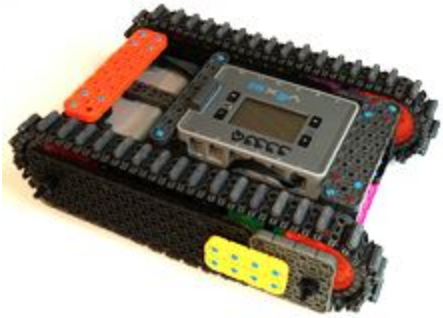
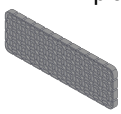
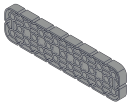
Tank Drivetrain Build Instructions



Before you start, make sure you have all needed parts. It may be helpful to have all the parts that you are going to need ready and separated from the rest of the kit.

30 or 40 - 1x1 Connector pegs 	20 or 30 - 1x2 Connector pegs 	8 - Thick washer/spacers 	12 - Rubber shaft collar 	4 - 5x capped shaft 
4 - 4x12 plates 	4 - 4x4 plates 	5 - 2x8 beams 	2 - 2x6 beams 	6 - 2x4 beams 
8 - 2x2 Corner Connector 	4 - 2x Wide, 1x2 Corner Connector 	4 - 24 Tooth Sprocket 	1 - 1x8 beams 	5 - Feet of Tank Tread 
1 - Dual Motor Support Cap 	80 - Traction Link 	2 - Smart Cables medium length 	2 - Smart Motors 	Robot Battery 
Robot Brain 	Controller (joystick) 			

Step 1

Parts needed: 1-4x4 plate, 1-4x12 plate, 1-2x6 beam, 2-1x1 pegs, 7-1x2 pegs

1. Line up the parts for this step 	4. Flip over connected plates 
2. Attach 1x2 pegs to 2x4 beam as pictured 	5. Attach two remaining pegs to plate 
3. Attach 2x4 beam to connect plates 	6. Attach 2x6 beam to plates 

Step 2

Parts needed: 1-4x4 plate, 1-4x12 plate, 1-2x6 beam, 2-1x1 pegs, 7-1x2 pegs

1. Line up the parts for this step

2. Attach 7 1x2 pegs into 2x4 beam

3. Attach plates to 2x4 beam as pictured

4. Attach two remaining pegs

5. Attach 2x6 beam to plates

6. This is what you have created so far

Step 3

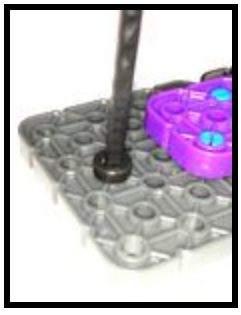
Parts needed: 6-2x standoffs, 2-24 tooth sprockets, 2-Rubber shaft collars, 2-washer spacers, 2-5x capped shafts

1. Parts

2. Slide shaft into center hole at one end of the assembly as pictured

3. Attach shaft to the other side of the assembly

4. Insert spacer/washer on each shaft

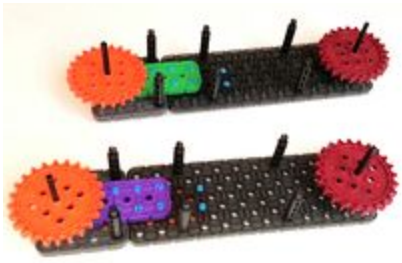


5. Insert rubber shaft collars on each shaft

6. Attach gears to shaft

7. Attach standoffs to assembly placed as shown

8. Build the other side in the same way



Step 4

Parts needed: 4-rubber collars, 2-washer spacers, 8-1x2 pegs, 2-2x4 beams, 1-4x4 plate, 1-4x12 plate

1. Parts for this step

2. Attach rubber shaft collars to shafts over gears

3. Slide spacer washers over shafts

4. Attach 1x2 pegs to to 2x4 beam

5. Attach both plates to beam

6. Attach other beam to plates

7. Slide plates over shafts and snap onto standoffs

8. Attach rubber shaft collars to shafts

10. Build another one and attach it to the other side

Step 5

Parts needed for one side: About +2 feet of tank tread

1. Parts

2. Lay tank tread flat, and set assembly onto of it.

3. Wrap tread around gears and note how many extra are on the tread. If your tread is too short then add some links and try again. In this picture there are 4 extra.

4. Detach the extra links of tread

5.

6. Wrap tread back around gears and connect ends

7.

