



LOGIC BLOCKS



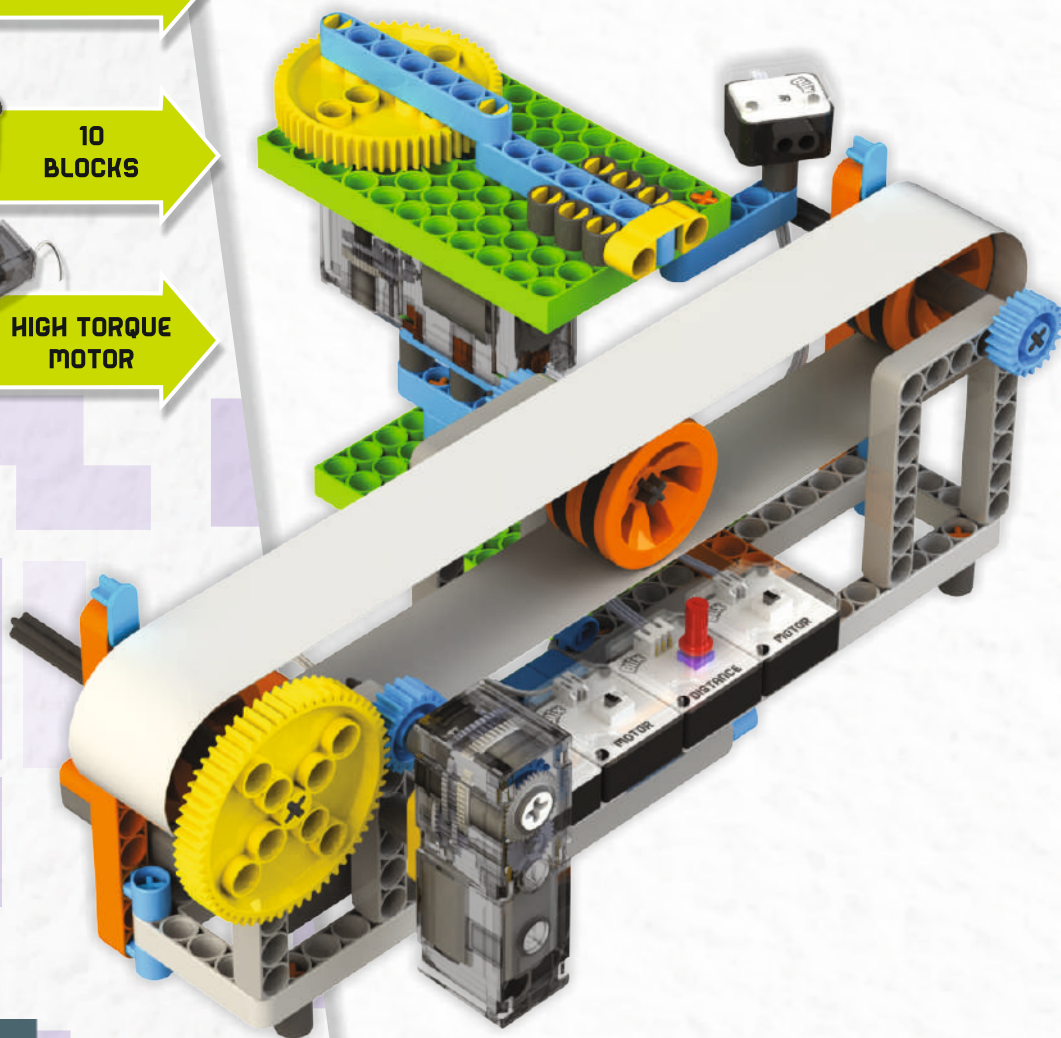
**QUICK
CONSTRUCTION**



**10
BLOCKS**



**HIGH TORQUE
MOTOR**



Name: _____

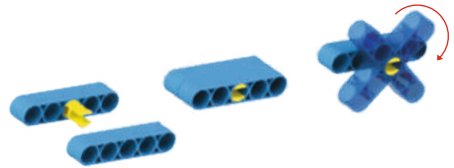
Class: _____

Call: _____

HOW TO CONSTRUCT



I - CL2 - Use this Connector to loosely connect 2 pieces

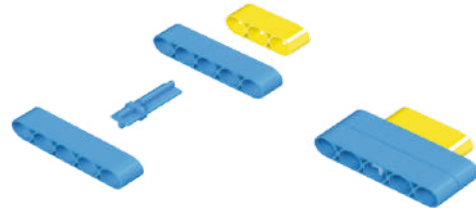


II - CT2 - Use this Connector to attach 2 pieces



III- CT3 - Use this Connector to attach 3 pieces

During assembly ensure position of collar is same as in the image in manual.



HOW TO DISMANTLE



- Narrow edge to remove connectors
- Fit the tool into narrow side of connector collar

- Broad edge to split two pieces

1. This set is intended for children 8 years and above
2. Do not mix old and new batteries
3. Do not mix alkaline, standard (Carbon-Zinc) or rechargeable (Nickel-Cadmium) batteries.
4. Batteries are to be inserted by matching (+) and (-) polarity markings as shown in the image.
5. Non-rechargeable batteries are not to be charged
6. Rechargeable batteries are to be removed before being charged
7. Exhausted batteries are to be removed from toy.
8. The supply terminals are not to be short-circuited
9. The kit is not intended for children under 3 years old.
10. Remove batteries before cleaning any part of the toy.
11. Prevent wire from coming up in contact with the wheels and tracks by using wire clip.

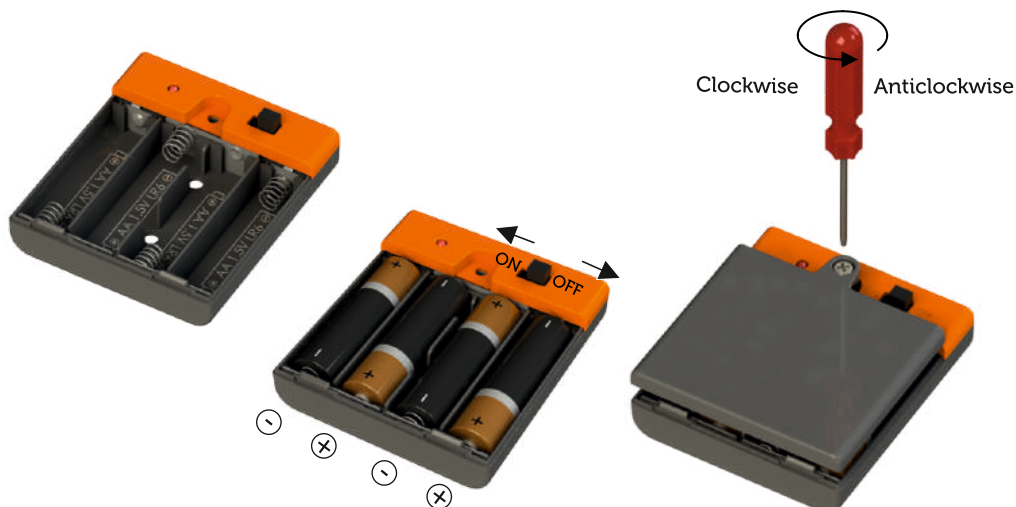
**FOR HOW TO DISMANTLE
SCAN THE QR CODE**



