Fachbereich Informatik
Lehrstuhl Informatik XII
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5. Embedded Systems Lab Exercises

1. **Task:**
   Using the instruction booklet, construct a so-called "Roverbot" with a wheel-based propulsion unit. Fit a bumper with a pressure sensor to the front of your robot so that it can detect objects it collided with. Configure the RCX unit so that it treats the sensor as a `SENSOR_TOUCH` sensor. Before having the robot actually bump into things, first check the functionality of the bumper by displaying the sensor's value on the LC-Display of the RCX unit.

2. **Task:**
   Implement an `nqc` program which allows your robot to evade obstacles it collided with. Transmit your program to the RCX unit of the robot and check the behavior of the robot. How can you avoid your robot crashing into the same obstacle more than once? How does the robot react when it is caught in a corner?

Please note:

- The tasks should be solved in groups of two (or max. three)

- Each group will receive all the neceassary Lego parts to construct a robot, along with an RCX unit and the required sensors

- The assembled robots will not have to be dismantled until the end of the robo labs. After each lab, they should be put into the leftmost cupboard

- Note the differences between `nqc` and the `C` programming language, as mentioned in the documentation!

- The RCX units that are being used in this lab support all functionality that is described as `"RCX2"` in the documentation

- The transmission of data from the computer to the RCX unit should only be performed in **near**-Mode, since the other robots might otherwise be affected by your transmission. In order for the near transmission to work, you have to place your robot directly in front of the transmitting unit.