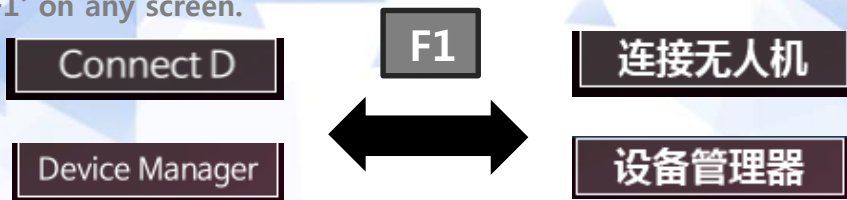# SIMULATOR

Drone Simulator

codrone DIY

Drone Simulator

Default Description

0. Language support (Chinese)

The 'drone simulator' supports Chinese language by pressing 'F1' on any screen.

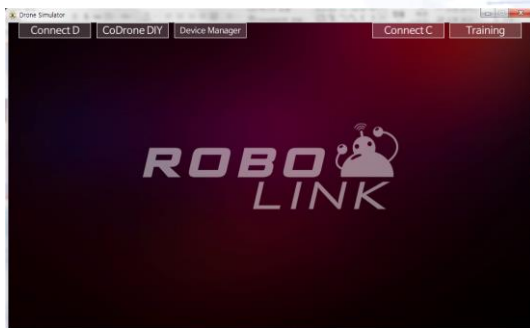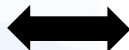Connect D

F1

连接无人机

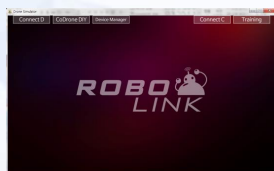Device Manager

设备管理器

전체화면

Windows

You can switch between 'Full Screen' and 'Window Mode' by pressing alt + enter.

Alt + Enter

Mac Osx

You can switch between 'Full Screen' and 'Window Mode' by pressing command + F.
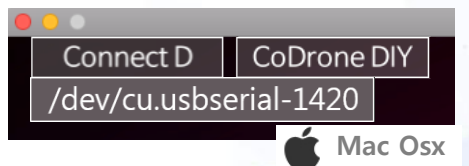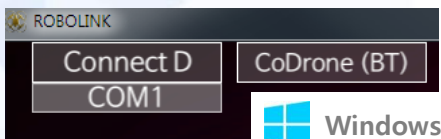
F + command

1. Connection

(1) Connecting PC to Controller, and Run " Drone Simulator "
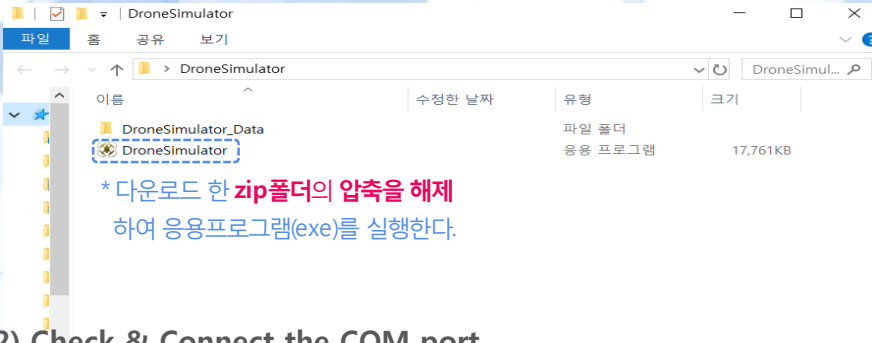
(2) Select Drone mode (Check the " Codrone DIY "

←CoDrone DIY 선택

(3) Connect the communication port.

Windows

Mac Osx

※ The number of ports varies from computer to computer.

2. Drone Simulator connected

(1) Running a drone simulator

* 다운로드 한 **zip폴더의 압축을 해제**
하여 응용프로그램(exe)를 실행한다.

(2) Check & Connect the COM port

Device Manager 를 클릭 후 COM 포트 번호를 확인합니다.

PORT (COM & LPT)

USB serial device (COM9)

Check the COM Port
(COM Port can vary from computer to computer)

Click on the COM port that you have checkf in Device Manager
*Select the corresponding COM number

Full Screen change : Alt + Enter
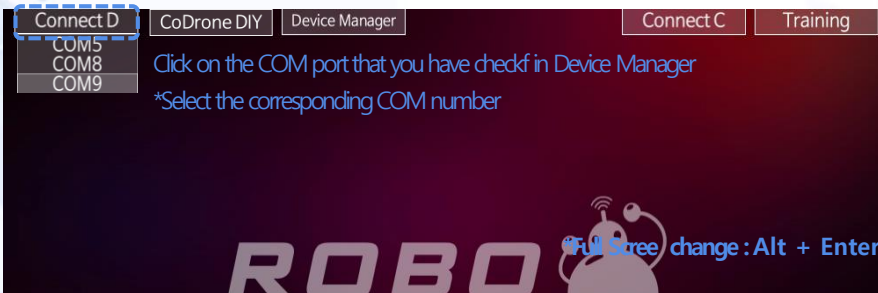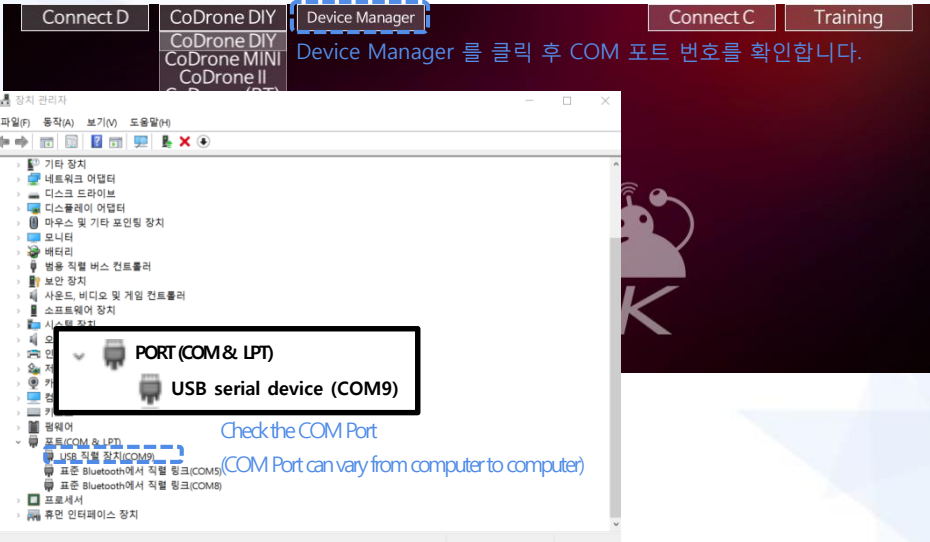
※ **'Device Manager' is not supported on Mac.**

