



# ROBOTICS CHALLENGE

## Challenge Description

### “Beginner’s Challenge”

Design a robot that completes each of the basic programming elements you will need for the robotics class. Teams who learn these elements will re-use them in the other challenges in the collection. *This challenge was especially designed for those who would like more step-by-step practice in the basic design elements before proceeding to more complex tasks or for those who, frustrated with complex tasks, need to step back and review a bit.*

## Specifications

- *Each challenge is completed separately and judged separately before teams move on to the next. They must be done in order (perhaps even use this very sheet as a checklist).*
1. [ ] Robot moves until it touches a wall, then stops. *Use of touch sensor fork and jump-land.*
  2. [ ] Robot moves until it sees a dark line, then stops. *Use of light sensor fork and jump-land.*
  3. [ ] Robot has a touch sensor on the front and on the back. Robot is placed between two stationary obstacles and moves in one direction and, upon hitting an obstacle, reverses toward the other directly opposite. Robot bounces between the obstacles until manual shut off. *Use of task split...*
  4. [ ] Robot moves until it touches a wall, then backs up for 1 second, turns slightly in one direction, then goes forward again. *Turning wheels...*
  5. [ ] Robot moves until it touches a wall, then plays a sound.
  6. [ ] Robot moves straight ahead into a wall, then reverses straight back for 1 second, then does it again. This action is continuous until manual shut off. The program uses containers to count how many times the robot has touched the wall and displays the result on the view screen. *Using containers...*
- Robots must be made with LEGO Mindstorms Robotics Invention System and be programmed with Robolab programming environments.
  - Robots can consist of a maximum 1 RCX, 8 Wires, and 3 motors.
  - Nothing can be added or removed from the robot during a round.
  - No non-lego parts are allowed
  - Challenge is maximum 3 minutes long

## Scoring

100 point challenge upon successful completion of **all** tasks in separate trials.