

DEVOXXTM
4KIDS

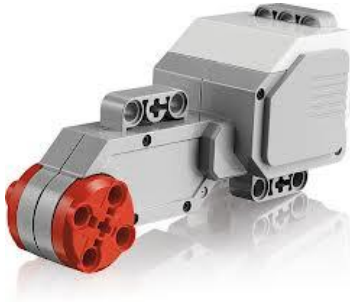


**Lego
Mindstorms**

What is your robot made of ?



- An **EV3 brick** on which sensors and motors are plugged. We will build our programs on the computer, and then upload them into this brick.



- 2 **large motors** to drive the robot.

What is your robot made of ?



- 1 **medium motor** for other mechanisms.
- 1 **infrared sensor** to detect objects and measure the distance to them.

How to program it ?

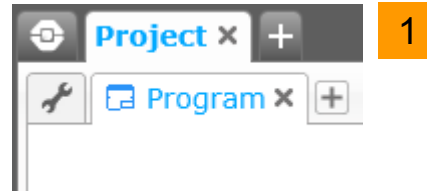


- We will give instructions to the robot by adding graphical blocks one to each other. We could make the robot :
 - move around,
 - wait,
 - play a sound,
 - display pictures, ...

Mission #1 : Make an half turn

Goal : The robot moves forwards, makes a 180-degree turn and moves forwards again to come back at the same position as the beginning.

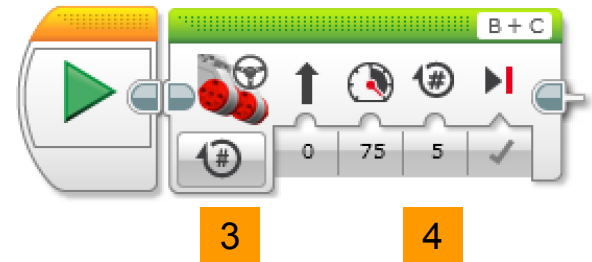
1. Add a new program



2. Place a **Move Steering** block after the start block

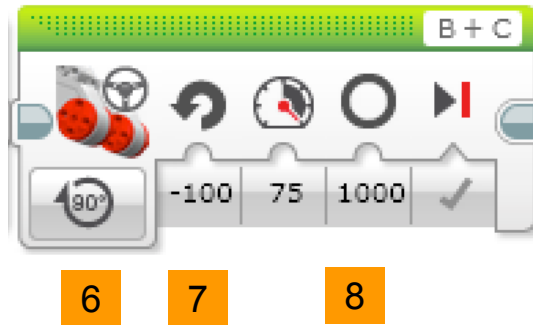
3. Change the mode to **On for Rotations**

4. Change the rotation number by **5**



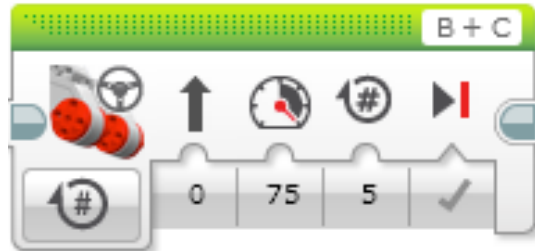
Mission #1 : Make an half turn

5. Place a **Move Steering** block after the previous one
6. Change the mode to **On for degrees**
7. Change the steering value by **-100**
8. Change the degrees value by **1000**



Mission #1 : Make an half turn

9. Place a **Move Steering** block after the previous one
10. Change the mode to **On for Rotations**
11. Change the rotation number by **5**



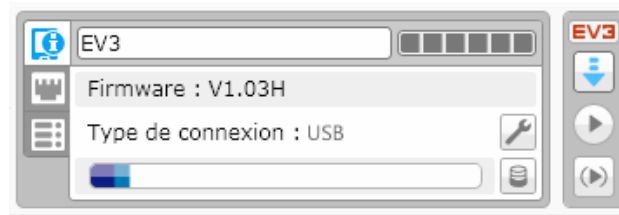
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Mission #1 : Make an half turn

12. Connect your EV3 Brick.

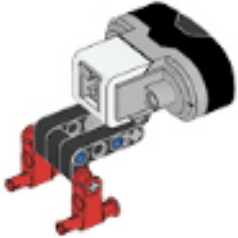
13. Download the program



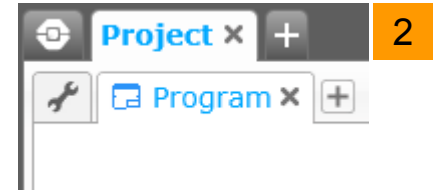
14. Run the program (Folder icon > TRACK3R > Program2)

Mission #2 : Detect an obstacle

Goal : The robot moves around continuously. If it detects something at a certain distance, it stops and plays a sound. If not, it continues to move around.

