Instructions on how to use the hanzi ku program: Changes to the program require a software that allows the user to use JavaFX, or Java. Such as IntelliJ or Eclipse.

How to change data, such as questions and users:

* + There isn’t a need to access the coding portion of the program at all. To change the question that is asked, simply go to the data menu. There are 3 levels of each round of data in this folder. These json files are the “data” that the program uses to generate the questions for each of the levels in the round. For each of these files, the questions can be changed by changing the characters under the purple Question. Simply change the the character in the quotes. The only exception to this is round 3, where it’s ROOTS and CHARS since in this round the participant needs to choose a root and a char to make a valid character, and round 4, where there are multiple QUESTIONS since there are more than one type of question. Round 4 also has CHOICES, which are the choices the participant are given when asked the corresponding question. The only difficult component to alter would be the round 3 level 3 question where an image is used in the question. To change these type of questions, transfer over the selected image into the round4 folder under the data folder. In addition to that, in the Round4Level3Data.json, include the image name under QUESTIONS3.
  + In addition to these changes, these elements are in every json: INSTRUCTION\_ZH, is the instructions towards the participant in Chinese, INSTRUCTION\_EN, is the instructions towards the participant in Chinese, TIME\_LIMIT, is the time limit (in minutes) the participant has on this level, and EXAMPLES, is the example for the participant for that particular level.
  + Remember for any changes you make in these databases in one program, either the server or the client, make the same changes in the other program or else there will be inconsistencies.
  + To add, remove or alter the participants that can participate in the contest, go to the data folder, similar to before. This time, go to UsersData.json, this is the database of the users that can “log in” to the app. There are three types of elements in this json, USER\_NAME, USER\_LEVEL and USER\_ID. USER\_NAME is the participant’s name, USER\_LEVEL is the participant’s class level (this can only be 1, 2 or 3) and USER\_ID is the id of the participant, this can be any combination of numbers but there cannot be two same combination of numbers. The use of the id is also the only way for students to participate in the contest, provide each student with their corresponding id for them to log in the app.

How to use the program, such as how each round works, traversing into the next round and how to score participants:

**Most important:** The server program must be run first, before the participants start the clients. The server contains all the information and handles all the processed data so the server must be executed first before the clients or the clients will not work since the first thing the clients execute is to locate the server and connect to it.

Side note: The programs are made to utilize the components in full screen, otherwise there will be parts that cannot be seen.

* + This program starts from round 1 and progresses towards round 5. When you traverse to the next round, you cannot traverse back to the previous round. To traverse through the levels in the current round, simply press on the tabs at the side, Novice, Intermediate and Advance. This component is used to show each level of the participants the instructions and examples for the round. In addition to that, when the timer runs out, traverse to each of the tabs, the scoring option will then be available. The only exception to this is round 4, instead of the usual, each tab will start have a start button that allows you to start the contest for that particular level. In the next scene, press the question tab to start the questions. To go back to the original overall view, press home in the question tab.
  + To start each round, traverse to the tools tab at the side and press start. This will initiate all three levels for all participates that are connected to the server to start the round.
  + Scoring: Press the score option in each tab, after the timer ends, and you will move to a scene when the questions and answers for each corresponding question will be located. At the side are text fields where you enter the amount of points the participant will receive for each question or the whole level in general. On the top left is a drop down button that will allow you to change the participant that you are viewing at and giving a score for. Next to this button is the home button, click on this to go back to the original overall scene. Traverse back to the tool tab and at the top left corner is the scoreboard, press this to go to the scoreboard. It is through going to the scoreboard that you can traverse to the next round.
  + Round 1: Type any characters that have one more stroke to the given character.
  + Round 2:
    - Level 1: Write the chinese character according to the given pinyin with your trap pad or mouse.
    - Level 2: Write out identically structured characters, such as characters with the same left and right components, upper and lower components, or inner and outer.
    - Level 3: Find the corresponding simplified Chinese characters, traditional characters to simplified
  + Round 3: Choose a combination of a root and a character that when combined is a valid character.
  + Round 4: Select the correct option for the answer.
  + Round 5: Select the character that is believed to be wrong and type the character you believe is the correct character in the text field. Click on the text field and press delete to remove your change.