COMPX202 Assignment8 Document

Students
Name: ShengyangXu (X); ID: 31711055
Name: Dan Jin (J); ID:31711003

Project Name
Adventure Ball

Mobile testing equipment
Pixel 3a XL API 23 & Huawei P30 Pro

Software Methodology
The iterative and incremental approach

Backlogs

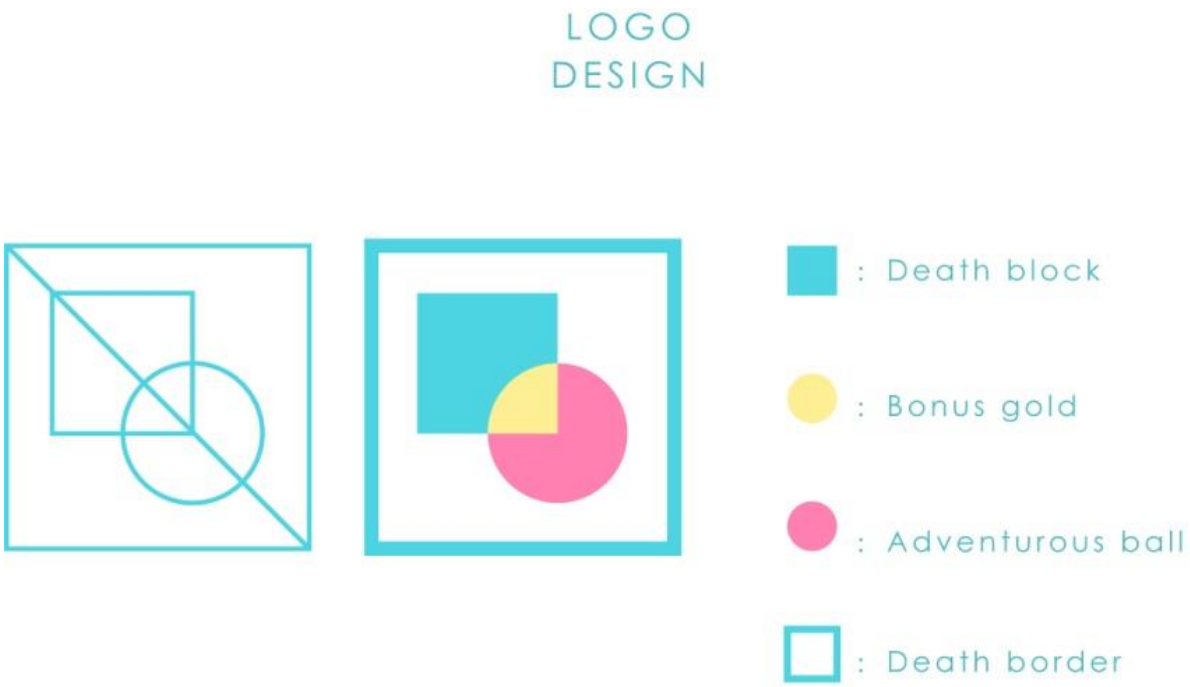
Task ID	Description	Author	ETA
1.	App Icon Design	J	2 hrs
2.	GameUIdesign	J	3hrs
3.	Layout the welcome screen with XML	J	1hrs
4.	Define and code functions in welcome screen	X	30 mins
5.	Define functions in game screen	X	30 mins
6.	Define obstacles &target	J	1 hrs
7.	Define ball movement & score	J	1 hrs

8.	Visible hierarchy	X	2hrs
9.	Implement ball movement	X	3hrs
10.	Test ball movement	J	2 hrs
11.	Implement obstacle& reward effect	X	7hrs
12.	Test obstacle& reward effect	J	1hrs
13.	Implement score system	X	3hrs
14.	Test score system	J	2 hrs
15.	Define and code functions in ranking screen	J	15 mins
16.	Display pseudo data in ranking screen	X	1 hrs
17.	Test Use Page jump between screens	J	1hrs
18.	Transfer data from game toranking	X	2 hrs
19.	Display Top 5 in score screen	X	2 hrs
20.	Test Top 5 in score screen	J	1 hrs
21.	Test the whole game	J	5 hrs

