COS221 GROUP PROJECT

FUNCTIONAL REQUIREMENTS

Group Name: Database Schreeeeema		
Initials	Surname	Student Number
L.M.	Burgess	u18015001
J	Antalis	u19141859
JH	Kwak	U18279092

Contents

System description

A system is desired which may be used to run municipality elections. This consists of an use easy-to-use web-based voting system to cast votes, interface to process the results and registration systems for candidates and voters. The front-end should include a simple interface that put briefly:

- Voters can use to cast their votes.
- The IEC (Independent electoral committee) may use to process the results, candidates and voters who register.
- Voters and Candidates may use to register for the election.

The back end briefly should make use of a database to record, validate and process- the users, candidates, and their votes by municipality location. The locations of the voters and municipalities are also considered due to affecting the number of votes given.

The main data to be collected is the votes for each candidate based on the location of the voters.

Users

- Voters
- IEC (Staff)
- Candidates

Data Analysis & Requirements

The voters, candidates (with their parties) and IEC staff will have their data recorded and stored. This data may include metadata (names, ID, address etc.) for the voters, work information (work ID) for the IEC staff and candidate metadata (Name, ID, location, affiliated party when no independent).

Further data captured and collected will be the age of the voters, votes casted for different parties and candidates and location demographics of parties, and voters by location data. This information revolving around the election forms the central point of the system.

The data is required to be stored by some means for collection and review, MySQL database has been chosen.

The data is required to be captured by some means, this being the medium of a website scripted with JavaScript, PHP, and HTML/CSS.

The data is required to processed and reported upon, a mix of SQL and Java will be used to process the data and report on it.

The data is required to be secure from malicious use and will be designed with preventative measures in place through text filtering, limiting, and processing to prevent attacks and injections.

Use Cases

Use cases for the system as follows:

1. Register staff (IEC) members.
2. Register political/ independent parties and their candidates.
3. Allow residents to apply to vote (permission granted by IEC) for their area.
4. Allow voters to request an update of their information, or deletion.
5. Allow staff members to register voters (perform validation)- This may also be automated by the DBMS for large volumes.
6. Allows voters, candidates, and staff to login.
7. Voters are validated as to if they may cast their votes. Otherwise, they are informed of not being permitted or having voted already.
8. Registered voters cast their Metropolitan, District and Local votes based on their area, determined by the system.
9. Candidates may view their running totals, parties their running totals (proportional representation) as well as for their candidates.
10. Staff may register/ deregister voters, candidates, and parties.
11. Staff may process the total votes after the election. They may then view, compile and publish the results.
12. This may be reported as the correct number of votes and seats each candidate/party acquired.
13. Staff may update voter information upon request of voter.
14. Staff may also determine if a voter has not voted yet (If they are registered, have not voted, allowed to cast a District/Metro vote)

Database Interactions

Insert

- Registering voters, staff members, political parties and their candidates will be done via the interface in the front-end and an INSERT SQL statement, into the appropriate table, in the database located in the back end.
- Before being allowed to vote the voter's eligibility will be determined by whether they have already voted (come election day) and if they are permitted to cast a District vote using WHERE SQL statements based on the voters' area and the relevant districts to match. (This may also be done through CHECKS which may be used to validate inserts)
- Validation includes a unique ID (13 digit) number containing a valid birth date and age (18+ years)
- Validation by street location *may be* beyond the scope of this project. (Street address to municipality). The user may select their location via a list of municipalities. Their street location will be recorded if a validation means is made.

Update

- The desired attributes of the participants will be updated accordingly using the UPDATE SQL function.
- Whether a voter has voted or not
- Credentials of IEC staff

