Wizards of Wright

Cube-let 1 Challenges

These robots can be made with one sense and one action, or can be made more complex by using more Cube-lets.

Challenge	Hints and Suggestions
1. Make driving robots that represent different creature behaviors. Some of these might even make you think of different emotions.	– Make a robot that is "afraid" and drives away. – Make a robot that is "aggressive" and drives faster as it gets close to something. – Make a robot that is "confused" and drives in circles. – Make a robot that lets you "use the force" to control it with your hand. – Make a Robot that moves sideways like a crab. – What other robot creatures and emotions can you make?
2. Make a robot that acts as a motion-activated alarm light.	Motion activated lights turn off when no one is near to conserve energy and turning on to reveal when someone is trying to sneak by!
3. Imagine that your power has gone out, but your Cube-lets have plenty of batteries. How could you build a robot that alerted you when the refrigerator was starting to get warm inside?	What sense will work best for this? What Action will produce the most noticeable alarm?
4. Make a conveyor belt robot that can move something across it.	– Make a conveyor belt controlled by a person. – Now make one that will work constantly when the lights are on. – How could we change this conveyor belt to know when an object was on it and then move?

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5. Make a flashlight that "knows" to come on in the dark.	What sense will you need for this robot? Can you choose just a sense to check the robot's environment or do you also need a Think Cube-let - which one?
6. Make a robot that will "go forever" by using at least two senses and two actions.	Can you use one action to trigger another sense?
7. Construct an "environment" or arrange other objects around a robot so that it will "go forever" or "never quit".	What sense is easiest to use to do this? What objects or kinds of environments would give constant input to that sense?
8. Can you make a robot lighthouse that knows to come on in the dark?	– What action(s) will you need to include? – What sense will work best? – What Think block will best help this robot "know" to come on in the dark? – Is there a way to make this like a "real" lighthouse casting light around its lighthouse tower in a circle? – What Cube-let do we need for that? – What additions can you make to your lighthouse to improve its function and design?
9. Using the Blocker Cube-let can you make a steering robot with sides that drive and sense independently?"	– What senses will work best? Why? – What Action Cube-lets will you need? – Try having the sense Cube-lets facing UP. Now try having the sensors facing – OUT. Does this make a difference?
10. Make a robot that slows down and stops as it approaches objects or walls.	– What will the robot need to sense? – Does the robot need more than one sense? – Are more Think Cube-lets needed? – What direction should the senses face? – Will the robot benefit from more actions than just the drive Cube-lets? What other considerations are important when building this robot?

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Some possible robot solutions - No Peeking!

Now that you've built some of these robots, you may be interested in some solutions we've come up with. For each challenge there is more than one way to make the Cube-lets robot we picture, and there may be multiple robots we don't picture that satisfy the criteria using Cube-lets we don't picture. This is not an exhaustive solution list, just something to look at if you get stumped. So, no peeking before you try your hand at building cool robots!

1. **Some driving robots that represent different creature behaviors.**




2. **Motion Activated Alarm Light**

3. **Power-outage Fridge Alarm**

4. **Conveyor Belt Robots**



5. **Smart Flashlight**

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6. Make a robot that will "go forever" by using at *least two* senses and two actions


7. Arrange other objects around a robot so that it will "go forever" or "never quit"

8. A robot lighthouse that knows to come on in the dark


9. Steering robot



10. A Steering robot that knows to slow down before it hits something



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