



Note: There are multiple ways of solving these challenges. If your solution is different, but still achieves the GOAL, then it is correct.

Add Item

Menu

Challenge

<< 1 >>

# Lamp

**Instructions**

There are only two rules you need to remember:

- 1 - Always match colours.
- 2 - Any red or black sockets must be wired back to the battery.

**Goal**

Wire a switch so that when it is pressed the light is on.

Press "Z" on your keyboard to turn the switch on and off.

**Hint**

Click on a socket to plug in the first end of a wire.

Click on a second socket to plug in the second end of a wire.

Blue and Green sockets are connected using special Blue / Green wires.

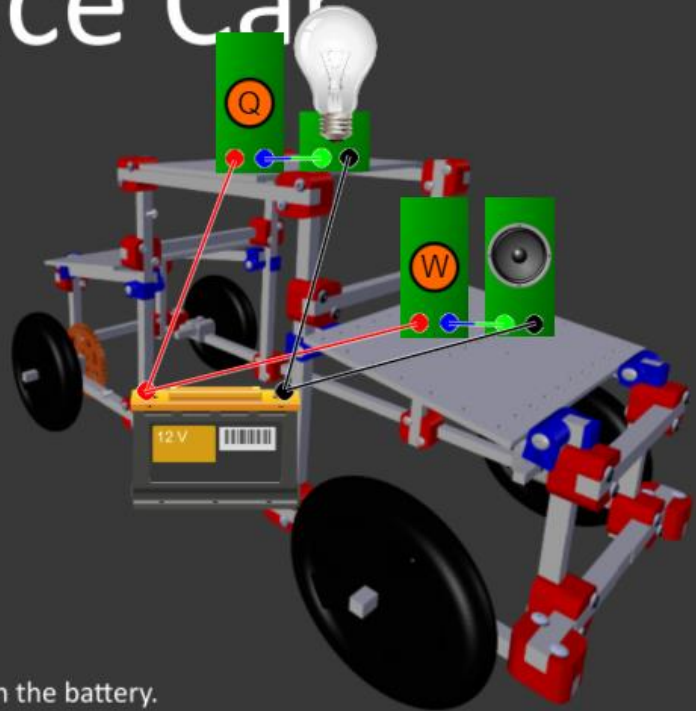
Add Item

Menu

Challenge

<< 2 >>

# Police Car



## Goal

One push button controls the light.  
A second push button controls the siren.

## Hint

Press CTRL and click a wire to delete it.  
If you make a mistake you might blow the fuse on the battery.  
Click on the battery to replace the fuse.



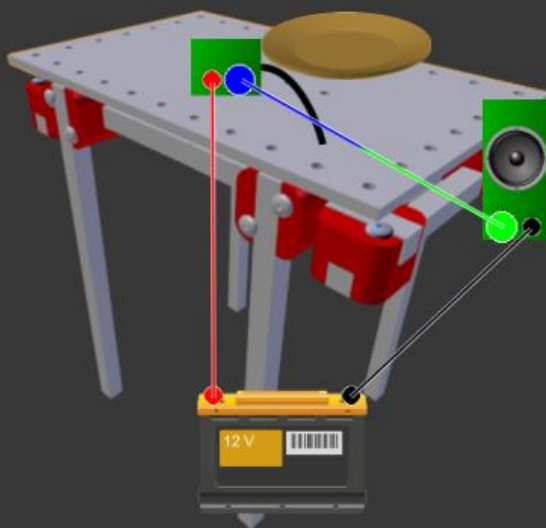
Add Item

Menu


Challenge

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# Dinner's Ready



## Instructions

A limit switch (  ) is a sensitive push button.  
It detects when objects hit it.

## Goal

When the plate is placed on the table a buzzer sounds.



