Professional Sumo

Model Name and Number: Professional Sumo YE.529.

Topic: Different propulsion devices.

Accessory tools: Parts for the basic model - 3 nail beams and 2 cross nails. In this lesson, the construction of the model is free and therefore it is necessary to try to provide the children with additional parts according to the student's needs.

Lesson's Goals:

- Students will develop creative thinking when building the propulsion devices (construction without building instructions).
- Students will develop strategic thinking through working in a group.

Lesson Structure:

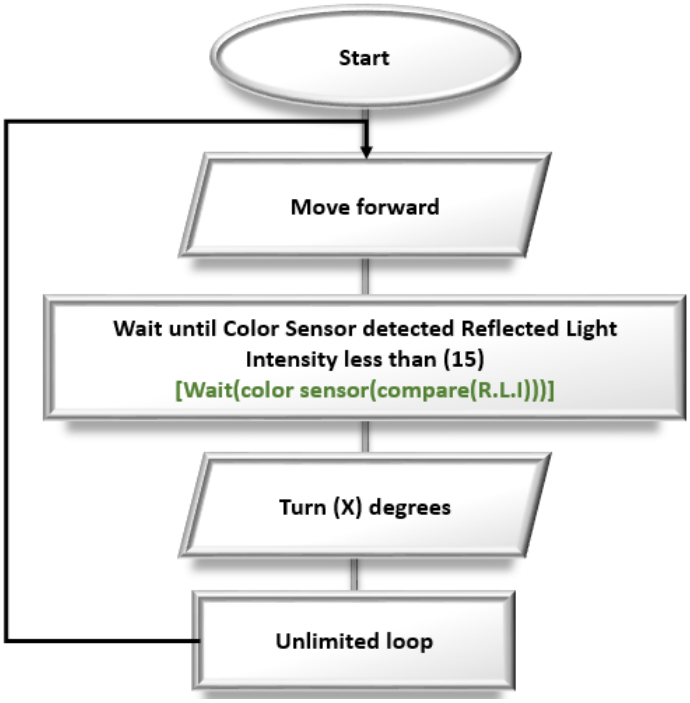
1. Explain the model built-in class.
2. Operational Algorithm.
3. Construction.
4. Programming.
5. Playing/Experiencing the model.
6. Dismantle and rearrange the Young Engineer kits - 10 minutes before class dismisses.

Explanation of the model built in class:

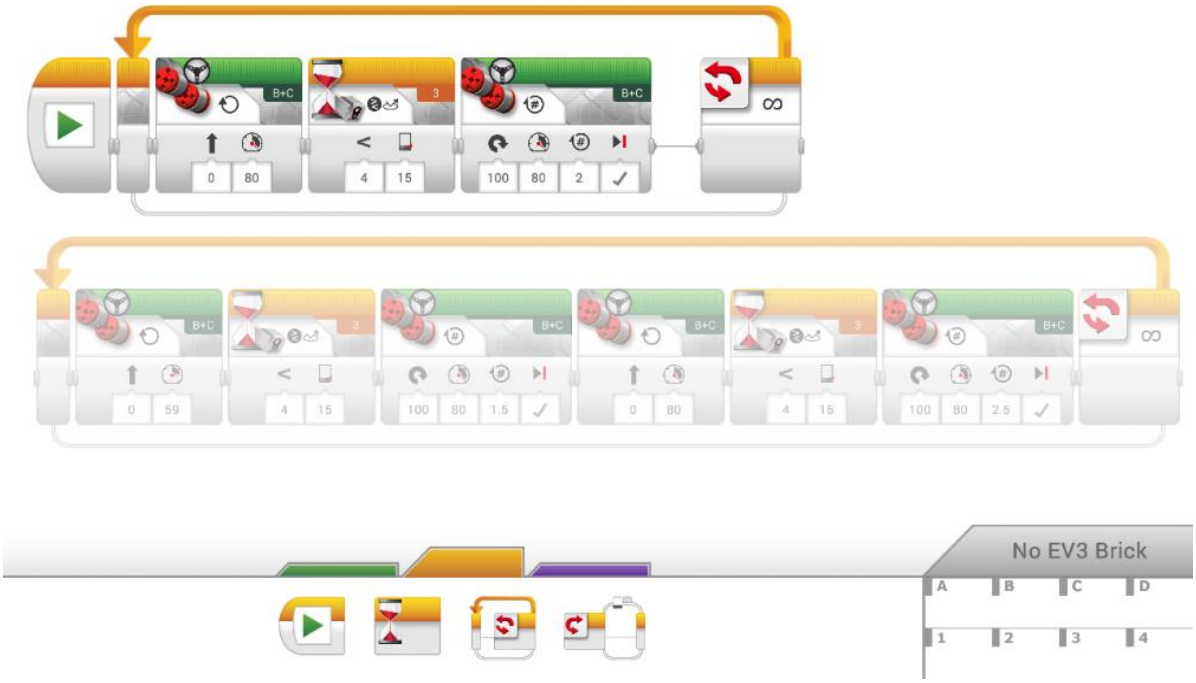
In this lesson, we are building a model called the "Professional Sumo". The products made in the lesson will be the result of the students' imagination, without building instructions. However, a basic model will be built - a vehicle composed of two motors on both sides that are responsible for its movement, but without devices allowing it to move (wheels or chain). Each team must complete the model on their own and without building instructions. In addition, a Color Sensor must be installed to detect a black line.