**LOST A PIECE?
BUY EXTRA PARTS ONLINE**



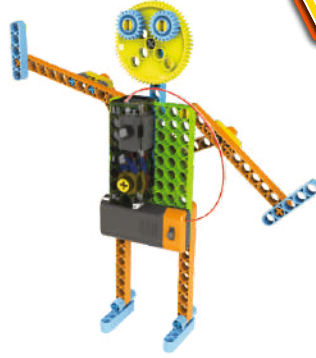
HOW TO CHANGE THE BATTERIES



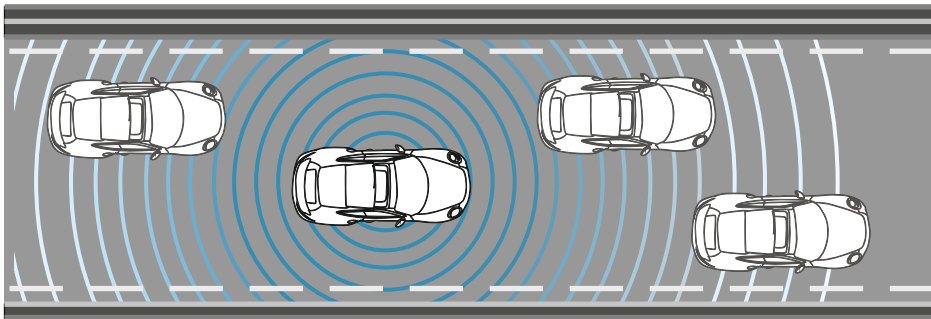
**Add 4 x 1.5V "AA"
size batteries**

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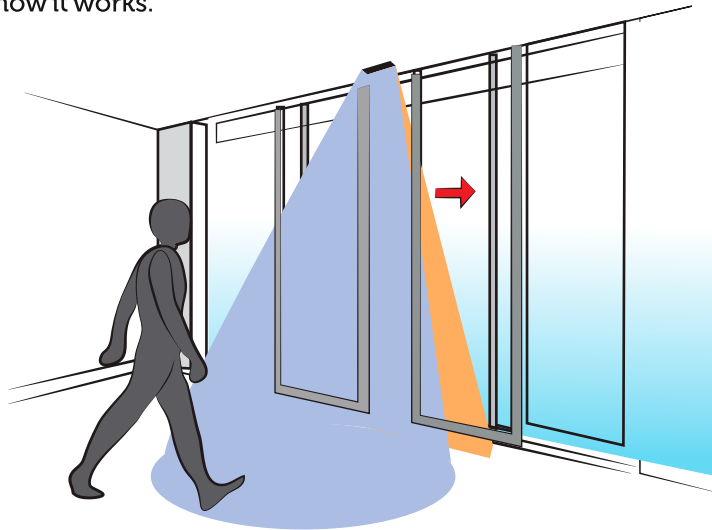
When you think about a robot, I'm sure you think about something like this.



Yes, there are some robots that look like this but robots come in all shapes and sizes. For example, this car below seems like a traditional car but in reality, it's a robot. It sees the environment around it. If it detects something getting close, it can brake on its own.

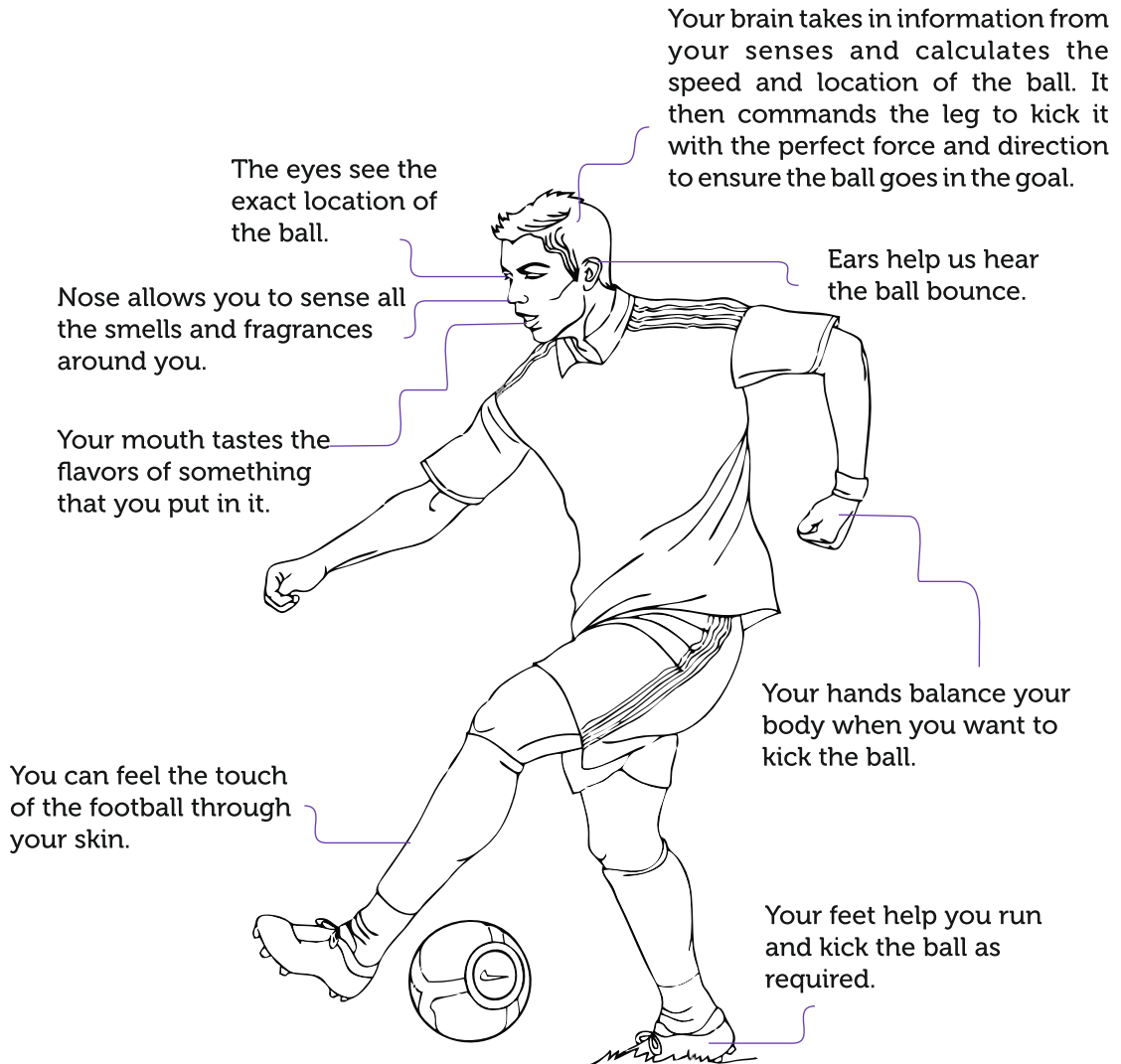


Let's look at another robot that we might experience every day at a mall or an office building, and try and analyze how it works.



