iCongress

A Database Design Proposal

April 24, 2016

Michael Guarino

Table of Contents

Executive Summary

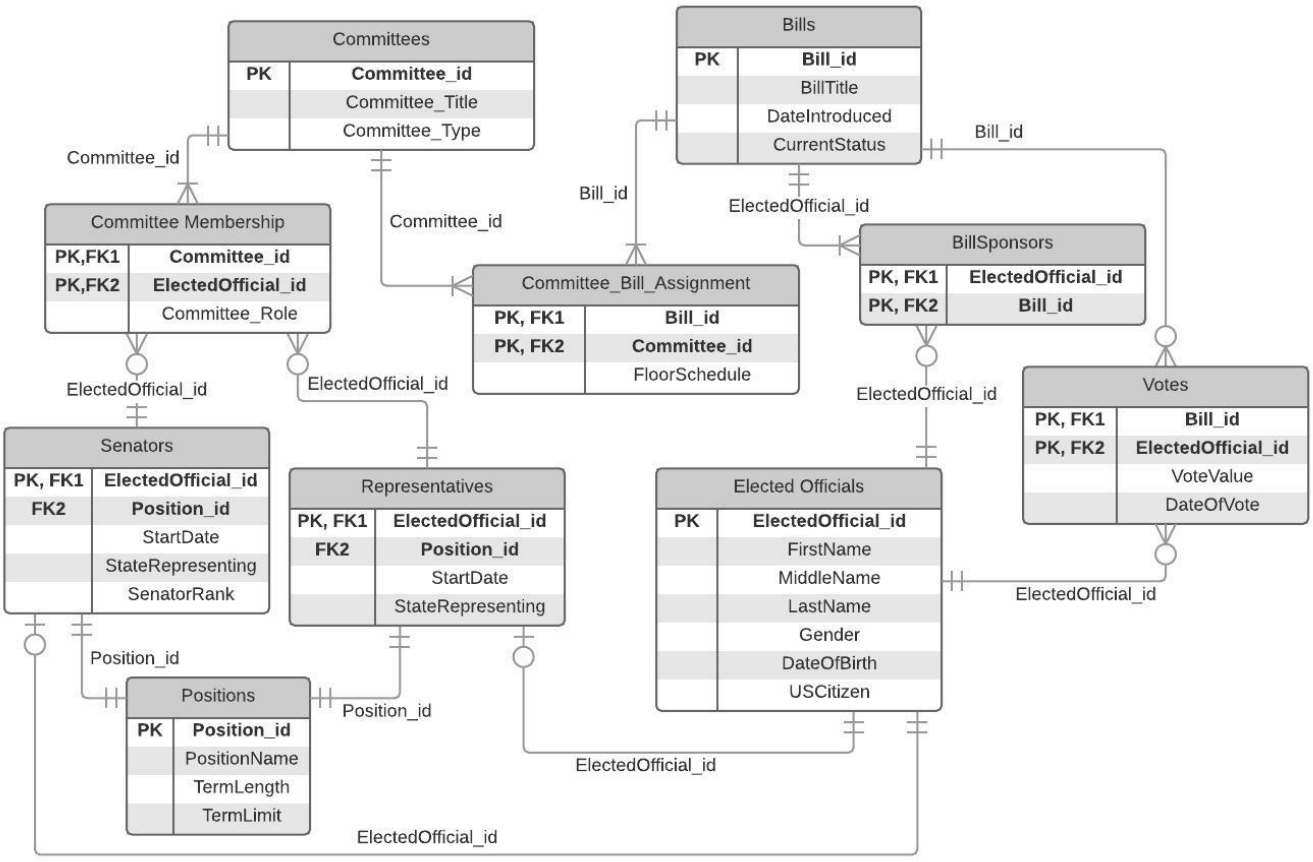
Overview

Due to a doomsday like series of events Donald Trump was elected president of the United States. His first action as president was to paint the White House gold and his second was to declare war on every civilized nation from Albania to Zimbabwe. However, according to Article One, Section Eight of the Constitution a formal declaration of war is a Congressional matter and thus must be decided by Congress. President Trump, always a stickler for the rules, introduced a proposal of war to Congress. The proposal was carefully examined over lunch, voted upon, and unanimously supported. The American public reacted with overwhelming disgust. In the following days and weeks sentiment felt towards Congress shifted from unsure to dubiously skeptical. A small group of tech savvy millennials venture to build a website detailing what their elected officials in Congress support for the purpose of increased transparency. The only problem is they need a Database.