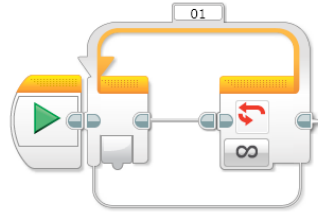


1. Add the **infrared sensor** in front of the EV3 Brick and plug it to the **port 4**
2. Add a new program



Mission #2 : Detect an obstacle

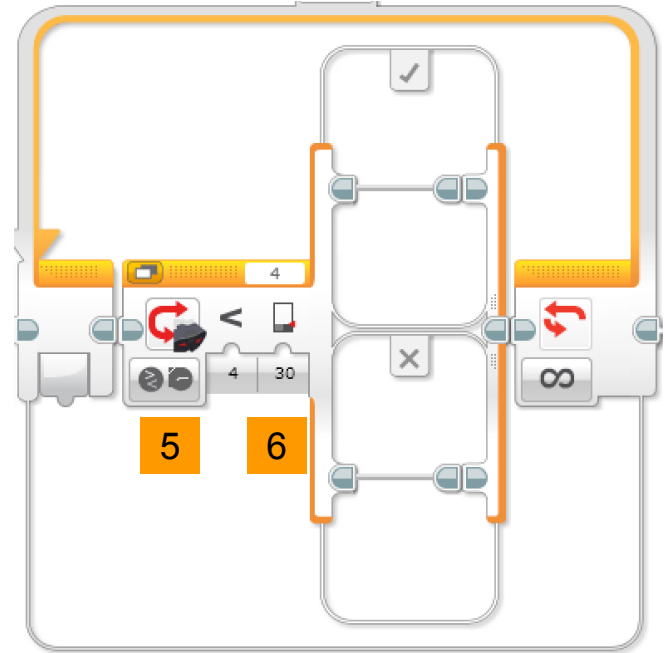
3. Place a **Loop** block after the start block



4. Place a **Switch** block **inside** the loop block.

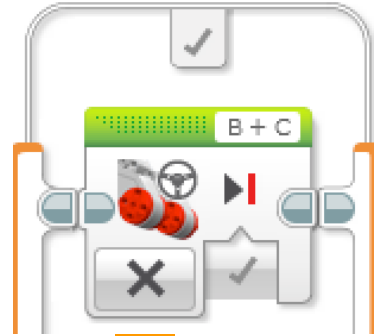
5. Change the mode to **Infrared sensor > Compare > Proximity**

6. Change the threshold value by **30**



Mission #2 : Detect an obstacle

7. Place a **Move Steering** block inside the **True case** of the switch block.
8. Change the mode to **Off**
9. Place a **Sound** block after the move steering block
10. Select the **Error alarm** sound (menu **LEGO sound files** > **Informations**)



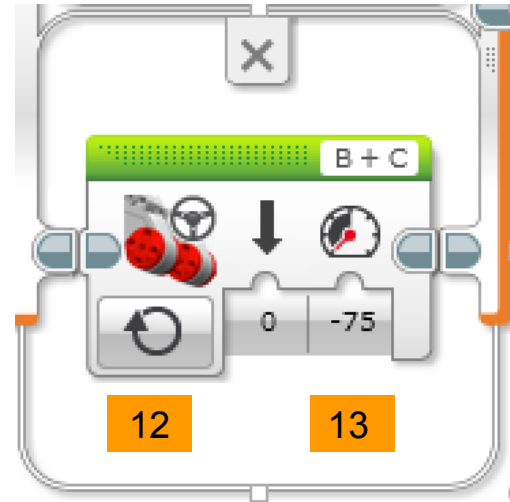
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Mission #2 : Detect an obstacle

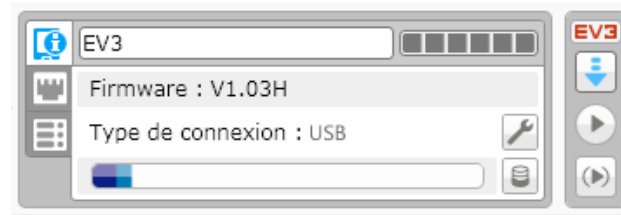
11. Place a **Move Steering** block inside the **False case** of the switch block.
12. Change the mode to **On**
13. Change the power value by **-75**



Mission #2 : Detect an obstacle

14. Connect your EV3 Brick.

15. Download the program

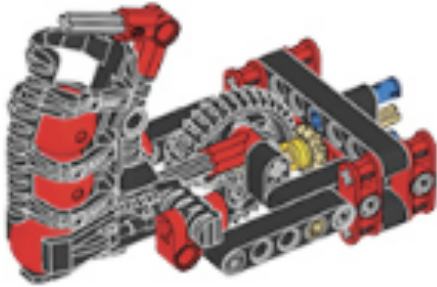


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16. Run the program (Folder icon > TRACK3R > Program2)

Mission #3 : Hunt the intruders !