3. Pairing

D. Pairing drones

1. If the controller is on and the drone is on, press the pairing button.

2. When the button is pressed, the LED of the drone is ready to pair with a yellow light.
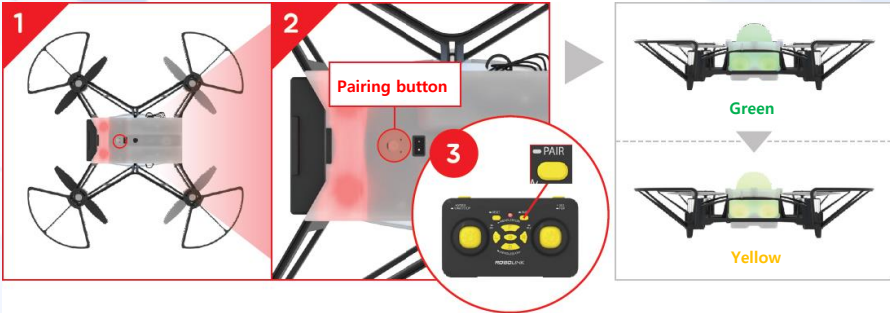
3. If you press the PAIR button on the controller, the drone and the controller are paired.

-Pairing keeps the pairing going without the need to pair each time the drone or controller is turned on.

- If you can't pair with the procedure above, please try again from the beginning.

Depending on the situation or environment, you may need to try several times without pairing at once.

- Drone and controller must use the latest version of firmware.

4. Running the Drone Simulator

First press '**take-off' Button (shift)** to take off the drone. And use W (rising), S (falling) A (left Turning), and D (right turn) among the keys **W, S, A, D**, You can also fly in desired direction with the rudder (↑ ↓ ← →)

＊Mode B 기준

Altitude · Rotation

Front · rear · left · right Move

<Space bar> 1 tab : Landing / **2 tab** : Emergency Landing
• Be sure to familiarize yourself with the 'Emergency Landing' Method' and fly.

Connect/Disconnect

Control method
(Mode 1,2,3,4)
Default : Mode 2

· Control Record **Save & Recall**
· Control Record **Record & Replay**
· Operating Cell **ADD/Delete**

Take-Off Button
Landing Button

(1) **Trim(trim) Value** Monitor

(2) **Image Flow Sensor Output**

(3) **3-way IR range measurement**

(4) **Acceleration·gyro sensor(IMU)**

X, Y, Z : Acceleration sensor value

AX, AY, AZ : Angle of Drone (Rotation)

GX, GY, GZ : gyro sensor value(Gyroscope)

(5) Battery Residue / Drone Temperature

 / Barometric Pressure Value

 / elevation value

(6) Drone LED color Setting

DRONE SIMULATOR

5. Drone Simulator Operation Cell Recording

(1) When you press the "Rec" button in the upper right corner of the screen, the control value is remembered.

(2) When the "Stop" Button is Pressed and the "Replay" Button is pressed, the entered control value is automatically executed

※ The trajectory may change depending on the environment of the drone

When you control a drone on a PC, you can control it with a keyboard

The control standard is MODE2. (Check mode2 at the top of the screen)

Keyboard Shortcuts Guide
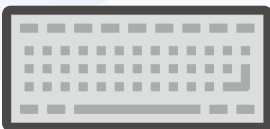
Rise : W Key

Fall : S key

Left Turn : A key

Right Turn : D key

forward : ↑ key

Reverse : ↓ key

Left-hand Movement : ← key

Right-hand Mobement : → key

TAKE-OFF : Shift key

Landing : Space bar key

Emetgency Landing
 : Space bar (Two consecutive hits)

※ **Alt + Direction Key (** **)   : Flip**

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6. Additional Information

(1) Communications Status Monitor

Once connected to the drone, the cogwheel rotates.

※The cogwheel rotates 5 degrees each time the 'drone & manipulator' communicates. If the rotation is slow or does not rotate, there is a problem with the communication status, and it checks.

(2) Drone Motor Speed

Speed can be changed by pressing the left back **(the back left) button** of the controller with the drone connected.

S 1 (30%)	S 2 (70%)	S 3 (100%)
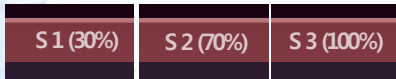
(3) Flight Information Display

If the drone is connected,
You can confirm by pressing F9.

F. 35:39   T. 376 L. 198 A.38

FLIGHT TIME	00 : 35 : 39
TAKEOFF	376
LANDING	198
ACCIDENT	38

Every time I press F9, I get updated information from the drone.
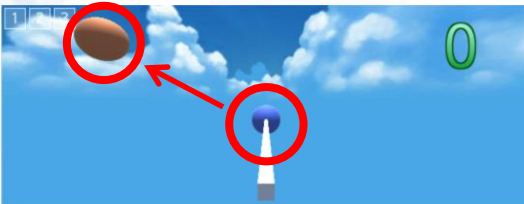
A Game Using Sensor Values

Click on the Axis box at the bottom and you will see the screen below.
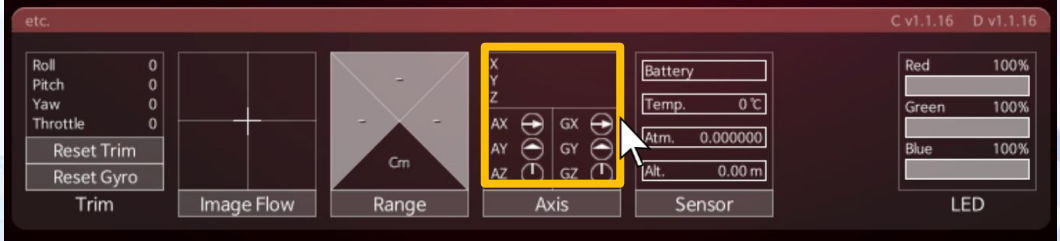
Operate the following simulator using the drone's gyro sensor.

This simulator can learn about 'sensors'.

You can select a simulator by clicking 1,2,3 in the upper left corner.

1

Move the drone and hit the ball to score.

2

Move the drone, pass the oncoming box, and you score.

3

Move the drone, steer the car, eat the ball, and score.

※ Before you start the game, make sure the drone and the pilot are in the same direction, and then re-engaged the battery.
(It matches the AZ value of the drone with the pilot.)

Control Mode – Coding Mode Conversion

When you turn on the simulator with the controller connected, the controller is connected to the PC in coding mode.

The Coding Mode status is that the controller's control is handed over to the PC, and the controller itself cannot control the drone.
However, if drone operation is not possible through the simulator, it should be switched to the controlling mode.
At this time, control is transferred from the PC to the controller when in control mode.
The control mode and coding mode can be switched by pressing the power button (center) of the controller.

