



QB (Cube - e)

QB is a cube shaped (90x90x90 mm) robot (hence the name) with two chunky 68mm diameter x 25 mm wide wheels driven by geared DC mini motors and a free spinning ball bearing which acts as a sort third wheel and keeps QB level and stable.

QB is controlled by an Arduino Nano micro-controller, mounted on a prototyping shield that provides many convenient pin out options and battery power conditioning. Other features include:

- ◆ A TB6612PNG Dual DC motor drive module.
- ◆ A 9V polymer ion rechargeable battery – that provides all of the power for everything on-board.
- ◆ A HC-06 Bluetooth module for external communications.
- ◆ A HC-SR04 sonar distance sensor (which look like eyes),
- ◆ Two opto switch encoders (1 for the axle of each wheel) (* SEE NOTES!!!)
- ◆ 4 LEDs set up in line (LED Chaser) on the front. These can be used for show or for status display.
- ◆ An active beeper/buzzer.

The USB C ports on the Arduino Nano and for charging the battery are externally accessible, so QB does not have to be taken apart for programming or charging. I was aiming for "compact cuteness"

No doubt that with a little imagination and coding, QB can be programmed for mine sweeping, seeking a hidden object in a maze, maze solving, explorer/collision avoider, to read and follow a series of "Go Turtle" commands or real time direct remote control using a joystick.

QB is fully 3D printable, and its parts are inexpensive and readily available on-line. All the files needed to reproduce QB are available on GitHub and free to use and modify. If you have trouble sourcing or printing the parts please contact them and I will try to supply them at cost.

Acknowledgements

I got some of the early coding and component ideas from the DroneBot Workshop 2017 <https://dronebotworkshop.com> - RobotCarSpeedSensorDemo.ino... and from the examples and other information in the libraries on GitHub. I also drew a lot of design inspiration from Otto Wheels (<https://www.ottodiy.com/academy>).

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