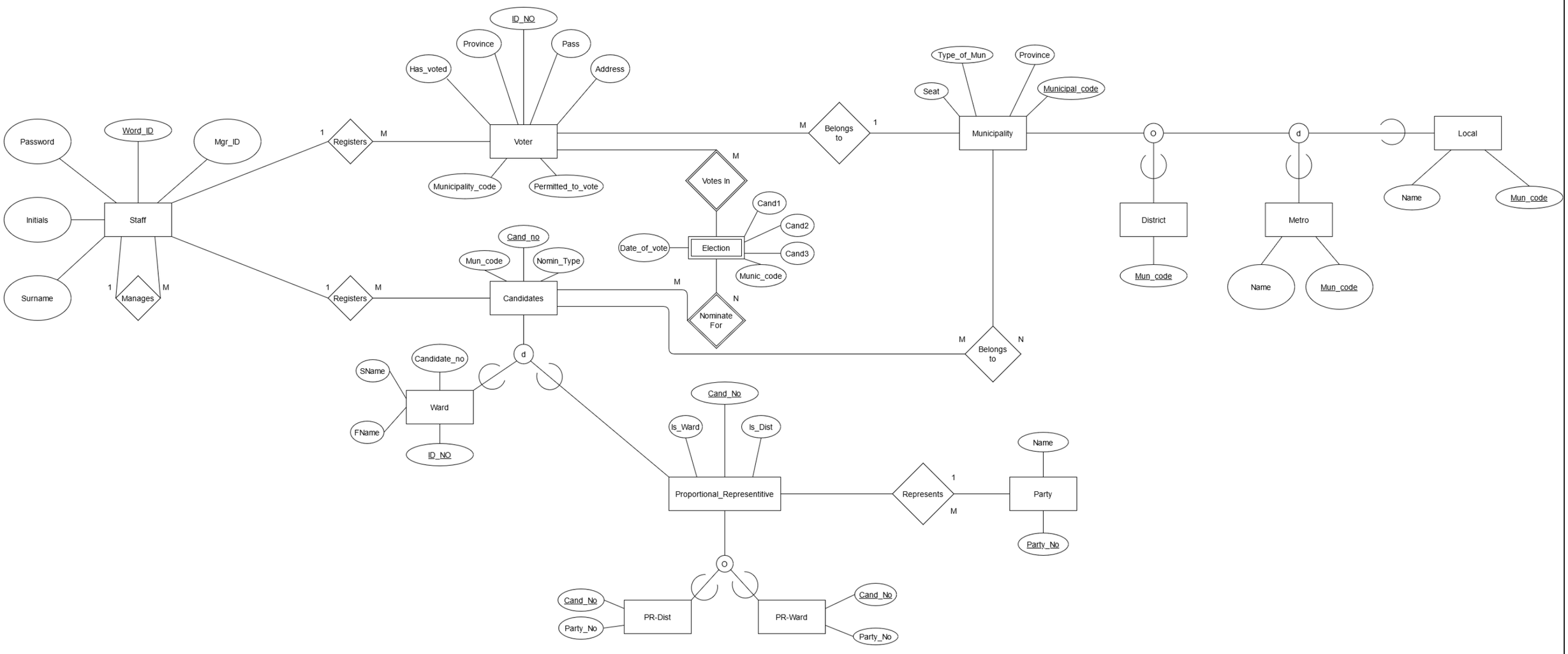
Delete

- Remove candidates and voters (invalid or removed from party)

Select (reporting)

- Show totals for votes.
- Display candidates
- Show voters by a filter set (location, age etc.)
- Report voting results (Winner, demographics etc.)

EER Diagram


ID_NO
Province
Pass
Has_voted
Address
Password
Word_ID
Mgr_ID
Initials
Surname
Staff
Manages
1
M
Registers
Voter
Municipality_code
Permitted_to_vote
Votes In
Cand1
Cand2
Cand3
Munic_code
Date_of_vote
Election
Cand_no
Mun_code
Nomin_Type
Candidates
Nominate For
Belongs to
Type_of_Mun
Province
Seat
Municipal_code
Municipality
O
d
District
Mun_code
Metro
Name
Mun_code
Local
Name
Mun_code
Candidate_no
SName
FName
ID_NO
Ward
Cand_No
Is_Ward
Is_Dist
Proportional_Representitive
Represents
Party
Party_No
Name
PR-Dist
PR-Ward
Cand_No
Party_No
Cand_No
Party_No

Database Schema

Staff

Work_ID	Initials	Surname	Password	Mgr_ID

Voter

ID_No	Address	Age	Municipality_code	Password	Has_voted	Permitted to vote

Municipality

municipal_code	type_of_mun	province	seat

Metro

name	Municipal_code

Local

name	Municipal_code

Districts

Municipal_code

Party

party_no	name	password	permitted

Candidate

candidate_no	municipal_code	Is_ward	Is_pr	registered

Ward

ID_no	Cand_no	Fname	Sname	P_num	password

Proportional_Representatives

Cand_no	Dist_nom	Ward_nom

PR_Dist

Party_No	Cand_no

PR_Word

Party_No	Cand_no

Elections

municipal_code	data_of_vote	ward_candidate	pr_ward	pr_district