Coding Mode Status

Manipulation

Toggle Button
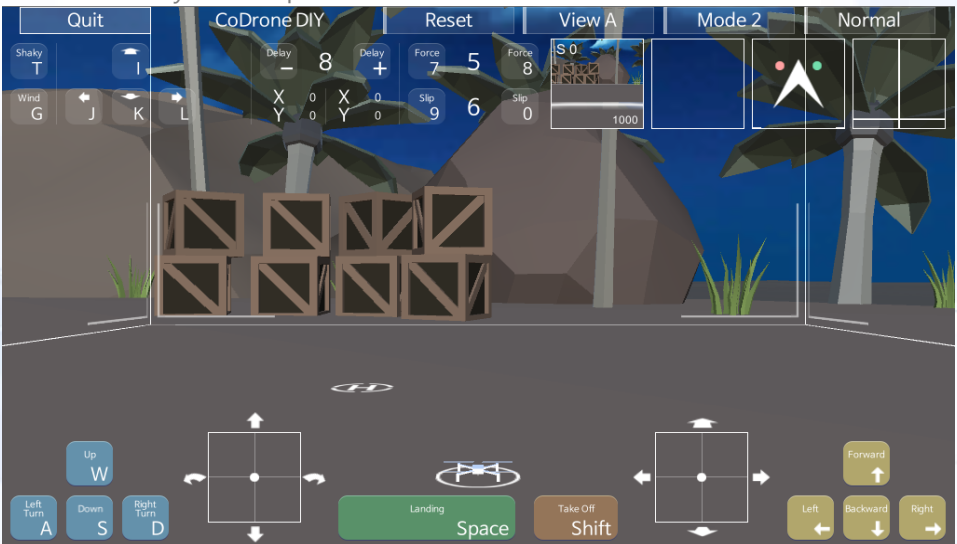
Control Mode Status

Manipulation

Drone Simulator

"Virtual Flight Exercise"

1. Starting

← **Select the CoDrone DIY**

Press the " **Training** " button in the upper right corner of the screen, You can enter virtual flight practice mode where you can learn how to control a drone before you manipulate the actual drone.
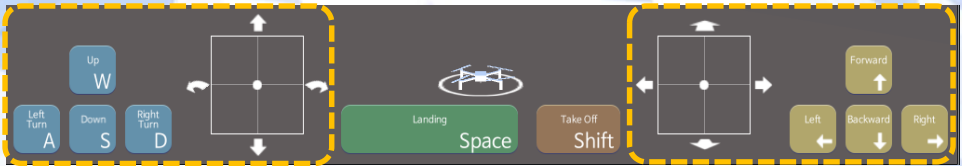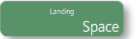

Like actual drones, virtual drones can operate after takeoff **Take Off Shift**
Let's push the take-off button for a second and fly the virtual drone into the air

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2. Operation Key Description

Mode **2**   **Left :** Rising/Fall Move /Rotation   **Right** : Front/Reverse/Left/Right/Move

The simulator controls the w,a,s,d keys with the left hand and the up,down,left, and right rudder keys with the right hand. To stop (land) a drone in flight, Press the landing key [Landing Space] for 1 second to use.
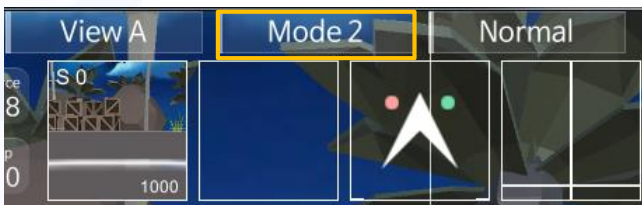
The mode used in this guidebook is usually a popular "MODE2" method.

Mode **2**   **Left :** Rising/Fall Move /Rotation   **Right** : Front/Reverse/Left/Right/Move

*If you click the icon on the controller without typing it on the keyboard, it will work.

Click the mode button in the upper right corner to change the mode in order 1 → 2 → 3 → 4. While "Mode 2" is common, it can be operated by switching to an environment that is convenient for individuals to use.

3. Setting the control mode

| Mode **1** | **Left :** Front / Reverse Move /Rotation | **Right** : Rising/Fall/Left/Right |

| Mode **3** | **Left :** Front / Reverse Move /Left /Right | **Right** : Rising/Fall/Rotation |

| Mode **4** | **Left :** Rising / Fall / Left /Right Move | **Right** : Front/Reverse/Rotation |

The landing drone cannot enter any action other than take-off.
Set the mode and press the take-off button.

4. Setting up the steering environment – Set input Limit Values
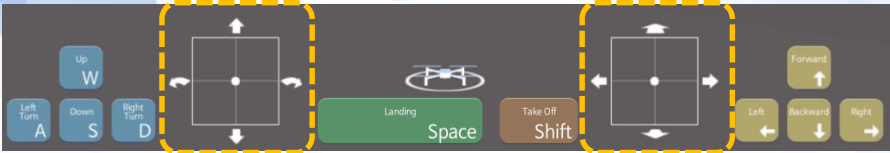
You can control the individual force applied to the drone. If the area representing maximum and minimum of UI is arbitrarily adjusted, it will not be subjected to more than a limited size.
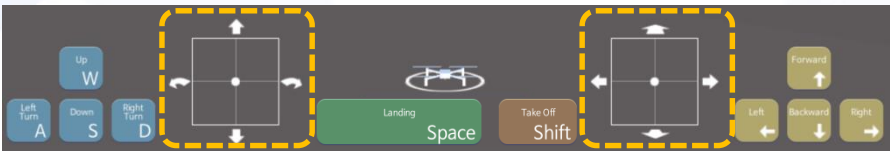
Clicking and dragging an area with the mouse or, After pressing the Ctrl key on the keyboard, you can change the W, A, S, and D keys or orientation keys.
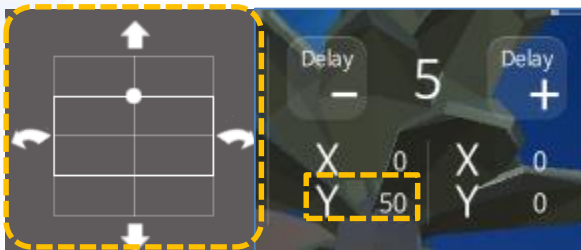
You can see that the UI at the top does not apply force over a limited size. It can be used, for example, when fine tuning is needed.

5. Manipulating – Trim Adjustment

Shaky

First Makes the drone "unstable.". It works with the 'T key' on the keyboard and can also be operated by clicking the button (UI) on the screen.

A single press of the button produces a "check" mark on the side of the button. A one more press of the button removes the "check mark" and the drone flies in a steady flight.

The buttons above are four 'trimming' buttons.

You can fine-tune it with the I jk l key on your keyboard, and you can fine-tune it by clicking the UI icon on the screen.

Press the opposite direction that tilts to proceed with stabilization. Repeat this function to learn 'stabilize the drones'.