Objective

This document outlines a Database system to record what elected officials in Congress support. Elected officials in Congress are either Senators or Representatives in the House of Representatives. Congress divides its work between committees where they discuss bills. Every bill must have a sponsor and every bill must be voted on. This document will provide a technical overview of the database including ER diagrams, tables, functional dependencies, views, reports, stored procedures, triggers, and security. This system is designed and tested on PostgreSQL 9.5.2.

Entity Relationship Diagram



Tables

Table: Bills

Purpose: This table is used to store Bills by their Bill_id along with their associated bill title, date the bill was introduced, and the bill's current status.

Create Statement:

```
CREATE TABLE IF NOT EXISTS Bills (
  Bill_id VARCHAR(10) NOT NULL UNIQUE,
  BillTitle TEXT NOT NULL,
  DateIntroduced DATE NOT NULL,
  CurrentStatus CurrentStatuses NOT NULL DEFAULT 'introduced',
  PRIMARY KEY (Bill_id)
);
CREATE TYPE CurrentStatuses AS ENUM(
        'introduced',
        'killed',
        'passed'
);
```

Functional Dependencies:

(Bill_id) → BillTitle, DateIntroduced, CurrentStatus

Sample Data:

	bill_id character varying(10)	billtitle text	dateintroduced date	currentstatus currentstatuses
1	aaaaaaaaa1	Freedom of Trump Act	2016-01-01	introduced
2	aaaaaaaaa2	Right to Arm Bears	2016-01-01	introduced
3	abnmz4oaa1	Freedom to Trump	2017-01-13	introduced
4	dafazjjaa2	Right to Arm Bears	2017-01-20	introduced
5	zafaaaaaa3	Ban all bike lanes	2017-01-25	introduced
6	ihjr58a9y4	Tuesday is ice cream day	2017-02-03	introduced
7	y2jro0a1k5	All magic tricks are real	2017-02-03	introduced

Table: BillSponsors

Purpose: This table is used to store a Bill's sponsors. The records kept are elected officials by ElectedOfficial_id and the Bill they sponsor by Bill_id.

Create Statement:

```
CREATE TABLE IF NOT EXISTS BillSponsors (
  ElectedOfficial_id VARCHAR(5) NOT NULL,
  Bill_id VARCHAR(10) NOT NULL,
  PRIMARY KEY(ElectedOfficial_id, Bill_id),
  FOREIGN KEY(ElectedOfficial_id) REFERENCES ElectedOfficials(ElectedOfficial_id),
  FOREIGN KEY(Bill_id) REFERENCES Bills(Bill_id)
);
```

Functional Dependencies:

(ElectedOfficial_id, Bill_id)

Sample Data:

	electedofficial_id character varying(5)	bill_id character varying(10)
1	hp214	abnmz4oaa1
2	z1uz6	dafazjjaa2
3	cr510	zafaaaaaa3
4	hp212	zafaaaaaa3
5	hp219	ihjr58a9y4
6	hp219	y2jro0a1k5
7	eo1z1	y2jro0a1k5
8	a4hn2	y2jro0a1k5

Table: Elected Officials

Purpose: This table holds basic information for every elected official in the iCongress database.

Create Statement:

```
CREATE TABLE IF NOT EXISTS ElectedOfficials (
  ElectedOfficial_id VARCHAR(5) NOT NULL UNIQUE,
  FirstName TEXT NOT NULL,
  MiddleName TEXT NOT NULL,
  LastName TEXT NOT NULL,
  Gender Genders,
  DateOfBirth DATE NOT NULL,
  USCitizen BOOLEAN DEFAULT TRUE,
  PartyAffiliation TEXT NOT NULL CHECK(PartyAffiliation IN ('Republican', 'Democrat','Other')),
  PRIMARY KEY (ElectedOfficial_id)
);
```

Functional Dependencies:

(ElectedOfficial_id) → FirstName, MiddleName, LastName, Gender, DateOfBirth,USCitizen, PartyAffiliation