Operational Algorithm:

In the diagram below you can see the basic programming only, students can add additional conditions inside the loop, meaning that each time a model reaches the black line it will make a different turn and start driving forward with a different intensity while maintaining the rule about not leaving the "Arena" (Which appears in the code image) In addition, the value of the rotation amount or forward driving force doesn't appear in the diagram, the children must program it themselves.



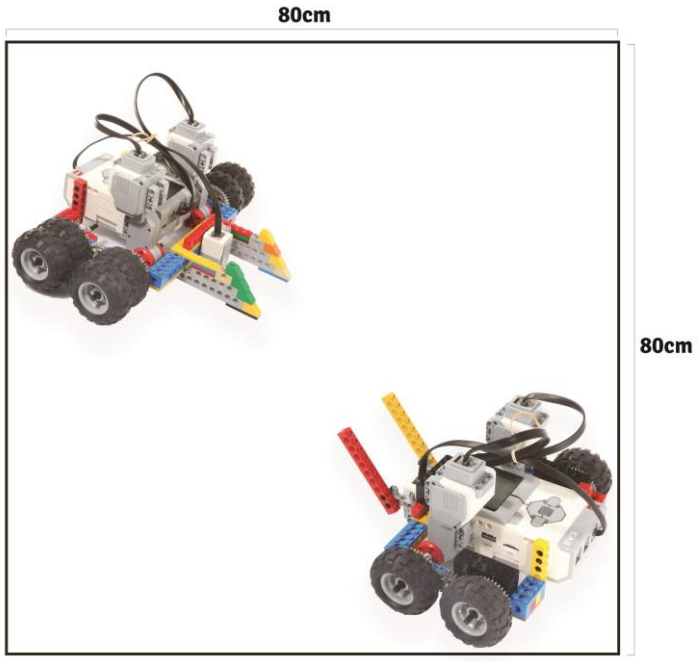
Programming:



Playing with the Model:

Each team must independently build the model's propulsion devices (no limits of what parts can be used), enhance them as they wish, and program the model, based on a programming presented, according the detailed instructions that the instructor will give, to complete the arena.

Game rules: Each model will be in the center of the ring as the front of the models each face a different direction from each other. After giving the signal to begin, each team will activate the models programming and competition will begin automatically. A model that falls or goes completely out of the lines is disqualified and must returned to the arena while it is running. After 3 disqualifications, the winner will be declared.



Notes for the instructor:

- ✓ The guide must prepare a square arena whose boundaries are marked with dark tape on a light floor or the other way around, depending the color of the floor.
- ✓ Make sure the children check that the model fulfills its mission (knows not leave the arena) before the competition between the models, so that each team can compete. According to the rules.
- ✓ Before the start of the competition it is recommended that each team check that his model does not leave the arena when it operates independently after being engaged, so you will not waste time in the competition itself and cause disappointment to the competing teams.
- ✓ Note that a higher-powered model will cause the wheels to slide, which will reduce the push capability. A long rotation will delay the model at the end of the arena therefore increasing the chances of exposure to

the push when the model is at the end (think of appropriate tactics - for example, placing the model in a more strategic location).

✓ In stage 15, 3 lines X2 are added.

Examples for model:

Model A

Model A

Model B

Model B

Model C