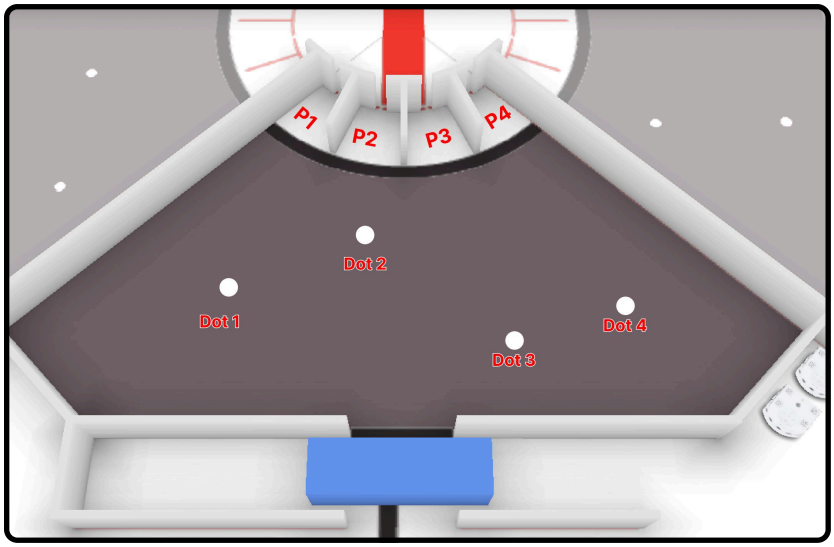
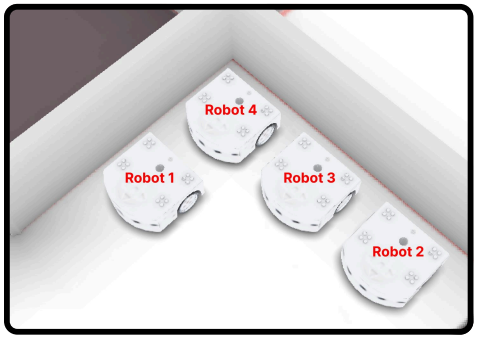
R2T2 Robotic Competition Strategy Overview

All following discussions will be based on markers Below.



Task List

A0	Pushing + Entry
A1	Entry with Line
A2	Find Dot
A3	Find Parking



Robot Position ตำแหน่งของหุ่นยนต์

The starting position of Thymio is currently uncertain

- If the position is random, then task assignment will be based on the allocated position

Task Distribution Each execution should inform in Discord

Robot 1

Robot 1 Task Flow:

- Execute A0: Pushing + Entry (Page 2)
- Then A2: Find Dot (Page 4)
- Finally A3: Find Parking (Page 5)

Action A0(P2) → A2(P4) → A3(P5)

Robot 2

Robot 2 – Robot 4 Task Flow

- Start with A1: Entry (Page 3)
- Proceed to A2: Find Dot (Page 4)
- Then A3: Find Parking (Page 5)

Action A1(P3) → A2(P4) → A3(P5)

Message Format:

Execution ✅ R2 Done A1, Ready for A2

Progress R2 Running now — others please hold
R4 Ready to start next stage

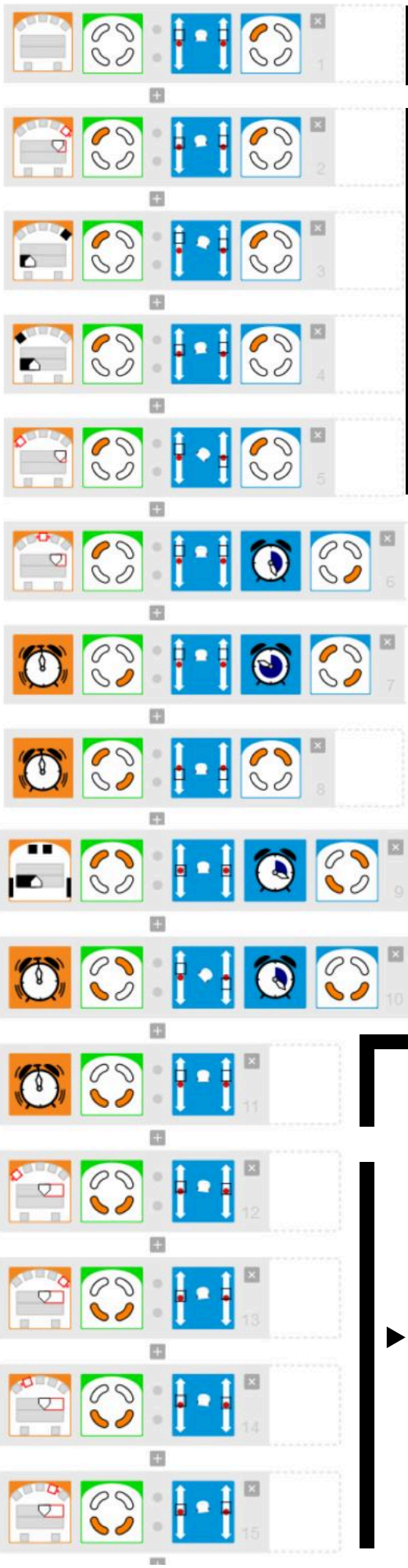
Adjustment ✅ R1 Dot detection = 925(Value for Nilai University Dot)

