Steps for User to Install and Launch the Web Application

Link to Github Repository:
https://github.com/MingceBi/Crystal-Synergy-Web-Application.git

To view and download the files, you need to sign in/ create your own GitHub account

Part 1: Install Visual Studio Code

1. Download and install Visual Studio Code.
2. Follow the guide to install python interpreter and python extension in Visual Studio Code.
3. In the Extensions view, search for **Jupyter** and install it.
4. Open a new terminal window (to open a new terminal, go to the top left tool bar and click "Terminal") and enter "pip install jupyter".

Part 2: Database Setup

1. Docker Container Installation
   - 1.1 Click on the appropriate link to download the latest Docker installer: macOS or Windows 10.
   - 1.2 Next, follow the instructions to Install and run Docker for Mac or to Install and Start Docker for Windows.
   - 1.3 To verify that your docker installation was successful, open a terminal or command line window and type:
     ```
     docker run hello-world
     ```
     and you should get an output similar to the following:
     ```
     Unable to find image 'hello-world:latest' locally
     latest: Pulling from library/hello-world
     1b930d010525: Pull complete
     Digest:
     sha256:4df8ca8a7e309c256d60d7971ea14c27672fc0d10c5f303856d7bc48f8cc1
     7ff
     Status: Downloaded newer image for hello-world:latest

     Hello from Docker!
     This message shows that your installation appears to be working correctly.
     ```

2. PostgreSQL Installation
   - 2.1 To pull the latest version (15.5) of Postgres, copy/paste and run the following command in your Terminal or Windows PowerShell:
     ```
     docker pull postgres
     ```
   - 2.2 To run Postgres container, copy/paste and run the following command in your terminal:

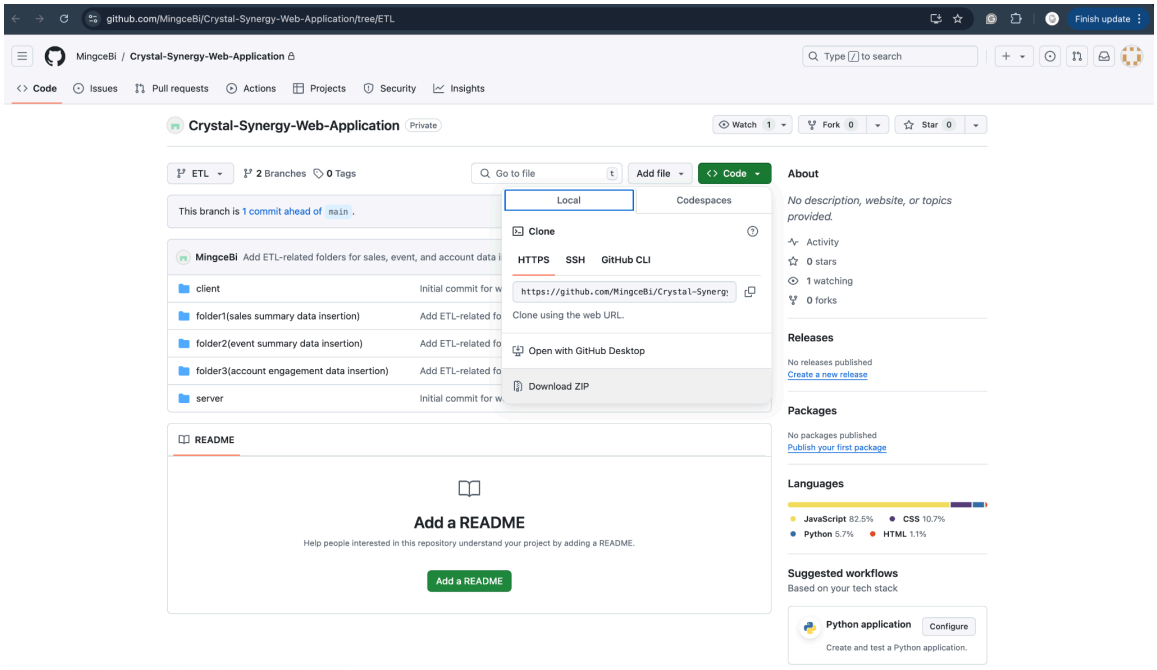
```
docker run --name postgres -p 5432:5432 --restart always -e
POSTGRES_PASSWORD=123 -d postgres
```

Note: This command is passing "123" as the Postgres server password, and launches the database server on your machine.

