CongressStats
for UTM CSCI 352 Spring 2018

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Abstract

CongressStats is a desktop application for Microsoft Windows that displays statistics such as attendance and voting records for U.S. senators and representatives. The application also displays descriptions and statuses of popular bills. Our application is for use by the average American citizen looking to learn more about how the U.S. government is representing him or her. Currently, we have fleshed out basic project goals as well as a short-term roadmap to implement the application's core features. In this paper, we document our design of CongressStats and the challenges we faced.

1. Introduction

In recent years, the United States has seen record interest in policy and legislation passed by its national government. The FCC's net neutrality policy, for example, reigned in nearly 22 million comments regarding citizens' positions on the issue [1]. Public trust in the government also remains near historic lows [2]. Observing these two trends has generated our inspiration for creating CongressStats, a desktop application for Microsoft Windows.

CongressStats fetches and arranges public data to allow users to view voting histories and attendance records for U.S. senators and representatives. The application also allows users to view descriptions and statuses of popular bills. By empowering U.S. citizens with this wealth of information, voters will be able to stay active in current legislature and be able to see for themselves whether or not they are truly being represented by their elected officials.

1.1. Background

In the United States, national and state governments are split into three branches: executive, legislative, judicial. The legislative branch, or Congress, is split into two groups: the House of Representatives and the Senate. Members of the House are referred to as both representatives and congressmen/congresswomen, which lead to confusion as both parties are technically members of Congress. Members of the Senate are referred to simply as Senators.

1.2. Challenges

An initial challenge for the project will be to manually track down all public records in XML form hosted by various sites of the U.S. government and automate the fetching, storage, and retrieval of their contents.

2. Scope

Our goals for CongressStats are to fetch and automatically update biographies and attendance for U.S. senators and representatives. We also want to parse voting records for bills to generate and display statistics for each official. In addition to these statistics, we would like to display information on bills themselves, including bill descriptions, times/dates of voting, and voting results. The project will be complete if we can accomplish the above.

If time permits, we would like to add support for the same statistics for state governments that maintain adequate and public digital records, and we would like to add notifications for the following of specific bills. We would also like to display information about upcoming elections and election cycles.

2.1. Requirements

As part of fleshing out the scope of your requirements, you'll also need to keep in mind both your functional and non-functional requirements. These should be listed, and explained in detail as necessary. Use this area to explain how you gathered these requirements.

Use Case ID	Use Case Name	Primary Actor	Complexity	Priority
1	Add item to cart	Shopper	Med	1
2	Checkout	Shopper	Med	1

TABLE 1. SAMPLE USE CASE TABLE

2.1.1. Functional.

- User needs to be able to fully navigate the application.
- User needs to be able to locate relevant information tied to an inputted location.
- User needs to be able to easily track down detailed statistics for all members of the United States national Congress.
- User needs to be able to easily track down detailed information regarding all national bills for at least the previous year.

2.1.2. Non-Functional.

- Change in Members of Congress should be updated within 24 hours of change to http://www.house.gov.
- All bills from the 113th Congress and onward should be listed on the site, unless waiting on updated information to the bulk data repository.
- Change in Bill Status should be updated within a business week.

2.2. Use Cases

This subsection is arguably part of how you define your project scope (why it is in the Scope section...). In a traditional Waterfall approach, as part of your requirements gathering phase (what does the product actually *need* to do?), you will typically sit down with a user to develop use cases.

You should have a table listing all use cases discussed in the document, the ID is just the order it is listed in, the name should be indicative of what should happen, the primary actor is typically most important in an application where you may have different levels of users (think admin vs normal user), complexity is a best-guess on your part as to how hard it should be. A lower number in priority indicates that it needs to happen sooner rather than later. A sample table, or Use Case Index can be seen in Table 1.

Use Case Number: 1
Use Case Name: Find Members of Congress by Location of Representation
Description: A user of the application is wanting to know what members of Congress represent him or her. This is the process of events the user will engage in in order to accomplish this task.
Below is the basic flow for the process:

1) User selected "Members of Congress" to navigate to the Congress Navigation page.
2) User types in his or her location into the search bar and chooses "search".
3) User is navigated to a Congress Listing page that displays only the members of Congress who represent the inputted location.

Termination Outcome: The user now has a listing of his or her representing officials.