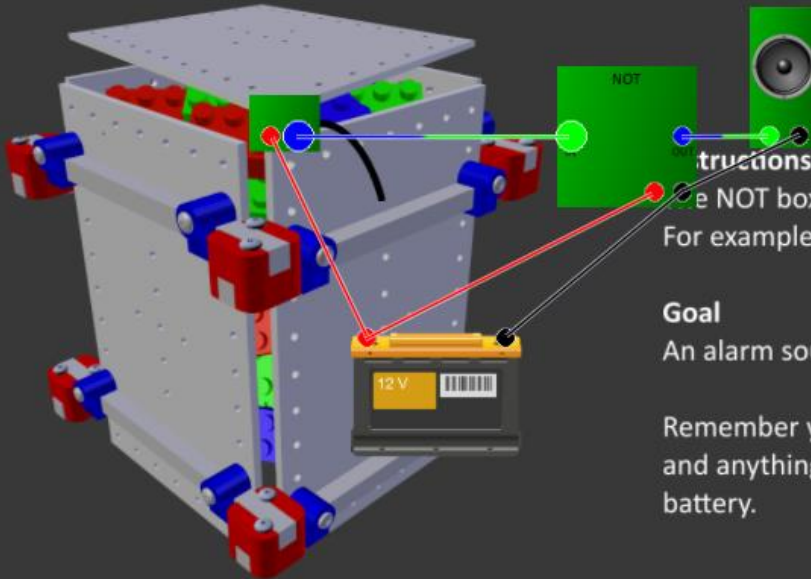
Add Item

Menu

Challenge

<< 4 >>

# Toy Box



## Instructions

The NOT box does the opposite.  
For example if something is NOT on the limit switch.

## Goal

An alarm sounds when the lid is NOT on the toy box.

Remember your wiring must always match colours,  
and anything red or black must be wired back to the battery.



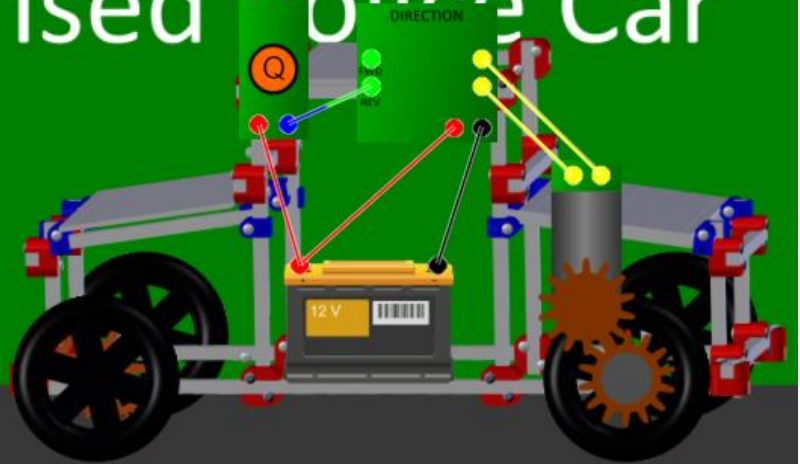
Add Item

Menu

Challenge

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# Motorised Police Car



## Instructions

Motors have yellow sockets.  
Because we must match colours the only thing  
we can connect them to is the DIRECTION box.

## Goal

A motor is attached to the wheel.  
When a button is pushed the motor turns on,  
which makes the wheel turn.