Sample Data:

	electedofficial_id character varying(5)	firstname text	middlename text	lastname text	gender genders	dateofbirth date	uscitizen boolean	partyaffiliation text
1	eo1z1	Alexander	Daddy	Hamilton	Male	1755-01-11	t	Other
2	a4hn2	Benjamin	Daddy	Franklin	Male	1706-01-17	t	Other
3	b3zi3	John	E	McCain	Male	1936-08-29	t	Republican
4	jzkq4	Jeff	J	Flake	Male	1962-12-31	t	Republican
5	d3kz5	Bill	C	Nelson	Male	1942-09-29	t	Democrat
6	z1uz6	Marco	L	Rubio	Male	1971-05-28	t	Republican
7	y3ub7	Chuck	N	Schumer	Male	1950-10-23	t	Democrat
8	m7po8	Kirsten	D	Gillibrand	Female	1966-12-26	t	Democrat
9	k0ti9	Dianne	A	Feinstein	Female	1933-06-22	t	Democrat
10	cr510	Barbara	N	Boxer	Female	1940-10-11	t	Democrat
11	sp211	Barbara	I	Boxer	Female	1940-10-11	t	Democrat
12	hp212	Matt	E	Salmon	Male	1958-10-11	t	Republican
13	hp213	Raul	L	Grijalva	Male	1948-10-11	t	Democrat
14	hp214	Jeff	C	Denham	Male	1967-10-11	t	Republican
15	hp215	Paul	R	Cook	Male	1943-10-11	t	Republican
16	hp216	Ami	A	Bera	Male	1965-10-11	t	Republican
17	hp217	Tom	I	Rooney	Male	1970-10-11	t	Republican
18	hp218	Patrick	G	Murphy	Male	1983-10-11	t	Republican
19	hp219	Gregory	Q	Meeks	Male	1953-10-11	t	Democrat

Table: Senators

Purpose: This table contains information about Senators in the iCongress database. Every state has two Senators. The Senator that started most recently is referred to as the Junior Senator.

Create Statement:

```
CREATE TABLE IF NOT EXISTS Senators (
  ElectedOfficial_id VARCHAR(5) NOT NULL UNIQUE,
  Position_id PositionValues NOT NULL CHECK(Position_id='Senator'),
  StartDate DATE NOT NULL,
  StateRepresenting States NOT NULL,
  SenatorRank SenatorRanks NOT NULL,
  PRIMARY KEY(ElectedOfficial_id),
  FOREIGN KEY(ElectedOfficial_id) REFERENCES ElectedOfficials(ElectedOfficial_id),
  FOREIGN KEY(Position_id) REFERENCES Positions(Position_id)
);
```

Functional Dependencies:

(ElectedOfficial_id) → Position_id, StartDate, StateRepresenting, SenatorRank

Sample Data:

	electedofficial_id character varying(5)	position_id positionvalues	startdate date	staterepresenting states	senatorrank senatorranks
1	b3zi3	Senator	1987-01-03	Arizona	Senior
2	jzkq4	Senator	2013-01-03	Arizona	Junior
3	d3kz5	Senator	2001-01-03	Florida	Senior
4	z1uz6	Senator	2011-01-03	Florida	Junior
5	y3ub7	Senator	1999-01-03	New York	Senior
6	m7po8	Senator	2009-01-26	New York	Junior
7	k0ti9	Senator	1992-10-10	California	Senior
8	cr510	Senator	1993-01-03	California	Junior

Table: Representatives

Purpose: This table contains information about Representatives in the iCongress database. Every state has several Representatives in the House of Representatives.

Create Statement:

```
CREATE TABLE IF NOT EXISTS Representatives (
  ElectedOfficial_id VARCHAR(5) NOT NULL UNIQUE,
  Position_id PositionValues NOT NULL CHECK(Position_id='Representative'),
  StartDate DATE NOT NULL,
  StateRepresenting States NOT NULL,
  PRIMARY KEY(ElectedOfficial_id, Position_id),
  FOREIGN KEY(ElectedOfficial_id) REFERENCES ElectedOfficials(ElectedOfficial_id),
  FOREIGN KEY(Position_id) REFERENCES Positions(Position_id)
);
```

Functional Dependencies:

(ElectedOfficial_id) → Position_id, StartDate, StateRepresenting

Sample Data:

	electedofficial_id character varying(5)	position_id positionvalues	startdate date	staterepresenting states
1	hp212	Representative	2003-01-30	Arizona
2	hp213	Representative	2013-01-30	Arizona
3	hp214	Representative	2011-01-30	California
4	hp215	Representative	2013-01-30	California
5	hp216	Representative	2013-01-30	California
6	hp217	Representative	2009-01-30	Florida
7	hp218	Representative	2013-01-30	Florida
8	hp219	Representative	1998-01-30	New York

Table: Committees

Purpose: Congress conducts business in committees. Committees come in three types Senate Committees exclusively composed of members of the Senate, House Committees exclusively composed of members of the House of Representatives, and Joint Committees that are composed of both branches of Congress. This table holds Committees and the type of committee.