8. Follow the same steps for the other side

Step 6

Parts needed for 1 side: About 40 tread nubs

Step 7

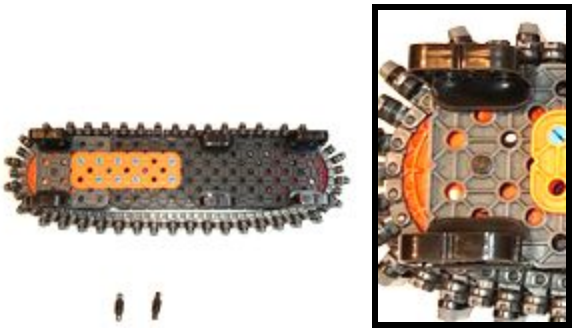
Parts needed: 4-2x2 corner connector, 2-2x1 corner connector, 2-0.5 standoffs

1. Parts for this step

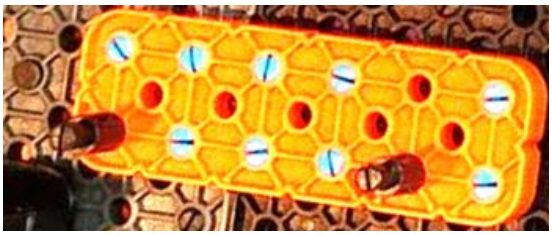
2. Attach large corner connectors to end top and bottom as shown

3. Attach small connectors as shown

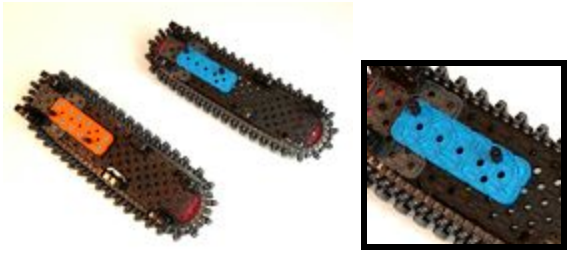
5. Attach large connectors to other end as shown



