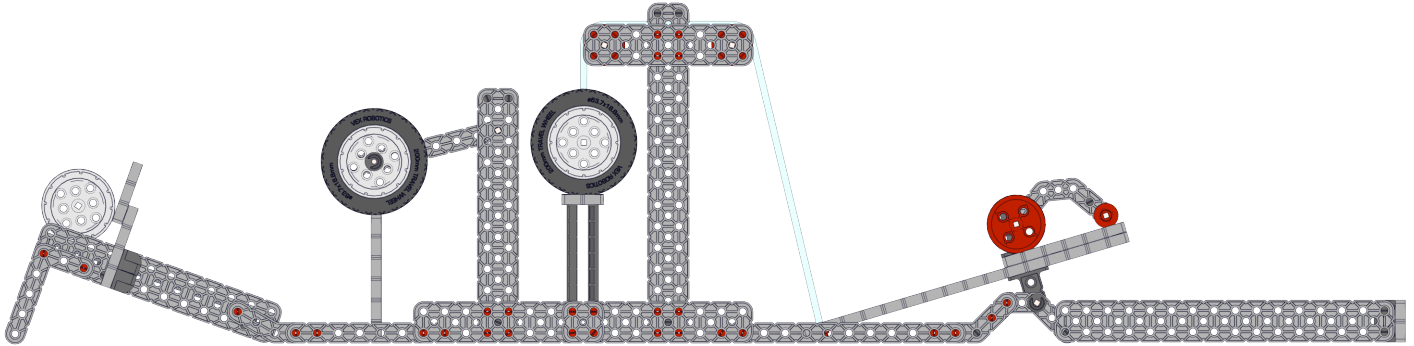


### What is a Chain Reaction Device?

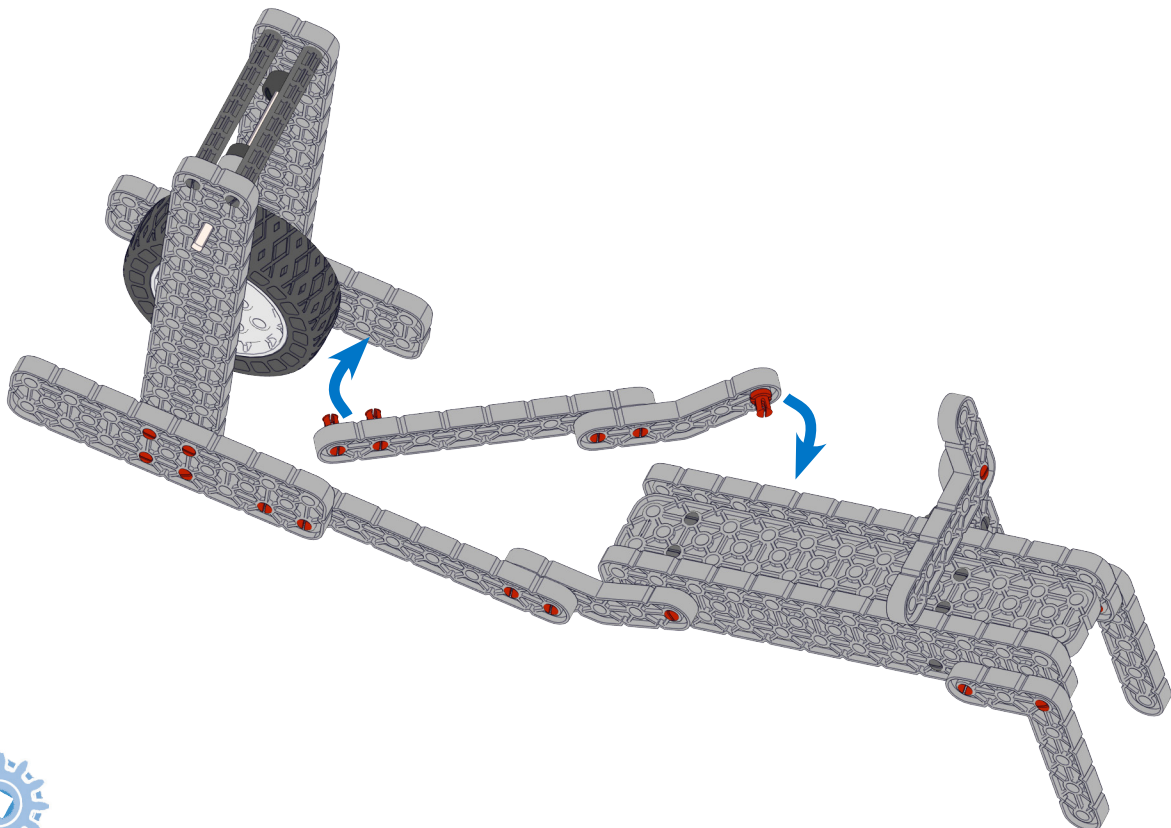
A **Chain Reaction Device** is a complex machine that performs a very simple task in a very complicated way. A **Chain Reaction** is a series of events so related to each other that each event triggers the next event.