Wind

It creates a wind that pushes the drone away. Operate with the G key on the keyboard and click the button (UI) on the screen to operate.
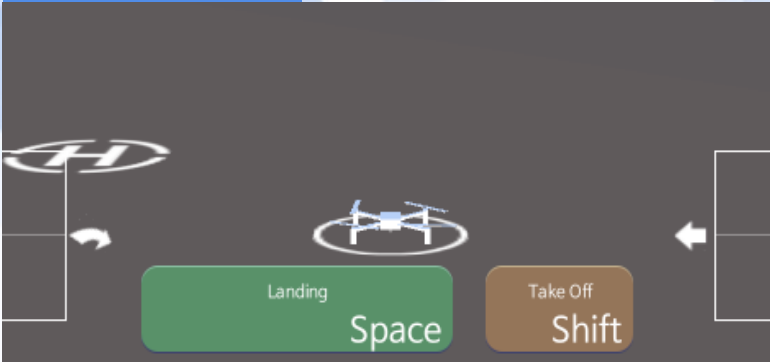
A single press of the button produces a "check" mark on the side of the button. The direction of the wind changes randomly when it is checked.

Using this function, we have a slightly more experienced control.

6. Manipulating – Landing Exercise

(1) Landing Exercise

Move the drone to the landing position shown on the screen, and through this process you can practice landing. This exercise will learn the basic maneuverability of the drone, and when the drone is correctly lowered to the landing position, the next landing position will be displayed.

If the drone flew too far and disappeared from the screen, Press the **Reset** button to move the drone to its first position. This function works by clicking the button (UI) on the screen.

(2) Practice reaching a fixed/free target

You can practice moving drones to the target (violet ball). At the top of the screen, the point of view of the drone is shown, and the numbers shown below indicate the distance to the target.
The distance to the numerically marked target, the location of the drone, and the target using the front view of the drone.
must be reached to
When the drone reaches the target, the top number is counted by one, and the next target is displayed.

DRONE SIMULATOR
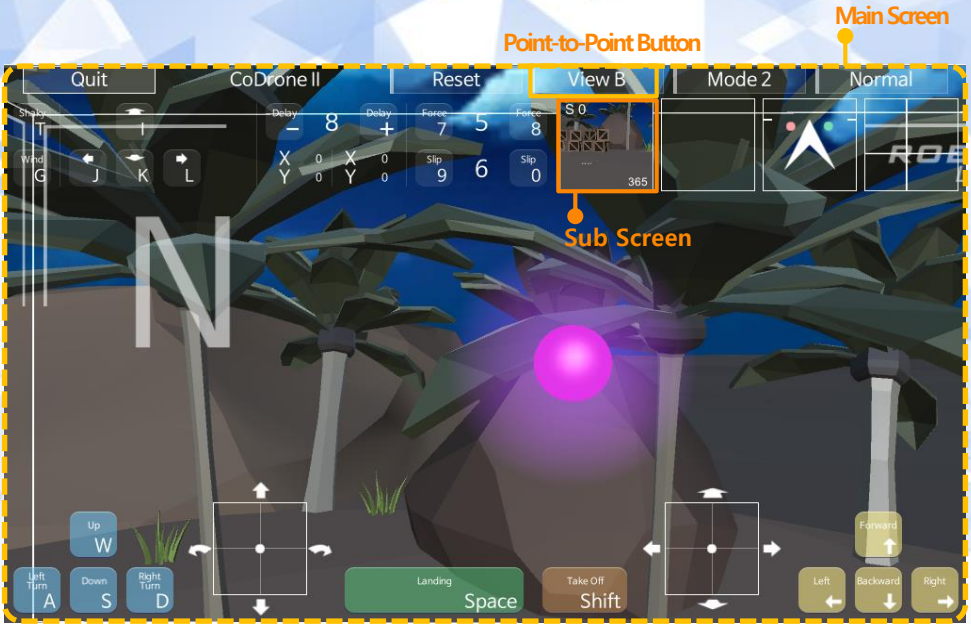
Press the point-in-time conversion button to switch to View A ↔ View B.

View A	**Main Screen**:Pilot Point	View B	**Main Screen**:Drone Point
	Sub-screen:drone Point		**Sub-screen**:Pilot Point
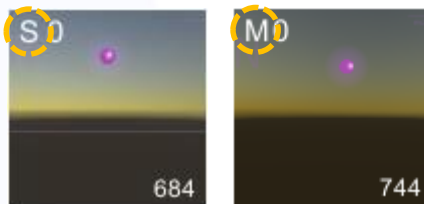
Click on the sub-screen to change the purple target from S (Stay, Fixed) to M (Movement). When motion (M) occurs, the fixed (S) purple target moves freely within the space. Each time you click on the sub-screen, it changes to S ↔ M repeatedly.
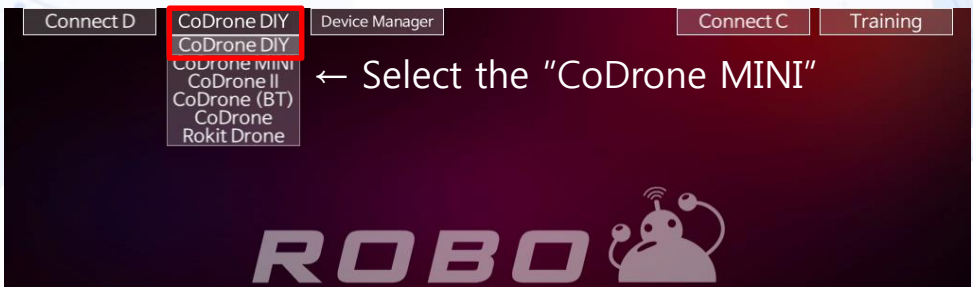
The number of times a target has been reached is counted next to the alphabet, and this function is aimed at learning more skilled manipulations.

7. To Simulate flying with a controller

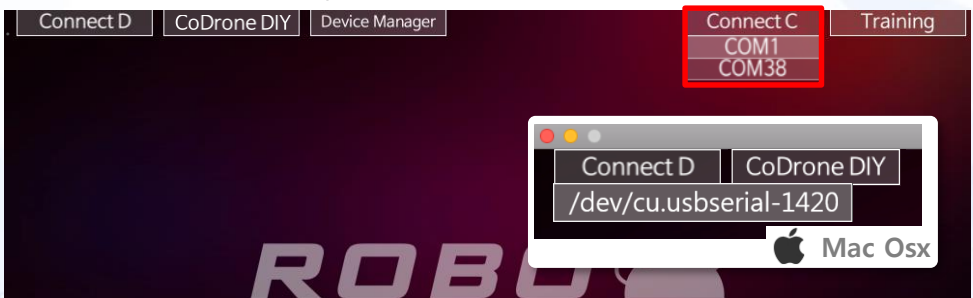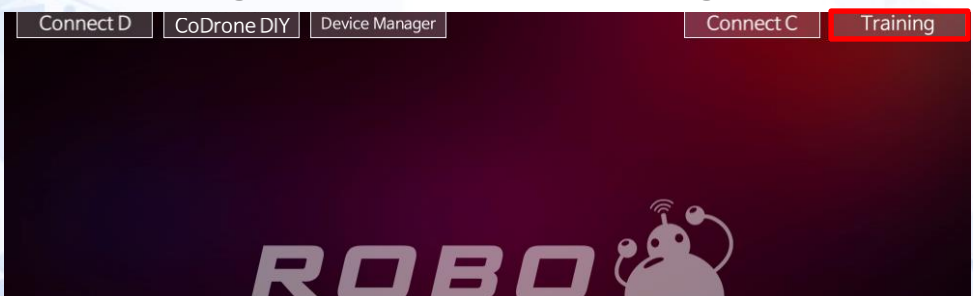(1) Connect the PC and the controller, the drone. Run the simulator.

