# Activity 28. Why does it turn around? Building, programming and debugging your first Engino Robot! (EUC)

1. **Learning outcome(s):** (list up to 3)
	* 1. Built a small robot/car by following building instructions
		2. Navigate and use the Engino robotics software to create a simple program for the robot
		3. Identify flows in the program and fix them, by comparing the program with its outcome.
2. **Relation of activity with the STEM, gender inclusiveness and Entrepreneurship:** (text, not bullets, explaining the relation of the activity to 3 above)

STEM

1. **Indicate the area of focus:**

**☒ STEM**

**☐ Gender inclusiveness**

**☐ Entrepreneurship**

1. **Materials:** (including ppts, videos, hands-on material)
* Engino Robotics pro kits (1 kit per 3 students) (including Engino parts for the robot, instructions, and software for programming)
* Computers with the Engino Robotics software (1 PC per 3 students)
1. **Preparation:**
2. **Duration:** 60 (minutes)
3. **Target group:** 9-14(student age)

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1. **Description of the activity:**
2. ***Build the Robot***
* Students are presented the Engino Robot kit, the various pieces and the instructions
* Students from groups of 2-3 and they start building their robot.
1. ***Getting to know Engino Robotics Platform ERP***
* Students in whole group discuss what it takes to make the robot move (provide the robot with instructions what to do)
* Looking at one of the robot/cars they built, we discuss what instructions we need to simply make the robot move forward (2 engines = 2 instructions, 1 for each engine).
* Students are shown how to make their first program through the platform and them they are let to go to their groups, and program their first program.
* Students are shown how to transfer their program to the robot
* They are asked to try their first program.
1. ***Debugging***
* Due to the fact that the two engines are build symmetrically revered, their first program makes the robot to move in wave-like shapes.
* Students in whole group discuss how this happen. They need to realize the there is nothing wrong with the robot – their program simply needs to be fixed
* We identify the necessary changes and we show students how to make them on the platform.
* They then move to their groups to make changes and try things out.

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