Recordings

Task1: AppIconDesign

ETA: 2 hrs, **Actual**: 1hrs

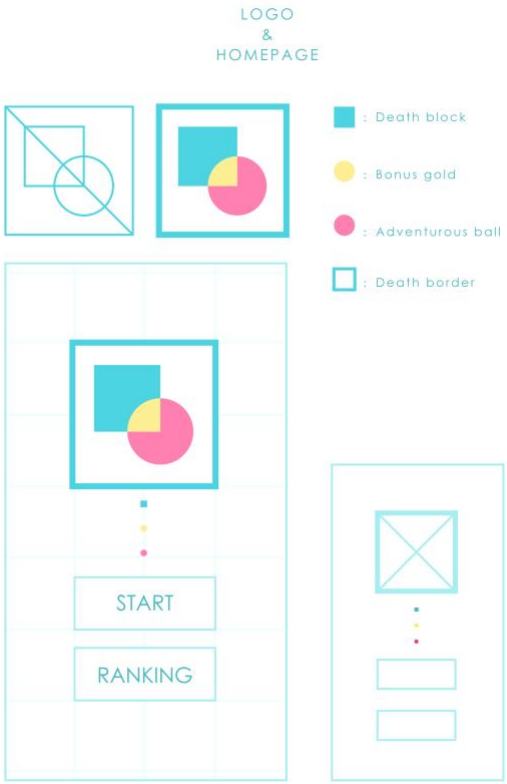


Design Idea: As a small leisure game, I want its logo to show the relaxed and happy atmosphere. Before designing the logo, our group has conceived the game's playing method and general content. I extracted the elements in the game and designed such a logo.

Inspirations: The design inspiration comes from the game itself. We try to make a small ball rolling by gravity. This small ball is in the game world where danger and opportunity coexist. On the left and right sides, it is the boundary between touch and death; in the middle, it is the death blue box and the bonus box. We use blue to represent the crisis. The edge line and the death box are defined as blue, and they are abstracted

into four square rectangles. Use the yellow of gold coin to represent the bonus box and abstract it into a circle of gold coin.
The ball is naturally round, which needs to be eye-catching and represents the opposite "life" of death. I set it as a blue contrast - pink.

Meanings: The square and circle in the middle of the logo intersect, and the junction is yellow, which means that the pink ball shuttles through the blue death box, so it is possible to obtain "bonus gold coin" and "vitality". The shape of the bonus circle is the same as the small ball, indicating that only survival can continuously obtain scores. The blue box outside the logo also represents the death line on both sides of the game interface.



Task2: GameUIDesign

ETA: 3hrs, **Actual**: 3hrs

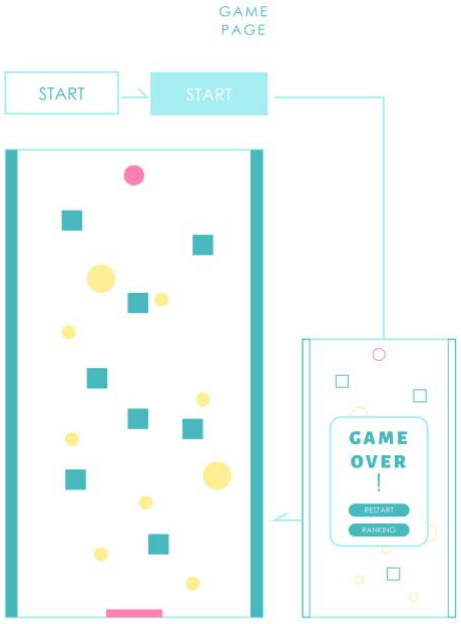
1. Homepage: The border of the two game buttons is selected with a color lower than the saturation of the logo border to make the text more prominent and clear. Choose

sans serif fonts to make the game more modern and concise.

Rankingpage:
List the names and scores of the top five players in the game.

2. Ranking page: After clicking the ranking button, the top five records will appear. Three elements of the game are used on the left: blue square, yellow circle and pink circle to divide the ranking.

The names and scores are arranged horizontally, while the top five names and scores are arranged vertically, which makes different names and scores look more orderly.



Game page:
Whenever the ball meet the blue border or block, game over.
Meet the yellow coin will get points.

3. Game page: After clicking the "start" button, player will enter the main interface of the game. The pink ball will fall from the top. Player needs to touch the pink rectangle at the bottom of the screen to pass the customs. In the process, the ball needs to avoid the blue box that will make the end of the game, and touch

as many yellow circles as possible. When you touch the blue box in the middle of the screen or the long rectangle on both sides of the screen, the "gameover" box will pop up on the interface to display the current score, restart the game or view the ranking.

