Data Engineer Bootcamp (Full-Time)

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WeCloudData

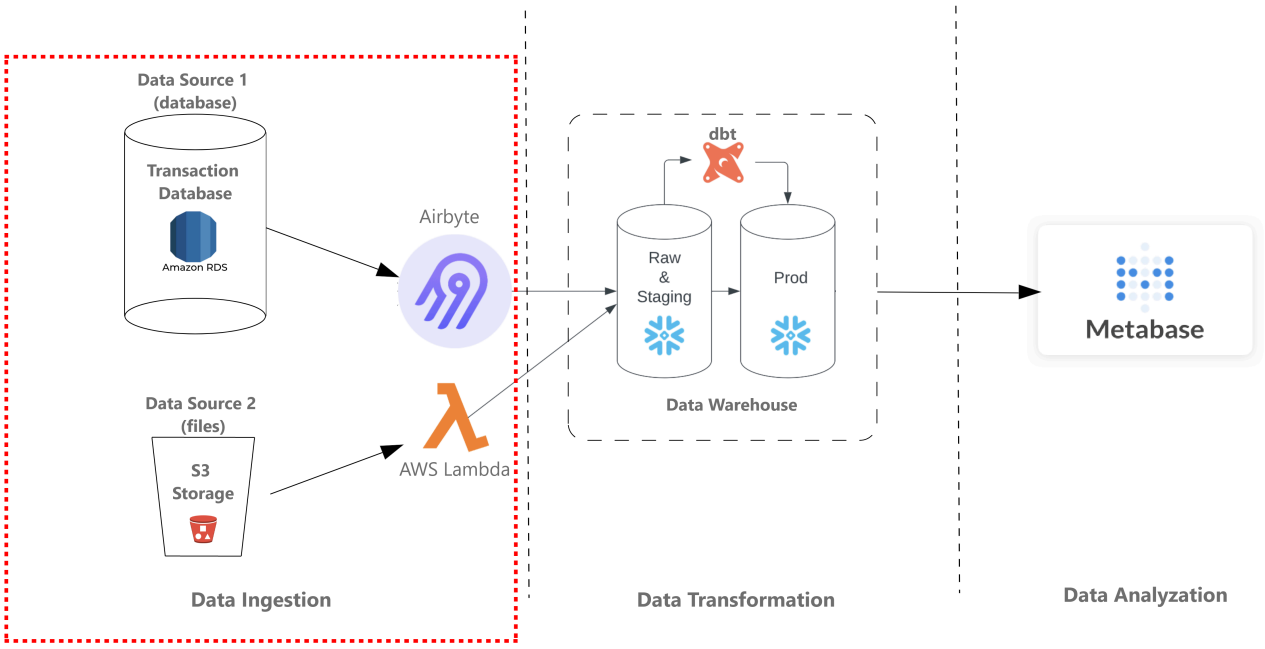
Project Description

Data Engineering Diploma

Content developed by: WeCloudData Academy

There are three parts in this project infrastructure:

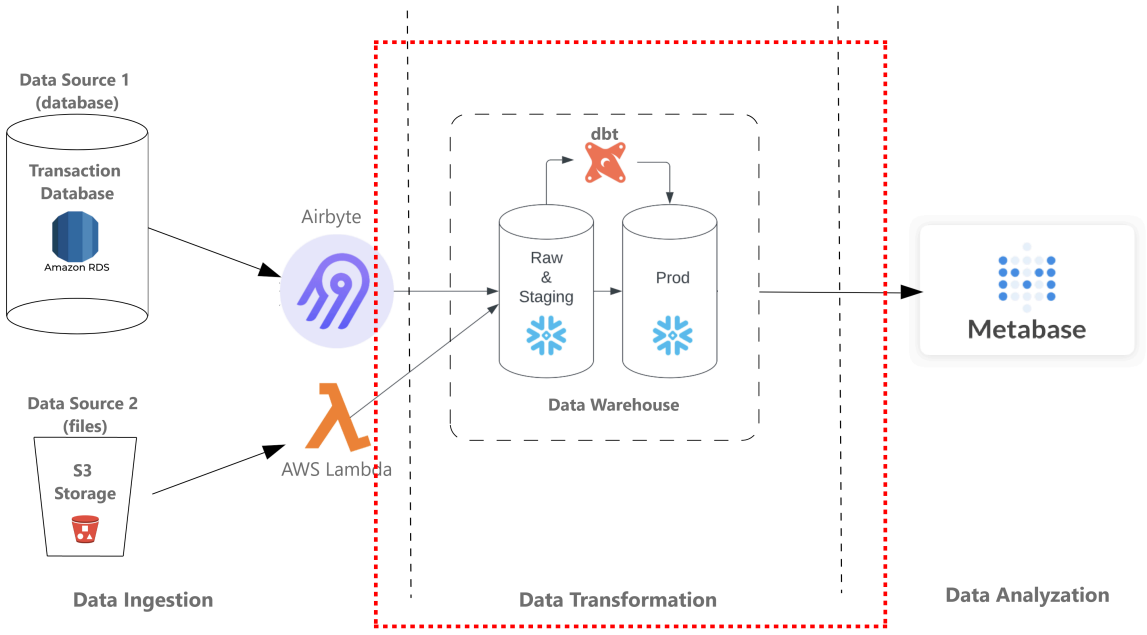
Part One: Data Ingestion



The first part of the project is Data Ingestion. This involves connecting to two data sources: the Postgres database and the AWS S3 bucket.

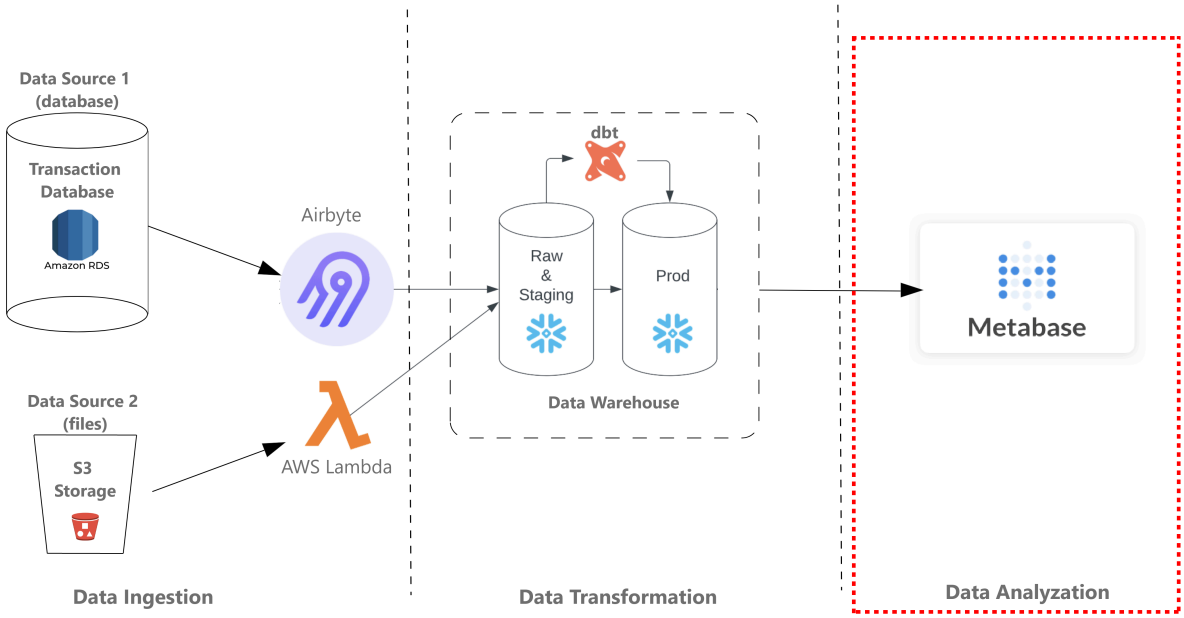
- Use Airbyte to connect to schema "raw_st" of the Postgres database on AWS RDS. Transfer all tables to the Snowflake data warehouse.
- Use the AWS Lambda function to connect to the AWS S3 bucket and transfer the file named "inventory.csv" into the Snowflake data warehouse.

Part Two: Data Transformation



The second part of the project is data transformation, which occurs in the Snowflake data warehouse. In this phase, you will transform the tables from their original structure into the desired tables. This process involves creating a data model, building ETL scripts, and scheduling the data loading process.