Robot 1

A0: Pushing + Entry

Only Robot 1 will execute this Action

Next-A2: Find Dot



▶ Line 1: Start

▶ Lines 2–5: Detect wall and follow it, keep robot centered (may need adjust)

▶ Lines 6–7: Detect block and push – two timers control pushing distance (adjust depending the distance)

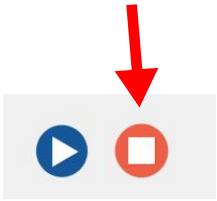
▶ Line 8: Move backward after timer ends

▶ Line 9: Detect the line behind

▶ Lines 10–11: Rotate the robot and enter the area

▶ Lines 12–15: Detect surroundings and continue into the field

After entering the field, the robot needs to stop running.

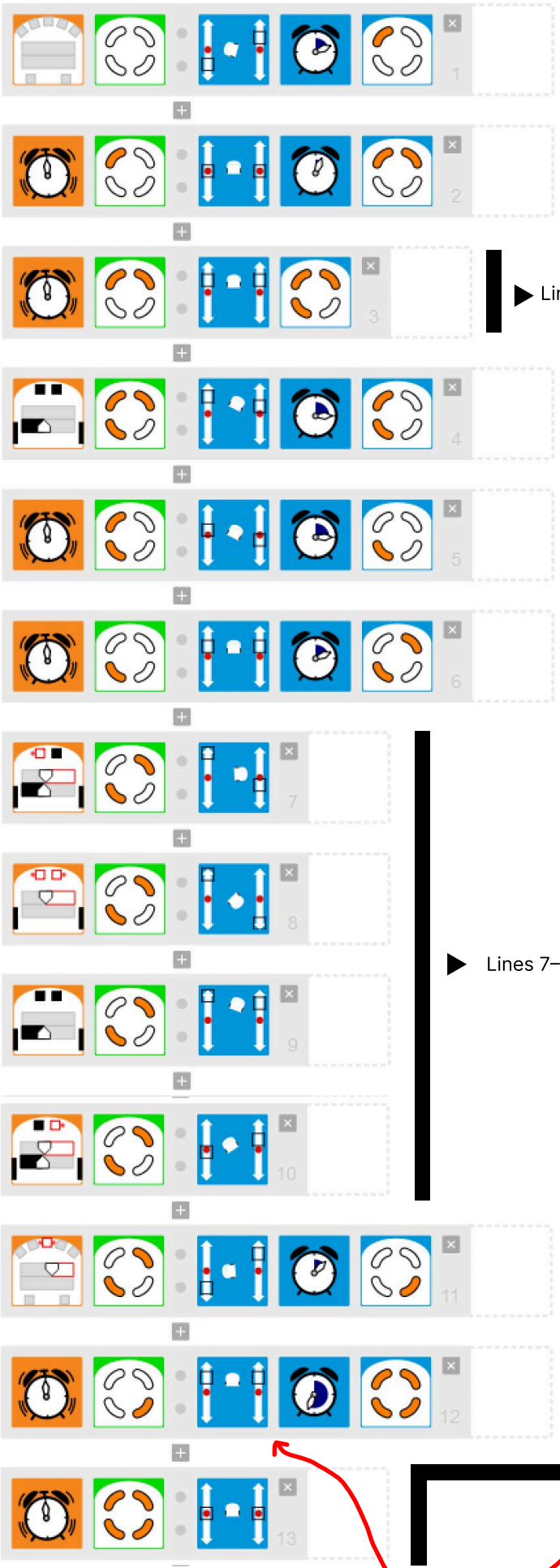


Robot 2 - 4

A1: Entry

The robots need to execute one by one from 2 to 4, based on our assigned order.

Next-A2: Find Dot



▶ Line 1: Start and rotate the robot (angle might need adjustment)

▶ Line 2: Stop rotation and proceed to the next stage

▶ Line 3: Start moving forward

▶ Line 4: Move forward until the line is detected

▶ Line 5: Perform a rotation

▶ Line 6: After adjustment, continue moving forward

▶ Lines 7–10: Move forward while following the line

▶ Line 11: When hitting the side of the gate, perform a rotation

▶ Lines 12–13: Move forward for a certain duration and then stop

Line 12: The moving angles for Robot 2 to 4 should be slightly different to avoid collisions.