Task3: Layout the welcome screen with XML

ETA: 1hrs, **Actual**: 1hrs

According to the design of the page at that time, I designed my own layout and interface in XML.

Task4:Define and code functions in welcome screen

ETA: 30mins, **Actual**: 1hrs

Because my partner had some problems in setting up the full screen, I spent a certain amount of time to modify it, so it took longer than expected, and then quickly completed the jump to the game interface of the welcome page.

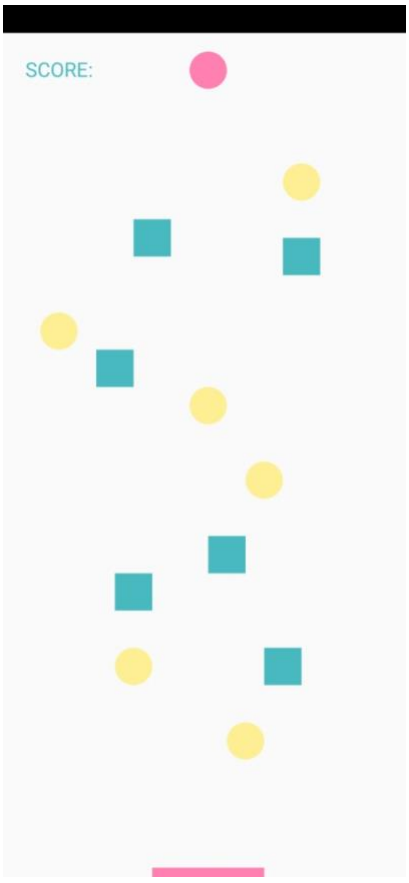
Release version 1.0

In this version, we initialize the project, including file, icon, logo, name, etc. Then we designed and arranged the welcome screen, game interface, and ranking interface, but we have a hunch that the design of the interface in the later stage will be modified and improved according to

the problems we encounter.For example, when we was on Task 2, I defined obstacles and targets in the game interfacein Taks6.

Task5(amend): Redesign &Code the screen of gameActivity—J

ETA:2hrs , **Actual**: 2hrs



Put rectangle, circle, ball and bottom bar into the screen, and set the distribution position of obstacles. Add a control to display scoresin the top left corner of the game screen.Modify the previously designed game interface.

Process：

Task6(amend):Define functions in game screen— X

ETA:30mins**Actual:**30min

I defined the play method of the game, that is, when the ball is thrown out, the score is obtained by contacting the Yellow scoring ball through the collision rebound with the screen edge and obstacles, and when the ball hits the pink bar at the top, the game is over. So I've defined the class to perceive flying, the method to move the ball, the method to judge when colliding, and the method to score and end the game.

Task7: Define ball movement & score

ETA:1hrs**Actual:**30min

After the game starts, the ball will be thrown in the sliding direction after the finger slides once, and it will rebound when it touches the edge of the screen. When the ball hits a square obstacle, it bounces. Whenever the ball touches the yellow circle, the circle disappears and the score in the upper left corner increases by 3 points. Until the ball hits the pink rectangle at the top, the game is over and the score is set.

Task8: Visible hierarchy

ETA:2h**Actual:**1hrs

Object as the parent class of visible objects in canvas is added in this task, the DrawRectangle class represents obstacles and endGamebar. And the DrawCircle class represents both targets and ball.

Task9:Implement ball movement

ETA:3hrs **Actual:**3hrs

The movement of the ball has the following characteristics:

1. The ball will move completely in the direction of the throwing position.

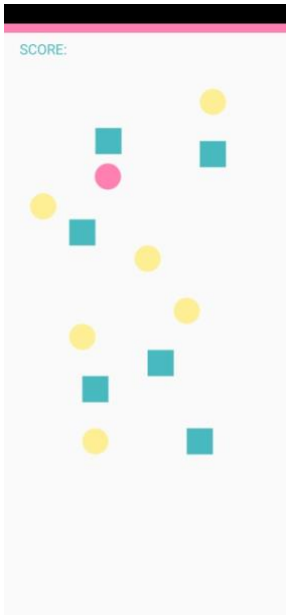
2. The throwing movement in any direction can affect the ball's movement.

