Online Election Voting System

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THE PROBLEM

Musts:

- Online voting system
- Run governmental elections
- Secure and anonymous
- Produces Summaries
- Protects against election fraud

Future Work:

- Advanced Statistical Summaries
- Accessibility features
- Coercion protection

THE SYSTEM REQUIREMENTS

1. Login
2. Voting
3. Admin Login
4. Statistical
5. Admin Privileges
6. Adding Admins

FUNCTIONAL REQUIREMENTS

PRE-DEFINED VOTING

DUPLICATE VOTES

INTUITION

DATA STORAGE

ACCESSIBILITY

USER PRIVACY

AESTHETICS

COERCIVE VOTING

STABILITY

PERFORMANCE

NON - FUNCTIONAL REQUIREMENTS

Project Phases

Phase 1:
Requirements and Analysis

Describe objectives of the project (Online voting System)

Explore the relationships among the components of the system(OVS) that meet the requirements.

Security of the system.

Identify product will be delivered, the resources required, and the skills needed to complete the work.

Phase 2:
Architecture and Design

Identify the elements that will be included in the system.

Identify technical solutions. Identify the UI/UX, data structure and report layout.

The components of the of the system will technically work; how it will interacted with other components (Frontend and Backend) of the system.

Phase 3:
Implementation, Integration and Testing

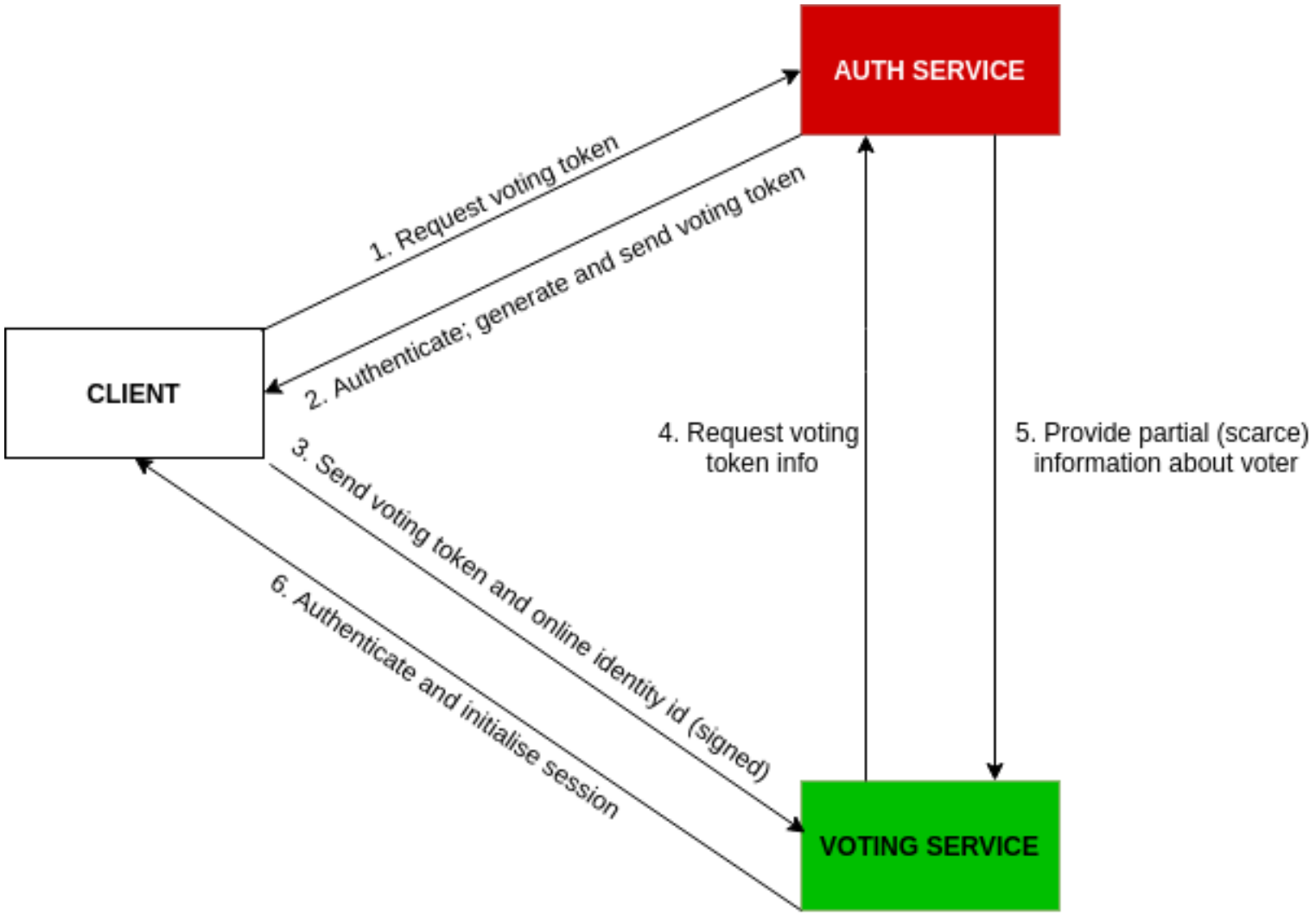
Development of the code and building the components.

Integration is combining all of the modules and components into a functioning system.

Testing of the system. Other testing like Unit and functions, User side and admin side of the system, Integration.

System design: What changed?

