PRESENTATION 16 · LEARNING WITH STATEMENTS

Around the flags

Plan a route, then drive it with position and compass: no flag touched.

TheBotCup 2026 · AiBotCup Simulator



RECAP · PRESENTATION 11

The compass in the simulator

0	90	180	270
north · up	west · left	south · down	east · right

Turning **left** makes the compass go **up**; turning right makes it go down. Position X and Y say **where** the robot is.

PART 1

The mission: Session 16

To FINISH, no flag touched

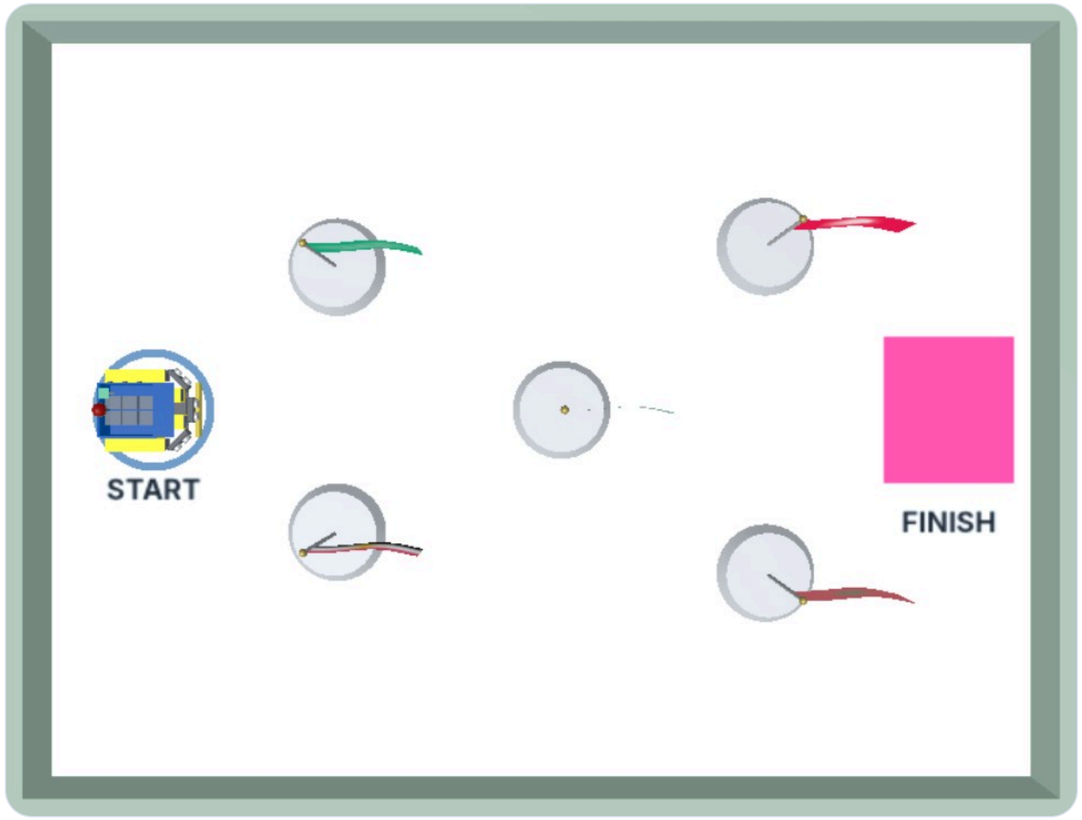
SESSION 16 · AROUND THE FLAGS

START to FINISH, flags untouched

Reach FINISH: **+150**. Each touch: **−10**.

Time limit **4:00**. Code challenge: at most **6** statements.





THE FIELD

Five flags in the way

START left middle, facing **right** (compass 270).

Five flags on round bases in the middle.

FINISH on the right. The bottom strip is **free**.

PART 2

Plan a route

Zones, headings and drives

WE TESTED BOTH

React, or follow a plan?

TESTED · DID NOT WORK

“See a flag, turn away”

Thin flags are hard to see: it touched flags, or got stuck between two of them.

TESTED · WORKED

A planned route

Down, along the free bottom strip, then up into FINISH. **0 touches, 0:14**.

THE PLAN · THREE LEGS

Each zone: turn, then drive

Leg	Zone (where)	Heading	Compass
1 South	X 0–199 · Y 22–255	down	about 180
2 East	X 0–199 · Y 0–21	right	about 270
3 North	X 200–255	up	about 360 (= 0)

In every zone: **Turn** while the compass is wrong, otherwise **Go** straight.

PART 3

Step by step in statements

Six statements, three pairs

STEP 1 · THE WHOLE PROGRAM

Turn and Go, three times

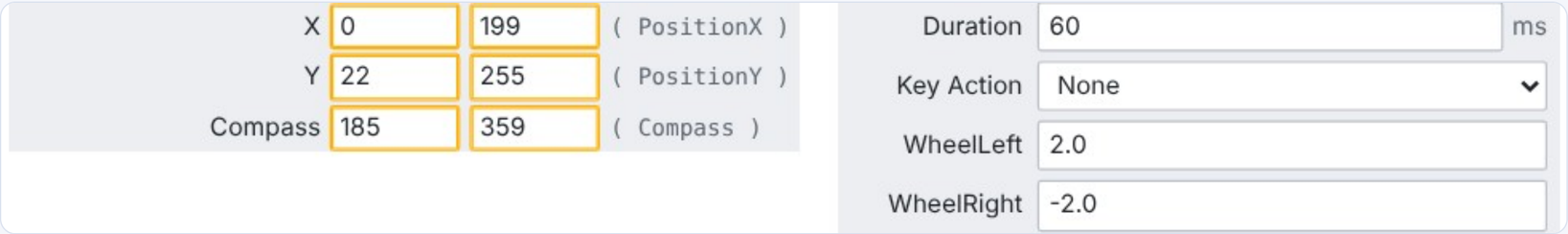
Statement	Position	Compass	Wheels
1 TurnSouth	X 0–199 · Y 22–255	185–359	2 / −2 (turn right)
2 GoSouth	X 0–199 · Y 22–255	any	4.5 / 4.5
3 TurnEast	X 0–199 · Y 0–21	0–265	−2 / 2 (turn left)
4 GoEast	X 0–199 · Y 0–21	any	4.5 / 4.5
5 TurnNorth	X 200–255	180–355	−2 / 2 (turn left)
6 GoNorth	X 200–255	any	4.5 / 4.5

Each **Turn** sits above its **Go**: it wins until the compass is right.

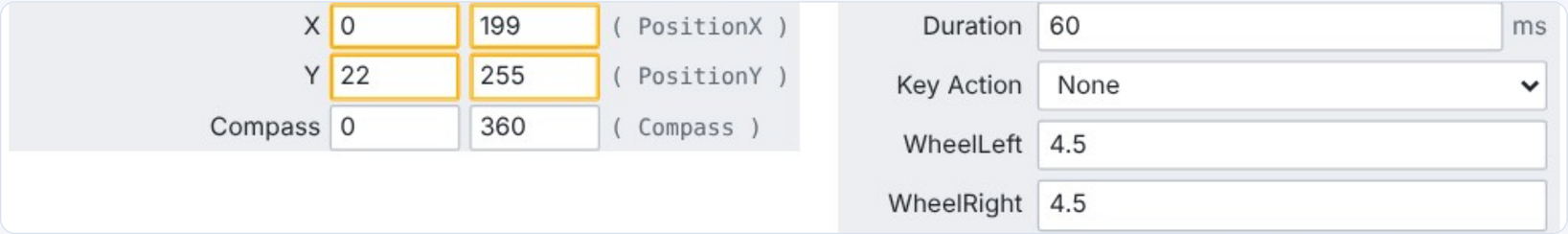
STEP 2 · LEG 1 · STATEMENTS 1 AND 2

Face south, drive down

1 TurnSouth
compass 185–359



2 GoSouth
same zone, any compass

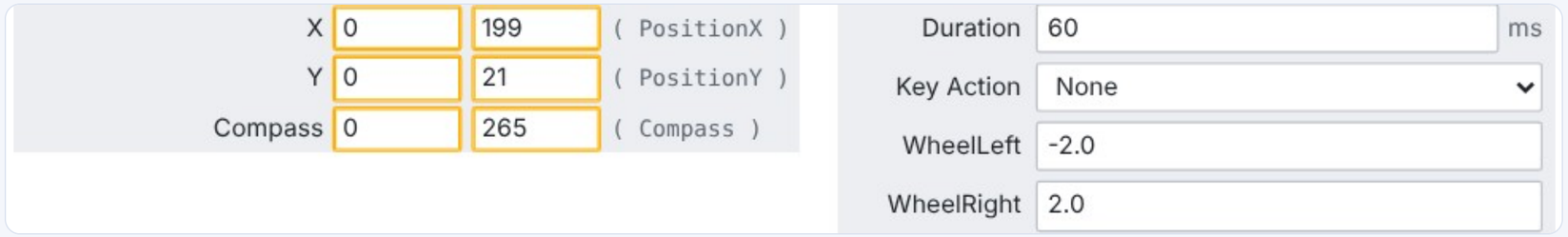


From 270 the robot turns **right**: the compass goes down to 184, then GoSouth takes over.

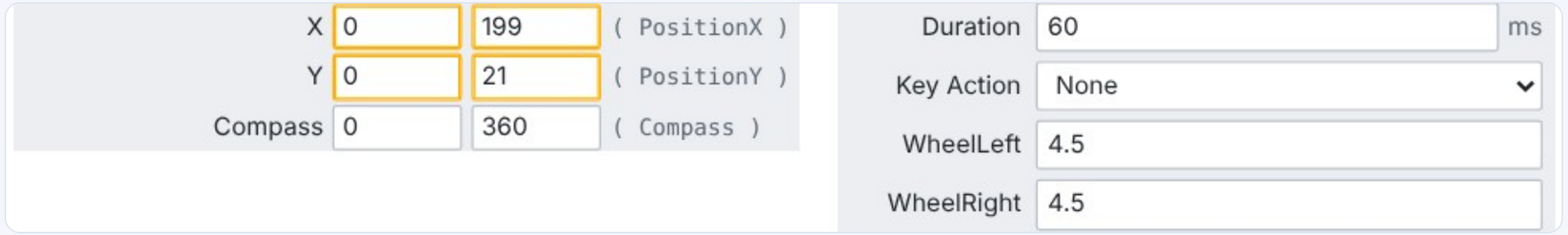
STEP 3 · LEG 2 · STATEMENTS 3 AND 4

Face east, drive along the bottom

3 TurnEast
compass 0–265



4 GoEast
same zone, any compass



From about 180 the robot turns **left**: up to 266, then GoEast drives right.

STEP 4 · LEG 3 · STATEMENTS 5 AND 6

Face north, drive into FINISH

5 TurnNorth
compass 180–355

X	200	255	(PositionX)
Y	0	1000	(PositionY)
Compass	180	355	(Compass)

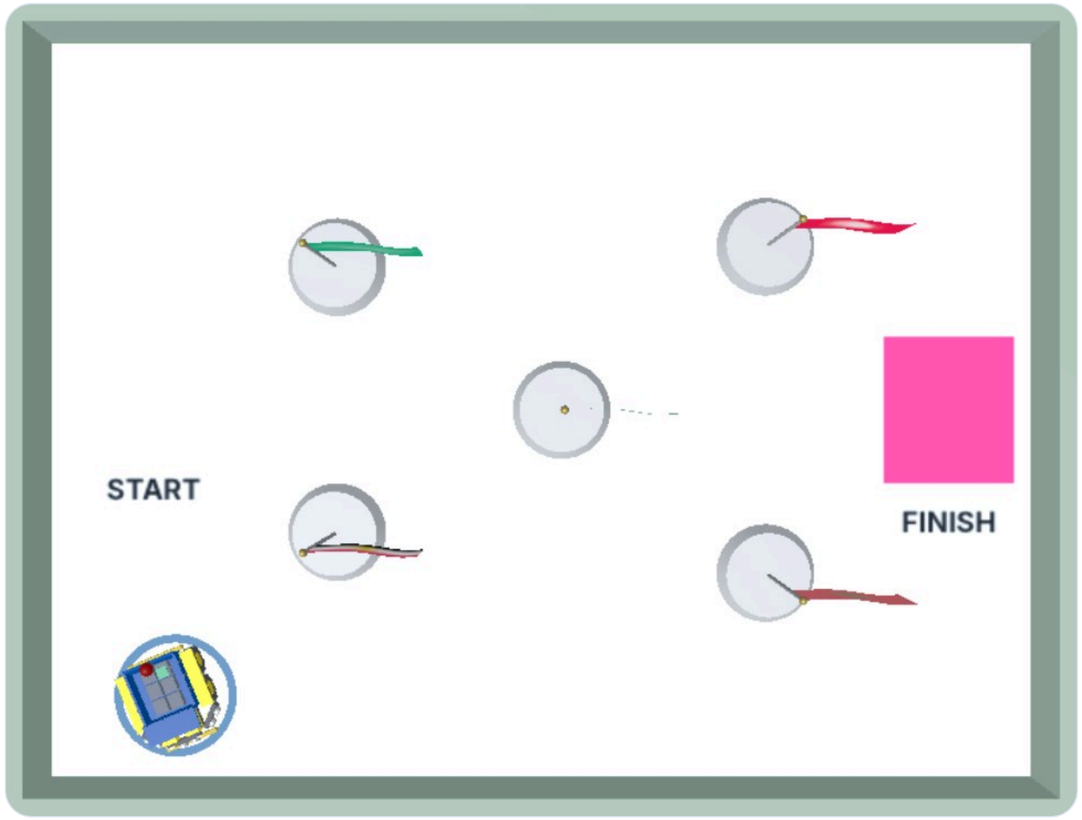
Duration	60	ms
Key Action	None	
WheelLeft	-2.0	
WheelRight	2.0	

6 GoNorth
X 200–255

X	200	255	(PositionX)
Y	0	1000	(PositionY)
Compass	0	360	(Compass)

Duration	60	ms
Key Action	None	
WheelLeft	4.5	
WheelRight	4.5	

From 270, left again: up to 356, almost north. GoNorth drives up into FINISH.



STEP 5 · RUN · 0:04

The first corner

Position

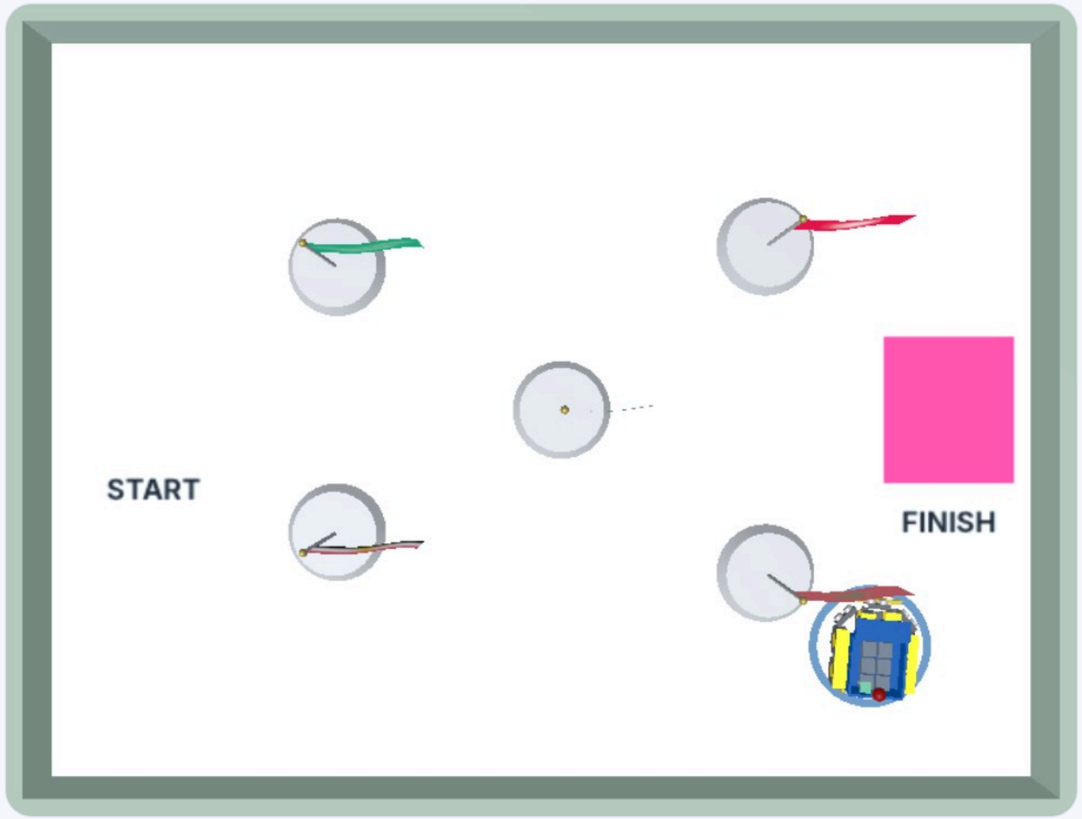
X 30 (PositionX)

Y 20 (PositionY)

Compass

233 (Compass)

Y **20**: bottom strip. Compass **233** < 266: **TurnEast** is turning.



STEP 6 · RUN · 0:13

Up into FINISH

Position

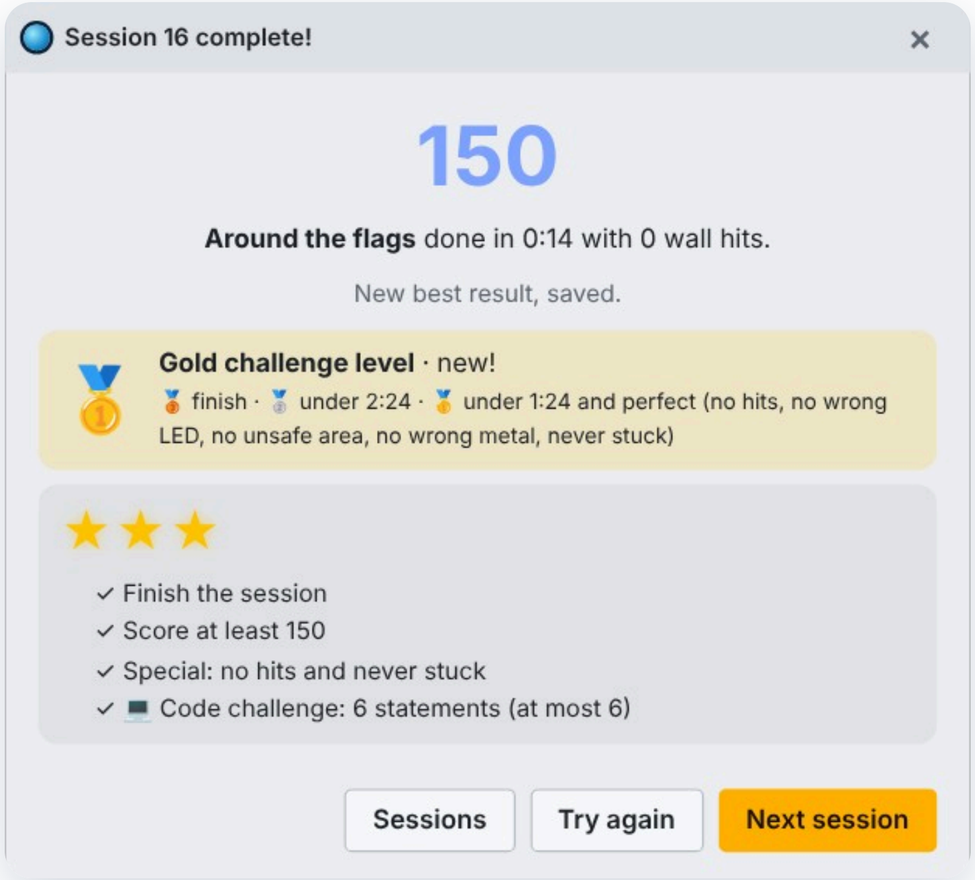
X 201 (PositionX)

Y 41 (PositionY)

Compass

356 (Compass)

X **201**, compass **356**: **GoNorth**, past the last flag.



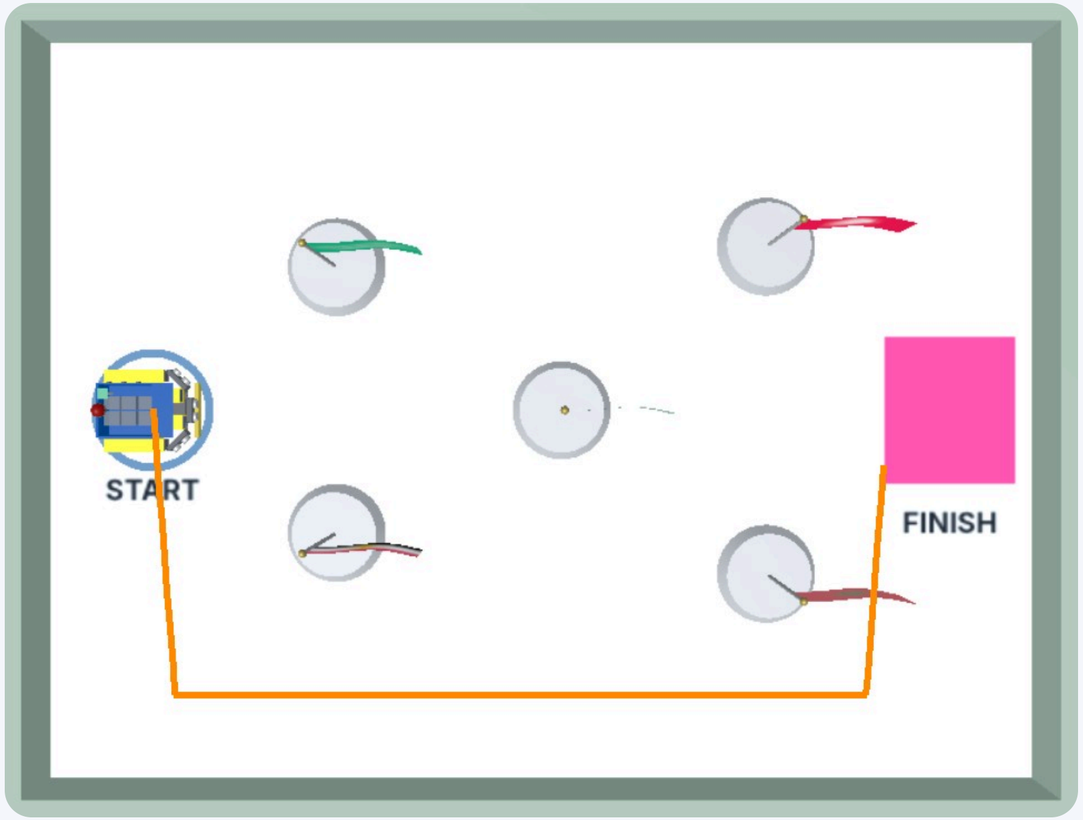
RESULT · TESTED

150 points in 0:14 · Gold

Touches · 0. No hits, never stuck.

Medals · Silver: under 2:24 · Gold: under 1:24 and perfect.

Code challenge · at most 6 statements. We used exactly 6.



THE PATH · RECORDED

A U-shape below the flags

Down, right, up: three straight legs, as planned.

When sensors are not enough, **position and compass** drive a plan.

DID NOT WORK?

Check first, then tune carefully

What you see	What to do
Spins in place forever	Turn direction: right = 2 / −2, left = −2 / 2
Drives off at the wrong angle	Check each Turn’s compass range
Never starts a leg	Zones must touch: Y 22 / 21, X 199 / 200
Old program still on the robot	**Build** again, then **Load** on BLUE

NEXT TIME

Presentation 17 · Timer

Using **Time** as a condition: drive for a set number of seconds.