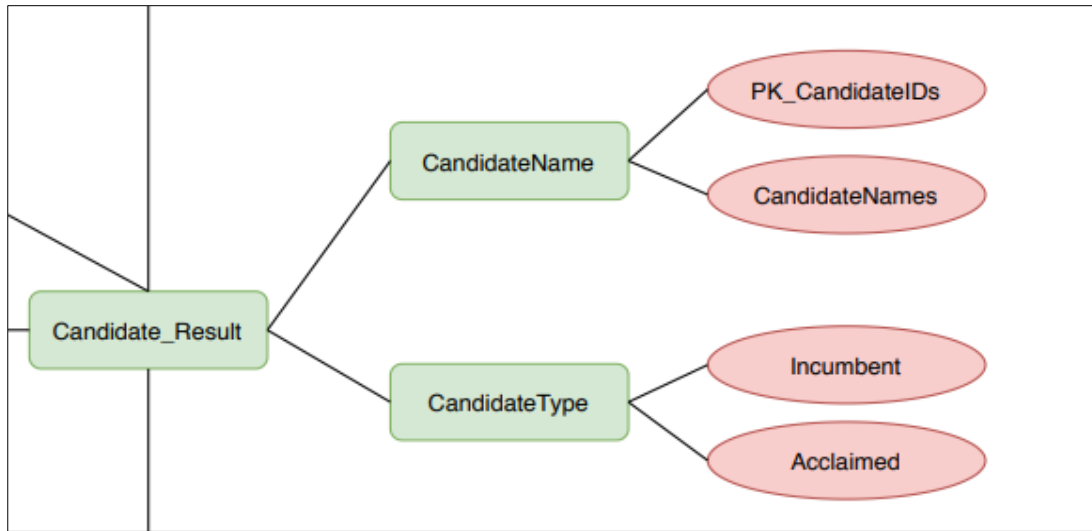
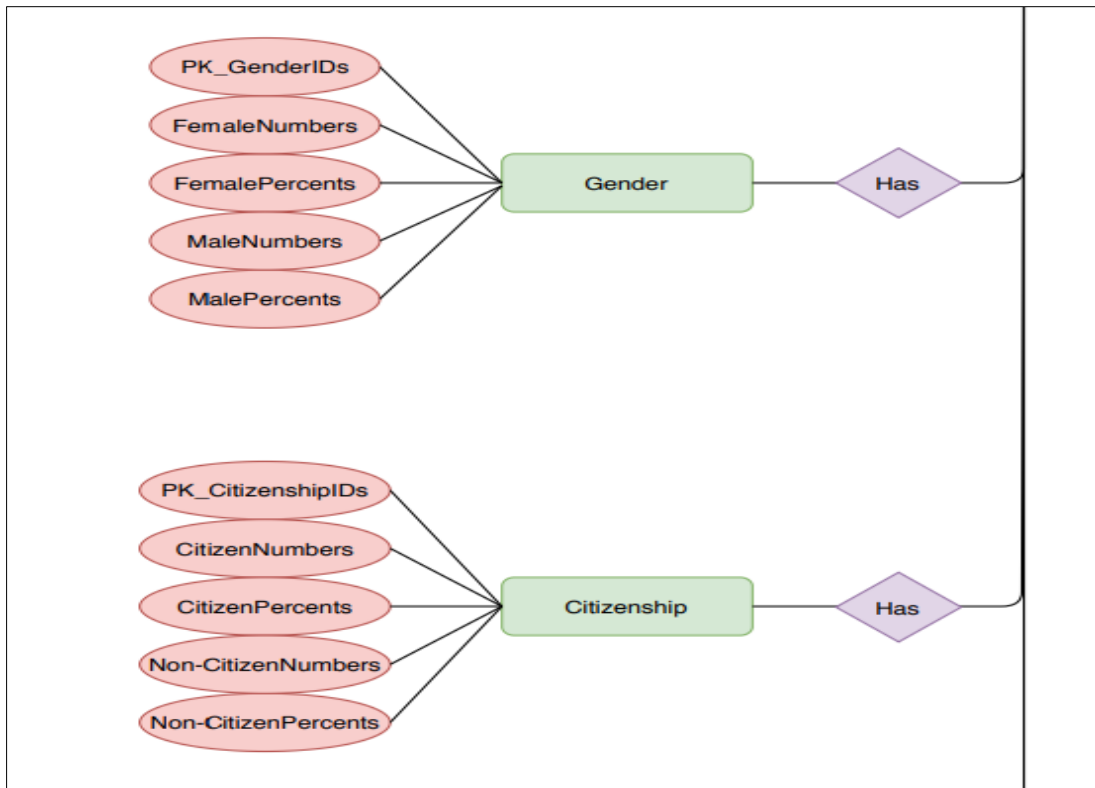
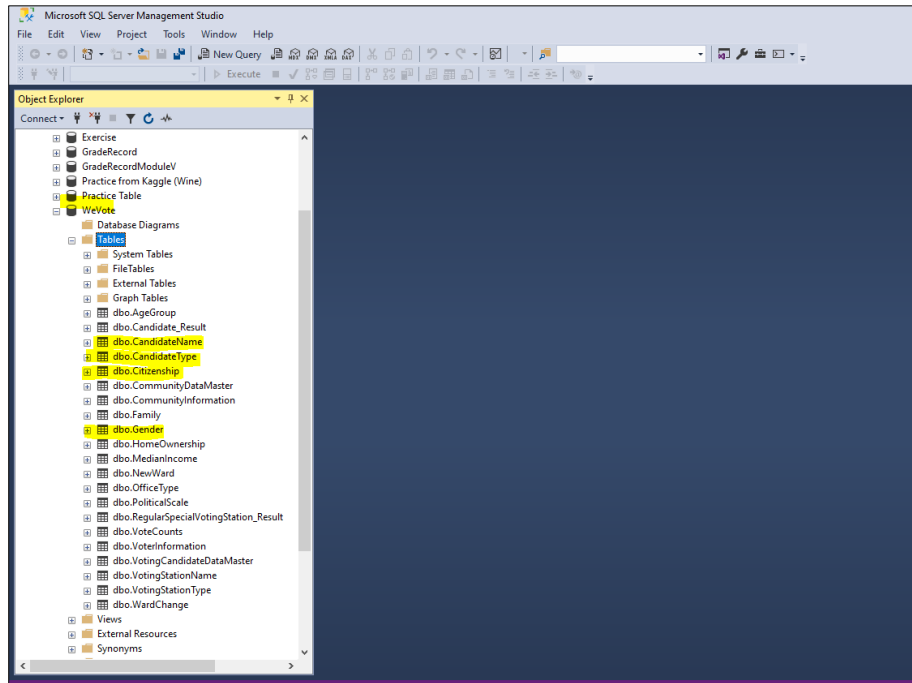