Robots take in information from the environment around them, analyze that information based on our instructions, and give an output in the form of a task. Are they all that different from us?

The human body is a very advanced futuristic robot. Look at all the operations that are taking place inside the human body to do something simple like playing football.



Like the sensor in the automatic opening doors, your eyes, nose, mouth, ears, and skin, sends information to your brain. Your brain then analyses that information and gives commands to your hands and legs to move, your mouth to talk or sing, etc.

Input

Compute

Output

Power Block

This is the most essential block; our robot will be powered by this block.

This block is powered using 6V battery box.



LED block

Light-emitting diodes have a wide range of usage from mobile phones to large billboards.

This LED block will provide light. We will use this as one type of output for our Robot.

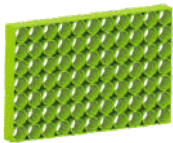


Let's use this block to make a table lamp.

LAMP

Step 1

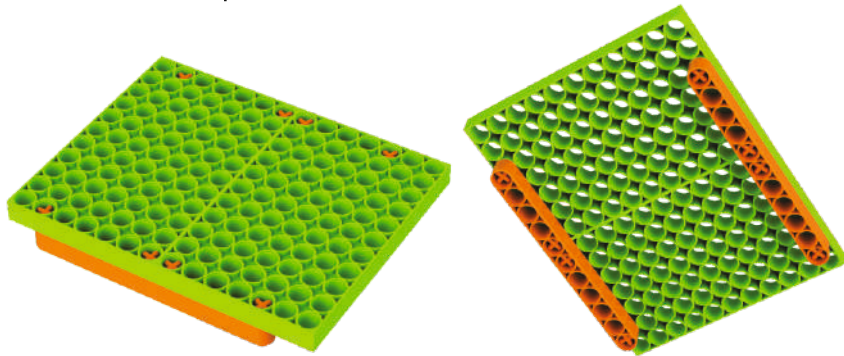
CT2 8 pcs.



P7 X 11 2 pcs.



P11 2 pcs.



Backside view

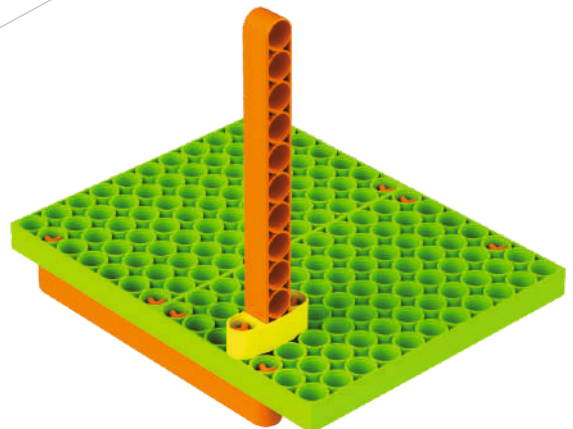
Step 2

CT2 2 pcs.

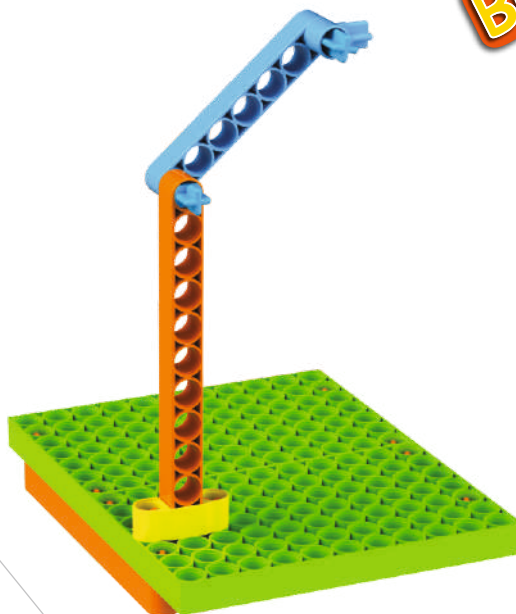
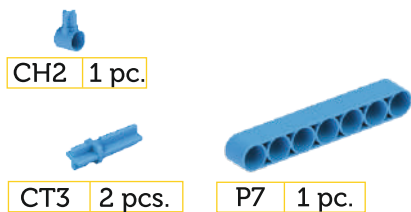
PC3 1 pc.



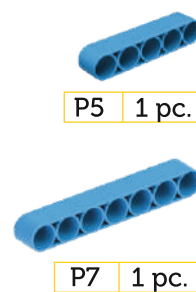
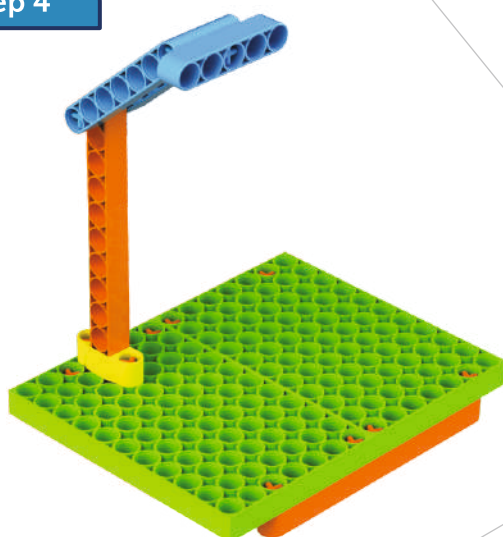
P11 1 pc.



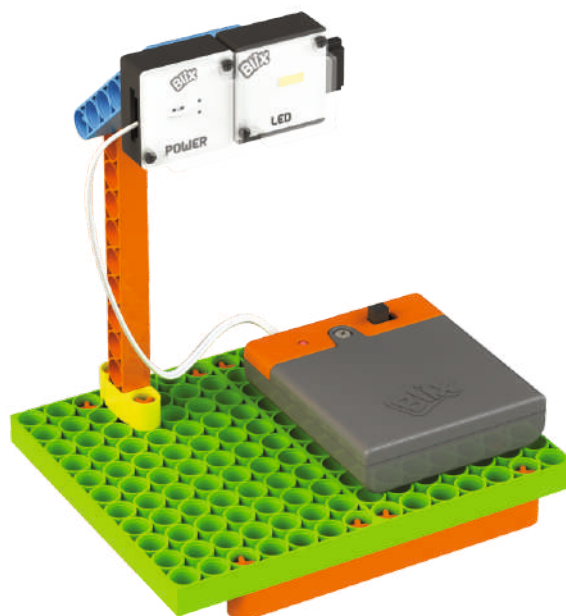
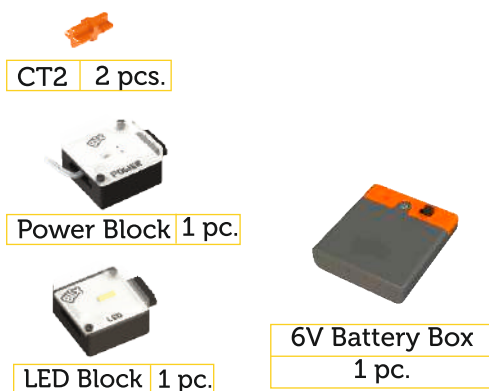
Step 3



Step 4



Step 5

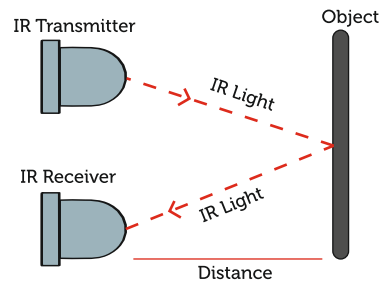


You can see 2 LED's coming out of the IR block, one is IR transmitter, and another is IR receiver (also called a photodiode).