Part Three: Data Analyzation



In the last part, you will connect the Snowflake data warehouse with the BI tool, Metabase, to display dashboards and reports in Metabase based on the data in Snowflake. After this step, the entire project is complete.

In this project, the entire infrastructure is constructed in the cloud:

- **Servers:** Create several servers on the AWS cloud.
- **Tools:** Install various tools on these servers, including Airbyte for data ingestion, and Metabase as the BI tool for building dashboards.
- **Cloud Data Warehouse:** Create an account on Snowflake. Then, use Snowflake, the cloud data warehouse, to store data and perform data transformation. Create an account on Snowflake.
- **AWS Lambda:** Use AWS Lambda, a serverless service, to ingest data from AWS data storage (S3).

Daily Schedule
2
Surveys
Chapter overview
Surveys
Week 0 Survey - Student Background
Week 3 Survey - Client Project
Week 4 Survey
Project Group Survey
3
Week 00 (Virtual)- Program Preparation
Chapter overview
Week Plan
Week Plan
Software Installation
[Software Installation]: VsCode
[Software Installation]: Jupyter notebook
[Software Installation]: Python
[Software Installation]: MySQL
[Software Installation]: Unbuntu on Mac
[Software Installation] Ubuntu on Windows
[Online Platform Use]: Colab
Pre-bootcamp
Pre-bootcamp Material
Presentations
[Lecture Video] Sunday: Orientation Session
[Lecture Video] Tuesday: Introduction to Data Engineering
[Lecture Video] Wednesday: Curriculum
[Lecture Video] Thursday: Curriculum

✓
[Lecture Slide] (Wed) Curriculum Introduction
4
Week 01 - SQL
⌄
Chapter overview
Sunday - Basic SQL
⌃
✓
[Lecture Materials]SQL basics
✓
[Lab] SQL Basics Exercise
✓
[Lab] Exercise: SQL - Airbnb (Optional)
✓
[Lecture video] SQL Basics
Monday - SQL Join and sub-select
⌃
✓
[Lecture Materials] SQL join and sub-select
✓
[Lab] Exercise: Join and Sub-select
✓
[Lecture video] SQL Day 2
Tuesday - SQL Window Function
⌃
✓
[Lecture Materials] SQL Window Function
✓
[Lab] Exercise: Window Function
✓
[Lecture video] SQL Day 3
✓
[Lab Video] SQL Lab Solution
Wednesday - SQL DDL and CTE
⌃
✓
[Lecure Materials] DDL and CTE
✓
[Lab] SQL ddl
✓
[Lab] SQL CTE
✓
[Lecture Video] SQL Wednesday
Thursday - SQL Review
⌃
✓
[Weekly Quiz] SQL - Week 1
✓
[Lecture Video] SQL Thursday Review
✓
[Lecture Slides] SQL Review
5
Week 02 - Python

Chapter overview
Sunday - Python data type and structure
[Lecture Materials] Python Data Structure and Data Types
[Lab] Exercise: Python Data type and structure
[Lab] Exercise: OpenAI ChatBot (Optional)
[Lecture Video] Python Sunday
Thursday - Holiday
Monday - Python Control Flow and Function
[Lecture Material] Python Control Flow and Function
[Lab] Exercise: Python Function
[Lab] Exercise: Python Control Flow
Python Quiz (Multiple-Choice)
[Lecture Video] Python Monday
Tuesday - Pandas 1
[Lecture Material] Pandas 1
[Lab] Pandas Intro
[Lecture Video] Python Tuesday
Wednesday - Pandas 2
[Lecture Material] Pandas 2
[Lab Demo] PandaSQL
[Lab] Exercise: Advanced Pandas
[Lecture Video] Python Wednesday
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Week 03 - Client Project
Chapter overview
Sunday - Real Client Project Intro
[Lecture Material] Web Scraping
[Real Client Project] Project Requirements