- Split the system into services
  - Auth service – handles part of the authentication process, works with voter's raw credentials
  - Voting service – provides the main voting functionality
  - Admin backend – used to manage the whole system
- Changes in the types of cryptographic algorithms used – transition to elliptic curve cryptography
  - Speed up system performance
  - Provide (relatively) better security

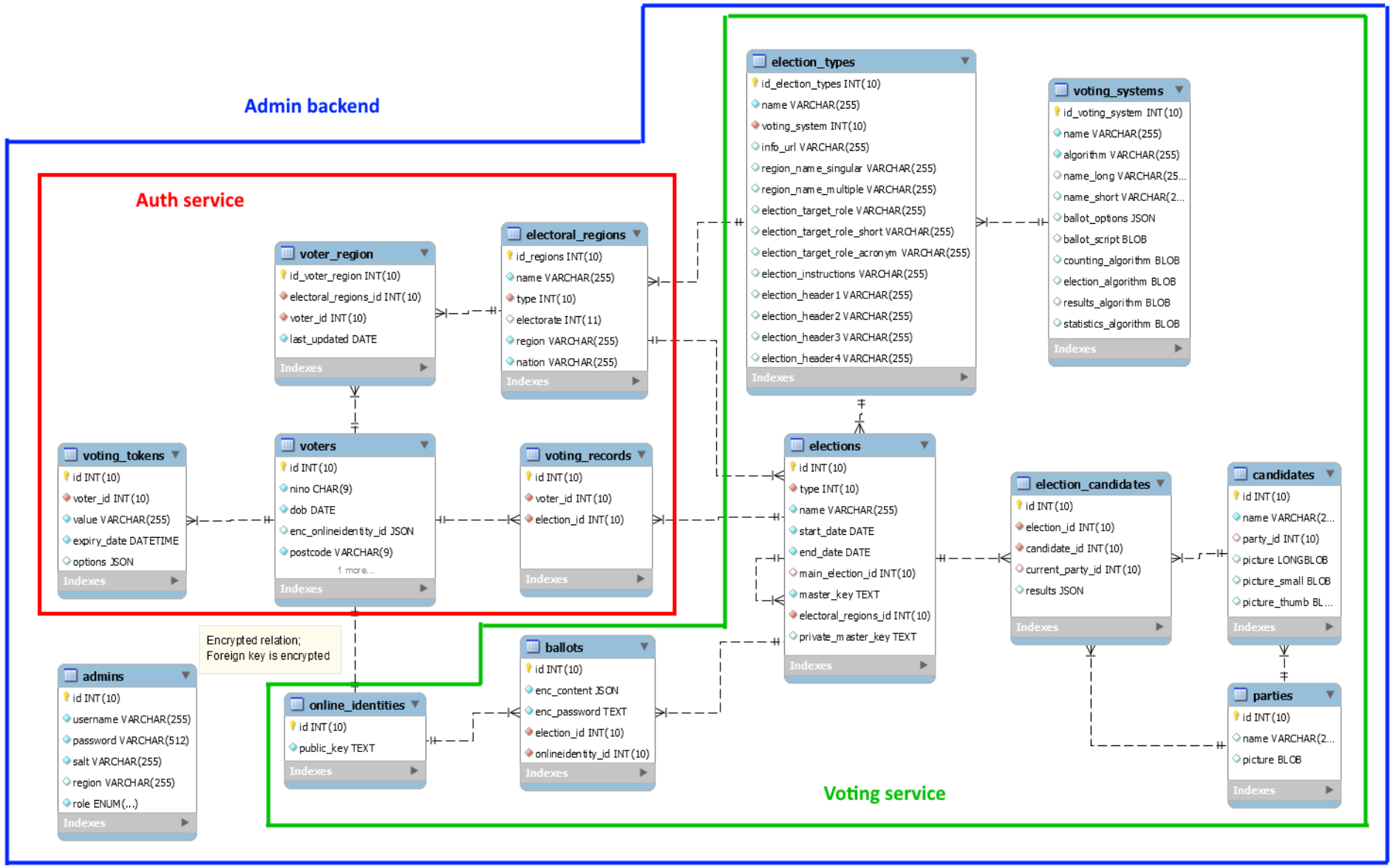


System design: What changed?
The new authentication procedure

System design: What changed?

- Elections are done by electoral regions, instead of being postcode-based as in the original specification

- Database design and part of the voting service's design were changed so different types of voting systems can be implemented in the future



System design: What changed?
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DEMO

Testing

- Two different ways.
- Developer perspective
- User Feedback Survey
- We used all this information to make changes before the final iteration
- Also helped us to see where we would take the project in the future if we were to do so.

What the system is and is not capable of

Implemented Features

- Admin and voter registration
- Electoral voting
- Viewing election results
- All required administrator privileges (creating, editing, deleting elections, confirming voters ID etc)
- Display Election Results in statistical graphs by demographic

Features for future implementation

- Two-factor authentication
- Coercive voting
- Synchronized data storage across multiple databases

Evaluation

The objective of this evaluation was to identify outcomes of the project(online voting system); to examine the effectiveness of the system, implementation, monitoring of the system and how efficient were the planning . The evaluation is focused more on appraising the result and outputs of Phase 3 (Implementation) of the project and how we as a group worked for this project.

Team Evaluation:

- Whole team worked cooperatively with each other.
- Displayed positive approach and made constructive comments in working toward goal.
- Each team member tried to approach tasks in systematic manner.
- Followed through in completing own contribution to team project.
- We have looked at the requirements and identified the key functional and non-functional requirements, developed a plan for the system's architecture and design while keeping in consideration, legal, professional, social and ethical issues that arise with such an application.
- As a group, we tried to participate in identifying and defining problems and working toward solutions.

Major challenges of the project

- Some lack of communication; some team members work overlapped with other members' tasks
- Varying experience levels with the technologies we used
- Prioritizing security alongside the basic system requirements
- University servers were not initially available which caused a slight set back.

Any Questions?