(2) Select the Drone MODE

← Select the "CoDrone MINI"

(3) Select and click on the port to which the control is connected.

(4) Click the Training button to switch to the simulated flight screen
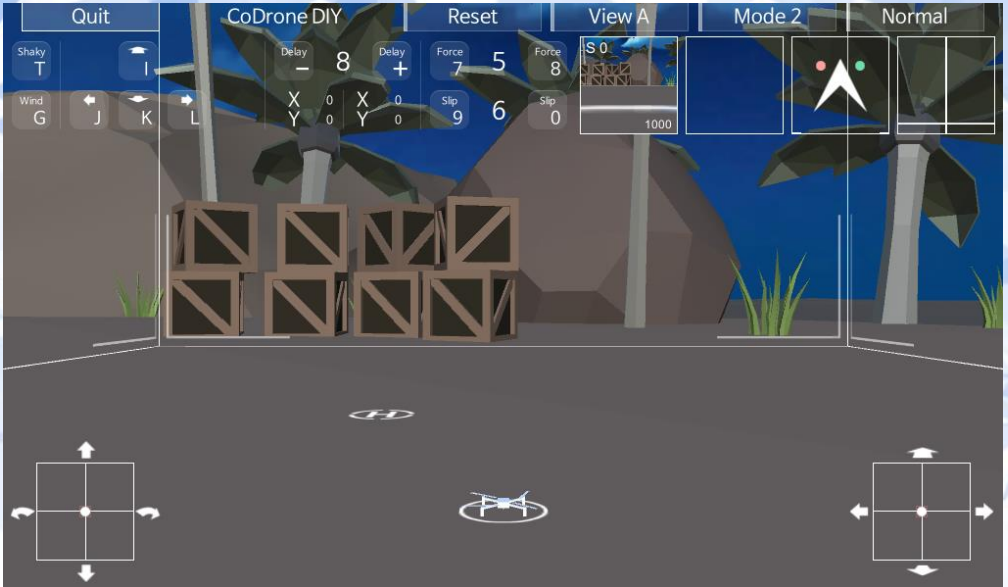
(5) Hold the L1 button for more than 1 second to take off/land and control the drone with the controller.
(See Quick Guide for self-controlled methods)
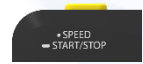
※ **Emergency landing: L1 + under the throttles (↓)**

LONG : TAKE-OFF/LANDING

(6) Other options for simulated flight are the same as for simulated flight with a keyboard.

Drone Simulator

"Mini Game"

Mini game
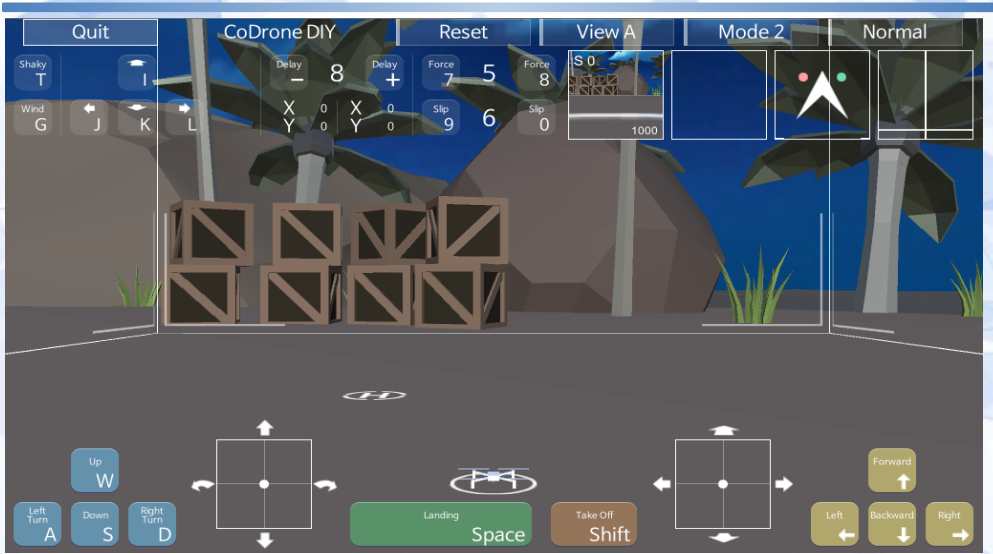
Press ' **F2** ' on the Training Mode screen as shown above. **(mac: Fn + F2)**
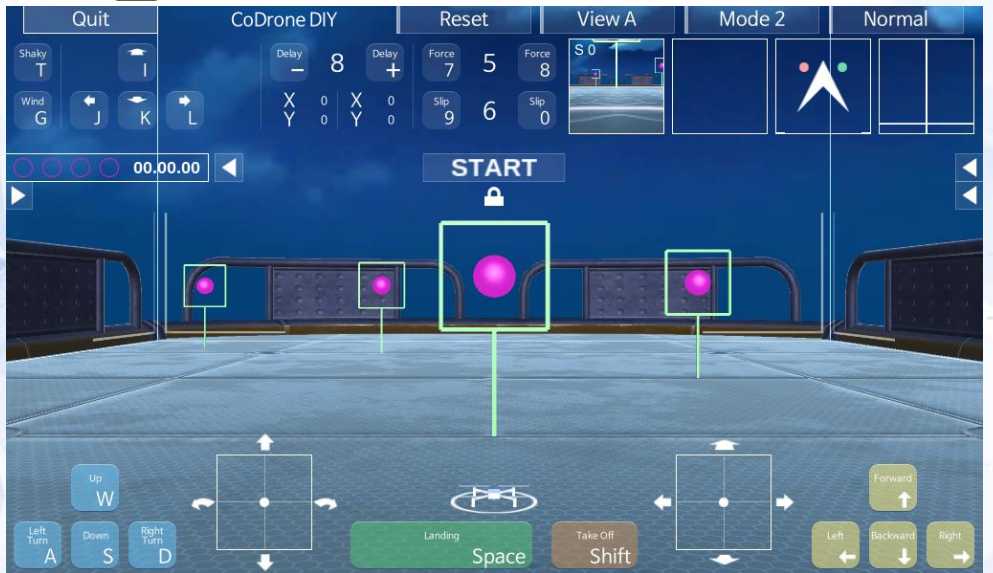
The screen changes as shown above.

