1. **Introduction to python File Functions**
   1. **home\_ui.py**

The function is to serve as the entry point of the system, responsible for starting the system and displaying the main interface. The main interface contains multiple functional buttons, such as "Display Analysis" and "ID Mapping Management". Users can enter the corresponding functional modules by clicking on these buttons.

* 1. **preprocess\_form.py**

The function is to preprocess the chat record files to be analyzed to meet the standards that can be read by the system.

* 1. **database.py**

The function is to create a database for storing information, and this program only needs to be enabled once initially.

* 1. **auth.py**

The function is the part related to user information management, including registration and login, information modification, joining groups and other functions.

* 1. **analysis\_form.py**

The function is to conduct data analysis on the files selected by users, assess students' skill development based on the communication records in the files, and generate detailed analysis reports. The report content includes detailed feedback and skill scores of each member, as well as the overall analysis results of collaboration ability. This part is the main function of the system.

1. **System operation process**

2.1 Startup System

Run home\_ui.py. The system will display the login page. After logging in, you can enter the home page.

There are two test accounts in the system, namely the administrator and the group member. Their accounts and passwords are as follows:

user1 123, user2, 123

It is recommended to use user1 for testing because it provides more data in the analysis report

2.2 Data Import

2.2.1 Preprocess the chat records

After logging in, the user selects the data preprocessing button, chooses the chat record file to be preprocessed, and renames the preprocessed file.

2.2.2 Batch import of ID mapping

Only group administrators can access this function.

In the main interface, click the "ID Mapping Management" button, and the system will pop up the ID mapping management window.

In the ID mapping management window, clicking the "Add Mapping" button can establish the correspondence between the wechat ID in the chat record and the registered system ID.

Enter the group name and file path, and the system will read the list of original ids in the file.

2.3 Data Analysis

2.3.1 Select the analysis file

On the main interface, click the "Show Analysis" button, and the system will display the analysis interface.

In the analysis interface, click "Browse..." Button, select the file to be analyzed.

2.3.2 Start the analysis

After selecting the file, click the "Start Analysis" button, and the system will initiate the analysis process.

During the analysis process, the progress bar will display the analysis progress.

After the analysis is completed, the system will display the analysis results in the result area, including detailed feedback and skill scores.

2.4 Report Generation

2.4.1 Generate json analysis reports

The system will call the analysis\_form.py script to generate the analysis report.

The report will include detailed feedback and skill scores for each member, as well as the overall analysis results of their collaborative abilities.

2.4.2 Generate downloadable pdf reports

After the analysis is completed, select generate PDF report in the progress report interface