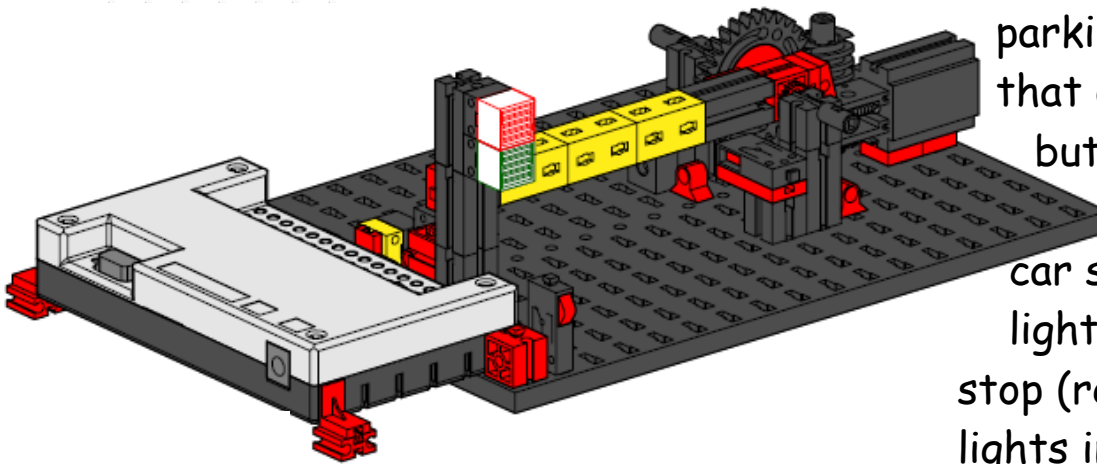


Robotics

Science 8



Model 7: The Car Park Barrier



Build and program a parking lot barrier that opens when the button is pressed and closes after the car safely clears the light beam. Let's put stop (red) and go (green) lights in there too!

Assemble the model:

Step 1: Build the Car Park Barrier Model as shown in these assembly instructions.

Step 2: Wire three pushbutton switches and one phototransistor to the **digital inputs I1 - I8** on the interface.

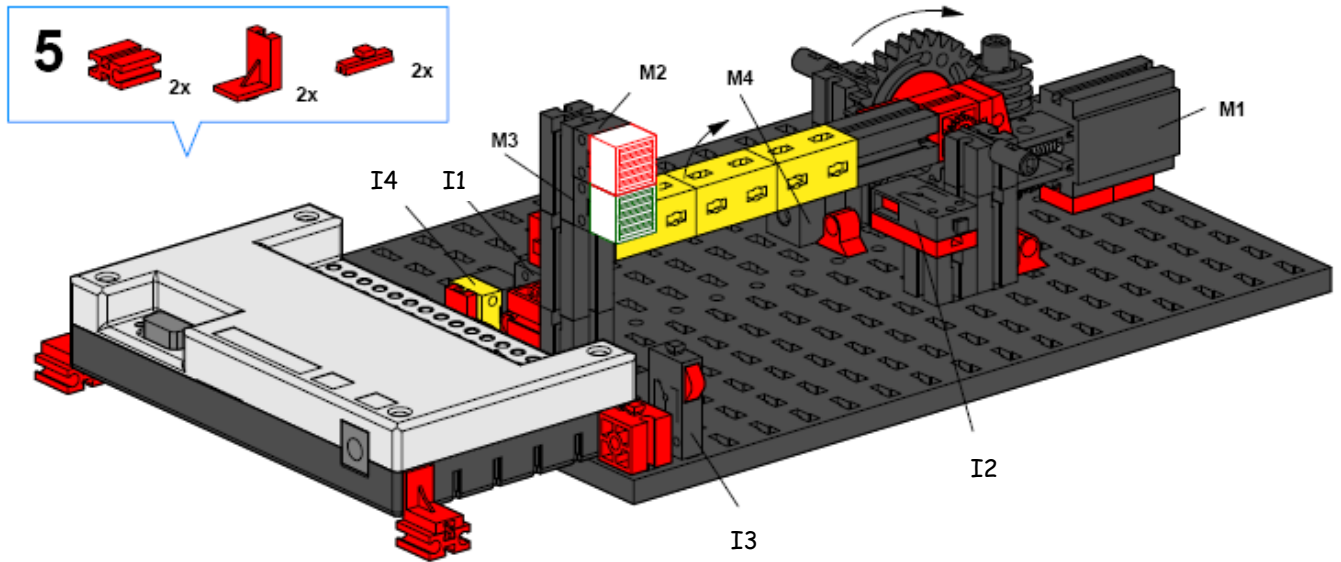
Step 3: Wire the 3 lights and 1 motor to the **outputs M1 - M4** on the interface.

Programming Tasks:

Task 1: Program the barrier so that the red light is on and the barrier moves to the down position and stops (if it is not already there). When the pushbutton switch in front is pressed, the barrier should move to the top position and stop. When the barrier stops the red light turns off and the green light turns on. When the light beam is interrupted (a car passes through), the green light turns off, the red light turns on and the barrier moves to the bottom position and stops. The program should repeat the next time the button is pressed.

Task 2: Modify the original program so that the barrier moves up when the switch is pressed 5 times. The barrier will stay up until the switch is pressed again. If the beam is broken as the barrier is going down, it will reverse and go back up and stop until the switch is pressed again. The red light will be on whenever the barrier is moving or in the down position.

Bonus: Modify your program to include a secret 3 digit code that must be entered in order for the car park barrier to operate. Use a 6 digit operator's console on the computer screen with the numbers 1 - 6.
The correct code is 352. Note; this task requires advanced programming techniques.



Wiring Diagram

Note: our interface looks a little different from this picture.