IR Block

IR means infrared light, which is invisible to human eyes.

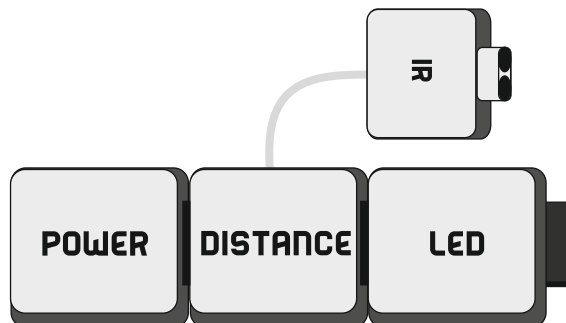


Distance block has a regulator (potentiometer) on it, this can change the distance at which object has to be detected.



Distance Block

Connect Power block, Distance block with IR block using wire and LED block. LED will glow if sensor detects an object in front of it.



Have you seen the light of a refrigerator glowing only when it is opened?
Or a smart cupboard which switches on the light when you open it?

How do they work?

Let's create our own "Smart box" using Distance and IR blocks.

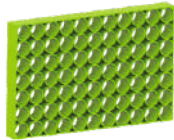
SMART BOX

Blix

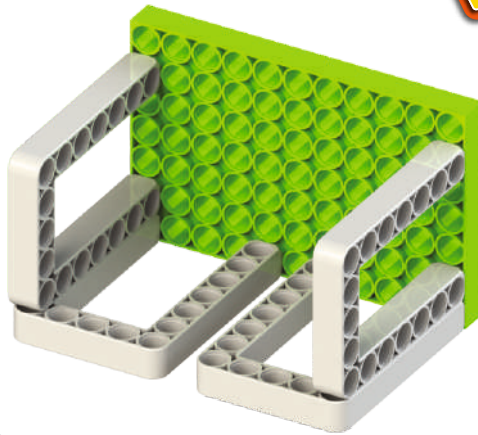
Step 1



PU5 X 7 4 pcs.



P7 X 11 1 pc.



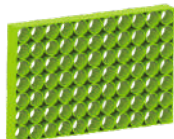
Step 2



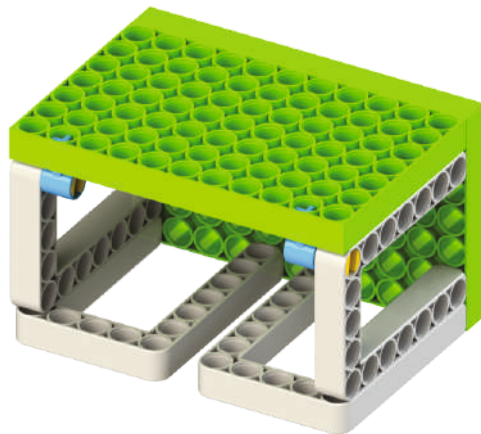
CH2 2 pcs.



CL2 2 pcs.



P7 X 11 1 pc.



Step 3



CT2 3 pcs.



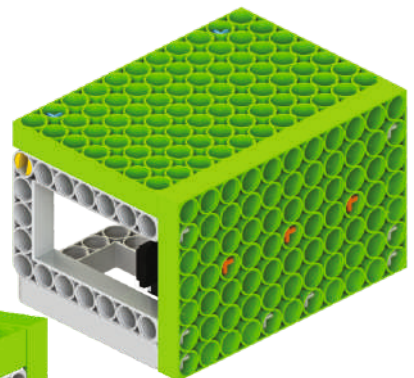
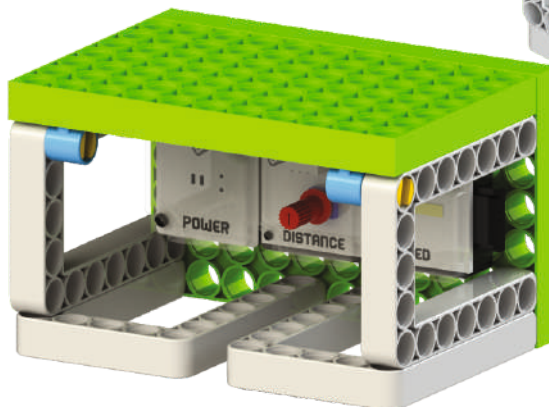
Distance Block 1 pc.



LED Block 1 pc.



Power Block 1 pc.



Backside view

Step 4

TW1 2 pcs.

CT2 1 pc.

CH2 1 pc.

CT3 2 pcs.

P5 1 pc.

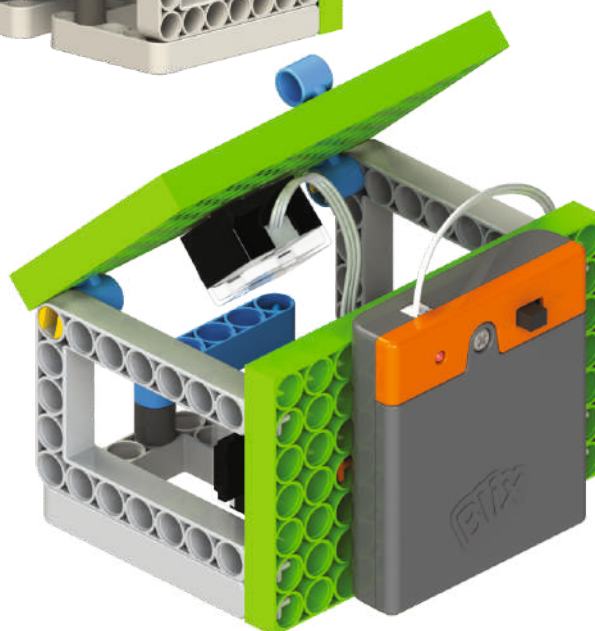
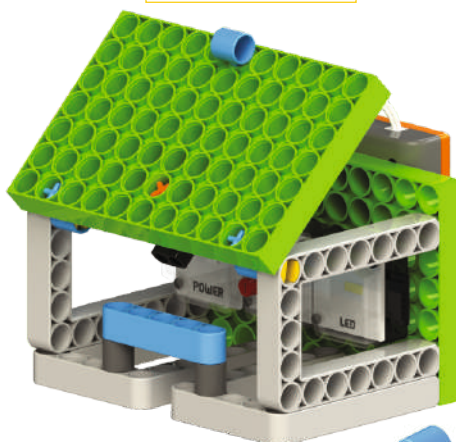
P5 1 pc.

