**Background**

You are the new Chief Data Scientist for your city's school district. In this capacity, you'll be helping the school board and mayor make strategic decisions regarding future school budgets and priorities.

As a first task, you've been asked to analyze the district-wide standardized test results. You'll be given access to every student's math and reading scores, as well as various information on the schools they attend. Your task is to aggregate the data to showcase obvious trends in school performance.

**Before You Begin**

1. Create a new repository for this project called pandas-challenge. **Do not add this homework to an existing repository**.
2. Clone the new repository to your computer.
3. Inside your local Git repository, create a folder for this homework assignment and name it PyCitySchools.
4. Add your Jupyter notebook to this folder. This will be the main script to run for analysis.
5. Push these changes to GitHub or GitLab.

**Files**

Download the following files to help you get started:

[Module 4 Challenge files](https://courses.bootcampspot.com/courses/2799/files/2221892/download)

**Instructions**

Using Pandas and Jupyter Notebook, create a report that includes the following data. Your report must include a written description of at least two observable trends based on the data.

**Hint:** Check out the sample solution called PyCitySchools\_starter.ipynb located in the .zip file to review the desired format for this assignment.

**District Summary**

Create a high-level snapshot of the district's key metrics in a DataFrame, including the following:

* Total schools
* Total students
* Total budget
* Average math score
* Average reading score
* % passing math (the percentage of students who passed math)
* % passing reading (the percentage of students who passed reading)
* % overall passing (the percentage of students who passed math AND reading)

**School Summary**

Create a DataFrame that summarizes key metrics about each school, including the following:

* School name
* School type
* Total students
* Total school budget
* Per student budget
* Average math score
* Average reading score
* % passing math (the percentage of students who passed math)
* % passing reading (the percentage of students who passed reading)
* % overall passing (the percentage of students who passed math AND reading)

**Highest-Performing Schools (by % Overall Passing)**

Create a DataFrame that highlights the top-5 performing schools based on % Overall Passing. Include the following metrics:

* School name
* School type
* Total students
* Total school budget
* Per student budget
* Average math score
* Average reading score
* % passing math (the percentage of students who passed math)
* % passing reading (the percentage of students who passed reading)
* % overall passing (the percentage of students who passed math AND reading)

**Lowest-Performing Schools (by % Overall Passing)**

Create a DataFrame that highlights the bottom-5 performing schools based on % Overall Passing. Include the following metrics:

* School name
* School type
* Total students
* Total school budget
* Per student budget
* Average math score
* Average reading score
* % passing math (the percentage of students who passed math)
* % passing reading (the percentage of students who passed reading)
* % overall passing (the percentage of students who passed math AND reading)

**Math Scores by Grade**

Create a DataFrame that lists the average math score for students of each grade level (9th, 10th, 11th, 12th) at each school.

**Reading Scores by Grade**

Create a DataFrame that lists the average reading score for students of each grade level (9th, 10th, 11th, 12th) at each school.

**Scores by School Spending**

Create a table that breaks down school performance based on average spending ranges (per student). Use your judgment to create four bins with reasonable cutoff values to group school spending. Include the following metrics in the table:

* Average math score
* Average reading score
* % passing math (the percentage of students who passed math)
* % passing reading (the percentage of students who passed reading)
* % overall passing (the percentage of students who passed math AND reading)

**Scores by School Size**

Create a table that breaks down school performance based on school size (small, medium, or large).

**Scores by School Type**

Create a table that breaks down school performance based on school type (district or charter).

**Submission**

To submit your Challenge assignment, click Submit, and then provide the URL of your GitHub repository for grading.

**NOTE**

You are allowed to miss up to two Challenge assignments and still earn your certificate. If you complete all Challenge assignments, your lowest two grades will be dropped. If you wish to skip this assignment, click Next, and move on to the next module.

Comments are disabled for graded submissions in Bootcamp Spot. If you have questions about your feedback, please notify your instructional staff or your Student Success Manager. If you would like to resubmit your work for an additional review, you can use the Resubmit Assignment button to upload new links. You may resubmit up to three times for a total of four submissio