In this unit you will use a series of simple machine and/or pendulum assemblies to create **Chain Reaction Devices**. Each individual simple machine/pendulum assembly is known as a **Stage** of the overall device. Students will also build and/or design at least one **Trigger Mechanism** to activate the operation/chain reaction of their device(s) in this unit.

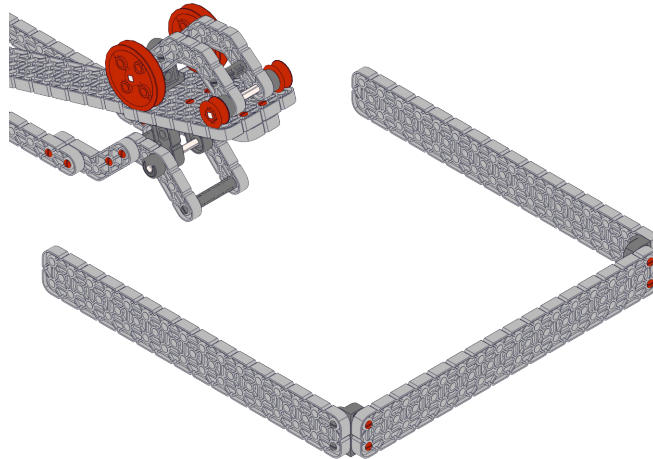
### Assembling the Sample Chain Reaction Device

Your teacher may instruct you to assemble and test the sample unpowered Chain Reaction Device next. If so, please use the Sample Chain Reaction Device Assembly Instructions provided by your teacher.



## The Chain Reaction Challenge Rules: Parking the Car

**Challenge Goal & Overview:** The goal is to successfully build a Chain Reaction Device that successfully parks the car in the garage. Your teacher will provide you with or ask you to build the car and garage models to be used in this challenge. In most cases you will be asked to work together in teams, but you may be asked to work alone.



### Challenge Rules for Unpowered Chain Reaction Device (for grades 4-6):

1. Build a four-stage Chain Reaction Device that parks the car in the garage.
2. Your Chain Reaction Device will be unpowered - no motors, no robot brain, no controller.
3. Use three or more of the following to construct your stages:  
Wheel & Axle, Inclined Plane, Wedge, Lever, Pulley, Screw, or Pendulum.  
You may use some of the simple machines/pendulum above more than once if you wish.
4. Please see the *Rubric to Evaluate Unpowered Chain Reaction Device* for all of the details on how you will be evaluated.
5. Idea Book Pages can be used for planning and troubleshooting. Your teacher will provide further instructions on using the Idea Book Pages.

### Challenge Rules for Powered Chain Reaction Device (grades 4-8):

1. Build a four-stage Chain Reaction Device that parks the car in the garage.
2. Your Chain Reaction Device will be powered – using three or more motors, robot brain, and controller. You will be expected to teleoperate your device with the controller.
3. Use three or more of the following to construct your stages:  
Wheel & Axle, Inclined Plane, Wedge, Lever, Pulley, Screw, or Pendulum.  
You may use some of the simple machines/pendulum above more than once if you wish.
4. NO sensors are used and NO programming is required for this challenge.
5. Please see the *Rubric to Evaluate Powered Chain Reaction Device* for all of the details on how you will be evaluated.
6. Idea Book Pages can be used for planning and troubleshooting. Your teacher will provide further instructions on using the Idea Book Pages.