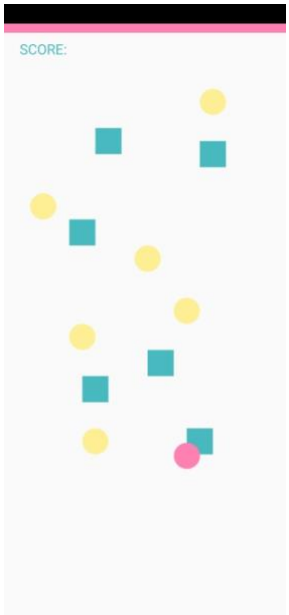
3. The ball moves and bounces in the canvas view, not over it.

4. If the user throws the ball at a very fast speed, the ball will move forward quickly, otherwise, at a very slow speed.

Task10: Test ball movement

ETA:2hrs **Actual:**30mins





Test the movement and bounce of the ball.

1. Android test: set the direction of the ball to be arbitrarily changed to test whether the throw in all directions can operate normally.

2. The fingers slide at multiple angles and the ball can move according to the sliding angle of the fingers. And touch the edge of the screen rebound, rebound angle and speed are consistent with the expected requirements.

3. The ejection speed of the ball will change with the finger sliding at different speeds (fast, slow and uniform velocity), which reaches the expected standard.

Task11: Implement obstacle& reward effect

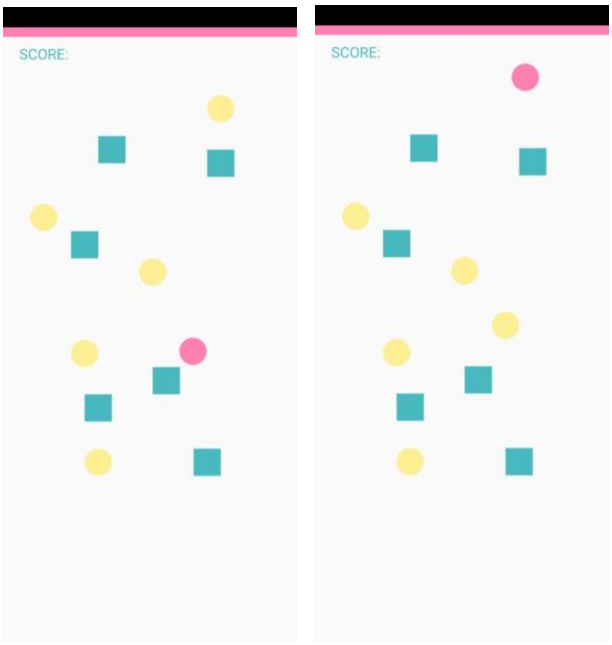
ETA:7hrs **Actual:**3hrs

Obstacle influence has the following characteristics: 1. Once the ball interacts with any edge of any obstacle, the ball will change direction and speed. But the position of the obstacle remains unchanged

The rewardobject has the following characteristics: 1. When the ball touches the reward object, the sreward object will disappear and the ball will continue to move in its original direction.

Task12: Test obstacle& reward effect

ETA:1hrs **Actual:**1hrs



1. Androdex test: touch the square obstacle to rebound, touch the Yellow scoring circle, the circle disappears, and the ball continues to roll.

2. The fingers slide at multiple angles, and the ball can move according to the sliding angle of the

fingers. And the edge of the touch screen bounces, touching the square edge bounces, bounce angle and speed meet the expected requirements.
3. When the ball touches the square edge at a slow speed, it will shake due to the deviation of angle collision, which needs to be improved.

Task13:Implement score system

ETA:3hrs **Actual:**30mins

This scoring system has the following characteristics:

1. When the ball touches the scoring ball, the scorer on the interface will be updated in real time
2. 3 points will be added for each score
3. At the end of the game, the score is reset to 0