ERD: Candidate Name and Type



ERD: Citizenship and Gender





## SQL System tests.

### a. CandidateName

- Columns (checked, all good)

Column Name	Data Type	Allow Nulls
PK_CandidateIDs	tinyint	<input type="checkbox"/>
CandidateNames	varchar(30)	<input type="checkbox"/>

- SQL Code

```

UniversityNormaliz...PIJH5AV\d17 (51)) WeVote System QA...PIJH5AV\d17 (54))
SELECT DISTINCT PK_CandidateIDs
FROM CandidateName
ORDER BY PK_CandidateIDs ASC;
BEGIN TRAN;

SELECT DISTINCT CandidateNames
FROM CandidateName
ORDER BY CandidateNames ASC;
BEGIN TRAN;

USE WeVote;
GO

SELECT CandidateNames
FROM CandidateName
WHERE ISNULL(CandidateNames) <> 0;
GO

```

PK_CandidateIDs	CandidateNames
128	Teresa Hargrea...
129	Tory Tomblin
130	Trevor Buckler
131	Trina Hurdman
	Tudor Dinca
	Veeral Rai
	Ward Sutherland
	Wasima Sultan

```
--Validate DISTINCT values --
SELECT DISTINCT PK_CandidateIDs
FROM CandidateName
ORDER BY PK_CandidateIDs ASC;
BEGIN TRAN;
```

PK_CandidateIDs
118
119
120
121
122
123
124
125
126
127
128
129
130
131

```
SELECT DISTINCT CandidateNames
FROM CandidateName
ORDER BY CandidateNames ASC;
BEGIN TRAN;
```

