###### Teamwork

**Team division**:

1. **About coding：**

Reasonable team division is the guarantee of team efficiency. We divide groups into front-end and back-end groups, depending on each individual's interests and capabilities. Ensure that each team has at least one strong code-capable person who can guide the team in the direction.

Front end: Zhao Wenqi, Dong Yuehui, Zhen Ziyang. Three people divide the basic work equally, in addition, Zhao Wenqi is responsible for and considering comprehensive, mainly responsible for the overall details of the revision and functional design. Dong Yuehui code writing and learning skills, additional responsibility for difficult problem solving and hardware, environment configuration. Zhen Ziyang is more patient and calm, extra responsible for cooperating with the work. Back-end three: Zhang Jingyuan, Zhang Lei, Zhang Tianhui. Zhang Jingyuan code ability and learning ability is excellent, responsible for holding the back-end code direction. Zhang Lei is more interested in cloud server-related content, responsible for cloud affairs. Zhang Tianhui can take advantage of the limited time but proactive, so he is responsible for cooperating with the work.

**2.About other thing：**

In addition to dividing the front-and back-end groups according to code capabilities, we still define each individual's position in other tasks in the group, depending on individual abilities. Among them, Zhao Wenqi and Zhen Ziyang are relatively good at English, responsible for the main work of the speech. Zhang Jingyuan and Dong Lehui professional ability, responsible for speech, documentation and other technical aspects of writing and control. Zhang Lei is responsible for his work and the wealthiest, taking on the team's all-round assistance and most of the expenses. Zhang Tianhui with excellent ps ability and aesthetic, responsible for the group's document layout and ppt production and other work. At the end of the work, with the full implementation of the basic functions of the project, we re-planned the work of everyone in the group. Dong Lehui, Zhao Wenqi and Zhang Jingyuan are responsible for the problem handling and overall code testing in the front-end handover process, while the back-end Zhang Lei is responsible for cloud detection and the production and improvement of bilingual functions, and Zhen Ziyang is responsible for assisting the work. Zhang Tianhui is responsible for Android software production. Everyone performed their duties and helped each other, completing a great deal of extra work at the last tense moment.

In general, our team has a clear and flexible division of labor, with different and clear responsibilities assigned to each member for different tasks. And the blurring of the work is done with each other, and members never evade each other. Therefore, we believe that our team division of labor is very successful, giving full play to everyone's specialties, doing a great deal of extra work, and helping each other, United and harmonious with each other.

**Problems and Solutions:**

**1.first problem and solution:**

First of all, because of each person's different time planning, there is a situation where individuals are a little lazy. Some team members have high requirements for grades, so they do project promotion every day; some members do not need such high grades, so they spend most of their time taking the postgraduate entrance examination or traveling. Similarly, absolute equity is difficult to achieve, given the differences in each person's abilities. At the same time, students with strong product skills can do two to three times as much work as poor ability students. As a result, it is unfair to limit the same time or the same work, so we met to discuss ways to solve the problem.

Our solution is to first assign the same tasks to everyone, students who finish ahead of schedule appropriately help students with difficult code and appropriately take on more work according to their own circumstances, so, We also add the rules for collective code writing and independent code books within the front and back teams (method 2 and method 3) to help each other improve the team's overall productivity through weekly collaborative code time. At the same time, the difficult part is assigned to the students with stronger ability to solve the task assignment problem and to maximize the benefit of the team by delivering the troublesome and simpler work to the weak students and assigning the difficult parts to the students with stronger ability. Moreover, several students who are more professional in the communication process are willing to take the initiative to take on more work and enjoy the code implementation process. Weak students also indicated that they are willing to spend more time, saving the best of strength to play a greater role in the team.

**2.Second problem and solution:**

In addition to solving the small problems caused by individual differences, we have also solved the problem of uncoordinated and out-of-sync in cooperation. Once, because we first developed a working method for the separation of the front and rear ends, and then, in the process of merging the front and back ends, there was a problem that the data did not correspond to each other on the handover.

We discussed it collectively and used our voting system(method 4). The rules of weekly communication between the front and back end and the rules that the front and back end students should cooperate to solve any problems arising in the handover are formulated. But in fact, because of group culture and previous exchanges, everyone in our group is proactive in solving problems together. So this temporary front-and-back problem was solved in less than ten minutes and never happened again.

Overall, as a result of mutual understanding and positive communication, our team has hardly encountered any difficult problems. Although there are some inevitable minor contradictions, but because of the direct and sincere communication of the team members, we are more United. Whenever there is a technical or speech assignment, everyone takes an active part in the discussion.

**Methods of collaboration:**

1. Team leader polling system. In a six-member group, we believe that everyone will be the team leader in turn to give everyone a strong sense of collective responsibility and collective honor. Each week, we serve as team leaders, in the order of WeChat groups, to convene meetings, monitor and verify the progress of the project, and write weekly minutes of meetings. Through this method. Each of us can understand the hard work of the team leader, from urging others to taking the initiative to finish the weekly work ahead of schedule, and also learn all the relevant knowledge about our project, rather than just staring at a small piece of code that each one are responsible for.
2. The anterior and posterior ends were separated. We initially divided the six people equally into front-end groups and back-end groups, with the exception of group collective meetings, front-end and back-end as two relatively independent groups, separate in technical and task terms. As a result, we believe that the front-end and back-end as two independent groups to discuss their respective issues, can be more efficient, save time to take charge of other groups, and more targeted problem-solving.
3. Collective code writing and stand-alone code writing within the front and back end groups. Each group, after Monday's class, assigns its own internal responsibilities to each person and then writes independently. Then, meet each other for a certain period of time each week, and solve each other's unsolvable problems by helping each other. The meeting time is agreed on the basis of the specific circumstances of the respective groups.
4. Voting system.When differences arise, a group vote is conducted and the minority obeys the majority.
5. Conflict handling rules. When encounter group contradiction, should communicate each other's thoughts sincerely. Others have an obligation to adjust. If the problem is serious, should apply for external forces, such as application for assistant teacher intervention to help solve. We know that as long as there is real cooperation, there will be more or less problems, sincere and common goals are the fundamental solution to the problem. However, specific solutions must change according to circumstances, which requires us to always put the interests of the group at the top of the list.
6. Punishment system If there is a system, there must be people who violate it. As a kind of deterrent effect, punishment system is essential. We have decided that those who violate the Panel's agreement will be deprived of their right to vote, subject only to the Panel's decision, until them not violate the Treaty.

**Inspiration :**

After months of cooperation, we learned how to work together, how to behave, how to communicate, and how to deal with problems. First of all, from a personal point of view, we are aware of the need to be sincere and understanding. Talk or work, should let others feel their sincerity, not with personal temper, affect the development of the entire team. And learn to think from the perspective of others, understand other people's difficulties, and try not to create trouble for others. From the perspective of the team as a whole, early mutual understanding and rule-making are crucial. Only by getting to know everyone's abilities, specialties and characters as early as possible, can we let everyone exert their greatest abilities and reduce the occurrence of contradictions. On the premise of understanding each other as well as possible, making as perfect team rules as possible can greatly reduce the problem. The most important thing is to have the spirit of group (unity). No matter what happens, we face each other as a group. I think this unity is the fundamental reason why our team work so smoothly.