Task14: Test score system

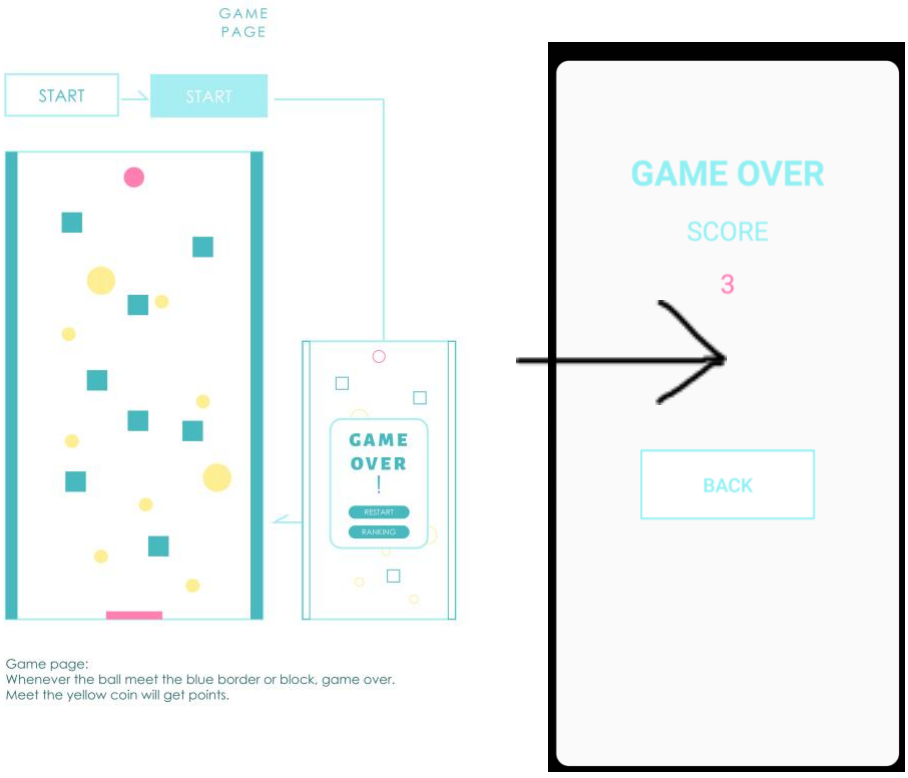
ETA:2hrs **Actual:**30mins

1. Android test: after touching the yellow circle once, the score will be increased by three.
2. The disappearance of yellow circle and the increase of score are in the right order.
3. Swipefingerscan get all the yellow round scoring balls on the screen, the top score is 18.

Task14(PLUS): Show the endgame screen —X

ETA:2hrs **Actual:**1h

At first, I wanted to use a pop-up window according to the original design, but after trying, I found that it was beyond my ability, so I took another approach. Created a game ending interface that pops up when the ball hits the bar at the top. The interface is designed to inform the user of the end of the game and the score obtained, and can return to the main interface.



Release version2.0

In this version, we further optimized the project, including file, rebound effect, score, end page, etc., and then designed and optimized the touch

interface and end interface of the game. In the pre-test, our ball touch bounce function and scoring control have been improved. The pop-up window at the end of the game has been modified to transfer to a new game end page, where you can restart the game and view the scores. We extend the main and task 14 (plus) tests and amend the task5 and task6.

Task15: Define and code functions in ranking screen

ETA:15mins **Actual:**15mins

Create a new ranking page, and place the page name, game logo, and ranking sequence number according to the design. In the design scheme, the original position where the name is displayed is replaced by a number, and the place where the score is displayed is changed from "count" to "score", plus the button to return to the home page.

Task16: Display pseudo data in ranking screen

ETA:1hrs **Actual:**15mins

In order to show the integrity of the ranking interface, I gave several initial values by default - 00 points

Task17: Test Use Page direct jump between screens

ETA:1hrs **Actual:**15mins

Users can start the game and view the ranking from the game homepage. At present, the ranking data is pseudo data. After entering the game, the ball operation can be carried out. After the ball touches the top, it will jump to the game end interface, and the bottom of the end interface can return to the game home page. The jump of each page meets the expected setting.

Task19: Display Top 5 in score screen

ETA:2hrs **Actual:**3hrs

I try a lot of methods. First, I save and sort the scores in GameActivity, and then the ranking interface scores at the end of the game are sorted from high to low. Besides, I integrated the previous GameOver interface with the Ranking interface.

Task20: Test Top 5 in score screen

ETA:1hrs **Actual:**30mins

When the user gets the score, the top five scores will be displayed. However, in the test, we found that when users get more than 3 points, the ranking will be displayed as a multiple of all points below the three points. This shows that there is a gap between the top five scores of five different games we expect. So we change the code after the test.