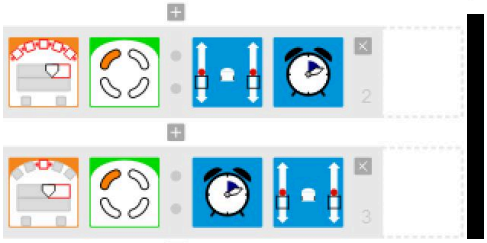
Robot 1 - 4

A2: Find Dot

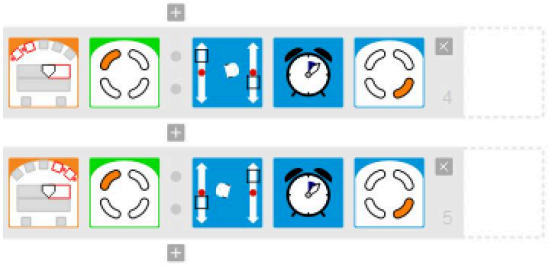
Execute according to our discussion on Discord

Next-A3: Find Parking

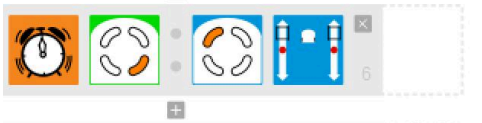
▶ Line 1: Start



▶ Lines 2–3: Detect obstacle ahead (robot/wall), move backward → go to Line 9

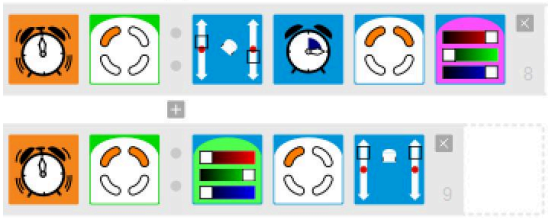


▶ Lines 4–5: Detect left/right obstacles (robot/wall), avoid them

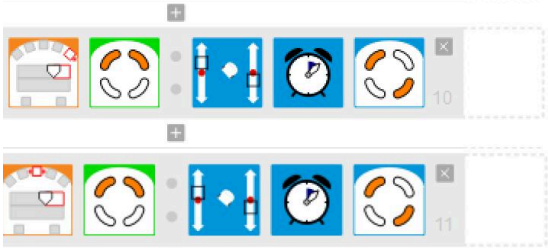


▶ Line 6: Move forward after avoiding

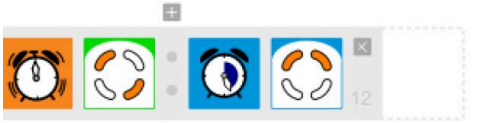
▶ Line 7: Detect ground edge and return to field → go to Line 9



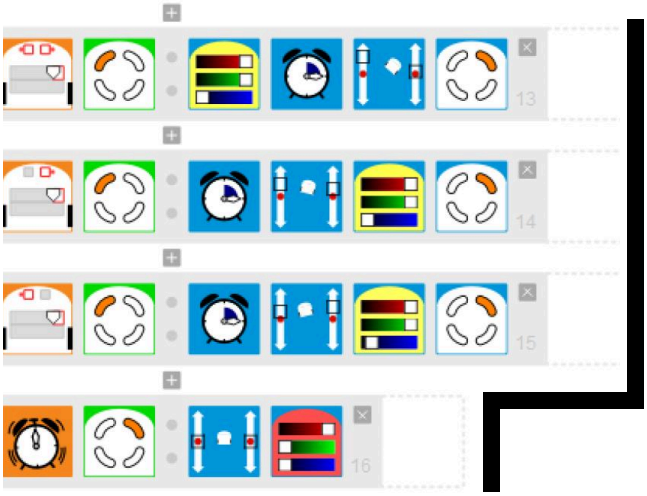
▶ Lines 8–9: Rotate and continue forward



▶ Lines 10–11: If obstacle is still detected while rotating, keep rotating



▶ Line 12: Go back to Line 9 and keep moving



When the grayscale value for detecting a dot is found, please update it in Discord.

▶ Lines 13–16: Detect the dot and stop (dot detection may need fine-tuning)

If you find the detection value for the dot, please share it on Discord — especially for the white dot.

