# Round 1: Coding Test

## Spark Coding Assignment

### Prerequisites

This round is heavily based on Apache Spark. So a working installation of Spark is needed. It's upon the candidates to decide whether to code the following exercise in Scala using Spark's Scaladocs or use Python using Sphinx (pySpark). The following are the components needed.

- Apache Spark
- HDFS // This is optional. HDFS is to read and write the input/output of the program. The candidate can also use local FS.

Below are links for installation of Apache Spark

- Install Spark on Ubuntu (PySpark)
- Install Apache Spark on Ubuntu 16
- How to Install Spark on Ubuntu
- How to install Apache Spark on Windows?

### Exercise

Attached below are links to 2 files. Please download these files in your local file system.

1. NonConfidential.csv
2. Confidential.snappy.parquet

Combine these 2 files in Spark into a single entity and answer the following questions.
**NOTE: Answer the below questions using Spark SQL Queries.**

1. How many LEED projects are there in Virginia (including all types of project types and versions of LEED)?
2. What is the number of LEED projects in Virginia by owner type?
3. What is the total Gross Square Feet of building space that is LEED-certified in Virginia?
4. What Zip Code in Virginia has the highest number of projects?
5. Is there a significant difference (use a t-test) in the points achieved for projects in Virginia compared to California for LEED NC 2.2?

### Execution automation instructions

Write the final output of each answer on HDFS/local disk and also print schema of each output.
Generate output as mentioned below,

- Create a linux bash script to execute above code
- Once execute it should create output directory as : /tmp/output
- Inside the output directory it should create output of all the answers in different folders.
- Create a README file with steps of compilation, configuration and execution mentioned in it

# Java Coding Assignment

Write Java Program to accomplish following,

- Create a Java maven project ( details here )
- Read two files mentioned in above
- Instantiate an in memory instance of HSQLdb ( details here )
- Connect with in memory HSQLdb with JDBC connection.
- Create two tables inside HSQLdb corresponding to the schema for two mentioned files.
- Load data read into above two tables through Java code (jdbc)
- Execute queries as mentioned in earlier problem statement through jdbc connection
- Output of these queries should be stored in separate output files
- Execution automation expected,
    - Give Java code should take command line arguments as,
        - --output_dir : Output directory path in which to generate output
        - --input_csv : Path of input csv file
        - --input_parquet : Path of parquet file
    - There should be one bash script created on top of above Java CLI
    - Once for execution of bash script, it should create output in output directory /tmp/output_2/ with file names as : 1.csv, 2.csv, 3.csv, 4.csv, 5.csv
    - Create a README file with steps of compilation, configuration and execution mentioned in it

# About assignment submission

- Please create your github account if not already created
- Create new git repository inside
- Create two separate directories for each assignment mentioned below

- Commit and push your code to git repository and share across link of same repository as submission
- Mail URL of git repository to ajitr@dataeaze.io, shardul.shinde@dataeaze.io, vishnu.kurup@dataeaze.io