[Note] Project Group Assignment
[Lecture Video] Webscraping Sunday
Monday - Real Client Project Day
Tuesday - Real Client Project
[Real Client Project] Code & Data Submission
Wednesday - RCP
Thursday - RCP
[Lecture Video] Webscraping Thursday
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Week 04 - Linux and AWS
Chapter overview
Sunday - Linux
[Lecture Material] Linux
[Lab] Exercise: Bash Commands
[Lab] Mini Project: Riyadh Climate Data - Cron Job
[Lecture Video] - Linux Sunday
Monday - AWS Intro
[Lecture Material] AWS Intro
[Lab] AWS Account Setup
[Lab] Workshop AWS EC2
[Lab] Workshop S3
[Lecture Video] AWS Monday
Tuesday - Lambda
[Lab] Workshop: Lambda
[Lecture Material] Lambda
[Lab] Mini Project: Lambda
[Lecture Video] Lambda Tuesday
Wednesday - Practice Day

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[Lecture Material] Plan For Today
✓
[Lab video] 2024-03-06
Thursday - Practice Day
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✓
[Lecture Material] Plan For Today
✓
[Quiz] Linux and AWS Quiz
✓
[Lab Video] EC2, S3, Lambda workshops demo
8
Week 05 - Docker and Client Project phase 2
v
Chapter overview
Sunday - Docker I
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✓
[Lecture Material] Docker
✓
[Lab] Software Installation: Docker
✓
[Lab] Account Creation Create your Dockerhub account
✓
[Lab] Workshop Demonstrating Hello World Example
✓
[Lab] Workshop: Work with Docker Image
✓
[Lab] Exercise: Basic Docker Commands
✓
[Lecture Video] Docker Sunday
✓
[Lab] Exercise: Basic Docker Commands Updated
Monday - Docker II
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✓
[Lab] Workshop: Install Zepplin with Docker
✓
[Lab] Workshop: Docker Compose --Flask
✓
[Quiz] Docker Commands Quiz
✓
[Lecture Video] Docker II - Monday
✓
[Lab] Workshop: Install Zepplin with Docker Updated
Tuesday - Real Client Project Phase 2
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✓
[Lecture Video] Learning Roadmap & RCP Feedback
Wednesday - Real Client Project Phase 2
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Thursday - Real Client Project Phase 2
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RCP project Submission (Competition)
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Week 06 - Data Warehouse
Chapter overview
Sunday - Snowflake Data Warehouse
[Lecture Material] Snowflake
[Lab- W601]: Software Installation: DBeaver
[Lab-W602]: Account Creation: Snowflake
[Lab-W603]: Software: Connect Snowflake with DBeaver
[Lab-W604]: Exercise: Snowflake
[Lecture Video] Snowflake - Sunday
Shaohua Weekly Review [RCP] - Sunday
[Lab Video] Snowflake Demo - Monday
Monday - Data Warehouse Intro
[Lecture] Data Warehouse Intro
[Quiz-W611] Data Warehouse Concept (Grading!!)
[Lab-W612] Exercise: Use SnowSQL (Optional)
[Lecture Video] Data Warehouse - Monday
Tuesday - SQL in ETL
[Lecture Materials] SQL in ETL
[Lab] TA Exercises Review
[Lecture Video] SQL in ETL - Tuesday
Wednesday - Data Modeling and ETL
[Lecture Material] Data Modeling and ETL
[Lab-W631] Exercise: Data Modelling and ETL (Group)
[Lecture Video] Data Modelling and ETL - Wednesday
Thursday - Data Loading
[Lecture Material] Data Loading

[Lab-W641] Exercise: ETL and Data Loads (Group)

[Lecture Video] Data Loading

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Week 07 {Project Week} - Capstone Project-1

Chapter overview

Sunday - Data Warehouse Review

[Lecture Material] Agenda For Today

[Lecture Video] Data Warehouse Lab Review - Sunday

Monday - {Capstone Project} Project Intro

[Project Material] Project Guideline

[Project Material] Project Data Overview

[Project Material] Business Requirements Overview

[Project Material] Project Infrastructure Overview

[Lab-W711] Project Task1: Setup Snowflake, EC2 and Docker

[Project Material] Project Introduction (Full-version)

[Lecture Video] Capstone Project Intro - Monday

Tuesday - {Capstone Project} Lambda Setup in Project

[Lab-W721] Project Task2: AWS Lambda Setup

Wednesday - {Capstone Project} Airbyte Setup in Project

[Lab-W731] Project Task3: Airbyte Installation and Configuration

Thursday - {Capstone Project} Self-work On Project Part 1

[Lab] Agenda for Today

[Project Material] Project Infrastructure Overview