PRESENTATION 19 · LEARNING WITH STATEMENTS

Mini mission

Water, land and deposit in one program: red, blue and green LEDs, and three minutes on the clock.

TheBotCup 2026 · AiBotCup Simulator



RECAP · PRESENTATIONS 13 AND 14

Three Key Actions, three LEDs

Collect

red LED · on the field

Collect in water

blue LED · in the pond, double points

Deposit

green LED · both sensors on green

Plus **LoadedObjects** to know when we are full. Today: all of it at once.

PART 1

The mission: Session 19

Four objects, three minutes

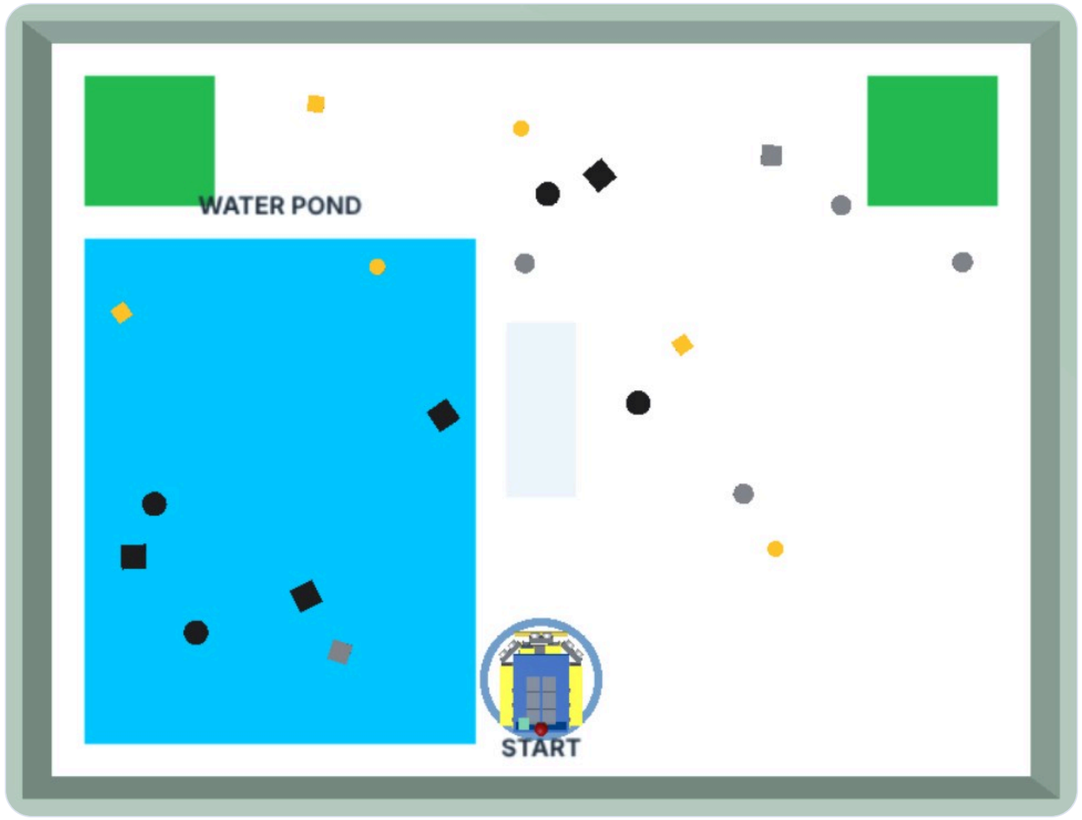
SESSION 19 · MINI MISSION

Mine and deposit 4 objects

Red on the field, **blue** in water, **green** to deposit.

All metal points count. 4 deposited: **+150**. Time limit **3:00**. At most **12** statements.





THE FIELD

Pond, land, two green corners

The **pond** on the left: double points.

Metals on **land** on the right.

Green **deposit** squares in both top corners.

PART 2

Two smart choices

The order, and what to leave out

CHOICE 1 · THE ORDER

Water collects above land collects

In the pond

Iron matches **PondIronLeft** and **IronLeft**. The one higher up wins: **blue LED**.

On land

The pond statements need X 0–104, Y 0–132: they do not match. **IronLeft** wins: red LED.