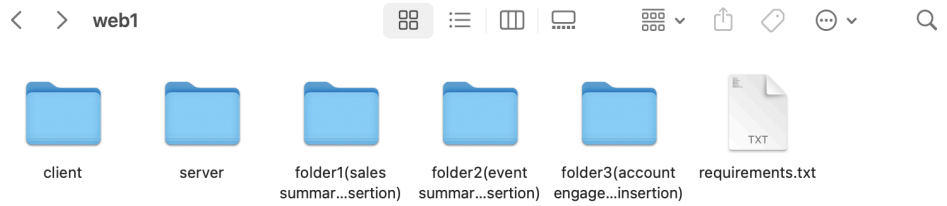
3. pgAdmin4 Installation
   - 3.1 Download pgAdmin4 installer for your operating system: macOS or Windows.
   - 3.2 Launch the installer file and follow the steps to complete the installation.
   - 3.3 Launch pgAdmin. The first time you do so, you may be prompted to create a password. For easy use, set the password to be the same as for postgres - "123".
   - 3.4 To connect pgAdmin to the Postgres server (if it's not already connected):
     - Click on the top menu **Object --> Register --> Server**, or
     - Right-click on "Servers" in the pgAdmin menu window and select **Register --> Server**, or
     - Click on "Add New Server" under "Quick Links" in the main pgAdmin window
   - 3.5 Type "Docker Postgres" for the server name in the "General" tab.
   - 3.6 Click on the next tab, "Connection". Type "localhost" for the host name and "123" for the password (or your own password if you entered a different one when you were installing Postgres above). Make sure to check the box to remember the password. All other options should be left with their default values.
   - 3.7 Click on “Save”.
   - 3.8 The left panel should now show your server. Expand the "Databases" list. There will only be one database, the default "postgres" database. It is best to create a new database to run your queries. It is easy to do so by right-clicking on "Databases" and creating a new one.
   - 3.9 Give the new database a new name “5900_test”. Click on “Save”.

Part 3: ETL (Transform and Load data into database)

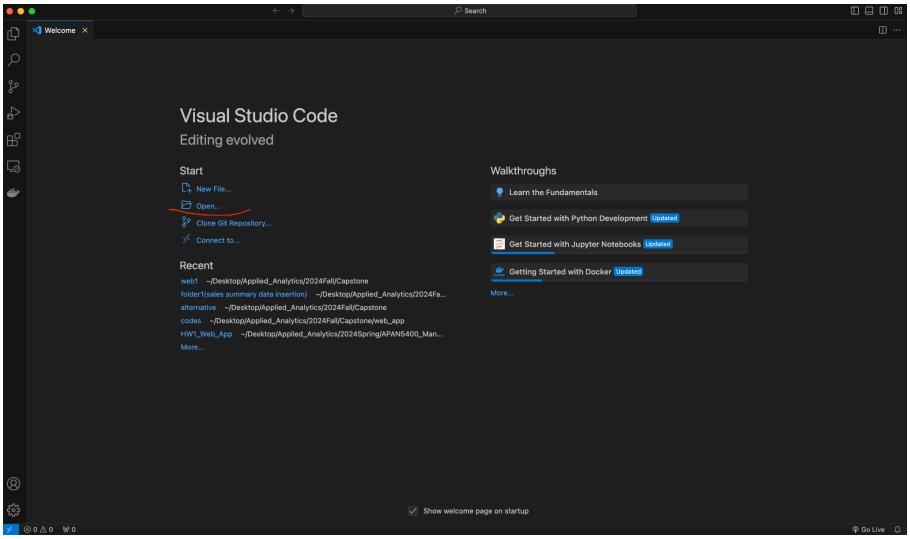
1. Prepare Datasets
   - 1.1 Download the zip file from https://github.com/MingceBi/Crystal-Synergy-Web-Application/tree/ETL. Click “Code” and then click “download zip”.



1.2 Create a local folder in your desktop and transfer the downloaded zip file to your local file you just created. Open the zip file, there are five folders and one txt file.

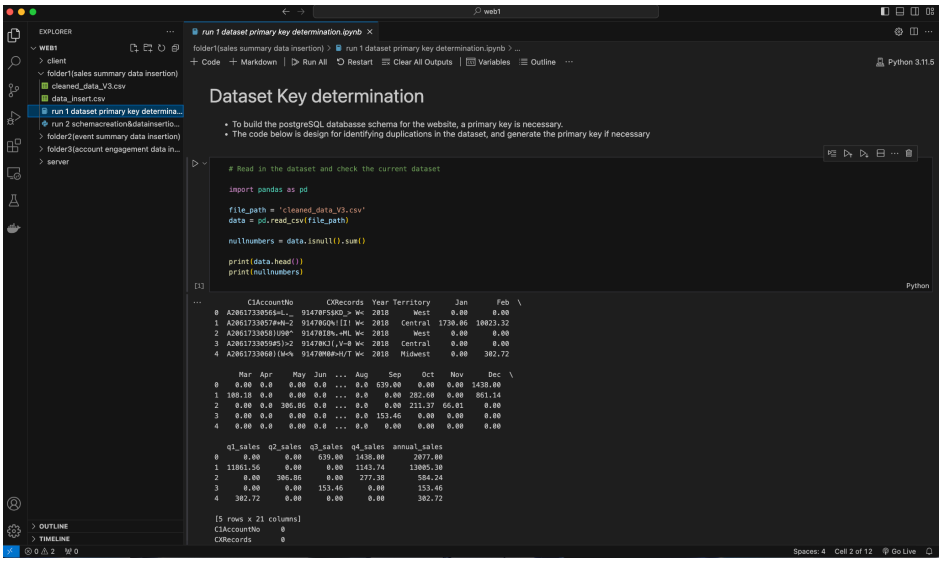


1.3 Open Visual Studio Code. Open the folder (in this guide, the folder name is web1).



1.3 Open a new terminal window and enter “pip install -r requirements.txt”. All required libraries will be installed.

1.4 Click folder 1 on the left panel. Then click “run 1 dataset primary key determination.ipynb”. Run each code block in the file (to run the code, click the right arrow icon on the left of the code block).