6V Battery Box
1 pc.

Wire 1 pc.

IR Block 1 pc.

Backside view



Truth Table

A truth table is used for designing digital circuits. It helps to relate input with the output of our logic. Let's make one for our "Smart box".

In digital circuits,

1 — ON
0 — OFF

Distance Block	LED Block
1	
0	

For input devices like the Distance block, if it senses something, we consider it as 1, and if it doesn't sense, we consider it as 0.

Challenge: Car Door

How does the lamp in a car glow when any door is open?

Can you take up this challenge to make the LED glow when you open the door of a car?

Motor Block

Blix

This motor block will supply power to our motor.

Can you see that tiny switch on the block? What does it do?
Let's make a car and check.



BASIC CAR

Step 1

CT2 2 pcs.

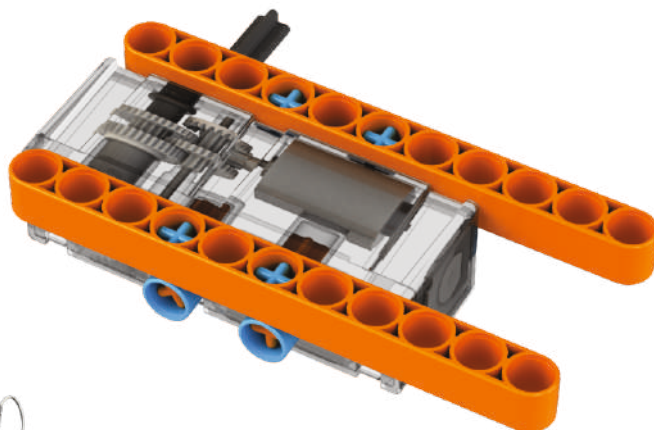
CH2 4 pcs.



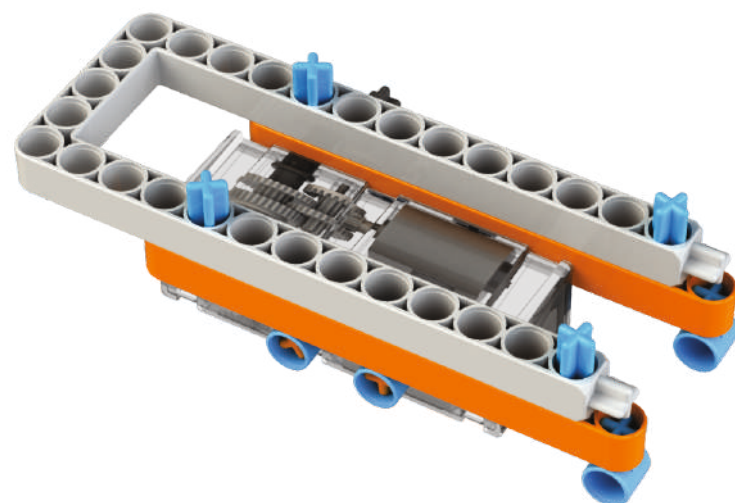
P11 2 pcs.



Motor 1 pc.



Step 2



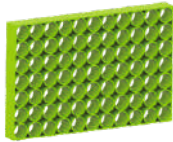
CH2 2 pcs.

CT3 4 pcs.



PU5 X 13 1 pc.

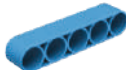
Step 3



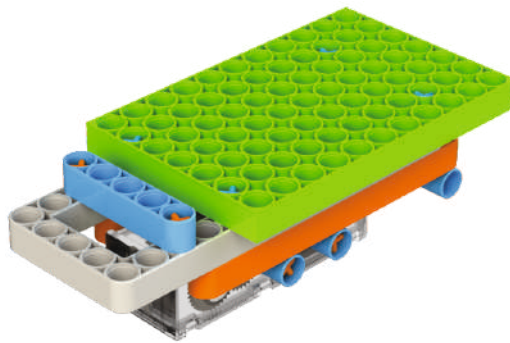
P7 X 11 1 pc.



CT2 2 pcs.



P5 1 pc.



Step 4



TW1 6 pcs.



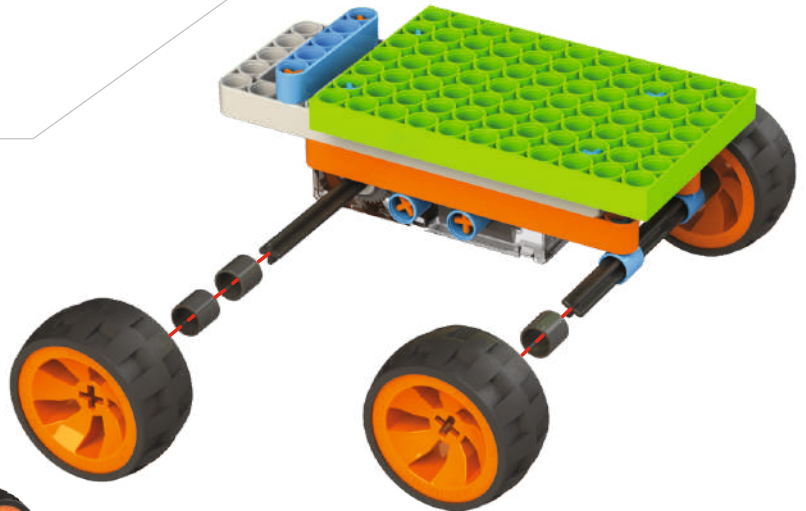
SH60 1 pc.



SH100 1 pc.



Wheel 4 pcs.



Step 5



CT2 2 pcs.



CT(1x2) 1 pc.



Motor Block 1 pc.



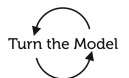
PU5 X 7 1 pc.



Power Block 1 pc.



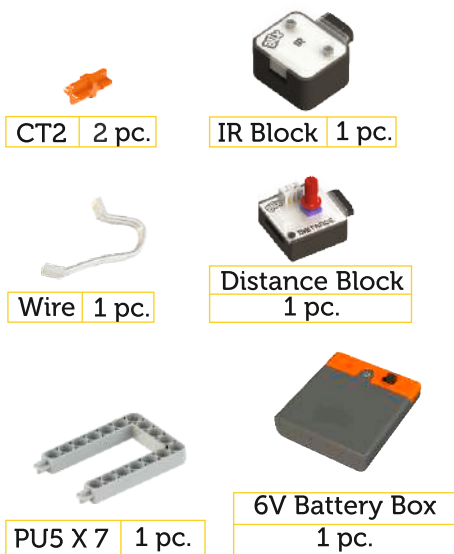
6V Battery Box 1 pc.



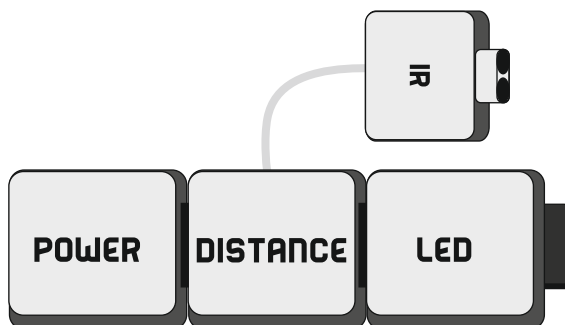
Do you have a pet? Ever tried calling it or instructing it to follow you?