CandidateNames
118 Shemsa Cells
119 Sohail Sherwani
120 Srinu Ganti
121 Stan the Man ...
122 Steve Turner
123 Syed Hasnain
124 Teresa Hargrea...
125 Tory Tomblin
126 Trevor Buckler
127 Trina Hurdman
128 Tudor Dinca
129 Veerpal Rai
130 Ward Sutherland
131 Wasima Sultan

```
USE WeVote;
GO
SELECT CandidateNames
FROM CandidateName
WHERE ISNUMERIC(CandidateNames) <> 0;
GO
```

CandidateNames

```
SELECT DISTINCT PK_CandidateIDs
FROM CandidateName
ORDER BY PK_CandidateIDs ASC;
BEGIN TRAN;
DELETE TOP(1)
FROM CandidateName;
ROLLBACK;

SELECT DISTINCT CandidateNames
FROM CandidateName
ORDER BY CandidateNames ASC;
BEGIN TRAN;
DELETE TOP(1)
FROM CandidateName;
ROLLBACK;
```

(131 rows affected)  
 Msg 547, Level 16, State 0, Line 23  
 The DELETE statement conflicted with the REFERENCE constraint "FK2\_CandidateIDs". The conflict occurred in database "WeVote", table "dbo.VoteCounts", column 'FK2\_Cand'.  
 The statement has been terminated.

Completion time: 2020-12-07T21:10:14.2612852-07:00

## b. CandidateType

- Columns (checked, all good)

Column Name	Data Type	Allow Nulls
FK1_CandidateIDs	tinyint	<input type="checkbox"/>
Incumbent	varchar(1)	<input type="checkbox"/>
Acclaimed	varchar(1)	<input type="checkbox"/>
PK_CandidateTypeIDs	tinyint	<input type="checkbox"/>
		<input type="checkbox"/>

- SQL

```

BEGIN TRAN;
DELETE TOP(1)
FROM CandidateType;
ROLLBACK

SELECT * FROM CandidateType
WHERE Incumbent IS NULL

SELECT DISTINCT CandidateNames
FROM CandidateName
ORDER BY CandidateNames ASC;
BEGIN TRAN;

BEGIN TRAN;
INSERT INTO CandidateType(PK_CandidateTypeIDs, FK1_CandidateIDs)
VALUES (5,6);
ROLLBACK

```

100 %

Messages

Msg 544, Level 16, State 1, Line 67  
Cannot insert explicit value for identity column in table 'CandidateType' when IDENTITY\_INSERT is set to OFF.

Completion time: 2020-12-11T13:05:32.0697479-07:00

```

SELECT DISTINCT FK1_CandidateIDs
FROM CandidateType
ORDER BY FK1_CandidateIDs ASC;
BEGIN TRAN;

```

100 %

Results Messages

FK1_CandidateIDs
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131

```

BEGIN TRAN;
UPDATE CandidateType
SET PK_CandidateTypeIDs = 5
WHERE PK_CandidateTypeIDs = 4;
ROLLBACK

--Validate if a non-existent tables/record can be retrieved--

SELECT * FROM CandidateName
WHERE PK_CandidateIDs = 4000;

```

100 %

Messages

Msg 8102, Level 16, State 1, Line 85  
Cannot update identity column 'PK\_CandidateTypeIDs'.

Completion time: 2020-12-11T13:18:14.7964751-07:00

```

BEGIN TRAN;
UPDATE CandidateType
SET PK_CandidateTypeID = 5
WHERE PK_CandidateTypeID = 4;
ROLLBACK

--Validate if a non-existent table/record can be retrieved--

SELECT * FROM CandidateType
WHERE PK_CandidateTypeID = 4000;

```

100 %

Results Messages

FK1\_CandidateIDs Incumbent Acclaimed PK\_CandidateTypeID

### c. CandidateType

- Columns (checked, all good)

