

# Module 22 Challenge

New Attempt

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**Due** Nov 20, 2023 by 11:59pm      **Points** 100      **Submitting** a text entry box or a website url

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In this challenge, you'll use your knowledge of SparkSQL to determine key metrics about home sales data. Then you'll use Spark to create temporary views, partition the data, cache and uncache a temporary table, and verify that the table has been uncached.

## Before You Begin

1. Create a new repository for this project called, `Home_Sales`. **Do not add this homework to an existing repository.**
2. Clone the new repository to your computer.
3. Push your changes to GitHub.

## Files

Download the following files to help you get started:

Module 22 Challenge files  ([https://static.bc-edx.com/data/dl-1-2/m22/lms/starter/Starter\\_Code.zip](https://static.bc-edx.com/data/dl-1-2/m22/lms/starter/Starter_Code.zip))

## Instructions

1. Rename the `Home_Sales_starter_code.ipynb` file as `Home_Sales.ipynb`.
2. Import the necessary PySpark SQL functions for this assignment.
3. Read the `home_sales_revised.csv` data in the starter code into a Spark DataFrame.
4. Create a temporary table called `home_sales`.
5. Answer the following questions using SparkSQL:

- What is the average price for a four-bedroom house sold for each year? Round off your answer to two decimal places.
  - What is the average price of a home for each year it was built that has three bedrooms and three bathrooms? Round off your answer to two decimal places.
  - What is the average price of a home for each year that has three bedrooms, three bathrooms, two floors, and is greater than or equal to 2,000 square feet? Round off your answer to two decimal places.
  - What is the "view" rating for homes costing more than or equal to \$350,000? Determine the run time for this query, and round off your answer to two decimal places.
6. Cache your temporary table `home_sales`.
  7. Check if your temporary table is cached.
  8. Using the cached data, run the query that filters out the view ratings with an average price of greater than or equal to \$350,000. Determine the runtime and compare it to uncached runtime.
  9. Partition by the "date\_built" field on the formatted parquet home sales data.
  10. Create a temporary table for the parquet data.
  11. Run the query that filters out the view ratings with an average price of greater than or equal to \$350,000. Determine the runtime and compare it to uncached runtime.
  12. Uncache the `home_sales` temporary table.
  13. Verify that the `home_sales` temporary table is uncached using PySpark.
  14. Download your `Home_Sales.ipynb` file and upload it into your "Home\_Sales" GitHub repository.

## Support and Resources

Your instructional team will provide support during classes and office hours. You will also have access to learning assistants and tutors to help you with topics as needed. Make sure to take advantage of these resources as you collaborate with your partner on this project.

## Requirements

1. A Spark DataFrame is created from the dataset. (5 points)
2. A temporary table of the original DataFrame is created. (10 points)
3. A query is written that returns the average price, rounded to two decimal places, for a four-bedroom house that was sold in each year. (5 points)
4. A query is written that returns the average price, rounded to two decimal places, of a home that has three bedrooms and three bathrooms. (5 points)
5. A query is written that returns the average price of a home with three bedrooms, three bathrooms, two floors, and is greater than or equal to 2,000 square feet for each year built rounded to two decimal places. (5 points)
6. A query is written that returns the view rating for the average price for homes that are greater than or equal to \$350,000, rounded to two decimal places. (The output shows the run time for this query.) (10 points)
7. A cache of the temporary "home\_sales" table is created and validated. (10 points)
8. The query from step 6 is run on the cached temporary table, and the run time is computed. (10 points)
9. A partition of the home sales dataset by the "date\_built" field is created, and the formatted parquet data is read. (10 points)
10. A temporary table of the parquet data is created. (10 points)
11. The query from step 6 is run on the parquet temporary table, and the run time is computed. (10 points)
12. The "home\_sales" temporary table is uncached and verified. (10 points)

This project will be evaluated against the requirements and assigned a grade according to the following table:

Grade	Points
A (+/-)	90+
B (+/-)	80–89

Grade	Points
C (+/-)	70–79
D (+/-)	60–69
F (+/-)	< 60

## 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 Advisor. 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 submissions.

### IMPORTANT

**It is your responsibility to include a note in the README section of your repo specifying code source and its location within your repo.** This applies if you have worked with a peer on an assignment, used code in which you did not author or create sourced from a forum such as Stack Overflow, or you received code outside curriculum content from support staff such as an Instructor, TA, Tutor, or Learning Assistant. This will provide visibility to grading staff of your circumstance in order to avoid flagging your work as plagiarized.

If you are struggling with a challenge assignment or any aspect of the academic curriculum, please remember that there are student support services available for you:

1. Ask the class Slack channel/peer support.
2. AskBCS Learning Assistants exists in your class Slack application.
3. Office hours facilitated by your instructional staff before and after each class session.
4. **Tutoring Guidelines**  ([https://docs.google.com/document/d/1hTIdEfWhX21B\\_Vz9ZentkPeziu4pPfnwiZbwQB27E90/edit?usp=sharing](https://docs.google.com/document/d/1hTIdEfWhX21B_Vz9ZentkPeziu4pPfnwiZbwQB27E90/edit?usp=sharing)) - schedule a tutor session in the Tutor Sessions section of Bootcampspot - Canvas
5. If the above resources are not applicable and you have a need, please reach out to a member of your instructional team, your Student Success Advisor, or submit a support ticket in the Student Support section of your BCS application.

## References

Data for this dataset was generated by edX Boot Camps LLC, and is intended for educational purposes only.