



## Topics

- Determine appropriate field types
- Select primary and composite keys
- Identify appropriate table relationships

## Background Information

This project includes information on West Virginia Senate elections from 2000 to 2014.

## Instructions

**IMPORTANT:** This assignment requires the Windows version of Microsoft 365. macOS users can access a ready-to-use version through Windows Virtual Desktop by following the instructions at <https://cs101.wvu.edu/wvd>.

**IMPORTANT:** Complete the steps below in the order they are given. Completing the steps out of order may complicate the assignment or result in an incorrect result.

1. Download and extract the provided Data Files ZIP file. It contains the following file for use in this assignment:
  - a. **senate\_ppfk\_wvsp.accdb** – Information on West Virginia Senate elections [1]–[5].

<b>Table: <i>Candidates</i></b>		
<b>Field Name</b>	<b>Type</b>	<b>Description</b>
<b>CandidateID</b>	AutoNumber	Primary key. Unique identifier for the candidate.
<b>CandidateFirst</b>	Short Text	First name of candidate.
<b>CandidateLast</b>	Short Text	Last name of candidate.
<b>ServedInHouse</b>	Yes/No	If yes, the candidate has served in the West Virginia House of Delegates.

<b>Table: <i>Districts</i></b>		
<b>Field Name</b>	<b>Type</b>	<b>Description</b>
<b>District</b>	Number	Part of composite key. Number of State Senate district.
<b>RedistrictingCycle</b>	Number	Part of composite key. Census data year used for redistricting.
<b>Counties</b>	Short Text	List of counties or parts of counties in the district.
<b>Population</b>	Number	Population of district.



# Fields & Keys

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<b>Table: <i>ElectionCandidates</i></b>		
<b>Field Name</b>	<b>Type</b>	<b>Description</b>
<b>ElectionCandidateID</b>	AutoNumber	Primary key.
<b>Seat</b>	Short Text	Seat up for election.
<b>Year</b>	Number	Year of election.
<b>CandidateID</b>	Number	Unique identifier for the candidate.
<b>PartyAbbrv</b>	Short Text	Abbreviation of party name.
<b>Contributions</b>	Currency	Amount of money contributed to the candidate's campaign.
<b>Expenditures</b>	Currency	Amount of money spent by the candidate's campaign.
<b>VotesReceived</b>	Number	Number of votes received by the candidate.
<b>Incumbent</b>	Yes/No	If yes, candidate was an incumbent in the election.

<b>Table: <i>Elections</i></b>		
<b>Field Name</b>	<b>Type</b>	<b>Description</b>
<b>Seat</b>	Short Text	Part of composite key. Seat up for election.
<b>Year</b>	Number	Part of composite key. Year of election.
<b>District</b>	Number	Number of State Senate district.
<b>RedistrictingCycle</b>	Number	Redistricting cycle this election used.
<b>WinnerPctg</b>	Percentage	Percentage of the total received by the winning candidate.
<b>IncumbentRetired</b>	Yes/No	If yes, incumbent did not run for re-election.

<b>Table: <i>Parties</i></b>		
<b>Field Name</b>	<b>Type</b>	<b>Description</b>
<b>PartyAbbrv</b>	Short Text	Primary key. Abbreviation of party name.
<b>PartyName</b>	Short Text	Full text of political party name.

<b>Table: <i>AnalysisQuestions</i></b>		
<b>Field Name</b>	<b>Type</b>	<b>Description</b>
<b>QuestionNumber</b>	Short Text	Primary key. Question being answered.
<b>Response</b>	Long Text	Response to the analysis question prompt.

- Open the **senate\_ppfk\_wvsp.accdb** database in Microsoft Access.



### Determine appropriate field types

3. For a database to be effective and efficient, each field must use an appropriate data type for the information it will store. While you can store everything as text, you will be very limited when writing formulas, specifying criteria, and sorting data.

For each of the tables below, evaluate each field and the data it is intended to store. Specify appropriate field types for all fields.

**NOTE:** You cannot set the *AutoNumber*-type on a field which already contains data. Use the *Number*-type field instead.

**HINT:** Attempt to run each query after you have completed setting the field types. If you are unable to run a query, that is an indicator you have specified an incorrect field type.

- a. *AnalysisQuestions*
- b. *Candidates*
- c. *Districts*
- d. *Elections*
- e. *Parties*

### Select primary and composite keys

4. Each table must have a key, a value which can uniquely identify each record in the database. No two records can have an identical key value.

In cases where the value of a single field can uniquely identify each record, you can select that single field to serve as a primary key. In cases where no single field can uniquely identify each record, you can combine multiple fields into a composite key.

For each of the tables below, specify an appropriate primary or composite key:

- a. *AnalysisQuestions*
- b. *Candidates*
- c. *Districts*
- d. *Elections*
- e. *Parties*



# Fields & Keys

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### Identify appropriate table relationships

5. The power of relational databases like Microsoft Access comes from the ability to relate pieces of data in different tables to one another. We must identify appropriate relationships for the tables which contain related data in this database.

Identify and create the relationships appropriate for the tables in this database. Some relationships may involve multiple fields. Enable referential integrity when creating relationships. If you cannot create a relationship with referential integrity enabled, that is a sign you either have an incorrect field type specified or are attempting to create the relationship between incorrect fields.

**NOTE:** The *AnalysisQuestions* table is not related to any other table. It will not be involved in any relationships.

**HINT:** When creating relationships involving multiple fields, the order in which the tables were selected in specifying the relationship matters. If you cannot create the relationship at first, try reversing the order of the tables.

6. Run the Compact and Repair Database utility on your database. Ignore any errors you receive when running the utility

### Grading Rubric

This assignment is worth 8 points. It will be graded by your instructor using this rubric:

Standard	Meets Requirements (8 points)	Does Not Meet Requirements (0 points)
Student made reasonable effort in correctly completing assignment.	Assignment is at least 70% complete and correct, or student contacted instructor for help on incorrect or incomplete items.	Assignment is less than 70% complete and correct, and student did not contact instructor for assistance on incorrect or incomplete items.

This rubric will be used for peer evaluation of this assignment:

Standard	Excellent	Satisfactory	Needs Improvement
Assignment is correct and complete.	Assignment is at least 90% complete and correct.	Assignment is 70%-89% complete and correct.	Assignment is less than 70% complete and correct.



# Fields & Keys

## WV Senate Problem

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### References

- [1] "Historical Election Results and Turnout," *West Virginia Secretary of State*. Available: <https://sos.wv.gov/elections/Pages/HistElecResults.aspx>.
- [2] "Campaign Finance Reporting System," *West Virginia Secretary of State*. Available: <http://cfrs.wvsos.com/#/home>.
- [3] "West Virginia Senate Contributions," *FollowTheMoney.org*. Available: <https://www.followthemoney.org/show-me?dt=1&c-exi=1&c-r-ot=S%2CH&s=WV&c-r-ot=S>.
- [4] "Candidate Listing and Finance Reports," *West Virginia Secretary of State*. Available: <http://services.sos.wv.gov/apps/elections/candidate-search/>.
- [5] "West Virginia: 2000 Population and Housing Unit Counts," U.S. Census Bureau, Washington, DC, Oct. 2003. Available: <https://www.census.gov/prod/cen2000/phc-3-50.pdf>.