6. Insert standoffs into 2x8 beam in holes shown



7. Build other side, not standoff are in different locations (mirror opposite)

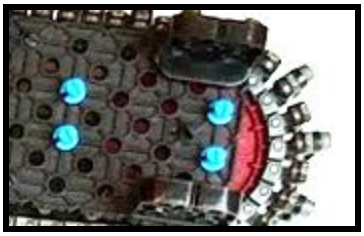


Step 8

Parts needed: 8-1x1 pegs, 2-medium length smart cables, 2-motors

1. Parts for this step

2. Attach pegs to both sides as shown



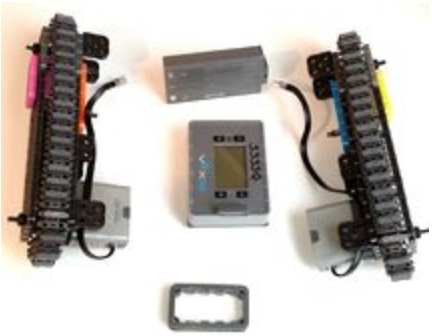
5. Connect wires to motors

6. Attach motors with cables oriented as shown

Step 9

Parts needed: 1-battery, 1-robot brain, 1-motor mount

1. Parts



5. Plug cables into ports 1 and 7 on the brain, then attach motor mount to one motor

2. Attach battery to brain, and attach brain to standoffs on one side

6. Attach brain to standoffs on other side

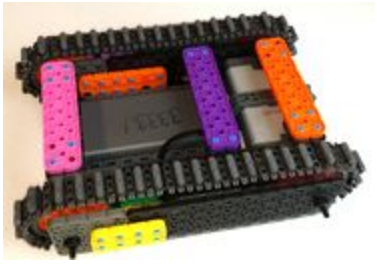
Step 10

Parts needed: 10-1x1 pegs, 2-2x8 beams, 1-1x8 beam

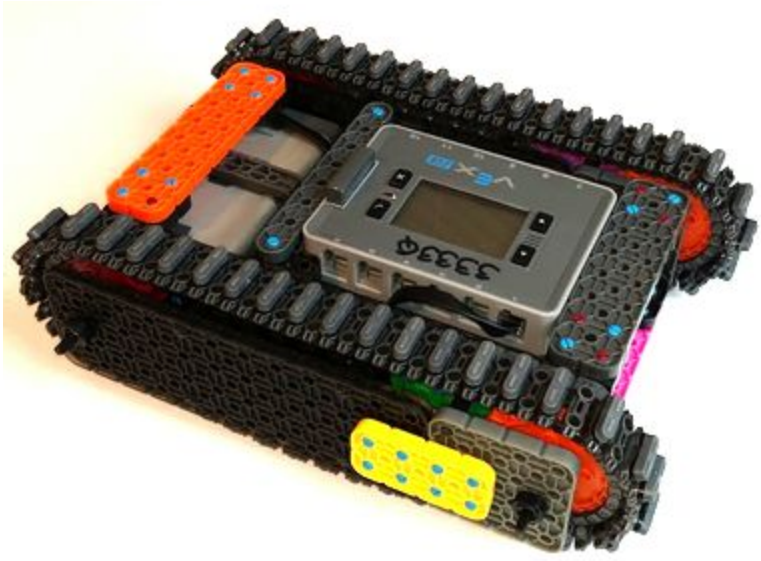
1. Parts for this step, flip robot over so you are looking at the battery 	5. 
2. Insert pegs into connectors 	6. 
3. Attach beams connectors 	

Step 11

Parts needed: 10-1x1 pegs, 3-2x8 beams

1. Parts for this step, flip robot over so you are looking at the battery 	5. 
2. Insert pegs into connectors 	6. 
3. Attach beams connectors 	

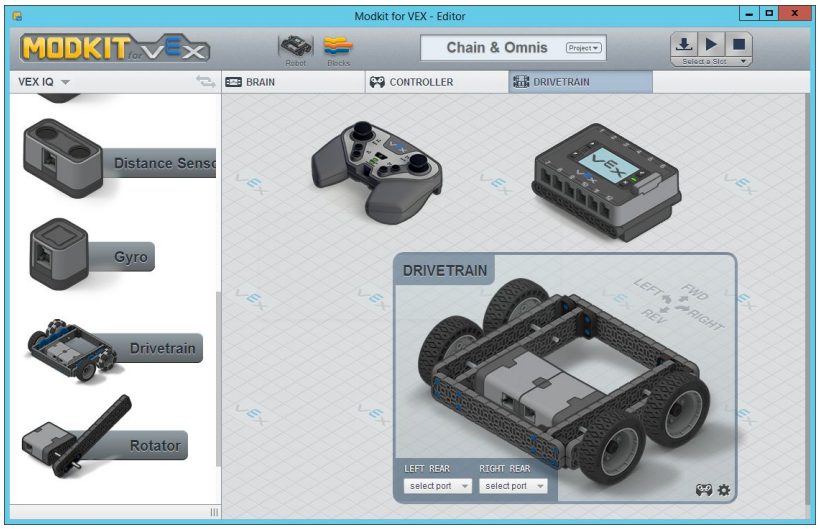
Congratulations! You are finished building your robot. Now create a driving program in Modkit.



Step 12 - ModKit Program

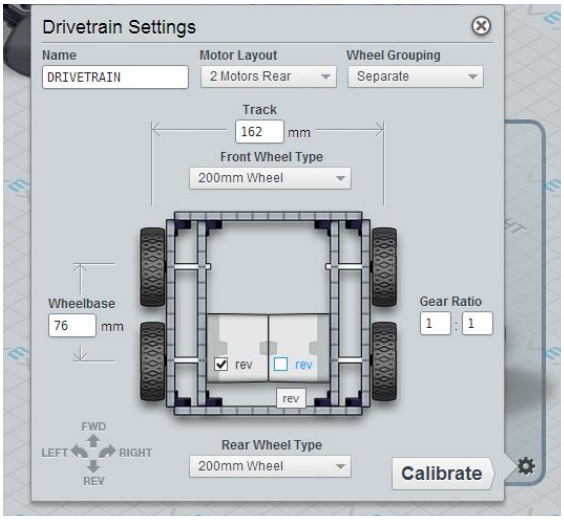
Parts needed: (1) Robot, (1) Computer running ModKit, (1) USB Cable