DESKTOP-PJHH5AV\S...- dbo.Citizenship			
Column Name	Data Type	Allow Nulls	
FK2_CommunityIDs	tinyint	<input checked="" type="checkbox"/>	
CitizenNumbers	smallint	<input checked="" type="checkbox"/>	
CitizenPercents	float	<input checked="" type="checkbox"/>	
NonCitizenNumbers	smallint	<input checked="" type="checkbox"/>	
NonCitizenPercents	float	<input checked="" type="checkbox"/>	
PK_CitizenshipIDs	tinyint	<input type="checkbox"/>	

- SQL

```

--Validate Citizenship table --

--Validate if tables/record/insertion to current PK--

BEGIN TRAN;
INSERT INTO Citizenship(PK_CitizenshipIDs, FK2_CommunityIDs)
VALUES (5,5);
ROLLBACK;

--Validate if tables/record can be updated by current PK--

BEGIN TRAN;
UPDATE CandidateName

```

100 %

Messages

Msg 544, Level 16, State 1, Line 102  
Cannot insert explicit value for identity column in table 'Citizenship' when IDENTITY\_INSERT is set to OFF.

Completion time: 2020-12-11T13:40:35.1887961-07:00

```

--Validate Citizenship table --

--Validate if tables/record/insertion to current PK--

BEGIN TRAN;
INSERT INTO Citizenship(PK_CitizenshipIDs, FK2_CommunityIDs)
VALUES (5,5);
ROLLBACK;

--Validate if tables/record can be updated by current PK--

BEGIN TRAN;
UPDATE Citizenship
SET PK_CitizenshipIDs = 5
WHERE PK_CitizenshipIDs = 4;
ROLLBACK;

```

100 %

Messages

Msg 8102, Level 16, State 1, Line 110  
Cannot update identity column 'PK\_CitizenshipIDs'.

Completion time: 2020-12-11T13:42:29.2980136-07:00

```

--Validate if a non-existent tables/record can be retrieved--

SELECT * FROM Citizenship
WHERE PK_CitizenshipIDs = 4000;

```

100 %

Results Messages

FK2_CommunityIDs	CitizenNumbers	CitizenPercents	NonCitizenNumbers	NonCitizenPercents	PK_CitizenshipIDs
------------------	----------------	-----------------	-------------------	--------------------	-------------------

d. Gender

- Columns (checked, all good)

DESKTOP-PJHH5AV\...Vote - dbo.Gender - WeVote System QA...-PJHH5AV\d17 (62)			
Column Name	Data Type	Allow Nulls	
FK6_CommunityIDs	tinyint	<input checked="" type="checkbox"/>	
FemaleNumbers	smallint	<input checked="" type="checkbox"/>	
FemalePercents	float	<input checked="" type="checkbox"/>	
MaleNumbers	smallint	<input checked="" type="checkbox"/>	
MalePercents	float	<input checked="" type="checkbox"/>	
PK_GenderIDs	tinyint	<input type="checkbox"/>	
		<input type="checkbox"/>	

- SQL

```
--Validate if tables/record/insertion to current PK--
BEGIN TRAN;
INSERT INTO Gender (PK_GenderIDs, FK6_CommunityIDs)
VALUES (5,5);
ROLLBACK;

--Validate if tables/record can be updated by current PK--

BEGIN TRAN;
UPDATE Citizenship
SET PK_CitizenshipIDs = 5
WHERE PK_CitizenshipIDs = 4;
```

00 %

Messages

Msg 544, Level 16, State 1, Line 127  
Cannot insert explicit value for identity column in table 'Gender' when IDENTITY\_INSERT is set to OFF.

Completion time: 2020-12-11T13:50:52.3618781-07:00

```
--Validate if tables/record can be updated by current PK--

BEGIN TRAN;
UPDATE Gender
SET PK_GenderIDs = 5
WHERE PK_GenderIDs = 4;
ROLLBACK;

--Validate if a non-existent tables/record can be retrieved--

SELECT * FROM Citizenship
WHERE PK_CitizenshipIDs = 4000;
```

100 %

Messages

Msg 8102, Level 16, State 1, Line 135  
Cannot update identity column 'PK\_GenderIDs'.

