

Dancing robot



Let your robot dance! You will also acquire additional programming skills with this model. You are already familiar with the fischertechnik components you will use from previous tasks.

The model contains the following actuators, sensors, and technical accessories:

Mini Motor	Gears	Button	Omniwheel	Support wheel
				

An explanation of the components is provided on the introductory page.

The “Dancing robot” model is divided into 2 programming tasks:

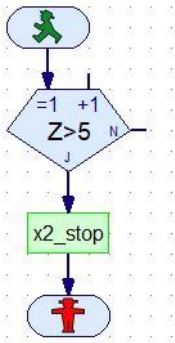
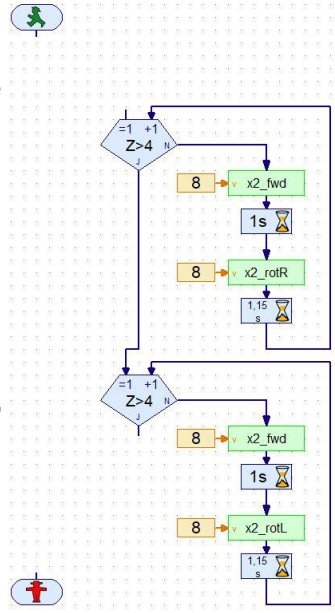
Task 1 Dancing_robot_1.rpp	<u>Programming level 3</u> The model should travel forward and backward as well as right and left in multiple passes. The head should also turn in different directions at the same time.
Task 2 Dancing_robot_2.rpp	<u>Programming level 3</u> The model travels forward in 2 passes, turns to the right and then travels backward, then the model turns to the right and then to the left in the 3 final passes. At the same time, the head turns to the left, then to the right and then to the left again. This movement should be completed 13 times. Then the head turns to the left once again until the button is pressed. Then the program stops.

Task 1

You can use the program “2-wheeled_robot_2” and the subroutine created there to program the dancing robot.

You will only have to make a few small changes.

1. First, delete the function calls “x2_bwd” and “x2_stop” in the main program, as well as the top wait command. Drag the “Start” and “Stop” command to the left slightly.
2. The steps of the dance should be completed 5 times, in a loop. Once the value is reached, the program will stop.



To implement this, insert the FOR loop command, with which you are already familiar, after the start command and change the counter to “>5”. Then the subroutine “x2_stop” follows. This is connected with the Stop command (red traffic light man).

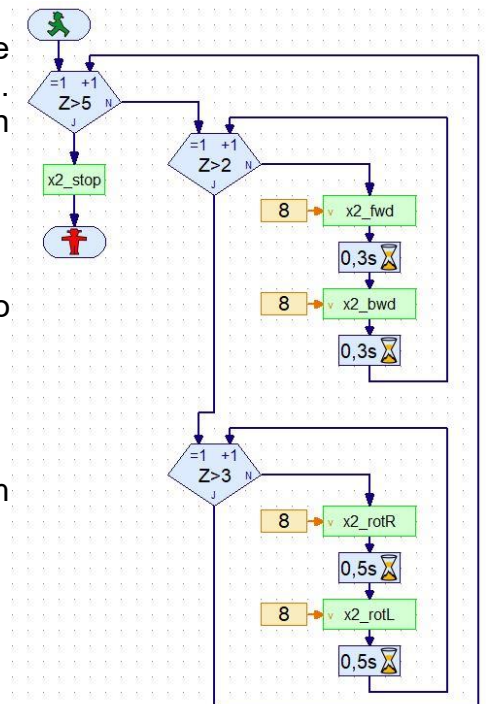
Connect the “N output” of the newly created FOR loop with the input “=1” of the FOR loop for forwards and backwards travel. Also connect the output “J” of the FOR loop for the rotation with the input “+1” of the newly created FOR loop.

Also change the following parameters:

FOR loop forwards/backwards – both wait times to 0.3 s, “Z>4” to “Z>2”.

FOR loop rotation – both wait times to 0.5 s, “Z>4” to “Z>3”.

You are then finished with the main program and can program the controller for the head.



To do so, program motor “M3”.

The button is used here for the first time. It is required for the rotational range of the head, to ensure it can be moved to a defined position. The subroutine runs in parallel to the main program, and is ended after 20x passes.



The button query is differentiated into 2 so-called conditions:

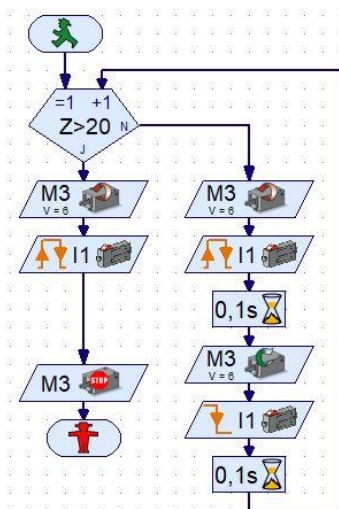
1. Wait for any change in the button status
2. Wait for a change from “button closed” to “button open”.

Create the program section and test the overall program. Save the program under

“Dancing_robot_1.rpp”

on your computer.

Note: this program is also available as a finished example program in your ROBOPRO directory
 C:\Programme(x86)\ROBOPRO\Beispielprogramme\ROBOTICS
 Smarttech\Dancing_robot_1.rpp

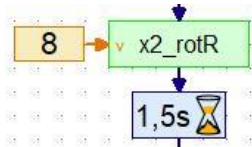


Task 2

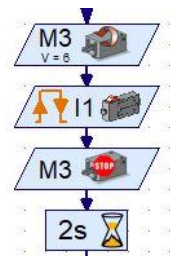
In task 2, you will add the required command sections to the program.

Important: The controller program for the head should be run 13 times.

Insert the commands shown here at the correct location in your main program.



The same applies to the following program elements, which you have to install in the control program for the head.



Once you have completed all of the tasks, test out the program and then save it under the name

“Dancing_robot_2.rpp”

on your computer.

Note: this program is also available as a finished example program in your ROBOPRO directory
 C:\Programme(x86)\ROBOPRO\Beispielprogramme\ROBOTICS
 Smarttech\Dancing_robot_2.rpp

Want your robot to learn some other dances? Then get creative and teach it a few more “dance moves”.

You can also disassemble the “Dancing robot” model and continue with the next task.