1. Create a new project and then add Controller and Drivetrain to it. Once you do it should look like this:

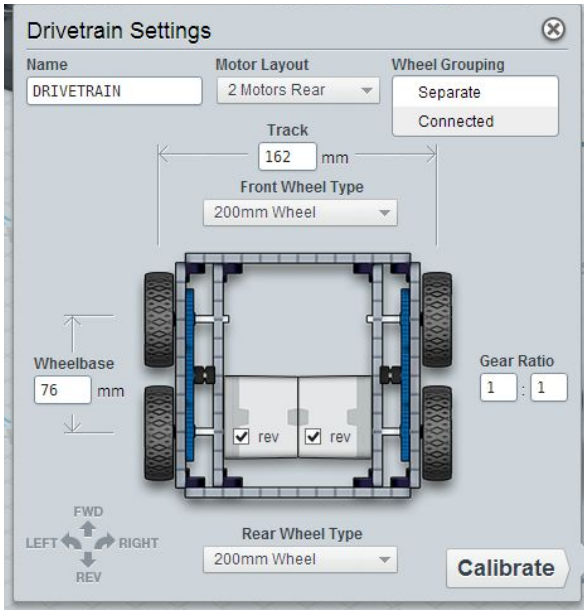


2. Configure the ports for the drivetrain. Which ports do the wires from the motors go into the brain?

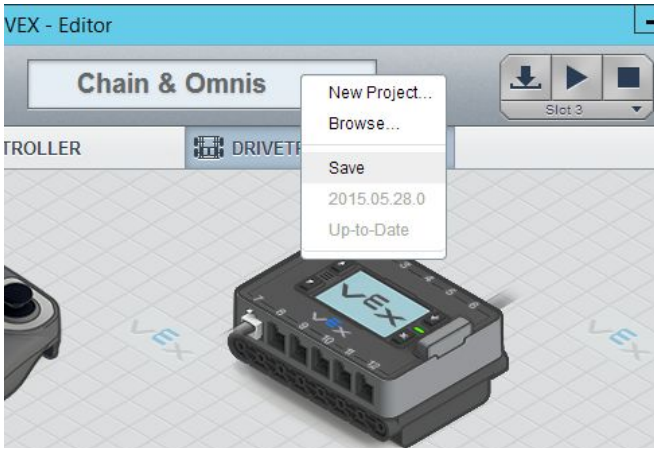
3. If you want the back of the robot to be where the brain is then reverse the direction of the motors. Click on the gear icon (configure) and then click the “rev” checkbox on each motor.



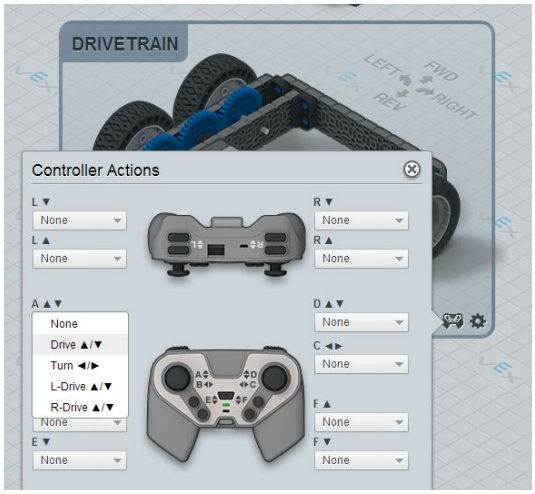
4. For the Wheel Grouping section select “Connected”. You can optionally measure and input the wheelbase, but the program will work without that setting. Calibrate is optional too.



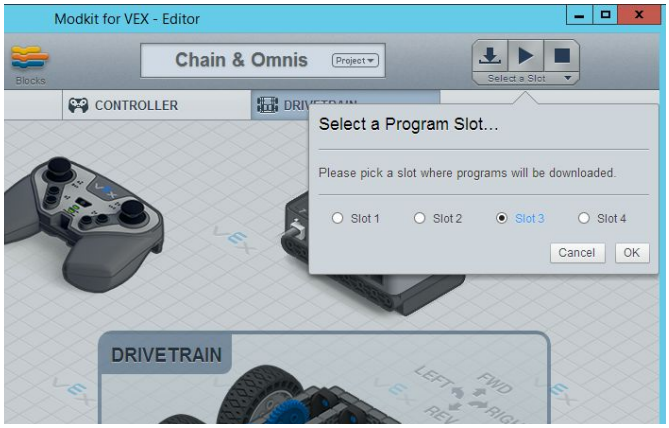
6. Give your program a name and save it.



5. Configure the controller actions for the drivetrain.

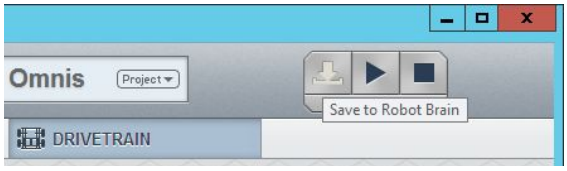


7. Select a slot for the program on the brain.



6. Only the A and C joystick settings need to be set.

7. Save program to the brain. Make sure your USB cable is hooked up first



Step 14 - Test Robot

Slot 3 on the brain should now have your program. Fire it up and try it out!