Why don't we make a robot which will follow us?
Let's make our car smarter and make it follow you.

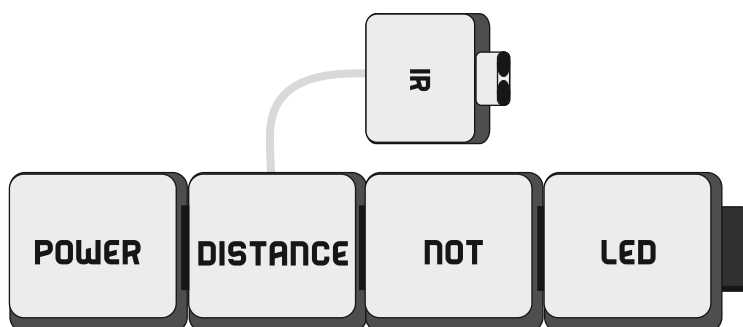
Distance Block	Motor Block
1	
0	



This block changes any given input into its opposite output.



Distance Block	LED Block
1	1
0	0

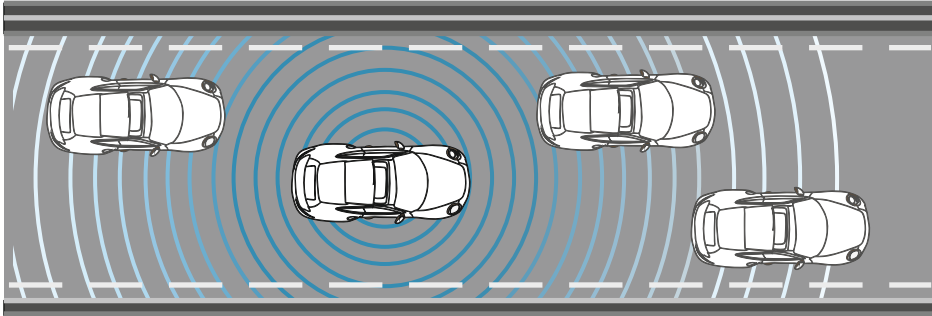


Distance Block	LED Block
1	0
0	1

When Distance block senses something and gives a signal to the NOT block, it will alternate the logic and give an opposite signal to the next block.

Do you know what is a self-driving car or an autonomous car?

It is a car that has sensors all around it, and can turn, go faster or stop automatically based on the input from these sensors.



Let's design a car which stops automatically whenever an obstacle is in front of it.

Distance Block	Motor Block
1	
0	



CT2 1 pc.



NOT Block 1 pc.



PU5 X 7 1 pc.



6V Battery Box
1 pc.

When the fire breaks out in a building, an alarm system helps in communicating that the building needs to be evacuated.

When a sensor detects the fire, it gives a signal to the alarm to go off. Similarly, we have a buzzer on this block. It will go off when an input signal is given to it.

Let's make our autonomous car that informs us whenever any obstacle is in front of it by blowing the buzzer.

AUTONOMOUS WITH BUZZER

Distance Block	Motor Block	Buzzer Block
1		
0		



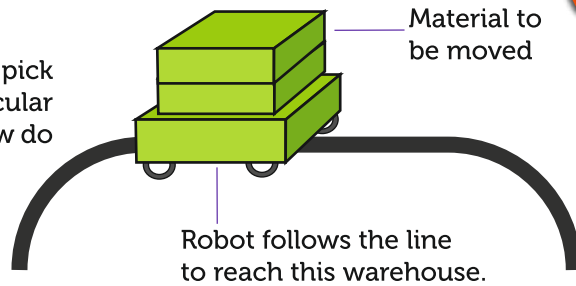
CT2 1 pc.

Buzzer Block 1 pc.

PU5 X 7 1 pc.

6V Battery Box
1 pc.

Do you know in industries, robot's pick up the material, follows a particular path and unload the material? How do they do that?

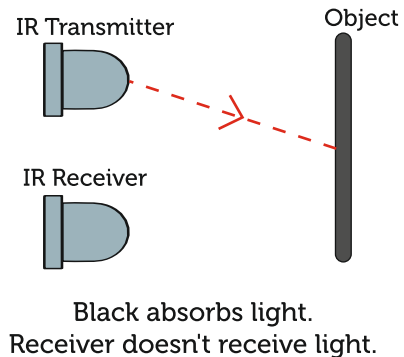
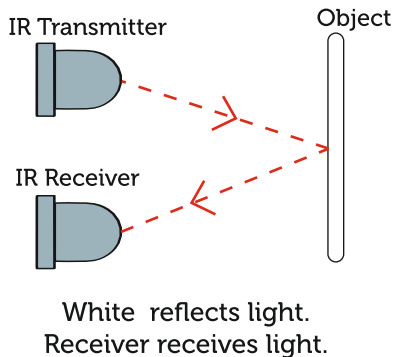


Excited to make one of our own line following robots? We need to think about these questions first-

1. How will our robot identify the line?
2. How will our robot turn?
3. What kind of algorithm will help our robot follow the line?

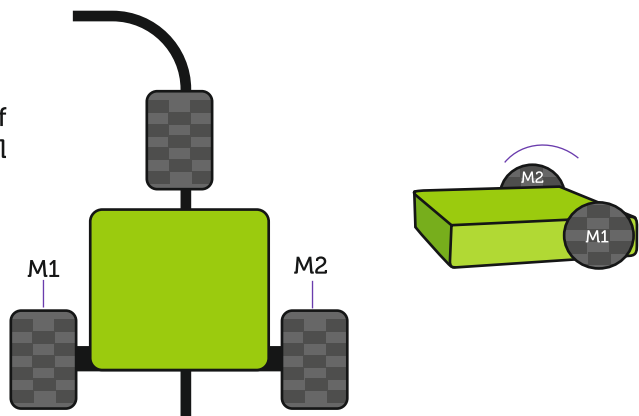
1. Identifying the Lines

Find the black line and a white Surface. Connect the Distance block with the Power block and try to detect white and black lines.



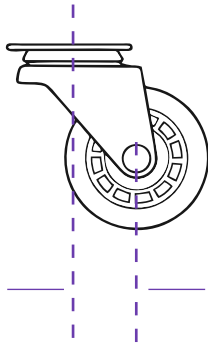
2. Turning the Robot

When both the wheels are running, if motor 1 stops suddenly then where will the robot go?



This way by switching on one motor we can make the robot turn. But for balance, we will need one wheel in the front which can turn in any direction.

Have you been on a swivel chair? Or in a shopping trolley?



Distance from center

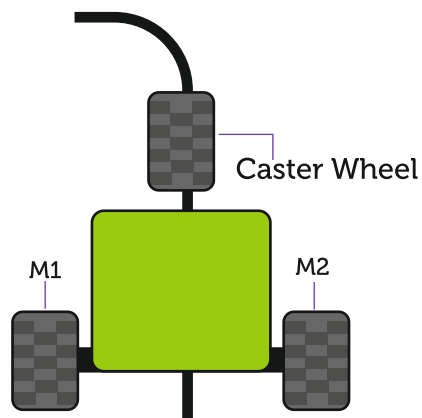


The wheels of this trolley are called caster wheels. Centre of the wheel is a bit away from the centre of where it is attached to its casing.