First match wins, so the **more specific** statement goes first.

CHOICE 2 · 12 STATEMENTS AT MOST

Leave silver out

Everything	Our choice
Deposit · Ahead · Forward = 3	Deposit · Ahead · Forward = 3
Pond: 3 metals × 2 sensors = 6	Pond: iron, gold × 2 = 4
Land: 3 metals × 2 sensors = 6	Land: iron, gold × 2 = 4
15, too many	**11, fits**

Iron is everywhere, gold is worth the most: **silver** is the one to drop.

PART 3

Step by step in statements

Eleven statements

STEP 1 · THE WHOLE PROGRAM

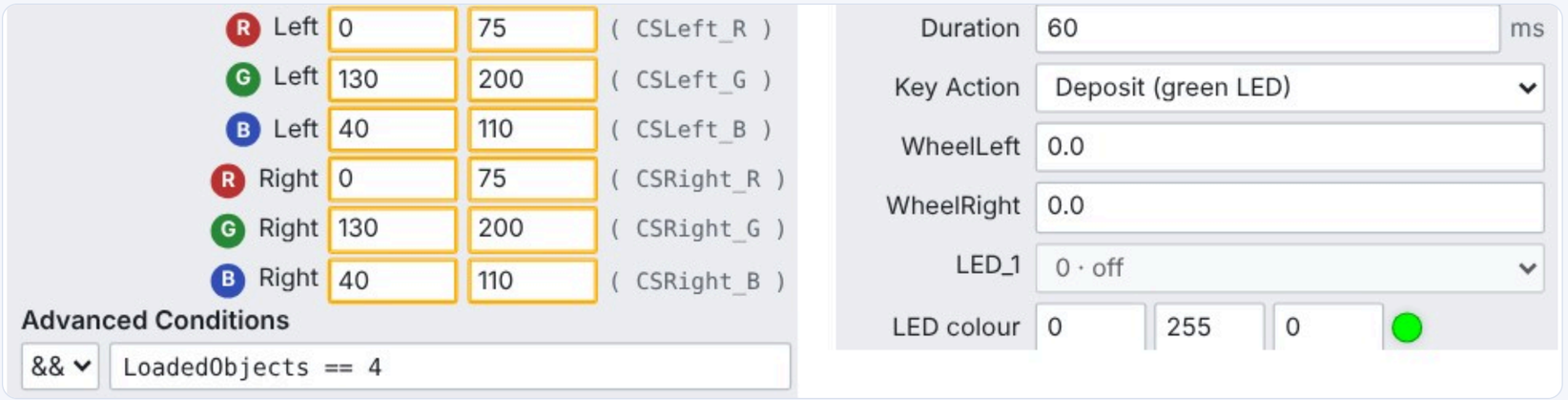
Deposit, pond, land, drivers

Statement	Condition	Advanced	Action
1 Deposit	both sensors green	LoadedObjects == 4	Deposit
2 PondIronLeft	left iron · X 0–104 · Y 0–132	LoadedObjects < 4	Collect in water
3 PondIronRight	right iron · X 0–104 · Y 0–132	LoadedObjects < 4	Collect in water
4 PondGoldLeft	left gold · X 0–104 · Y 0–132	LoadedObjects < 4	Collect in water
5 PondGoldRight	right gold · X 0–104 · Y 0–132	LoadedObjects < 4	Collect in water
6 IronLeft	left iron	LoadedObjects < 4	Collect
7 IronRight	right iron	LoadedObjects < 4	Collect
8 GoldLeft	left gold	LoadedObjects < 4	Collect
9 GoldRight	right gold	LoadedObjects < 4	Collect
10 Ahead	US_Front 0–20	none	−2 / 2 · 700 ms
11 Forward	none	none	4.5 / 4.5

