



Topics

- Create a `SELECT` query to retrieve data
- Use a `DISTINCT` clause to remove duplicate results
- Use an `ORDER BY` clause to sort query results
- Use a `JOIN` clause to include results from multiple tables
- Use a `GROUP BY` clause to calculate statistics
- Use a `WHERE` clause to specify criteria
- Create an `INSERT` query to add data
- Create an `UPDATE` query to modify data
- Create a `DELETE` query to remove data

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 file for use in this assignment:
 - a. **education_ppsql_wvkep.accdb** – Information on West Virginia K-12 schools [1], [2].

Table: <i>Districts</i>		
Field Name	Type	Description
District	Short Text	Primary key. Name of the school district.
Region	Short Text	Region where the school district is located.

Table: <i>DistrictStatistics</i>		
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.



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.

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.

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

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

2. Open the **education_ppsql_wvkep.accdb** database in Microsoft Access.
3. There is nothing to do for this step. Please proceed to the next step.
4. There is nothing to do for this step. Please proceed to the next step.
5. There is nothing to do for this step. Please proceed to the next step.



6. There is nothing to do for this step. Please proceed to the next step.
7. Create separate queries to provide the information requested below. Name each query after the step in which it appears (e.g., the name the query in Step 7a as *Query7A*).

HINT: Run your queries to test them. Make sure that they display all and only the records that you would expect to appear.

Create a **SELECT** query to retrieve data

- a. We want to find the grades served by each school and school year. Copy-and-paste this SQL code into a new query:

```
SELECT SchoolStatistics.GradesServed  
FROM SchoolStatistics;
```

IMPORTANT: Do not make any modifications to this query other than entering the above SQL code.

HINT: This query will show 5,361 records and 1 field.

Use a **DISTINCT** clause to remove duplicate results

- b. We want to find each unique combination of grades served. Copy-and-paste this SQL code into a new query:

```
SELECT DISTINCT SchoolStatistics.GradesServed  
FROM SchoolStatistics;
```

IMPORTANT: Do not make any modifications to this query other than entering the above SQL code.

HINT: This query will return 33 records and 1 field.

**Use an ORDER BY clause to sort query results**

- c. We want to find each unique combination of grades served, sorting the results by the region in ascending order. Copy-and-paste this SQL code into a new query:

```
SELECT DISTINCT SchoolStatistics.GradesServed
FROM SchoolStatistics
ORDER BY SchoolStatistics.GradesServed;
```

IMPORTANT: Do not make any modifications to this query other than entering the above SQL code.

HINT: This query will show 33 records and 1 field.

Use a JOIN clause to include results from multiple tables

- d. We want to list the schools serving each combination of grades. Copy-and-paste this SQL code into a new query:

```
SELECT SchoolStatistics.GradesServed,
SchoolStatistics.SchoolYear, Schools.SchoolName
FROM SchoolStatistics
INNER JOIN Schools ON SchoolStatistics.SchoolID =
Schools.SchoolID
ORDER BY SchoolStatistics.GradesServed, Schools.SchoolName,
SchoolStatistics.SchoolYear;
```

IMPORTANT: Do not make any modifications to this query other than entering the above SQL code.

HINT: This query will show 5,361 records and 3 fields.

**Use a GROUP BY clause to calculate statistics**

- e. We want to count the number of schools and school years serving each combination of grades. Copy-and-paste this SQL code into a new query:

```
SELECT SchoolStatistics.GradesServed,  
SchoolStatistics.SchoolYear, COUNT(Schools.SchoolID) AS  
SchoolCount  
FROM SchoolStatistics  
INNER JOIN Schools ON SchoolStatistics.SchoolID =  
Schools.SchoolID  
GROUP BY SchoolStatistics.GradesServed,  
SchoolStatistics.SchoolYear  
ORDER BY SchoolStatistics.GradesServed,  
SchoolStatistics.SchoolYear;
```

IMPORTANT: Do not make any modifications to this query other than entering the above SQL code.

HINT: This query will show 226 records and 3 fields.

Use a WHERE clause to specify criteria

- f. We want to display only the number of schools serving each combination of grades for the 2019-2020 school year, but do not wish to display the school year in the results. Copy-and-paste this SQL code into a new query:

```
SELECT SchoolStatistics.GradesServed, COUNT(Schools.SchoolID)  
AS SchoolCount  
FROM SchoolStatistics  
INNER JOIN Schools ON SchoolStatistics.SchoolID =  
Schools.SchoolID  
WHERE SchoolStatistics.SchoolYear = "2019-2020"  
GROUP BY SchoolStatistics.GradesServed  
ORDER BY SchoolStatistics.GradesServed;
```

IMPORTANT: Do not make any modifications to this query other than entering the above SQL code.

HINT: This query will show 31 records and 2 fields.



Create an INSERT query to add data

- g. We want to insert a new record in the *Schools* table for a school named Jennifer Garner Intermediate School. Copy-and-paste this SQL code into a new query:

```
INSERT INTO Schools (SchoolID, SchoolName, County, Closed)
VALUES ("039903", "Jennifer Garner Intermediate School",
"Kanawha", False);
```

IMPORTANT: Do not make any modifications to this query other than entering the above SQL code.

HINT: This query will append 1 record.

Create an UPDATE query to modify data

- h. We want to rename all cases of *Alternative School* to *Alternative Learning Center* in the *SchoolTypes* table. Copy-and-paste this SQL code into a new query:

```
UPDATE SchoolTypes
SET SchoolTypes.SchoolTypeName = "Alternative Learning Center"
WHERE SchoolTypes.SchoolTypeName = "Alternative School";
```

IMPORTANT: Do not make any modifications to this query other than entering the above SQL code.

HINT: This query will update 1 record.

Create a DELETE query to remove data

- i. We want to remove the school type abbreviation *OTH* from the *SchoolTypes* table. Copy-and-paste this SQL code into a new query:

```
DELETE FROM SchoolTypes
WHERE SchoolTypes.SchoolTypeAbbrv = "OTH";
```

IMPORTANT: Do not make any modifications to this query other than entering the above SQL code.

HINT: This query will delete 1 record.



8. In the *AnalysisQuestions* table, answer the analysis question below. Respond to one question per record.
 - a. Are there any patterns in the number of high schools (school type abbreviation `HIS`) in a district relative to the population of the district? Why do you think this is or is not the case?
9. 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 8a 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>.