Abdel-Aziz Mostafa Abdel-Aziz Mohammed 12 - B

Ayman Hassan Tawfik Abdel-Hafez 5 - A

Ziad Mohamed Hussein Khobeiz 2 - B

Steven Sameh Soliman Atta-Allah 2 - B

Youssef Nasser Saber Bilates 12 - B

Mohamed Abo El-Hagag Mohamed Khalil 17 - B

E-Voting System

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2020 2021

**E-Voting System**

**Mini-world aspects (Assumptions):**

It is our vision to what a database design of an e-voting system for The Parliament of Egypt, officially the House of Representatives would be like.

A candidate can make his/her own way to The Parliament of Egypt through two methods. The first is to be elected as an individual, the second is to be elected among a list of candidates.

A candidate is an Egyptian and ONLY Egyptian citizen that ages above 25 years old and enjoy his/her political rights.

A voter is any Egyptian citizen that ages above 18 years old and enjoy his/her political rights.

An election area is a specific area in a certain governorate. The number of individual candidates elected from a certain area varies from one to another.

A list area is a group of governorates that share the same candidates lists. The number of candidates in a list area differs from a list area to another. A voter can ONLY elect one list area.

A union is a group of parties and/or candidates. The aim of creating a union is to run for the lists race in any of the list areas. A union can choose not to participate in one or more list areas but not all of them.

A candidates list is a list of candidates provided by a certain union to run for the lists race in a certain list area.

**Design:**

* ****Citizen: holds all the data of all Egyptian citizens.

The following entities are inherited from Citizen:

1. Voter: any citizen that is eligible for voting and enjoy his/her political rights.



1. Candidate: any citizen that is eligible for candidacy and enjoy his/her political rights.



The following entities are inherited from Candidate:

* 1. List Candidate: any candidate that runs for the elections among a list.



* 1. Individual Candidate: any candidate that runs for the elections through the individual race.



1. Supervisor: a selected person to supervise the online voting process.

****

* Account: holds the data of the voter on the platform.

****

* List Area: holds the data of the list area.

****

* Party: holds the party name.



* Governorate: holds the data of the governorate.



* Election Area: holds the data of the election area.



* Union: holds the data of the union.



* Candidates List: holds the data of the candidates list.



**Relationships:**

* Party\_Member:

The relation is between a certain candidate and a corresponding party. Each candidate could be a member of at most one party. However, each party could have zero or more party members that ran for this election. Therefore, the cardinality ratio could be derived as follows:

Candidate Party

N : 1

1 : 1

------------------------------------------------------

N : 1

* Voter\_Account:

The relation is between a certain voter and a corresponding account. Each voter could have at most one account. Also, each account should correspond to exactly one voter. Therefore, the cardinality ratio could be derived as follows:

Voter Account

1 : 1

1 : 1

------------------------------------------------------

1 : 1

* List\_Members:

The relation is between a certain list candidate and a certain list. Each list candidate should have exactly one corresponding list. However, each list should have one or more list candidates. Therefore, the cardinality ratio could be derived as follows:

L\_Candidate Candidate\_List

1 : 1

N : 1

------------------------------------------------------

N : 1

* Lists\_Of (Identifying relation for Candidate\_List):

The relation is between a certain list and a corresponding list area. Each list should be in exactly one list area. However, each list area should have one or more lists. Therefore, the cardinality ratio could be derived as follows:

Candidates\_List List\_Area

1 : 1

N : 1

------------------------------------------------------

N : 1

* Voter\_Area:

The relation is between a certain voter and a corresponding area. Each voter could have exactly one area. Also, each area should have many voters. Therefore, the cardinality ratio could be derived as follows:

Voter Area

1 : 1

N : 1

------------------------------------------------------

N : 1

* Candidacy\_Area:

The relation is between a certain area and a corresponding individual candidate. Each individual candidate should have exactly one corresponding area. However, each area should have at least one candidate. Therefore, the cardinality ratio could be derived as follows:

Individual\_Candidate Election\_Area

1 : 1

N : 1

------------------------------------------------------

N : 1

* Union\_Lists:

The relation is between a certain union and a corresponding candidates list. Each candidates list should have exactly one corresponding union. However, each union should have at least one candidates list. Therefore, the cardinality ratio could be derived as follows:

Candidates\_List Union

1 : 1

N : 1

------------------------------------------------------

N : 1

* Forms:

The relation is between a certain governorate and a corresponding list area. Each governorate should have exactly one corresponding list area. However, each list area should have at least one governorate. Therefore, the cardinality ratio could be derived as follows:

Governorate List\_Area

1 : 1

N : 1

------------------------------------------------------

N : 1

* Supervision:

The relation is between a certain supervisor and a corresponding election area. Each supervisor could supervise on any number of election areas. Also, each election area should have at least one supervisor. Therefore, the cardinality ratio could be derived as follows:

Supervisor Election\_Area

1 : N

N : 1

------------------------------------------------------

M : N

* Areas\_Of (Identifying relation of Election\_Area):

The relation is between a certain election area and a corresponding governorate. Each election area should have exactly one corresponding governorate. However, each governorate should have at least one election area. Therefore, the cardinality ratio could be derived as follows:

Election\_Area Governorate

1 : 1

N : 1

------------------------------------------------------

N : 1