STEP 2 · STATEMENT 1

Deposit with 4 on board

1 Deposit
both green · load 4

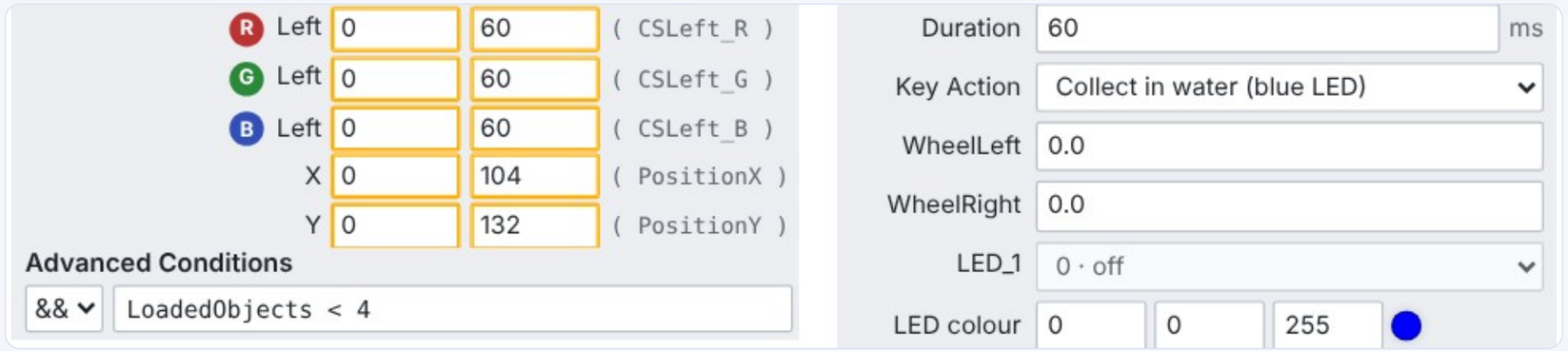


The same Deposit as before, now with **LoadedObjects == 4**.

STEP 3 · STATEMENTS 2 TO 5

Pond collects: colour + position + count

2 PondIronLeft
in the pond · load < 4

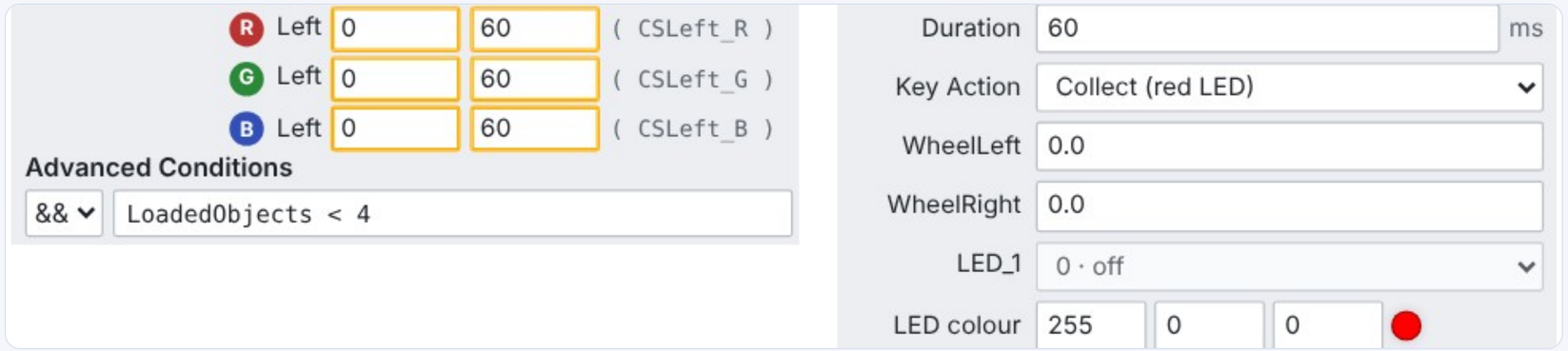


Three kinds of condition in one statement. PondIronRight, PondGoldLeft and PondGoldRight follow the same pattern.

STEP 4 · STATEMENTS 6 TO 11

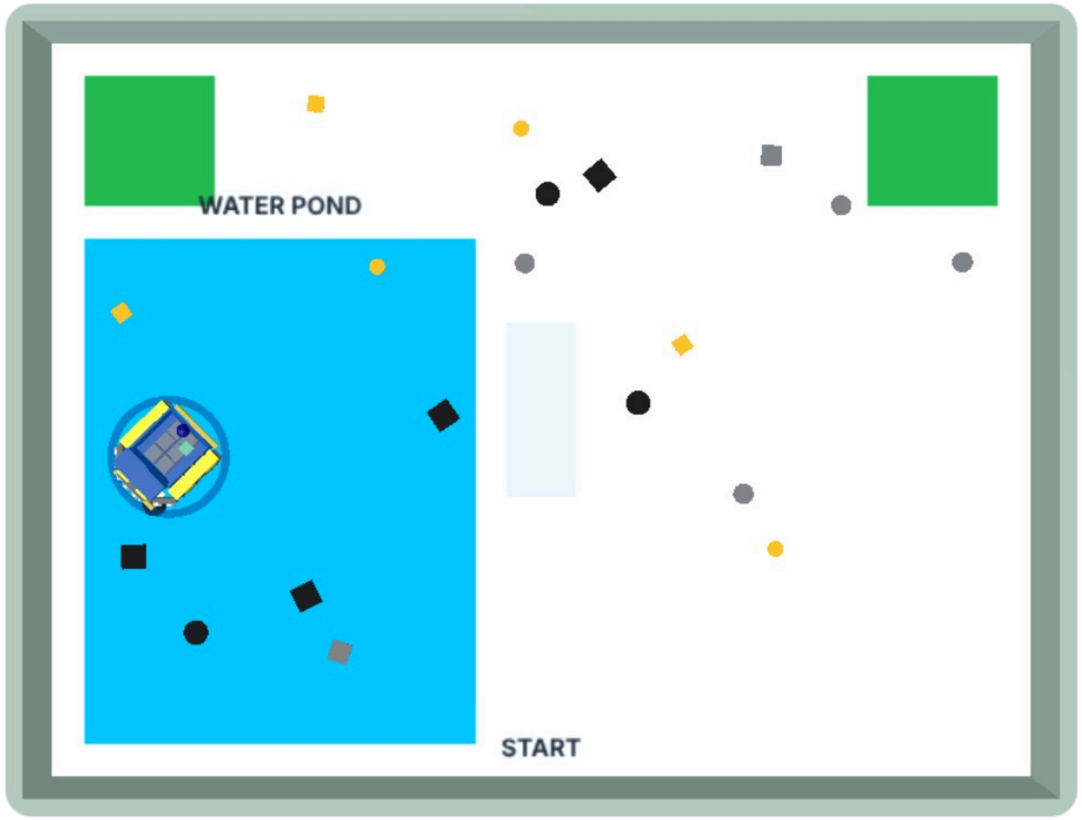
Land collects, then the drivers

6 IronLeft
no position · load < 4



IronRight, GoldLeft, GoldRight: the same, Key Action **Collect**.

Ahead (700 ms) and **Forward** close the list.



Colour Sensors

Left R	23	(CSLeft_R)
G	21	(CSLeft_G)
B	27	(CSLeft_B)

left sees this colour

Right R	0	(CSRight_R)
G	171	(CSRight_G)
B	241	(CSRight_B)

right sees this colour

Robot

Wheels L **0.0** · R **0.0** · LED **2**

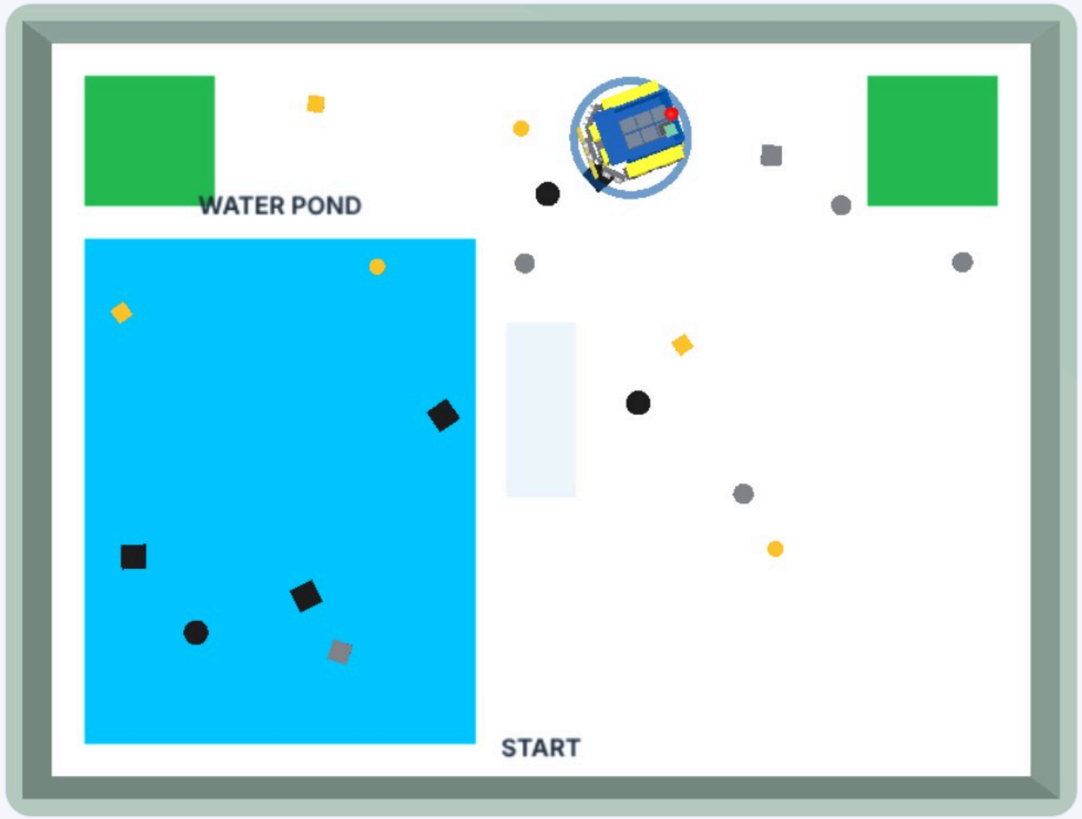
Load **0**/6 · Fe 0 Ag 0 Au 0

On **water pond · collecting 1.9 / 3 s**

STEP 5 · RUN · 0:08

Iron in the water

Both PondIronLeft and IronLeft match. **PondIronLeft** is higher: blue LED.



Colour Sensors

Left R	23	(CSLeft_R)
G	23	(CSLeft_G)
B	27	(CSLeft_B)

left sees this colour

Right R	228	(CSRight_R)
G	232	(CSRight_G)
B	239	(CSRight_B)

right sees this colour

Robot

Wheels L **0.0** · R **0.0** · LED **2**

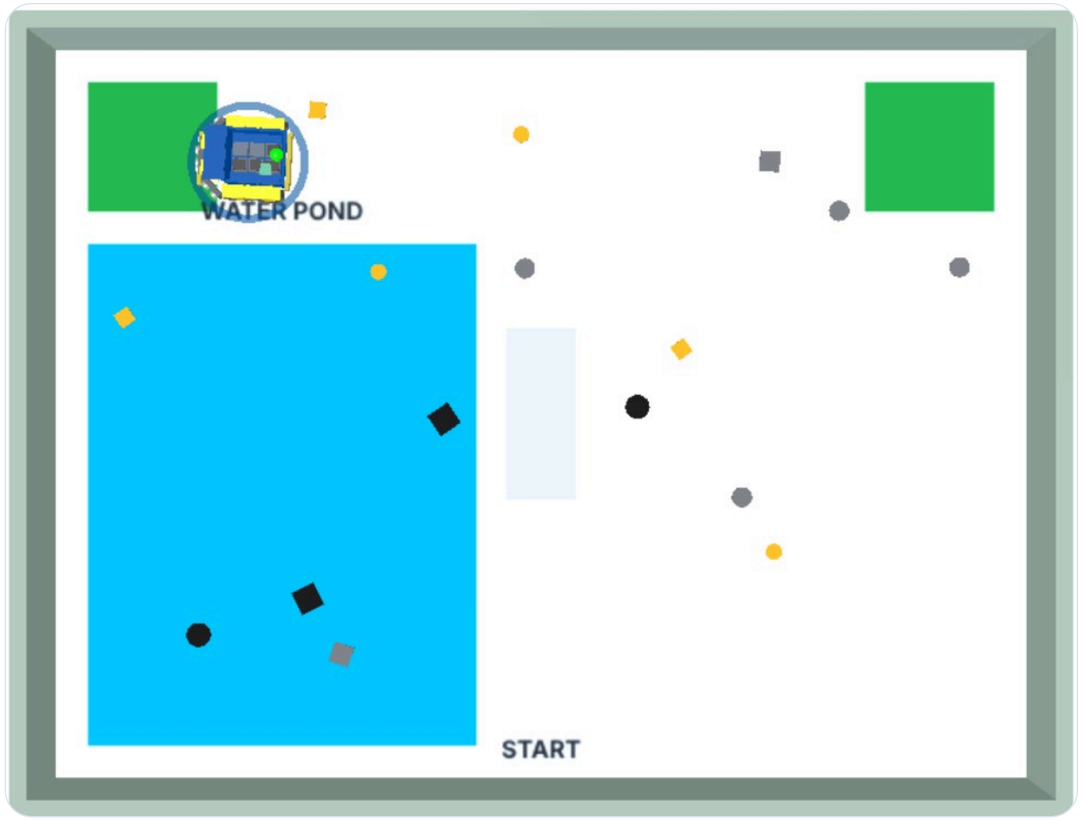
Load **1**/6 · Fe 1 Ag 0 Au 0

On **collecting 1.9 / 3 s**

STEP 6 · RUN · 0:30

Iron on land

Outside the pond box, so the pond statements fail. **IronLeft**: red LED.



Colour Sensors

Left R	28	(CSLeft_R)
G	162	(CSLeft_G)
B	69	(CSLeft_B)

left sees this colour

Right R	33	(CSRight_R)
G	163	(CSRight_G)
B	70	(CSRight_B)

right sees this colour

Robot

Wheels L **0.0** · R **0.0** · LED **1**

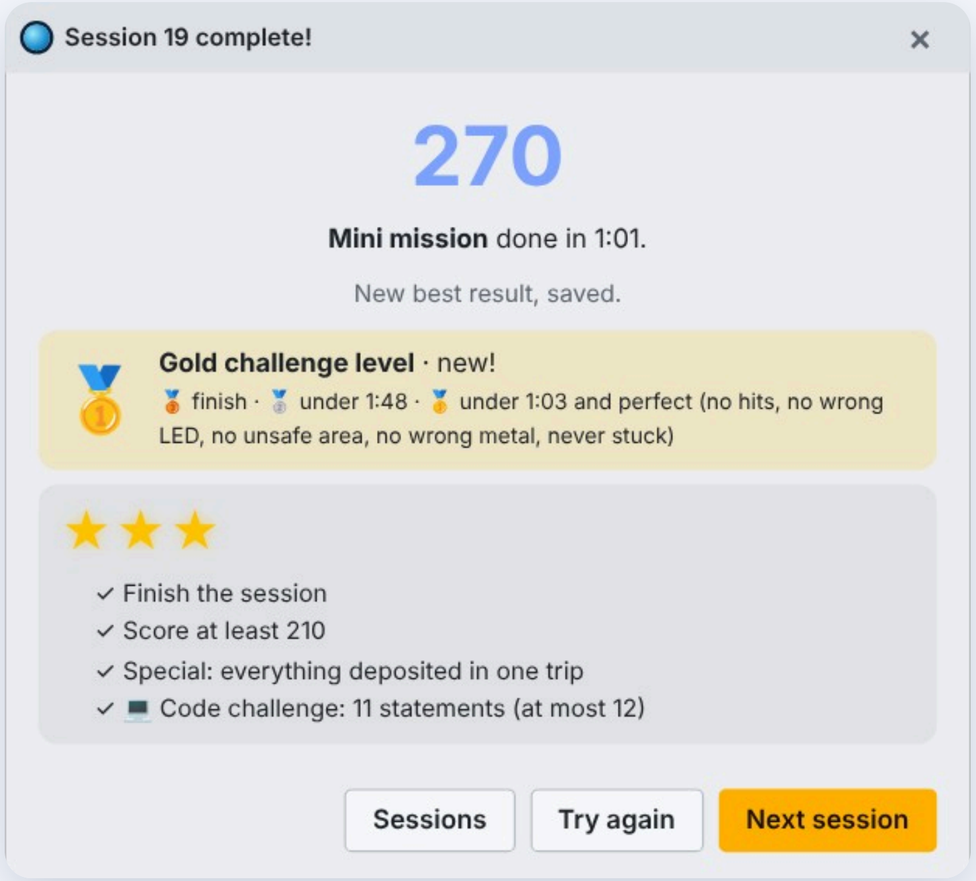
Load **4**/6 · Fe 4 Ag 0 Au 0

On **deposit area · depositing 1.6 / 3 s**

STEP 7 · RUN · 0:58

Four on board, on green

Load **4** (four irons), both sensors green: **Deposit**.



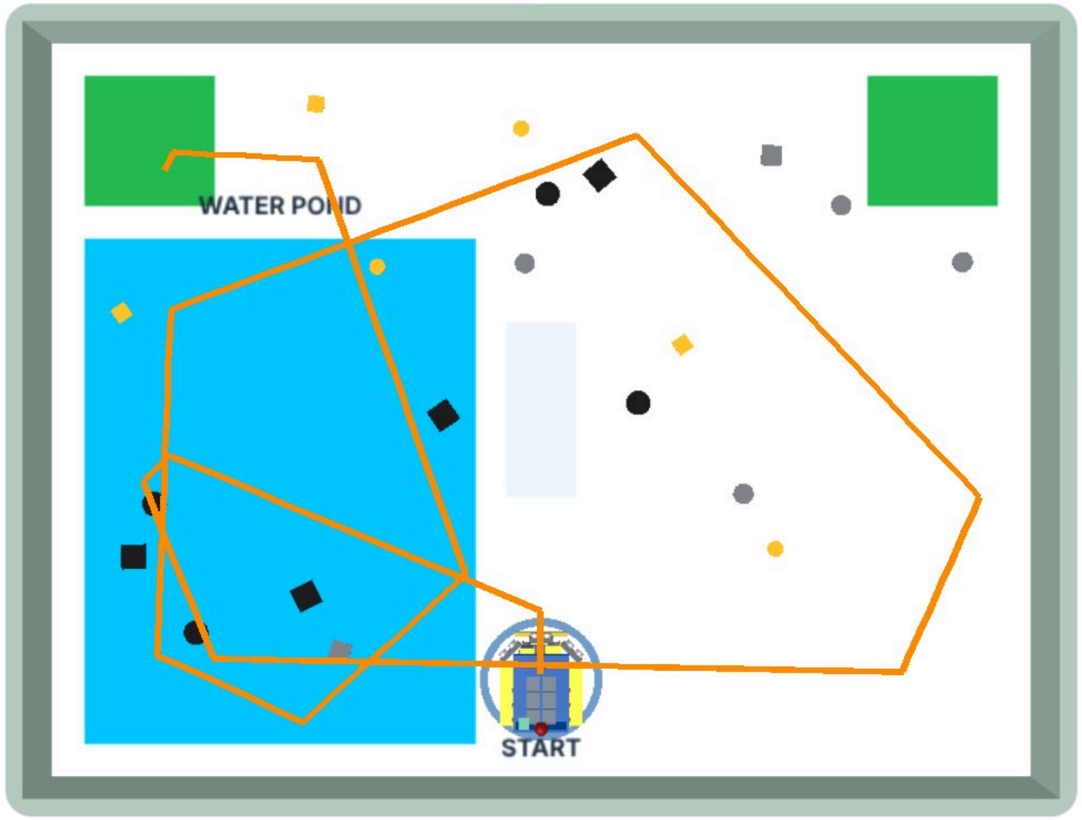
RESULT · TESTED

270 points in 1:01 · Gold

Score · metals 60 + deposited 60 + bonus 150.

Medals · Silver: under 1:48 · Gold: under 1:03 and perfect.

Code challenge · at most 12 statements. We used 11.



THE PATH · RECORDED

Water, land, water, home

The right LED in every place, decided by **order** and **position**.

Specific statements first, general ones after: **a rule for every program**.

DID NOT WORK?

Check first, then tune carefully

What you see	What to do
Red LED in the pond, not counted	Move the pond statements **above** the land ones
Blue LED on land	Pond statements need X 0–104 and Y 0–132
Too slow for gold	Try depositing at 3 and compare the score
Old program still on the robot	**Build** again, then **Load** on BLUE

NEXT TIME

Presentation 20 · Final challenge

The full Juniors challenge, with **warning bands** to avoid.