Task19(Plus): Display Top 5 in score screen

ETA:1hrs **Actual:**1hrs

In order to facilitate the transmission of game data, I modified the rules of the game. A user can finish 5 times in a game, and the game ends after 5 times, and display the ranking of 5 times' scores. If the same score appears, a score will be displayed.

Task20(Plus): Test Top 5 in score screen

ETA:30mins **Actual:**30mins

After the optimization of the game, I tested from the lowest score to the highest score, from the highest score to the lowest score, and repeated a score. The test results are in line with our design expectations.

Release version3.0

In this version, we further optimized the project, including file, game ranking, game score, end page, etc., deleted the jump from the game home page to the ranking interface, and then merged the game end interface and the ranking interface. Only after the end of the game can users get the ranking of the game on the spot. In the prediction test, our game ending interface and ranking effect have been improved.

We expanded task20 to do the top five ranking effects and game methods.

Task21: Test the whole game

ETA:5hrs **Actual:**1hrs

On the game page, when the fingers slide a second time, the direction of the ball changes again. We're trying to limit finger slip, but this will make it a quick end game based on luck, which needs to be considered. In the game interface, the movement speed of the ball changes with the sliding speed of the fingers, and the movement collision in different directions has the same effect as expected. In addition, we also merged the game end page and ranking page to make them as a same page. The user can play the small ball game five times in the game interface. Whenever the ball touches the pink bar at the top, record the score of the game once, reduce the number of games by one, the center position at the top of the interface will display the current number of games, and the game over interface will pop up after the end of the five games, and the score ranking obtained by the five games will be listed below the prompt. The flow and accuracy of jumping between pages are the same as expected.

Conclusion

1. Game development and modification:

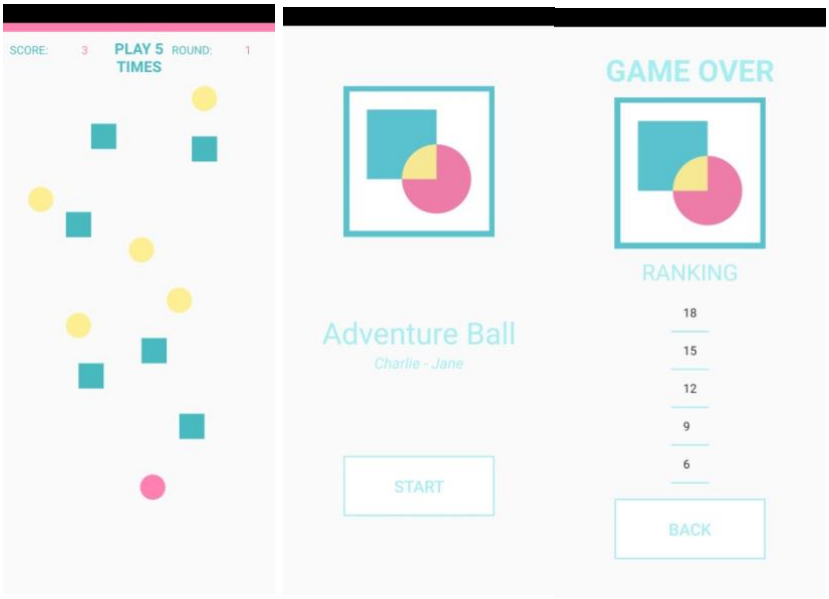
We set the game as a casual fingertip game. The UI design, logo design and theme color selection of the interface are all based on the theme of ease and simplicity. At the beginning of development, we first designed three main pages: home page, game time page, and game end page. After the design is completed, the code layout is carried out according to them. In the development process, we have made many minor changes to the game playing method, the layout and setting of the interface, and the jump between interfaces, which can be seen in the previous test. Until the last overall test, we improved the whole game.

2. Game advantages and improvements: our advantages are simple and modern UI design, interest of game setting, fluency of game operation, ranking information, etc. What needs to be improved is that the collision effect between the small ball and the square obstacle is not perfect. Besides, the interface of ranking screen we think need to be more beautiful and the ranking method need to be improved.

3. Self-evaluation: in the process of developing the game, we have modified many small places, but most of them are carried out according to our settings. The iterative increment method we used is also very suitable for the development of this small game.

4. Game interface(Final):

Three main pages:



Start screen

Gaming screen

Game Over

&

Ranking screen

5. Real machine test: