such as a system crash or freeze. Each NFC card has a unique card ID.

In terms of the relationships between these classes, we can see the following:

- A voter can use zero or one instance of fingerprint authentication to verify their identity.
- A voter uses one instance of a voting device to cast their vote.
- A voting device displays one or more instances of voting tickets to the voter.
- A voting device uses zero or one instance of fingerprint authentication to verify the identity of the voter.
- A voting device communicates with one instance of a server to send and receive data.
- A voting device is located at one instance of a voting location.
- A voting device can be accessed by one instance of a location administrator using one instance of an NFC card in case of issues.
- The server communicates with one instance of a voting device to send and receive data.
- A location administrator has one instance of an NFC card.

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