Create Statement:

```
CREATE TABLE IF NOT EXISTS Committees (
  Committee_id VARCHAR(6) NOT NULL UNIQUE,
  Committee_Title TEXT NOT NULL,
  Committee_Type Committee_Types NOT NULL,
  PRIMARY KEY (Committee_id)
);

CREATE TYPE Committee_Types AS ENUM(
        'senate',
        'house',
        'joint'
);
```

Functional Dependencies:

(Committee_id) → Committee_Title, Committee_Type

Sample Data:

	committee_id character varying(6)	committee_title text	committee_type committee_types
1	uta01t	Argiculture, Nutrition, and Forestry	senate
2	utv8tl	Energy and Natural Resources	senate
3	pop99b	Health, Education, Labor, and Pensions	senate
4	yay7n1	Foreign Relations	joint
5	vox1jc	Rules and Administration	house
6	101sto	Governmental Affairs	house
7	ei78b2	Small Business and Entrepreneurship	house

Table: CommitteeMembership

Purpose: This table holds members of a committee and also the role that each member plays on a particular committee.

Create Statement:

```
CREATE TABLE IF NOT EXISTS CommitteeMembership (
  Committee_id VARCHAR(20) NOT NULL,
  ElectedOfficial_id VARCHAR(5) NOT NULL,
  Committee_Role Committee_Roles NOT NULL,
  PRIMARY KEY(Committee_id, ElectedOfficial_id),
  FOREIGN KEY(Committee_id) REFERENCES Committees(Committee_id),
  FOREIGN KEY(ElectedOfficial_id) REFERENCES ElectedOfficials(ElectedOfficial_id)
);
CREATE TYPE Committee_Roles AS ENUM(
        'Member',
        'Ranking Member',
        'Vice Chairman',
        'Ex Officio',
        'Chairman'
);
```

Functional Dependencies:

(Committee_id, ElectedOfficial_id) → Committee_Role

Sample Data:

	committee_id character varying(20)	electedofficial_id character varying(5)	committee_role committee_roles
1	uta01t	eo1z1	Chairman
2	uta01t	a4hn2	Ranking Member
3	uta01t	b3zi3	Vice Chairman
4	uta01t	jzkq4	Ex Officio
5	uta01t	d3kz5	Member
6	utv8tl	eo1z1	Chairman
7	utv8tl	a4hn2	Ranking Member
8	pop99b	b3zi3	Vice Chairman
9	ei78b2	jzkq4	Ex Officio
10	yay7n1	d3kz5	Member

Table: Committee_Bill_Assignment

Purpose: This table holds which bills are assigned to a particular committee for review along with the date that that the bill will be on the schedule for the committee.

Create Statement:

```
CREATE TABLE IF NOT EXISTS Committee_Bill_Assignment (
  Bill_id VARCHAR(10) NOT NULL,
  Committee_id VARCHAR(20) NOT NULL,
  FloorSchedule DATE NOT NULL,
  PRIMARY KEY(Bill_id, Committee_id),
  FOREIGN KEY(Bill_id) REFERENCES Bills(Bill_id),
  FOREIGN KEY(Committee_id) REFERENCES Committees(Committee_id)
);
```

Functional Dependencies:

(Bill_id, Committee_id) → FloorSchedule

Sample Data:

	bill_id character varying(10)	committee_id character varying(20)	floorschedule date
1	abnmz4oaa1	pop99b	2017-04-08
2	dafazjjaa2	ei78b2	2017-03-21
3	zafaaaaaa3	yay7n1	2017-03-10
4	dafazjjaa2	yay7n1	2017-03-19
5	ihjr58a9y4	pop99b	2017-05-05
6	y2jro0a1k5	utv8tl	2017-08-30