3. Algorithm

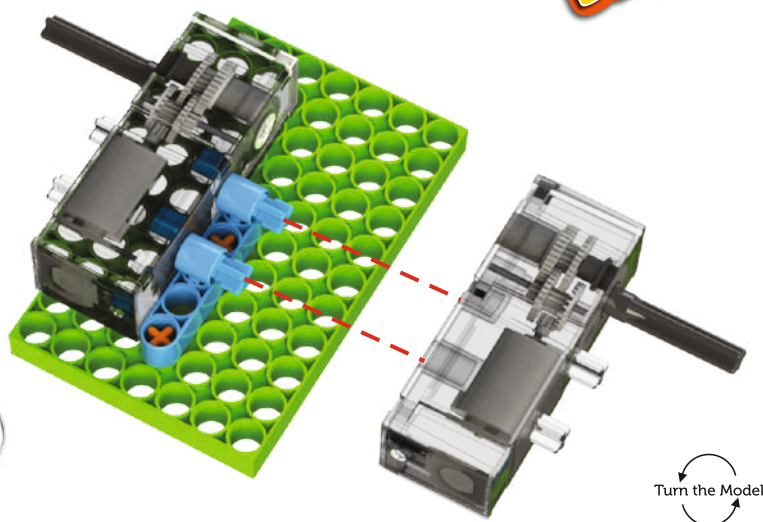
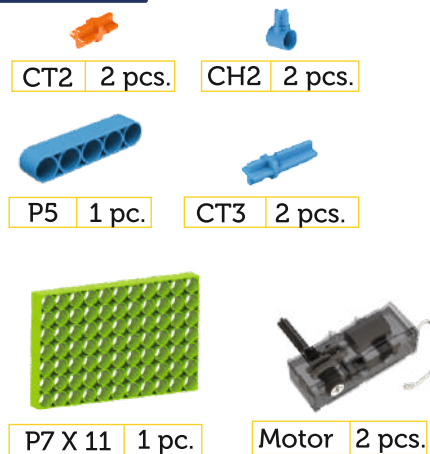
An algorithm is the set of rules which will be followed by the robot. We can make the rules by designing the logic table.

Colour of floor	Distance Block	Motor Block 1	Motor Block 2
White			
Black			

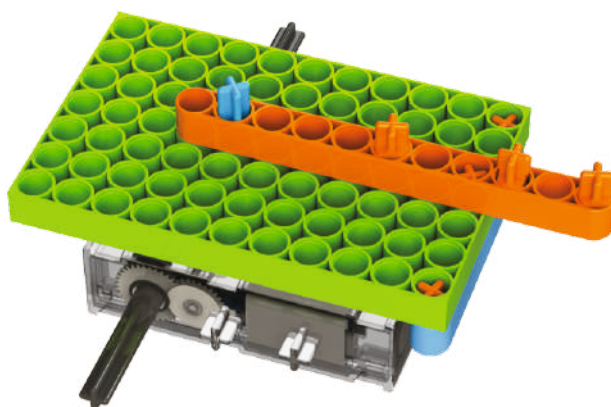
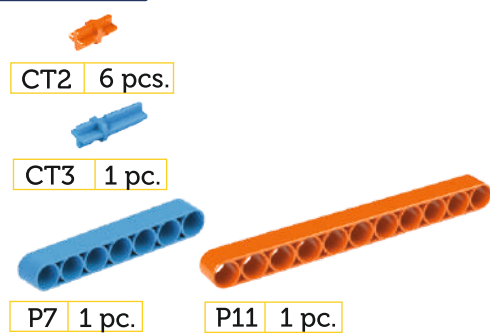


Now we can start building our line follower.

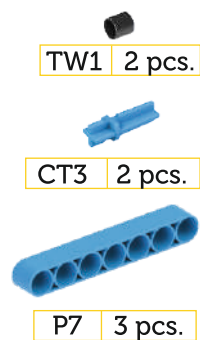
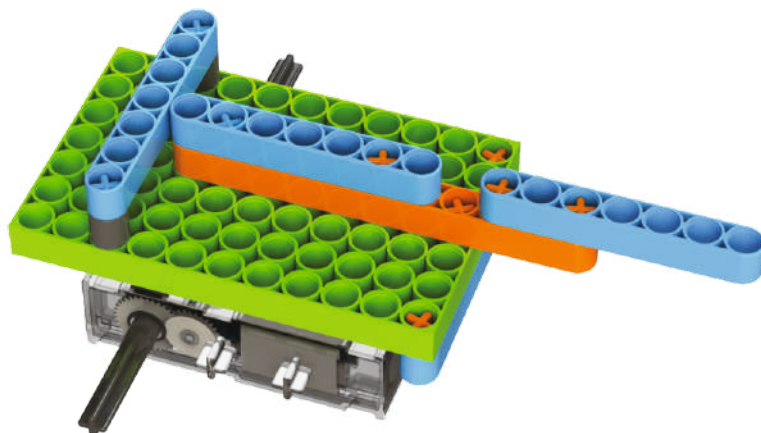
Step 1



Step 2



Step 3



Step 4

TW1 4 pcs.



Wheel 2 pcs.



Step 5

TW1 4 pcs.



P5 1 pc.

CH2 2 pcs.



CL2 1 pc.



SH60 1 pc.

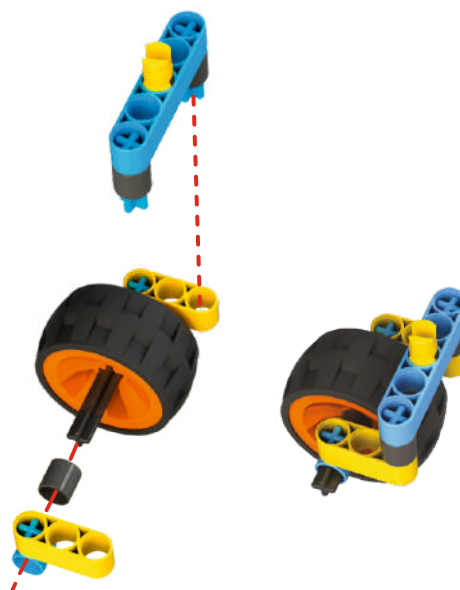
P3 2 pcs.



CT3 2 pcs.



Wheel 1 pc.



Step 6

Assembly of step 4 and step 5



CH2 1 pc.



CT2 4 pcs.



Step 7



NOT Block 1 pc.