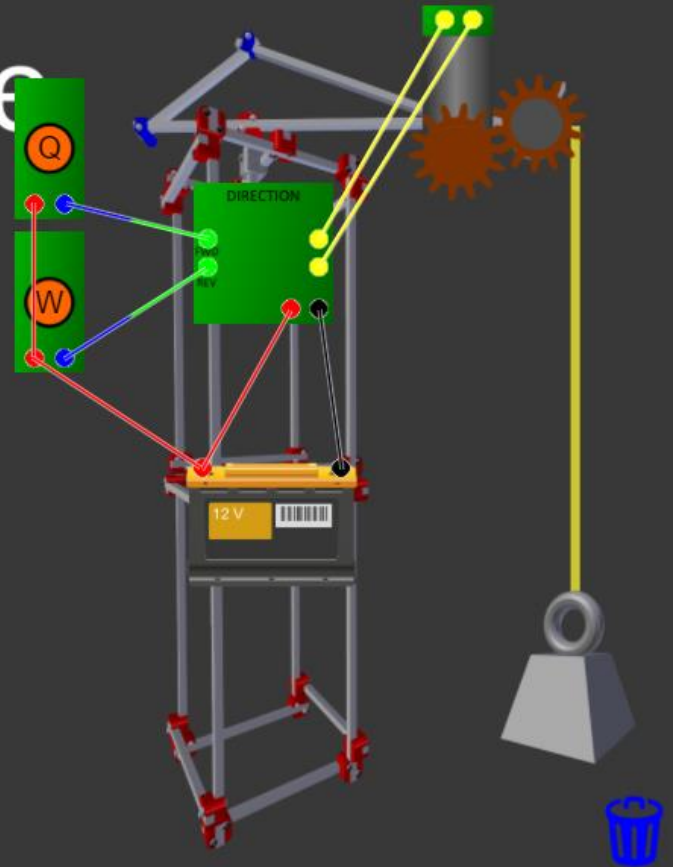
Add Item

Menu

Challenge

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# Crane



## Goal

Two buttons control the crane.  
One lifts the weight, the other lowers it.

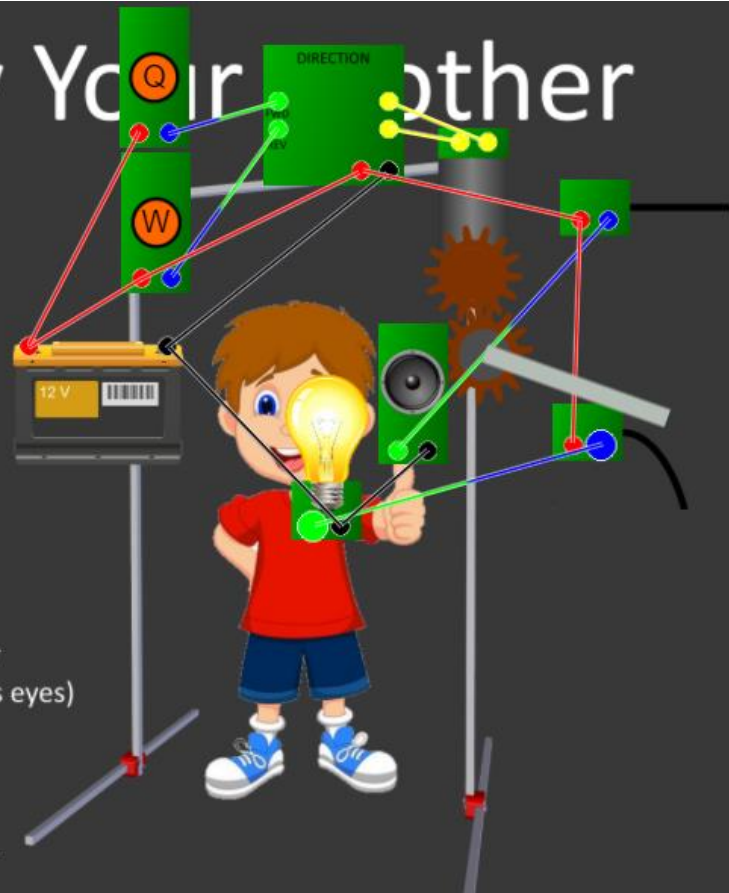
Add Item

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Challenge

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# Annoy Your Brother



## Goal

Annoy your brother with a tickling arm.  
Two buttons control the arm.  
When the arm is pointing away from your  
brother it will trigger a light (shining in his eyes)  
and a buzzer (blasting his ears).

## Hint

The ticking arm can trigger limit switches.



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# Counting Sheep

**Goal**  
The sheep move along the conveyor belt.  
A COUNTER counts the sheep as they go past.

Add Item

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Challenge

<< 9 >>

# It's Bedtime - Lights Out

**Instructions**  
The ON/OFF Box has two inputs:  
One that turns it on,  
the other that turns it off.

**Goal**  
A button at the front door turns the light on.  
The light remains on until a button on the  
bedroom door is pressed.

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# Auto Stop

**Goal**  
A button starts the vehicle moving.  
It continues moving until it hits an obstale.  
When it hits an obstale the vehicle automatically stops.

**Hint**  
Use the ON/OFF box to control the motor.

Add Item
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# Counting Sheep to Fall Asleep

**Goal**  
To fall asleep you turn on the night light.  
Once 20 sheep have passed the light t... automatically... (sleep).

**Hint**  
The COUNTER is set up so the output will be driven once it has counted to 20.

Add Item

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Challenge

<< 12 >>

# Doorbell

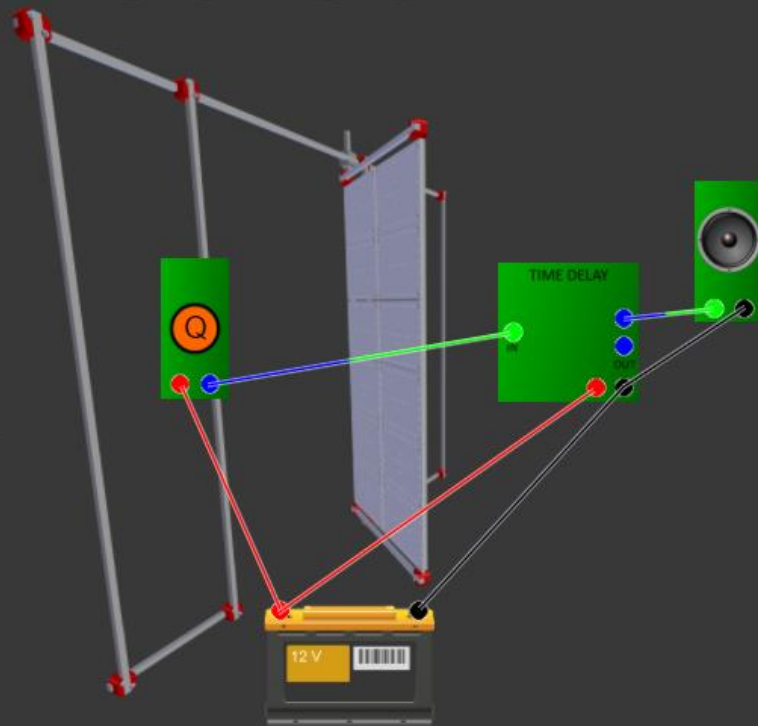
## Instructions

The TIME DELAY has two outputs:

- One that is on for two seconds.
- One that turns on after two seconds.

## Goal

When the doorbell (a button) is pressed, the buzzer sounds. The buzzer sounds for a maximum of two seconds, even if the button is held down.



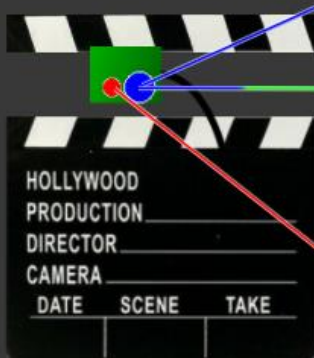
Add Item

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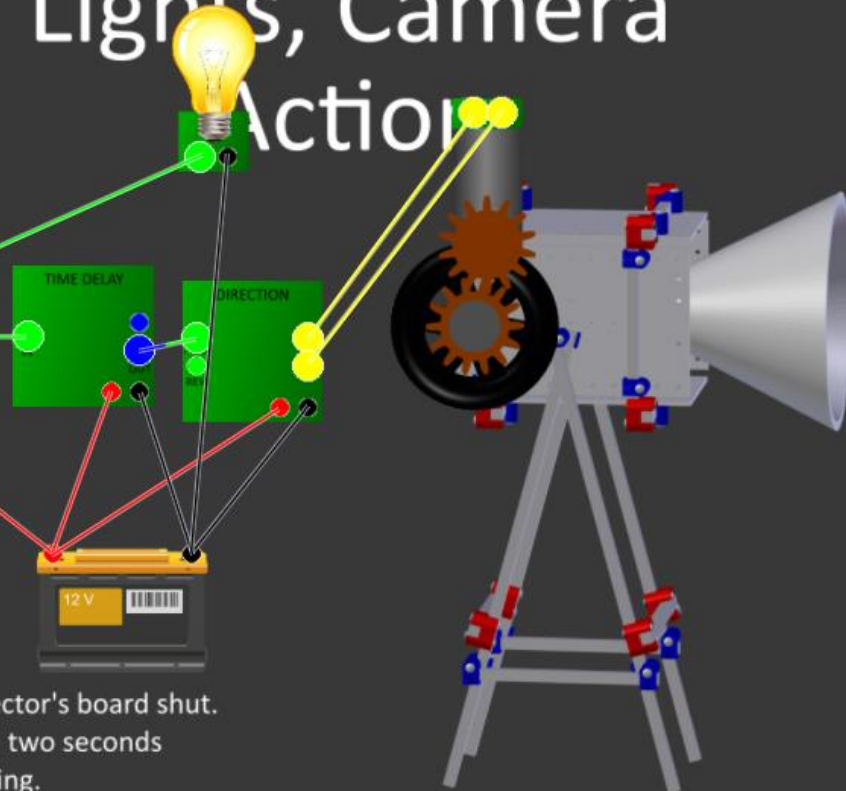
<< 13 >>

# Lights, Camera Action



## Goal

The director snaps the director's board shut. This turns the light on, and two seconds later the camera starts rolling.





# Light My Path

Add Item

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Challenge

<< 14 >>

**Instructions**

The SEQUENCE box has four inputs and four outputs. Four lamps line a long corridor. When Step 1 is triggered, output 1 turns on. This remains on until Step 2 is triggered.

an walks past, each light is turned on in sequence. remaining on until the man is at the next light

12 V

# No Sheep?

Add Item

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Challenge

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**Goal**

A light flashes whenever there is NOT a sheep.

If there is no sheep for more that two seconds then a buzzer sounds

12 V




Add Item

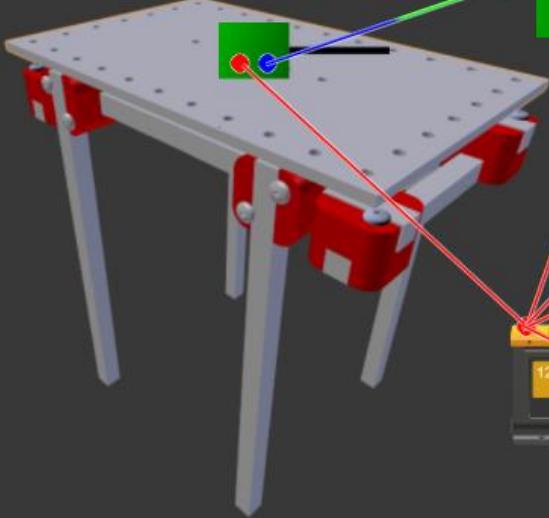
Menu

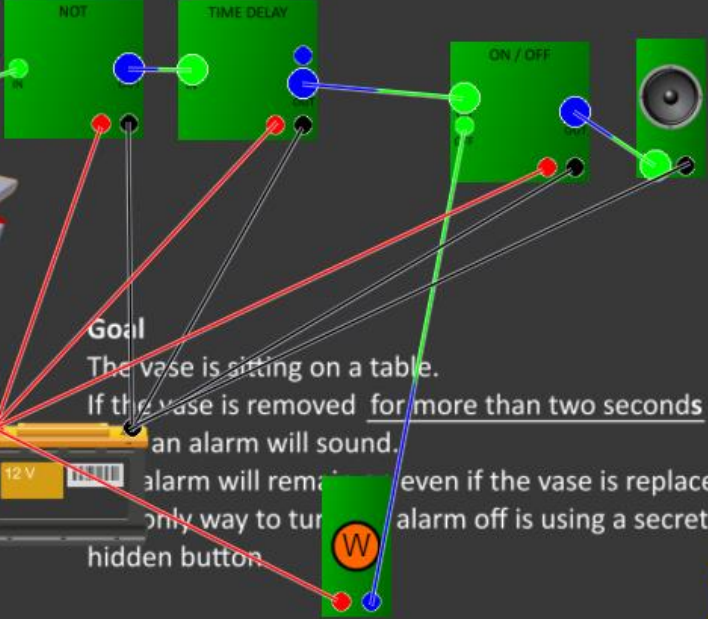
Challenge

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# Thief Alarm







**Goal**  
 The vase is sitting on a table.  
 If the vase is removed for more than two seconds  
 an alarm will sound.  
 The alarm will remain on even if the vase is replaced.  
 The only way to turn the alarm off is using a secret  
 hidden button.