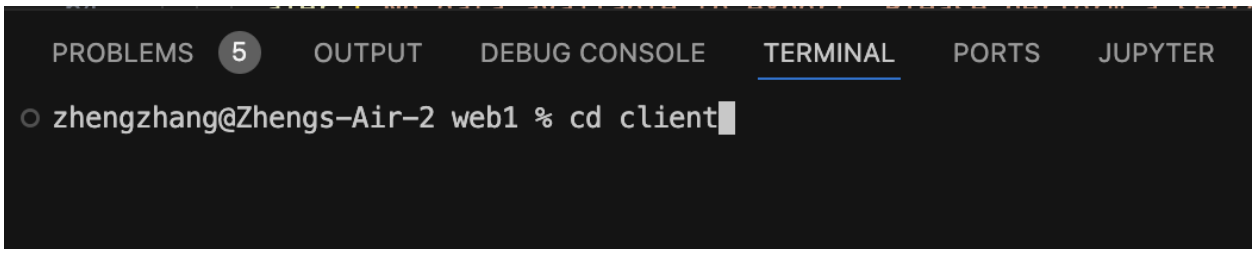
1.5 Click “run 2 schemacreation&datainsertion.py”. Run this python file. (may need to exit VS Code and open folder1 again because of data_insert.csv location)

1.6 Click “folder2(event summary data insertion)” on the left panel. Click “EventETLCode.ipynb” and run the code block.

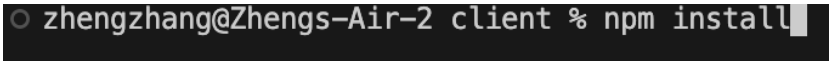
1.7 Click “folder3(account engagement data insertion)” on the left panel. Click “Purchase Rate Generation and ETL” and run all the code blocks.

Part 4: Web Application Installation and Launch

1. Download Javascript environment
   1.1 Download and install node.js.
2. Install npm and run the client side of the app
   2.1 Open a new terminal in VS Code. At default, you will be operating in the parent directory, enter “**cd client**” in the terminal to enter the client directory.



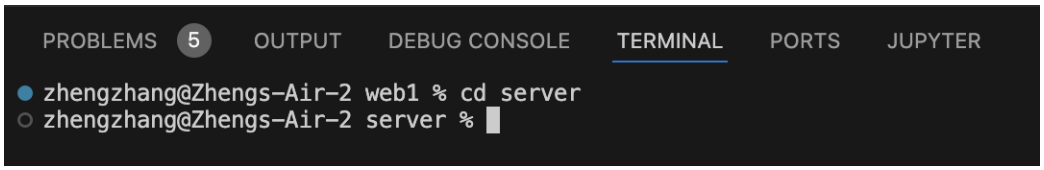
2.2 When you are in the client directory, enter “**npm install**” to install npm in the terminal.



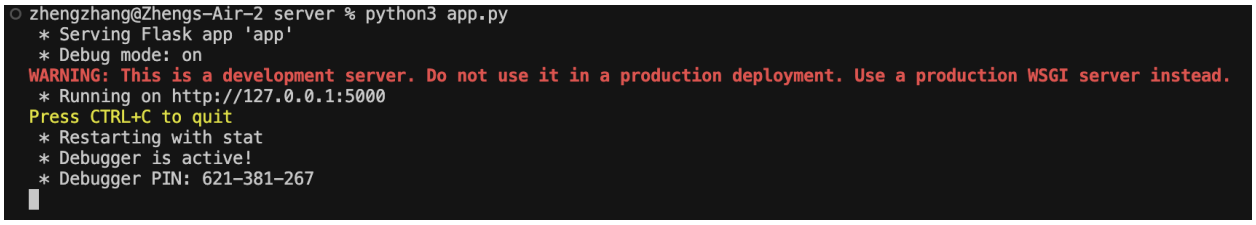
2.3 Wait for a few seconds for installation. When installation is completed, enter "**npm start**" in the terminal to run the client. If successful, you will be automatically directed to the web app interface. (The app is not ready to go yet)

3. Run the server side of the app

3.1 Open a new terminal and type "**cd server**" to go to server directory.



3.2 In the terminal, type "python app.py". **Note**: Try replace "python" with "python3" if doesn't work.



4. Refresh the web app and start exploring.
5. To stop the web application, press "**control + C**" in both "server" and "client" terminals.

Part 5: Web Features Introduction

1. Web Features Overview
2. Web Features Usage Introduction