DRONE SIMULATOR

In the above mode, press the arrow ▶◀ ▶◀ at the end of the screen to turn the game on.

Press the **START 🔒** button to start the game.

※ On this screen, you must press START to operate the drone.

Game 1

Game 3

Game 2

Game 4

Mini - Games : Description

Game 1 | View A | View B |

| ○ ○ ○ ○ | ○ ➡ ● | 00 : 00 : 00 |

The first game is who collects the purple balls in the obstacle faster within the time limit.
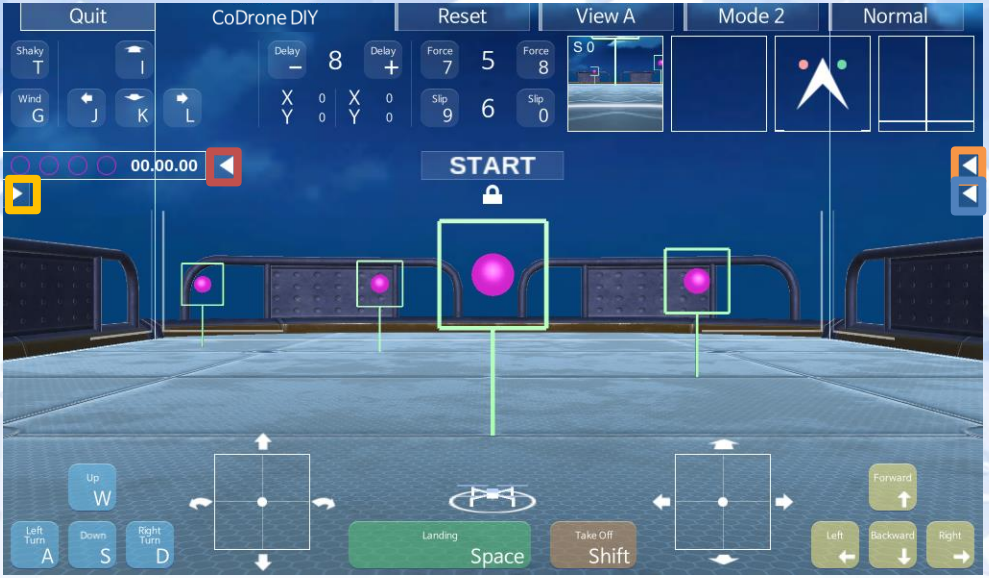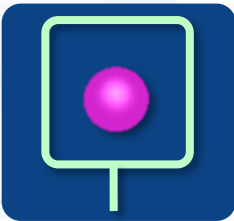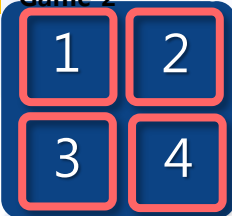When you eat a ball in an obstacle in a designated space with a drone, the ball is filled like the image above.

| View A | and | View B |

Game 2 | View B |
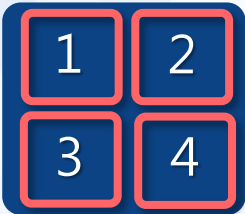
Two Views Supports

| 1 2 3 4 | 1 ➡ ① | 00 : 00 : 00 |

The second game is to see who will fly in a shorter time (1→2 → 3 → 4) in order of the aerial obstacles (No. 1, 3) and the floor obstacles (No. 2, 4).
If you pass or land through the obstacle, the left digit plate will be marked with a check mark, and obstacle number 3 will need to be changed to View B.

Game 3 | View A | View B |

| ◎ 0 ● 0 | ◎ ➡ ◎ 100 |

The third game is shooting game. When you eat the bullet icon ◎ , you load 100 bullets.
The bullet is fired automatically.
You can score if you hit the 'ink drop' with a bullet.
When the drone hits a black ball, the screen darkens and the game is over.

Game 4 | View B |

| ✕ 0 🟡 0 | ✕ 0 / 20 🟡 0 / 20 |

The fourth game is collecting yellow balls. If you control a drone and eat a yellow ball, you get a point.
In a short period of time, the ball will appear randomly and 'X Point' will be added '1 point' if you can't eat or eat late.
A total of 20 balls appear.

DRONE SIMULATOR

Game 1

View A View B

The first game is who collects the purple balls in the obstacle faster within the time limit.
When you eat a ball in an obstacle in a designated space with a drone, the ball is filled like the image above.

View A and View B

Two Views Supports

View A : Pilot Point of View

View B : Drone Point of View

| Quit | CoDrone DIY | Reset | View A | Mode 2 | Normal |

Shaky T | I
Wind G | J | K | L

Delay − | 8 | Delay + | Force 7 | 5 | Force 8
X Y 0 0 | X Y 0 0 | Slip 9 | 6 | Slip 0

S 0

START

1 2 3 4 00.00.00

Up W
Left Turn A | Down S | Right Turn D
Landing Space | Take Off Shift
Forward
Left | Backward | Right

Game 2 | View B

1 2 3 4   1 ➡ ①   00 : 00 : 00

The second game is to see who will fly in a shorter time (1→2 → 3 → 4) in order of the aerial obstacles (No. 1, 3) and the floor obstacles (No. 2, 4).

If you pass or land through the obstacle, the left digit plate will be marked with a check mark, and obstacle number 3 will need to be changed to View B.

