

1, 2, 3, code ! - Cycle 2 activities - Sequence III: Robotics

This sequence deals with programming a **robot** and is an alternative option to Sequence II (programming in *Scratch Junior*) and its alternative Sequence IIb, programming in *Scratch*). It was created by La main à la pâte and Inria, inspired by the project Inirobot¹ (<http://www.inirobot.fr>).

Programming a robot instead of programming on a tablet or computer

Programming a robot uses the same concepts as programming on a computer; they are simply applied to a physical object. The Thymio robot can be programmed using Aseba/VPL (visual programming language).

[Sequence III](#) does not include scripted elements from the adventure from [Sequence I](#): in this respect, it is completely independent. However, we do not suggest doing it alone but rather **after Sequence I**. This will let students use the unplugged activities to conceptualize the key ideas of algorithm and program, which will be covered again here, as well as key ideas specific to robots (sensors, actuators, environmental interaction, etc.). That said, there is no need to have completed [Sequence II-a](#) (*Scratch Junior*) or the alternative [II-b](#) (with *Scratch*).

This "Cycle 2 robotics" sequence is highly inspired by the "[Cycle 1 robotics](#)" sequence, and in fact repeats certain parts of it: the first three lessons of this sequence are a repeat of the Cycle 1 lessons, with just a few small differences. The following lessons will give students a more in-depth look at robot programming. For the sake of brevity, we will not recopy all the information here, but simply the key parts of these lessons with the necessary adaptations. We therefore suggest reading the "[Cycle 1 robotics](#)" sequence beforehand.

	Lesson	Title	Summary
	Lessons 1, 2, 3	Introduction to Thymio in Cycle 2	Students are introduced to the Thymio robot and familiarize themselves with it. After exploring the various pre-programmed modes, they have Thymio run a maze. They gradually formulate a simple definition of what a robot is. (Adaptation of the four first lessons of the "Robotics in Cycle 1" sequence, pages XX and on)
	Lesson 4	Programming Thymio (1/2)	To go into more depth with Thymio, students discover the Aseba/VPL programming environment. The graphic interface lets them design their own programs for Thymio.
	Lesson 5	Understanding sensors to program Thymio	VPL programming for Thymio is event-driven: students will learn how to use Thymio's sensor status to trigger precise actions.
	Lesson 6	Programming Thymio (2/2)	Students take on small challenges to create their own VPL programs for Thymio.
	Lessons 7 et 8	Obstacle course for Thymio	Students must reproduce Thymio's yellow "explorer" mode. First, they write the program. Then, they test their program in a real maze.

¹ Inirobot is a project from T. Guitard, D. Roy and P-Y. Oudeyer (team Flowers Inria ENSTA ParisTech), Morgane Chevalier (HEP Vaud)