Completion time: 2020-12-11T13:52:44.3492180-07:00

```
--Validate if tables/record can be updated by current PK--
BEGIN TRAN;
UPDATE Gender
SET PK_GenderIDs = 5
WHERE PK_GenderIDs = 4;
ROLLBACK;

--Validate if a non-existent tables/record can be retrieved--
SELECT * FROM Gender
WHERE PK_GenderIDs = 4000;
```

100 %

Results Messages

FK6_CommunityIDs	FemaleNumbers	FemalePercents	MaleNumbers	MalePercents	PK_GenderIDs
------------------	---------------	----------------	-------------	--------------	--------------

SQL Codes:

```
--Restore and Use Wevote file --
```

```
USE WeVote;
```

```
--Validate CandidateName table
```

```
SELECT * FROM CandidateName
```

```
-----
--Validate DISTINCT values and check if Varchar CandidateName table --
```

```
SELECT DISTINCT PK_CandidateIDs
FROM CandidateName
ORDER BY PK_CandidateIDs ASC;
BEGIN TRAN;
DELETE TOP(1)
FROM CandidateName;
ROLLBACK
```

```
SELECT DISTINCT CandidateNames
FROM CandidateName
ORDER BY CandidateNames ASC;
BEGIN TRAN;
DELETE TOP(1)
FROM CandidateName;
ROLLBACK
```

```
USE WeVote;
GO
SELECT CandidateNames
FROM CandidateName
WHERE ISNUMERIC(CandidateNames) <> 0;
GO
```

```
--Validate if tables/record insertion to current PK--
```

```
BEGIN TRAN;
INSERT INTO CandidateName (PK_CandidateIDs)
VALUES (5);
ROLLBACK
```



--Validate if tables/record can be updated by current PK--

```
BEGIN TRAN;
UPDATE CandidateName
SET PK_CandidateIDs = 5
WHERE PK_CandidateIDs = 4;
ROLLBACK
```

--Validate if a non-existent tables/record can be retrieved--

```
SELECT * FROM CandidateName
WHERE PK_CandidateIDs = 4000;
```

-----

--Validate CandidateType table --

```
SELECT * FROM CandidateType

SELECT DISTINCT FK1_CandidateIDs
FROM CandidateType
ORDER BY FK1_CandidateIDs ASC;
BEGIN TRAN;
DELETE TOP(1)
FROM CandidateType;
ROLLBACK
```

```
SELECT * FROM CandidateType
WHERE Incumbent IS NULL
```

```
SELECT DISTINCT CandidateNames
FROM CandidateName
ORDER BY CandidateNames ASC;
BEGIN TRAN;
```

```
BEGIN TRAN;
INSERT INTO CandidateType(PK_CandidateTypeIDs, FK1_CandidateIDs)
VALUES (5,5);
ROLLBACK
```

--Validate if tables/record can be updated by current PK--

```
BEGIN TRAN;
UPDATE CandidateType
SET PK_CandidateTypeIDs = 5
WHERE PK_CandidateTypeIDs = 4;
ROLLBACK
```

--Validate if a non-existent tables/record can be retrieved--

```
SELECT * FROM CandidateType
WHERE PK_CandidateTypeIDs = 4000;
```

-----

--Validate Citizenship table --

--Validate if tables/record/insertion to current PK--

```
BEGIN TRAN;
INSERT INTO Citizenship(PK_CitizenshipIDs, FK2_CommunityIDs)
VALUES (5,5);
ROLLBACK;
```

--Validate if tables/record can be updated by current PK--

```
BEGIN TRAN;  
UPDATE Citizenship  
SET PK_CitizenshipIDs = 5  
WHERE PK_CitizenshipIDs = 4;  
ROLLBACK;
```

--Validate if a non-existent tables/record can be retrieved--

```
SELECT * FROM Citizenship  
WHERE PK_CitizenshipIDs = 4000;
```

-----  
--Validate Gender table --

--Validate if tables/record/insertion to current PK--

```
BEGIN TRAN;  
INSERT INTO Gender (PK_GenderIDs, FK6_CommunityIDs)  
VALUES (5,5);  
ROLLBACK;
```

--Validate if tables/record can be updated by current PK--

```
BEGIN TRAN;  
UPDATE Gender  
SET PK_GenderIDs = 5  
WHERE PK_GenderIDs = 4;  
ROLLBACK;
```

--Validate if a non-existent tables/record can be retrieved--

```
SELECT * FROM Gender  
WHERE PK_GenderIDs = 4000;
```