Goal : The robot moves around continuously. If it detects something at a certain distance, it stops, plays a sound alert and waits for 3 seconds. If the obstacle has not move after 3 seconds, the robot shoots a ball.



1. Add the shoot mechanism on the **medium motor**
2. Pick up the previous program

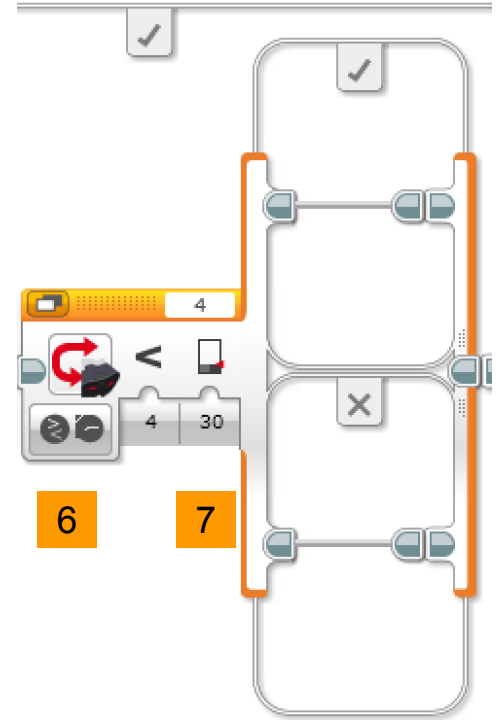
Mission #3 : Hunt the intruders !

3. Place a **Wait** block inside the **True case** of the switch block
4. Change the seconds value by **3**



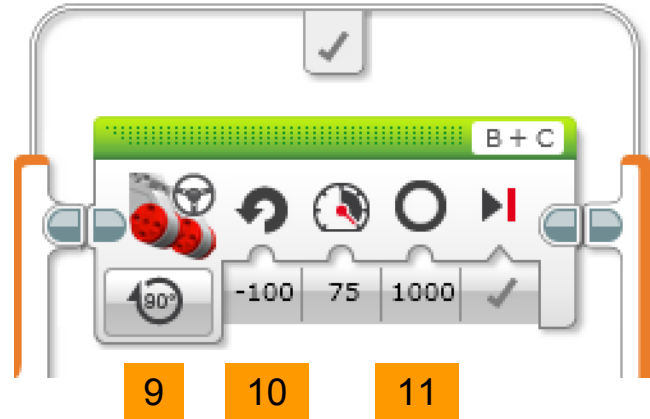
Mission #3 : Hunt the intruders !

5. Place a **Switch** block **inside** the **True case** of the switch block
6. Change the mode to **Infrared sensor > Compare > Proximity**
7. Change the threshold value by **30**



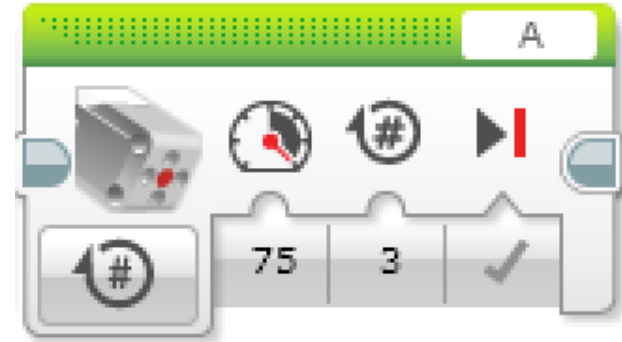
Mission #3 : Hunt the intruders !

8. Place a **Move Steering** block inside the **True case** of the switch block.
9. Change the mode to **On for Degrees**
10. Change the direction by **-100**
11. Change the degrees by **1000**



Mission #3 : Hunt the intruders !

12. Place a **Medium Motor** block inside the **True case** of the switch block.
13. Change the mode to **On for Rotations**
14. Change the rotations number by **3**



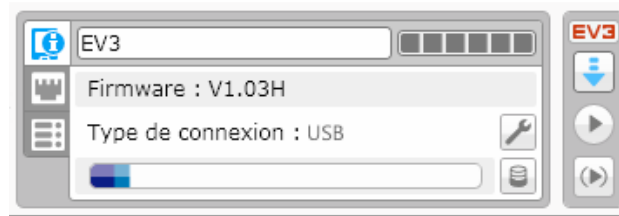
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Mission #3 : Hunt the intruders !

15. Connect your EV3 Brick.

16. Download the program



17. Run the program (Folder icon > TRACK3R > Program2)

Up to you !

Add sounds and pictures to make your robot alive :

- to make the robot play a sound, add a **Sound** block and select the sound
- to display pictures on the EV3 brick, place a **Display** block and select the picture