Use Case Number: 2
Use Case Name: Get Detailed Statistics for Members of Congress
Description: A user of the application is looking for detailed voting records and/or statistics for individual members of Congress. This is the process of events the user will engage in in order to accomplish this goal.
Below is the basic flow for the process:

1) User selected "Members of Congress" to navigate to the Congress Navigation page.
2) User selects either "Browse House" or "Browse Senate" to view a filtered list of members of Congress that matches his/her selection.
3) The user may choose additional filters on this page to further limit the displayed members of Congress.

Termination Outcome: Finally, the user may select any displayed member of Congress to view a detailed information page about the chosen member.

Use Case Number: 3
Use Case Name: Get Detailed Information on Popular Bills
Description: A user of the application is looking for detailed voting records and/or descriptions of popular bills. This is the process of events the user will engage in in order to accomplish this goal.
Below is the basic flow for the process:

1) The user selected "Popular Bills" to navigate to the Popular Bills page.
2) The user can now optionally filter all listed bills by name before selected one of interest from the "New", "In-Vote", or "Results" list.

Termination Outcome: The user is redirected to a Bill Profile page which details a description as well as voting records and statuses in House, Senate, or Executive review for the chosen bill.

2.3. Interface Mockups

Users begin with the main menu 1. For use cases 1 and 2, users will select "Members of Congress" and proceed to the Congress Navigation screen 2. Once the user has searched by location, selected "Browse Representatives", or selected "Browse Senators" the user will be redirected to a Congress Listing page 3. This page details all relevant members of Congress to the filters chosen on the previous and current pages. Once a user has selected any of the members of Congress on the page, they will be directed to a Congressional Profile page 4 detailing a basic description, statistics, and voting records for the selected member of Congress.
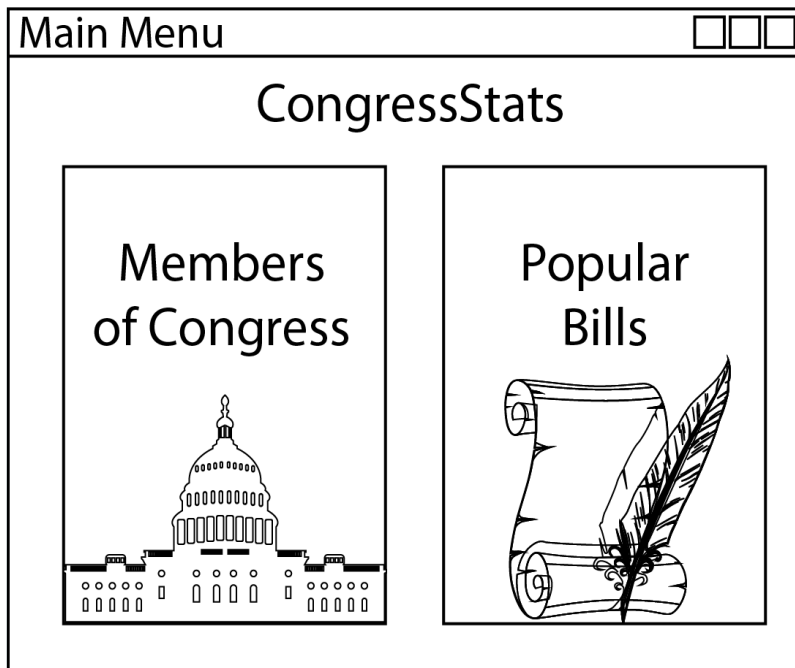
Figure 1. The Starting Screen for CongressStats

For use case 3, users will select "Popular Bills" from the main menu 1 and proceed to the Popular Bills screen 5. This screen displays bills in ordered lists that display newly introduced bills, bills that are currently in the voting process, and bills that have completed the voting process. When a bill is selected from any of the lists, the user is redirected to a Bill Profile page 6 which contains a short description of the bill itself and its status in House, Senate, and Presidential review.