| Quit | CoDrone DIY | Reset | View A | Mode 2 | Normal |

Shaky T

Wind G J K L

Delay − 8 Delay +

Force 7 5 Force 8

S 0

X Y 0 0 X Y 0 0

Slip 9 6 Slip 0

START

Game 3 View A View B

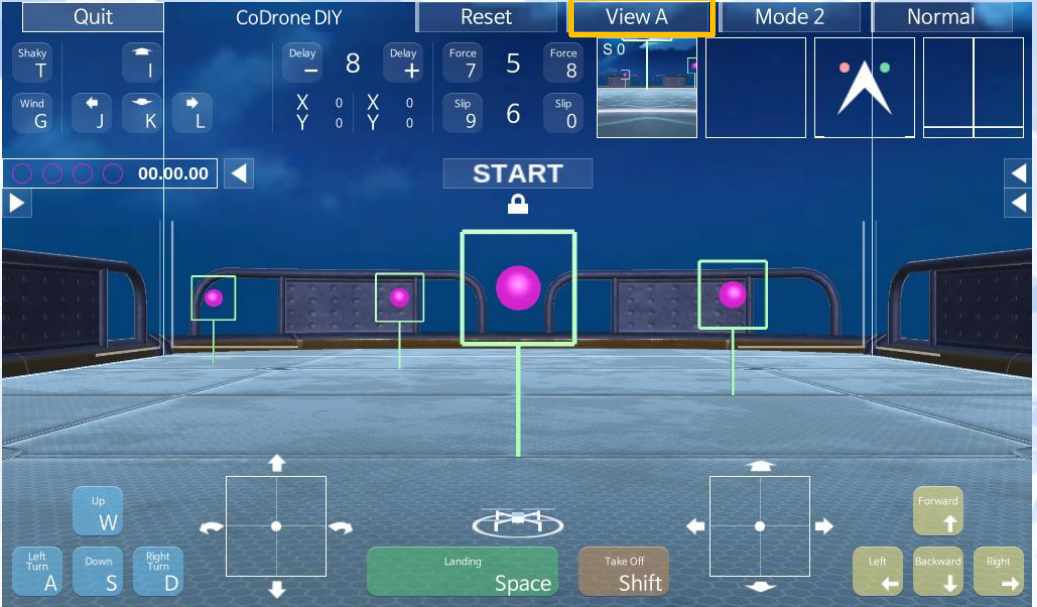$\bigcirc$ 0 ● 0 $\bigcirc$ ➡ $\bigcirc$ 100

The third game is shooting game. When you eat
the bullet icon $\bigcirc$, you load 100 bullets.
The bullet is fired automatically.
You can score if you hit the 'ink drop' with a bullet.
When the drone hits a black ball, the screen darkens and
the game is over.

※ **When the game is over, no ink drops appear.**

You can no longer earn points.

| Quit | CoDrone DIY | Reset | View A | Mode 2 | Normal |

Shaky **T** | **I**
Wind **G** | **J** **K** **L**

Delay **−** 8 Delay **+**
X Y 0 0 X Y 0 0

Force 7 5 Force 8
Slip 9 6 Slip 0

S 0

START

0/20   0/20

Up **W**
Left Turn **A** | Down **S** | Right Turn **D**

Landing **Space**   Take Off **Shift**

Forward **↑**
Left **←** | Backward **↓** | Right **→**

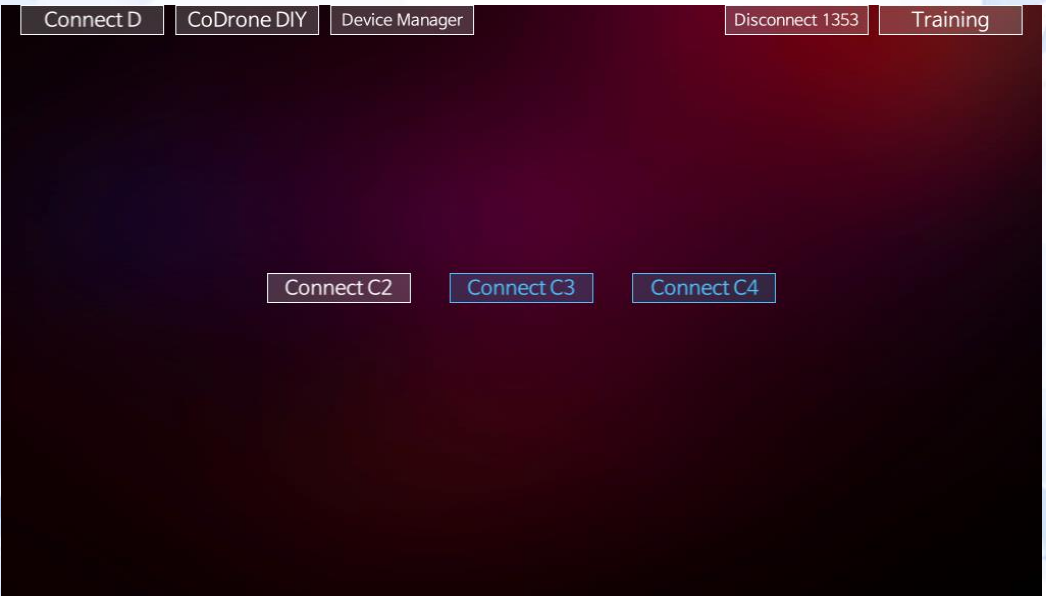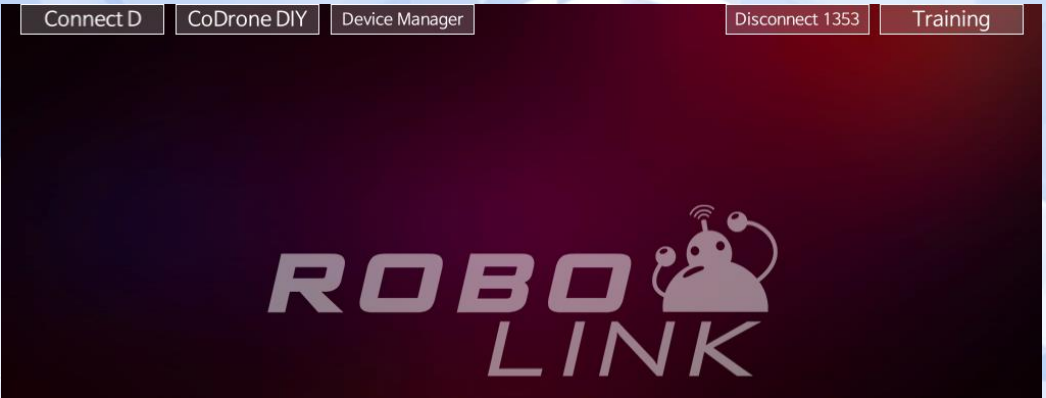## Game 4   View B

| ✕ 0 | 0 | | ✕ 0 / 20 | 0 / 20 |

The fourth game is collecting yellow balls. If you control a drone and eat a yellow ball, you get a point.
In a short period of time, the ball will appear randomly and 'X Point' will be added '1 point' if you can't eat or eat late. A total of 20 balls appear.
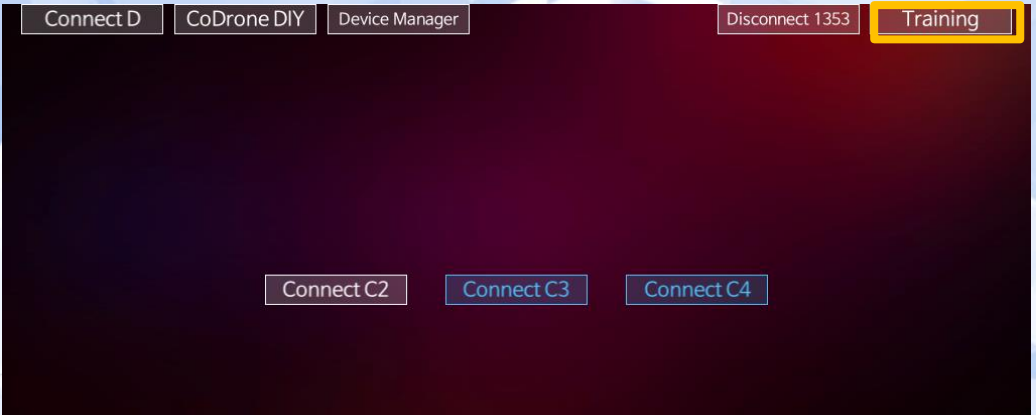
| ✕ | : Number of Misses |
| 🟡 | : Number of acquisitions |

