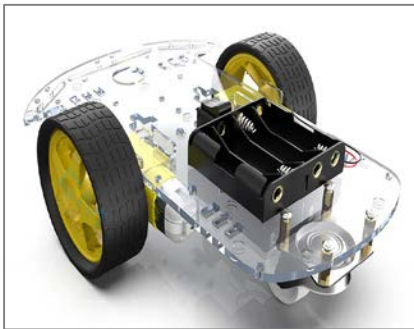# Tips for using without Lego

The R4G web app can also be used with other hardware combinations. Important elements are:

- BBC Micro:bit
- Motor Driver Board
- Buzzer
- Chassis

In the R4G we used the Waveshare **Motor Driver Board**. The software also works with the motorboards from Keyestudio and Elecfreaks. The corresponding HEX files must be loaded onto the microbit (e.g. the file r4g-microbit-ef.hex for the motor board from Elecfreaks). The files can be found at https://github.com/ZimdVienna/Robo4girls/tree/master/microbit.

If you want to use a buzzer, it is best to use the one from our order list (https://www.netidee.at/sites/default/files/2019-12/R4G_Bill_of_materials_0.pdf), because some buzzers are very quiet. Connect the pin 0 and GND pin of your micro: bit to the buzzer as shown in this circuit diagram: https://github.com/ZimdVienna/Robo4girls/.

For the body, we recommend the diymore 2WD robot smart car chassis, which we know is compatible with our other hardware. See also our order list.

The following elements from our "tool case" can be used:

1. **Firmware**: The Micro: bit must be connected to a computer via USB and one of the files R4G_MICROBIT.hex must be transferred to the Micro: bit. The instructions for this can be found at https://github.com/ZimdVienna/Robo4girls, the HEX files at https://github.com/ZimdVienna/Robo4girls/tree/master/microbit.
2. **Test instructions**. It is located at https://www.netidee.at/sites/default/files/2019-12/R4G-Pruefanleitung-v5-de.pdf, the chapter is relevant: **Check all functions.**
3. **Course guide Roberta with R4G**: Here, page 8 describes how programming using the R4G web app works: https://www.netidee.at/sites/default/files/2019-12/Workshop-Leitfaden_R4G.pdf.
4. **R4G app**: The functionality of the software is very simple and a very good start, as we have heard back several times during the project. It is explained in the guide above. The R4G app can be found at https://zimdvienna.github.io/Robo4girls/.
5. To program the R4G robots, you also need tablets and WiFi. Since this is often not available in schools, we always have a "cube" with a fast SIM card. It makes sense for the teacher to work with a tablet with a micro HDMI output as well as a projector and an HDMI to micro HDMI cable, so that the functionality of the software can be demonstrated. (But not all tablets need such an exit.)