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Data Engineer Bootcamp (Full-Time)

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Project Description

Data Engineering Diploma

Content developed by: WeCloudData Academy

Business Requirements

Our ultimate objective is to generate dashboards and reports using the BI tool Metabase. It is essential to comprehend the requirements for Metabase dashboards and reports:

- 1. Determine the top and bottom-performing items of the week by analyzing sales amounts and quantities.
- 2. Show items with low inventory levels on a weekly basis.
- 3. Identify items with low stock levels, including their associated week and warehouse numbers, marked as "True".

Based on these requirements, we need to know the sales amounts and quantities, inventory details from the inventory table, and a synthesis of sales and inventory data for metric calculations. Regarding dimension tables, we need information about items, weeks, warehouses, etc., requiring the dimension tables Item, Warehouse, and Date.

However, if we only based on the above business requirements in Metabase, it's challenging to define the data model. So we need to introduce new columns and tables (Data Model) in the data warehouse to meet these reporting requirements. So we need to create new tables in the data warehouse. Here are the requirements for the new tables:

1. Consolidate certain raw tables, for example, merging various customer-related tables into a single table.

- 2. As all BI requirements are on a weekly basis, establish a new fact table weekly, incorporating multiple additional metrics:
 - **sum qty wk:** The sum of sales quantity for this week.
 - sum amt wk: The sum of sales amount for this week.
 - sum profit wk: The sum of net profit for this week.
 - avg_qty_dy: The average daily sales_quantity for this week (= sum_qty_wk/7).
 - inv_on_hand_qty_wk: The item's inventory on hand at the end of each week in all warehouses (= The inventory on hand at the end of this week).
 - wks_sply: Weeks of supply, an estimated metric to see how many weeks the inventory can supply the sales (inv on hand qty wk/sum qty wk).
 - low_stock_flg_wk: Low stock weekly flag. For example, if there is a single day where (avg_qty_dy > 0 && (avg_qty_dy > inventory_on_hand_qty_wk)) in the week, then mark this week's flag as True.

True. **Course Content** Enter code × ∇ All Lecture Recordings **Practices Program Information** Chapter overview **Program Administration Grading and Attendance** About the projects in the bootcamp How to use the Learning Portal **Daily Schedule** Surveys Chapter overview Surveys Week 0 Survey - Student Background Week 3 Survey - Client Project Week 4 Survey Project Group Survey Week 00 (Virtual)- Program Preparation

Chapter overview

Week Plan

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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
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
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[Lecture Materials] SQL join and sub-select
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[Lab] Exercise: Join and Sub-select
[Lecture video] SQL Day 2
Tuesday - SOL 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
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
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[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
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
Week 04 - Linux and AWS
Chapter overview
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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
[Lecture Material] Plan For Today
[Lab video] 2024-03-06
Thursday - Practice Day
/
[Lecture Material] Plan For Today
[Quiz] Linux and AWS Quiz
[Lab Video] EC2, S3, Lambda workshops demo
Week 05 - Docker and Client Project phase 2
Chapter overview
Sunday - Docker I
[Lecture Material] Docker
```

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[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
[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
[Lecture Video] Learning Roadmap & RCP Feedback
Wednesday - Real Client Project Phase 2
Thursday - Real Client Project Phase 2
RCP project Submission (Competition)
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
```

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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
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
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[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] Business Requirements Overview
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