Drone Simulator

"Soccer Game"

| Connect D | CoDrone DIY | Device Manager | | Disconnect 1353 | Training |

F2

| Connect D | CoDrone DIY | Device Manager | | Disconnect 1353 | Training |

| Connect C2 | Connect C3 | Connect C4 |

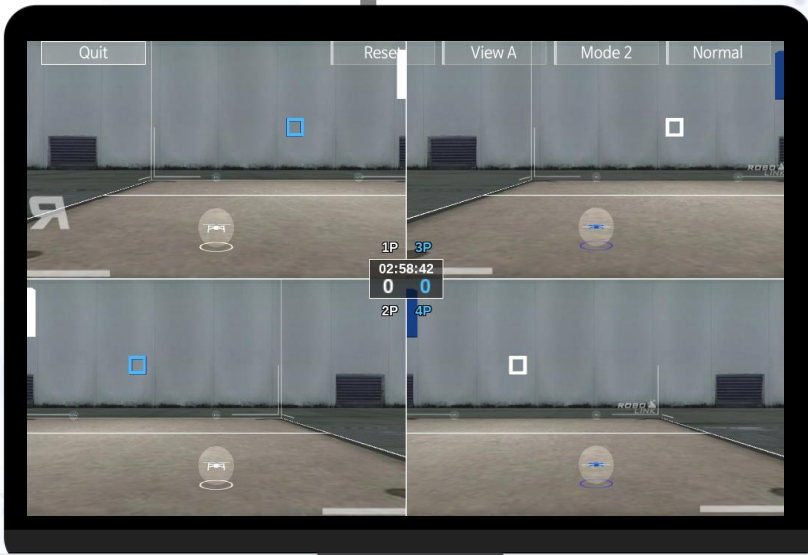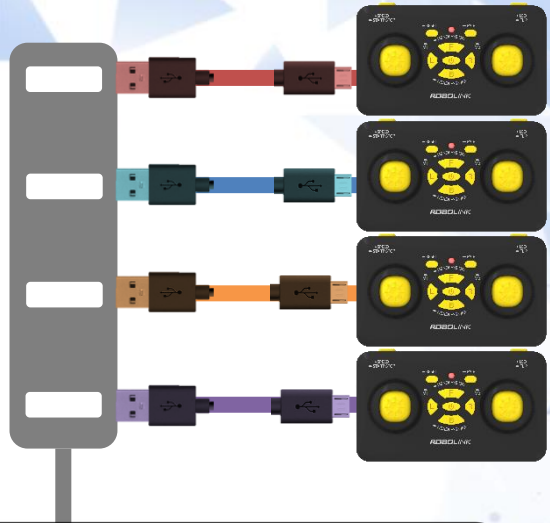On the initial screen, press the 'F2' key to connect multiple controllers to a single PC using a multi-port.
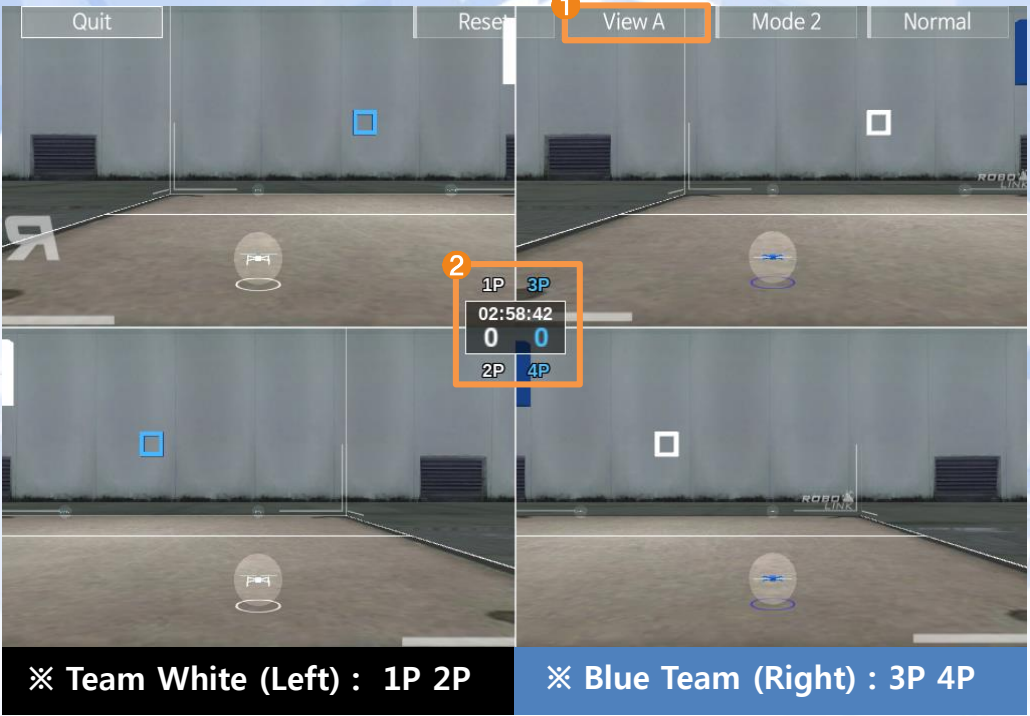
After connection, you can enter training mode by pressing Training in the upper right corner, and then press the 'F2' key to enter soccer game mode.

You can connect multiple controllers to enjoy soccer games on a single PC.

| Quit | | Reset | ① View A | Mode 2 | Normal |

② 1P 3P
02:58:42
0   0
2P 4P

※ Team White (Left) : 1P 2P　　**※ Blue Team (Right) : 3P 4P**

※ Game Rule

(1) Switch View : When you click and replace a **view**, all of the views in the window are replaced at the same time.
※ Even if you change the other control mode or headless mode, all drones will still be equipped with the same technology. It applies simultaneously.

(2) Score/Time : The time in the center shows the time remaining during the competition, and the white/blue numbers below mark each team's score.

(3) Point score : **White team** drives a drone into the opponent's **blue goalpost**, **Blue team** drives a drone into the opponent's **white goalpost**, and must pass in the right direction to score.

1 point

Even if you turn back and pass it in the right direction after scoring, you can't score, and you have to move to the center line point and go back inside the net to score.

※ Each score is 1 point and the total game time is 3 minutes.

Drone Simulator

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