# Database Creation

## WV K-12 Education Problem

## Topics

- Create a new database
- Import database tables and data
- Create database tables
- Add records
- Create lookup fields
- Create relationships
- Answer analysis questions

## Background Information

This project includes information on West Virginia K-12 schools from 2012 to 2020.

## Instructions

**IMPORTANT:** This assignment requires the Windows version of Microsoft Office.

**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 files for use in this assignment:
   a. **districts.xml** – Information on West Virginia school districts [1], [2].

| **Table: *Districts*** | | |
|---|---|---|
| **Field Name** | **Field Name** | **Field Name** |
| **District** | **District** | **District** |
| **Region** | **Region** | **Region** |

   b. **districtstatistics.csv** – Annual statistics for West Virginia school districts [1].

| **Table: *DistrictStatistics*** | | |
|---|---|---|
| **Field Name** | **Type** | **Description** |
| **District** | Short Text | Part of composite key. Name of the school district. |
| **SchoolYear** | Short Text | Part of composite key. School year for the data. |
| **Population** | Number | Population of the school district. |
| **DropoutRate** | Percentage | Percentage of students who dropped out of school in the school district. |

c. **schools.xml** – Information on West Virginia K-12 schools [1].

| Table: *Schools* | | |
|---|---|---|
| **Field Name** | **Type** | **Description** |
| **SchoolID** | Short Text | State-assigned identifier for the school. |
| **SchoolName** | Short Text | Name of the school. |
| **County** | Short Text | County where the school is located. |
| **Closed** | Yes/No | If yes, school is closed as of 2020-2021 school year. |

d. **schoolstatistics.xml** – Annual statistics for West Virginia schools [1].

| Table: *SchoolStatistics* | | |
|---|---|---|
| **Field Name** | **Type** | **Description** |
| **ID** | AutoNumber | Primary key. Unique identifier for the school statistics. |
| **SchoolID** | Short Text | State-assigned identifier for the school. |
| **SchoolYear** | Short Text | School year for the data. |
| **ManagingDistrict** | Short Text | Name of school district that manages the school. |
| **GradesServed** | Short Text | Grades served by the school. |
| **SchoolTypeAbbrv** | Short Text | Abbreviation of the school type. |
| **Enrollment** | Number | Number of students enrolled in the school. |
| **AttendanceRate** | Percentage | Average daily attendance rate for the school. |
| **GraduationRate** | Percentage | For high schools, percentage of students who has received a regular diploma in four years. |
| **StudentsTested** | Number | Number of students who took state proficiency tests. |
| **MathProficiency** | Percentage | Percentage of students that tested proficient in math. |
| **ReadingProficiency** | Percentage | Percentage of students that tested proficient in reading. |

e. **analysisquestions.xml** – Responses to analysis questions.

| Table: *AnalysisQuestions* | | |
|---|---|---|
| **Field Name** | **Type** | **Description** |
| **QuestionNumber** | Short Text | Primary key. Question being answered. |
| **Response** | Long Text | Response to the analysis question prompt. |

## Create a new database

2. Begin by creating a new Microsoft Access database named **education_ppdc_wvkep.accdb**.

## Import database tables and data

3. Import the following items into the database:
   a. **districts.xml** file – Import structure and data into a new table.
   b. **schoolstatistics.xml** file – Import structure and data into a new table.

c. **schools.xml** file – Import structure and data into a new table.

d. **analysisquestions.xml** file – Import structure and data into a new table.

e. **districtstatistics.csv** file – Import as a new table named *DistrictStatistics*. The first row of the file contains field names. Specify field types as indicated in Step 1. Do not set a primary key during the import, but afterwards create a composite key as indicated in Step 1.

4. We need to create a table to store data on school types.

## Create database tables

a. Create a table named *SchoolTypes* with the fields below. Specify field types and a primary key as indicated.

| **Table: *SchoolTypes*** | | |
|---|---|---|
| **Field Name** | **Type** | **Description** |
| **SchoolTypeAbbrv** | Short Text | Primary key. Abbreviation of the school type. |
| **SchoolTypeName** | Short Text | Name of the school type. |

## Add records

b. Enter records for all school types below.

**HINT:** The *SchoolTypes* table will contain 11 records.

| SchoolTypeAbbrv | SchoolTypeName |
|---|---|
| ELS | Elementary School |
| INS | Intermediate School |
| MDS | Middle School |
| HIS | High School |
| EMS | Elementary/Middle School |
| MHS | Middle/High School |
| EMH | Elementary/Middle/High School |
| OTH | Other |
| PRE | Preschool |
| ALS | Alternative School |
| TEC | Technical Center |

## Create lookup fields

5. We wish to modify the *SchoolStatistics* table to incorporate lookup fields.

   a. Modify the **SchoolTypeAbbrv** field in *SchoolStatistics* table. Using a lookup field referencing the *SchoolTypes* table, allow the user to select the school type abbreviation and school type name (e.g., "ELS | Elementary School") from a dropdown list. Sort by school type abbreviation in ascending order.

      Do not hide the key column. Store the value of the school type abbreviation field. Enable data integrity, restricting deletes, on the relationship created by the Lookup Wizard.

   b. Modify the **SchoolYear** field in *SchoolStatistics* table. Using a lookup field, allow the user to select the year from a dropdown list. Permit the user to choose only from these values:

      - 2012-2013
      - 2013-2014
      - 2014-2015
      - 2015-2016
      - 2016-2017
      - 2017-2018
      - 2018-2019
      - 2019-2020

## Create relationships

6. Create relationships for the tables as indicated below. Enforce referential integrity, but do not enable cascade updates or cascade deletes.

   **HINT:** When creating relationships involving tables with composite keys, Access is sensitive to the order of the tables in the relationship. Be sure to specify each relationship's ***Table*** and ***Related Table*** as shown.

   **HINT:** When creating relationships involving multiple fields from each table, specify all fields at the same time.

| Table | Related Table | Common Fields for Relationship |
|---|---|---|
| *Districts* | *DistrictStatistics* | **District** |
| *DistrictStatistics* | *SchoolStatistics* | **District** and **SchoolYear** in *DistrictStatistics*; **ManagingDistrict** and **SchoolYear** in *SchoolStatistics* |
| *Schools* | *SchoolStatistics* | **SchoolID** |

## Answer analysis questions

7. In the *AnalysisQuestions* table, answer the analysis question below. Respond to one question per record.
   a. Is there a relationship between students' attendance and their academic achievement? Why do you think this is or is not the case?
8. 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. |

The analysis question in Step 7a will be evaluated using this rubric:

| Standard | Meets Requirements | Does Not Meet Requirements |
|---|---|---|
| Answer is reasonable. | Answer addresses the question prompt and is factually correct or a reasonable interpretation of available data. | Answer does not address the question prompt, is factually incorrect, or is an unreasonable interpretation of available data. |
| Answer is supported. | Logical rationale is provided to support the given answer. | Logical rationale is not provided to support the given answer. |

# References

[1] "ZoomWV Data Dashboard," *West Virginia Department of Education*. Available: *https://zoomwv.k12.wv.us/*.
[2] "County Population Totals: 2010-2019," U.S. Census Bureau, Washington, DC, Jun. 2020. Available: *https://www.census.gov/data/datasets/time-series/demo/popest/2010s-counties-total.html*.