Here:

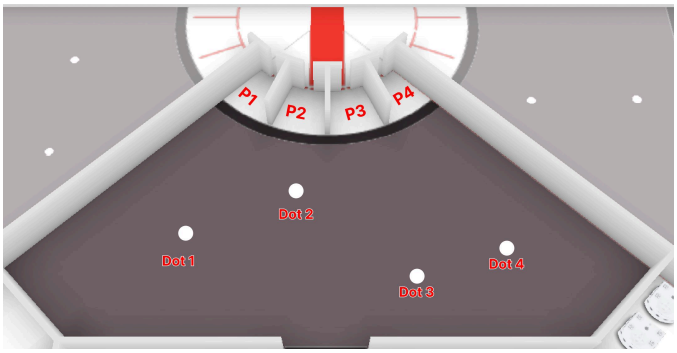
```
when prox.ground.delta[0] >= 650 and prox.ground.delta[1] >=
650 do
    if state[0] == 1 and state[1] == 0 and state[2] == 0 and state[3]
== 0 then
        call leds.top(32,32,0)
        timer.period[0] = 1000
        motor.left.target = 350
        motor.right.target = 50
        new_state[0] = 0
        new_state[1] = 1
        new_state[2] = 0
        new_state[3] = 0
        emit pair_run 12
        _emit.debug_log [0xc, 0x6, 0xc973, 0xd80, 0x5, 0x23f, 0x28a,
0x35, 0x8c40, 0x3e8, 0x110b, 0x47]
    end
end
```

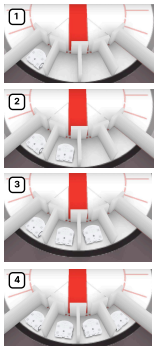
Robot 1 - 4

A3: Find Parking

Execute according to our discussion on Discord

End





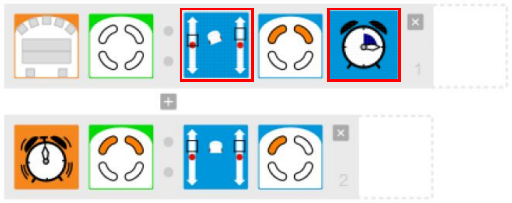
Process Overview:

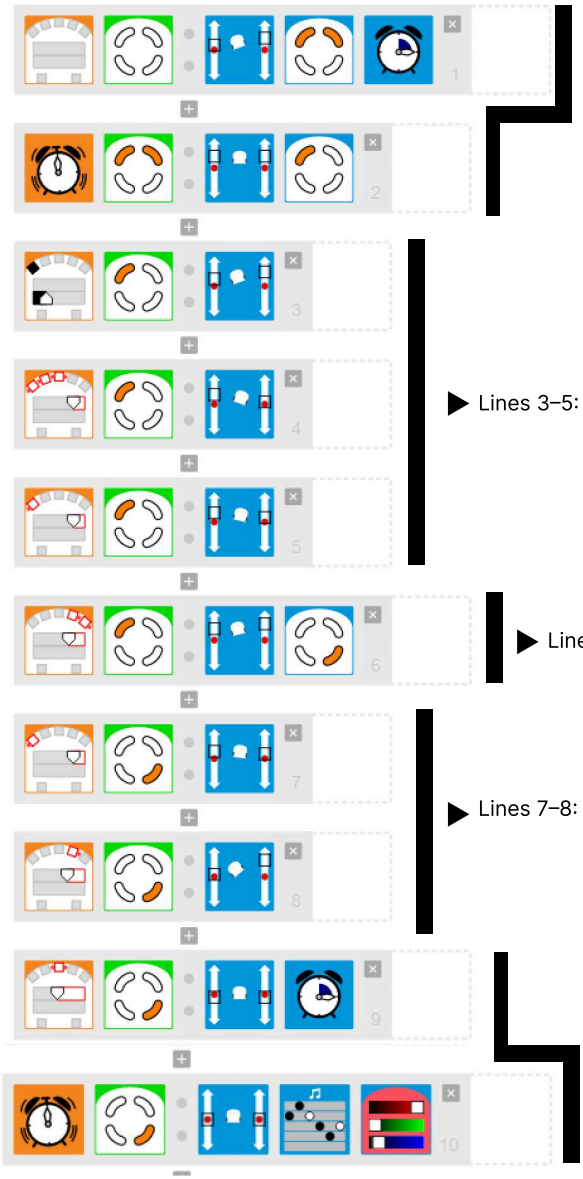
This final part is a bit more complex. The main idea is to fill from the left side to the right. The overall logic is for the robot to move along the left wall and fill positions from P1 to P4 in order.

Important Detail

- Make sure the left side of the robot contacts the wall first during Line 1
- Use "Line 1 movement + Timer" to perform the turning – the turning value needs to be adjusted on-site
- Update your robot's action status in Discord
- Notify the team before running to avoid collision between robots
- Execution order: Start from Dot 1 and continue to Dot 4

Adjust the angle by tuning the Timer and move value





▶ Lines 1–2: Adjust angle, then start

▶ Lines 3–5: After touching the wall, follow along it

▶ Line 6: Upon touching left wall again, switch mode and attempt to park

▶ Lines 7–8: Adjust position for parking

▶ Lines 10–11: After touching the inside of the parking slot, move backward slightly and stop