Add Item

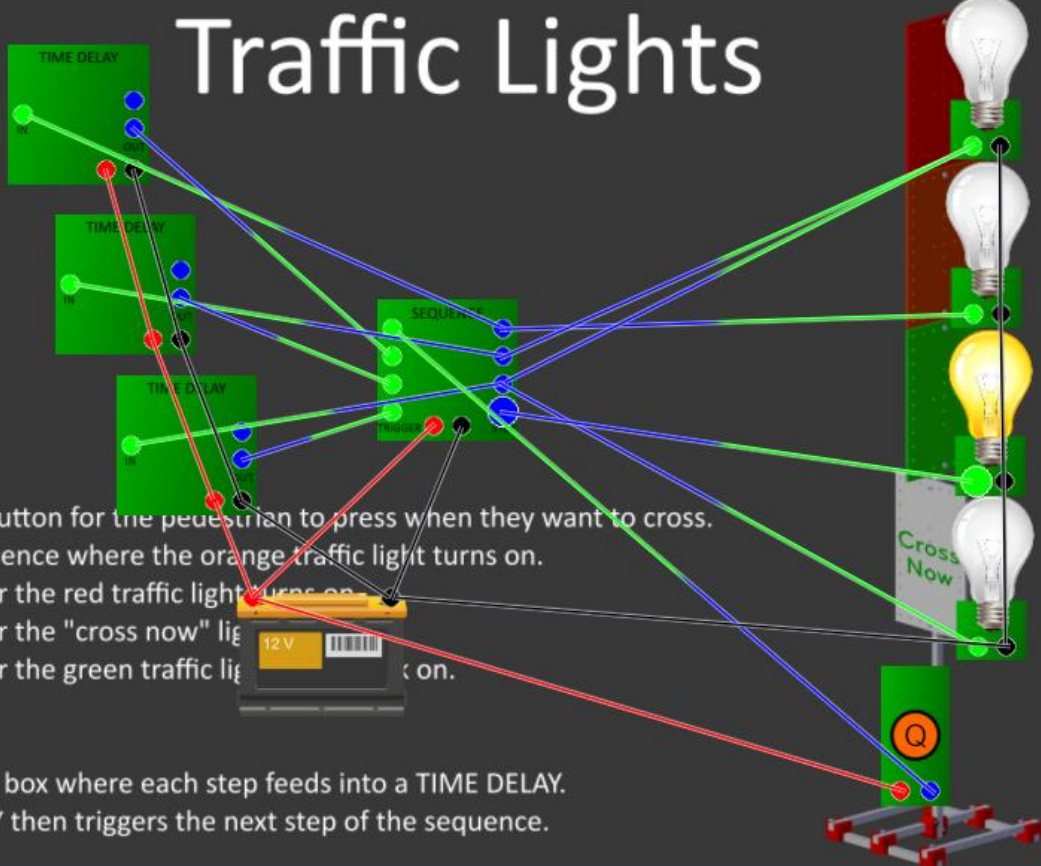
Menu

Challenge

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# Traffic Lights





**Goal**  
 There is a push button for the pedestrian to press when they want to cross.  
 This starts a sequence where the orange traffic light turns on.  
 Five seconds later the red traffic light turns on.  
 Five seconds later the "cross now" light turns on.  
 Five seconds later the green traffic light turns on.

**Hint**  
 Use a SEQUENCE box where each step feeds into a TIME DELAY.  
 The TIME DELAY then triggers the next step of the sequence.





## Barrell of Monkeys Step 3 - Lowering

Add Item

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Challenge  
<< 20 >>

**Goal**  
While in step 3 the barrel is lowered into the water.  
A sensor detects when the monkey is in the barrel, and moves the sequence to step 4.

## Barrell of Monkeys Step 4 - Reversing

Add Item

Menu

Challenge  
<< 21 >>

**Goal**  
While in step 4 the arm rotates in reverse.  
A sensor detects when the crane's arm is fully to the left. This moves the sequence back into step 1.

Challenge 18, 19, 20 and 21 all build on to the previous challenge. To make the solution easier to read, only the EXTRA wiring is shown in the answers for 19, 20 and 21.

To solve Challenge 20 you also need the electronics shown for challenge 18 & 19.

To solve Challenge 21 you also need the electronics shown for challenge 18, 19 & 20.