3. Project Timeline

1) Requirements
   - January 11 - Began Forming Project Requirements
   - February 1 - Finalized Project Requirements
2) Design
   - February 12 - Formalized Use Cases and Initial Interface Mockups
   - February 13 - Presented Proposal to Class
   - February 15 - Negotiated Initial Application Structure
3) Implementation
   - March 10 - Create All Initial Windows and Programmatically Fetch All Congress XML Files

Figure 2. The Congress Navigation Screen for Searching for Members of Congress

Figure 3. The Congress Listing Screen for Selecting Individual Members of Congress to View More Information About

- March 17 - Parse and Store Congress Data in Access Database, Create UI Placeholders, and Add Navigation Between Pages
- March 24 - Programmatically Generate and Add Controller Code for Congress Listing and Popular Bills Dropdowns from Model
- March 31 - Programmatically Generate Bill and Congress Profile Pages from Model
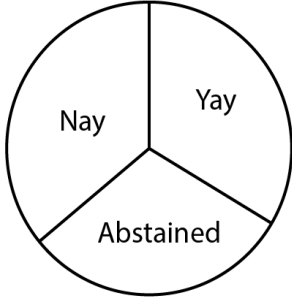- April 7 - Create and Add Functionality for All Search Bars in Application

Figure 4. The Congress Profile Screen for Viewing Basic Information, Voting Records, and Statistics about an Individual Member of Congress

Figure 5. The Popular Bills Screen for Displaying Bills that are Newly Introduced, in the Voting Process, or have Recently Completed the Voting Process

4) Verification

- April 11 - Verify Both Software Development Patterns Have Been Adhered to and All Use Cases are Fully Functional
- April 12 - Demo Project in Class
- April 21 - Finalize Application and Report
- April 27 - Final Class Presentation

Figure 6. The Congress Profile Screen for Viewing Basic Information, Voting Records, and Statistics about an Individual Member of Congress

4. Project Structure

This application will have two main pieces. The first will be a script that periodically runs to fetch new XML files from various government sites and parses and stores new data in a application's Access database. The second will be the application that users interact with and displays all stored data from the database in a user-friendly manner.

Currently, each window presented in our previously presented UI markups is created a WPF page consisting of both xaml and xaml.cs files. A grid within our MainWindow contains a navigation manager that sets the grid's contents to the currently viewed page. At the moment, we have most of our UI placeholders and the beginnings of our navigation between pages. The access database has not been created yet but nearly all xml files have been downloaded from their respective sources.

4.1. UML Outline

A very basic UML of our project can be seen in Figure 7. The diagram visualizes how we are implementing the Factory Method design pattern into our project through creation of the various pages in our application.
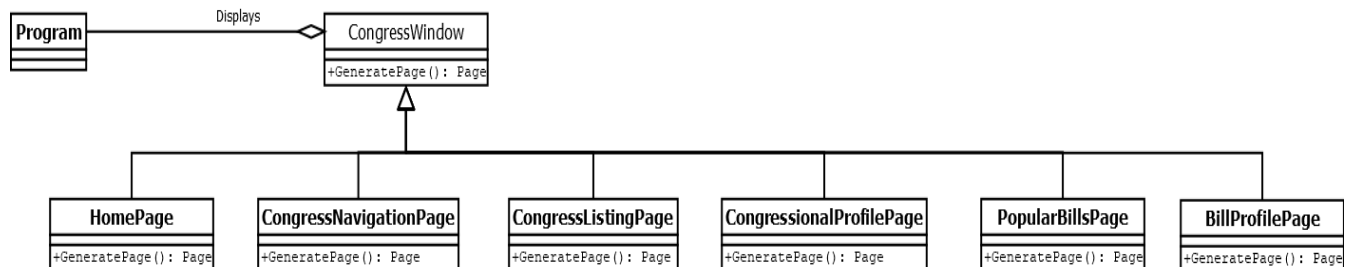

Figure 7. Basic Project UML

4.2. Design Patterns Used

We are implementing two design patterns in this application. The first of which is the Factory Method pattern. We are creating window factory classes that will generate needed components for the project. The second is model-view-controller.

We are working to isolate our database, controller code, and UI from each other. If performed correctly, this pattern should ensure loose coupling and tight cohesion throughout a significant portion of our application.

5. Results

This section will start out a little vague, but it should grow as your project evolves. With each deliverable you hand in, give me a final summary of where your project stands. By the end, this should be a reflective section discussing how many of your original goals you managed to attain/how many desired use cases you implemented/how many extra features you added.

5.1. Future Work

Where are you going next with your project? For early deliverables, what are your next steps? (HINT: you will typically want to look back at your timeline and evaluate: did you meet your expected goals? Are you ahead of schedule? Did you decide to shift gears and implement a new feature?) By the end, what do you plan on doing with this project? Will you try to sell it? Set it on fire? Link to it on your resume and forget it exists?

References

[1] J. L. Kent and A. Newcomb, "The fcc just stopped regulating equal access to the internet," Dec 2017.

[2] P. Bell, "Public trust in government: 1958-2017," May 2017.