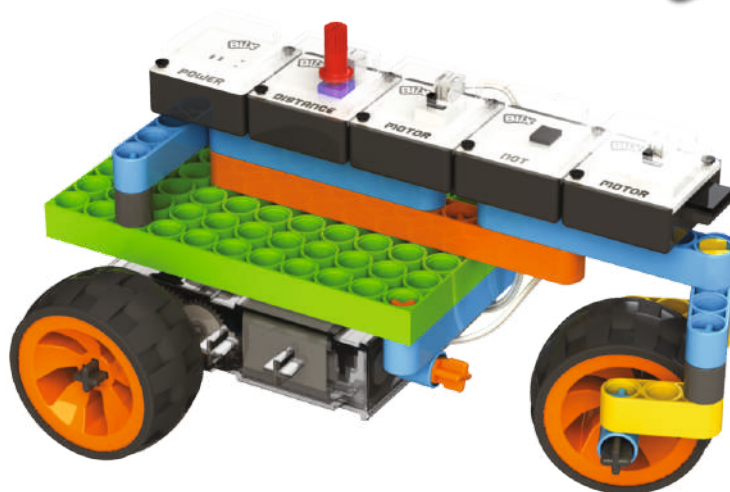
Distance Block 1 pc.



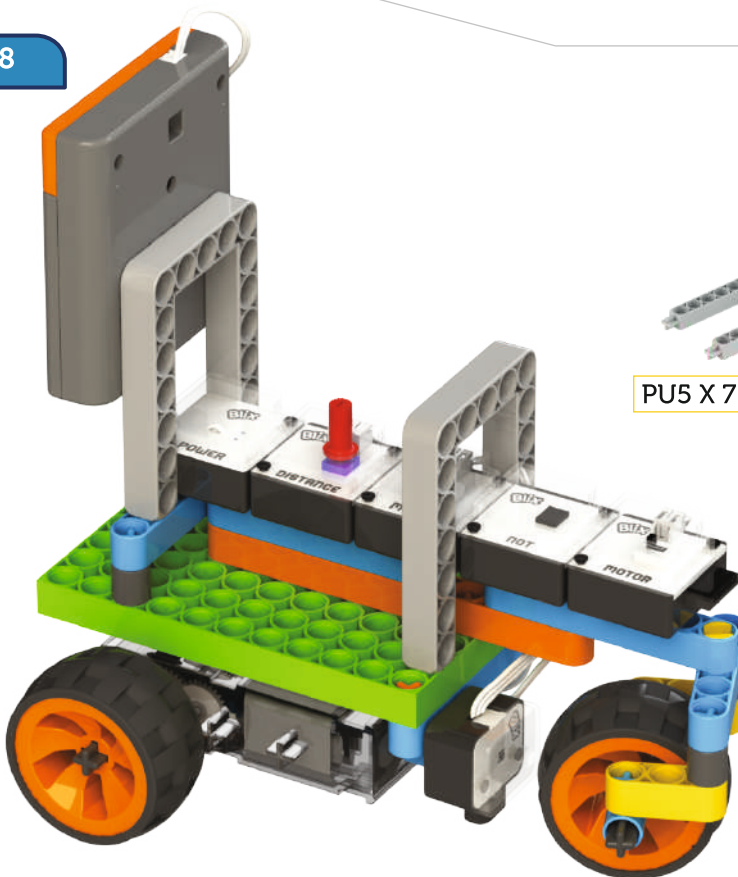
Power Block 1 pc.



Motor Block 2 pc.



Step 8



Wire 1 pc.



PU5 X 7 2 pcs.



CT(1x2) 2 pcs.



IR Block 1 pc.



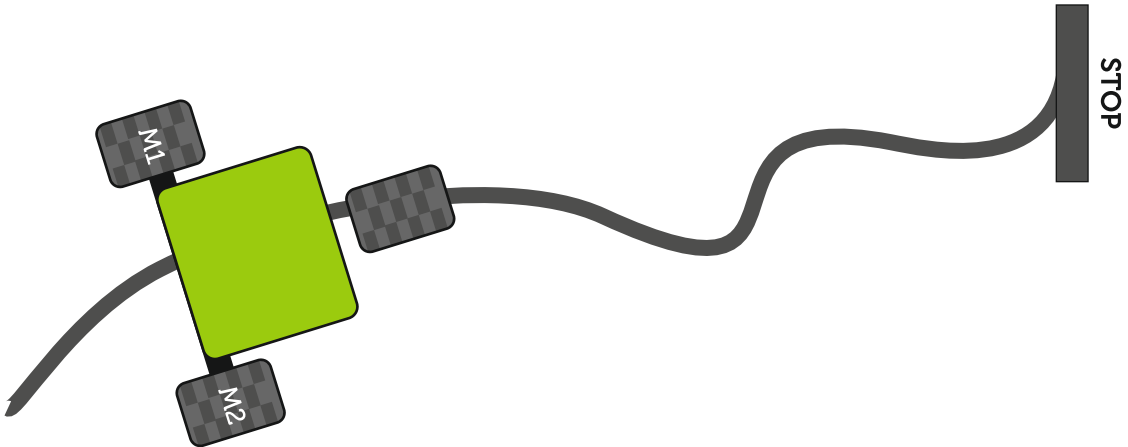
6V Battery Box 1 pc.

Challenge: Self-parking Robot



Here comes a challenge for you!

Your robot can follow a path for now, can it park itself? Design your robot in such a way that it follows a track and stops itself at the "STOP" line.



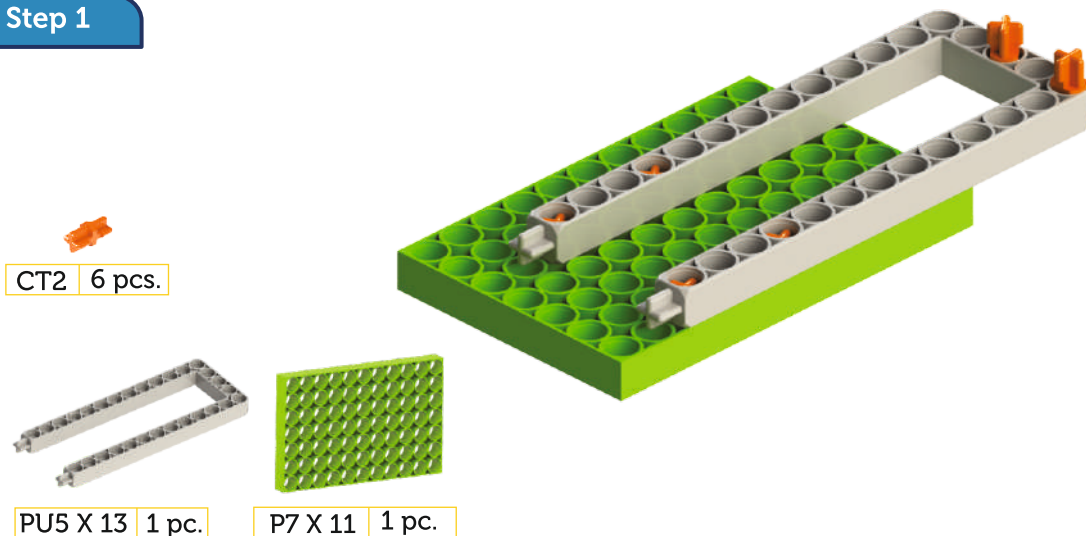
Distance Block	Motor Block 1
1	
0	

Distance Block	Motor Block 2
1	
0	

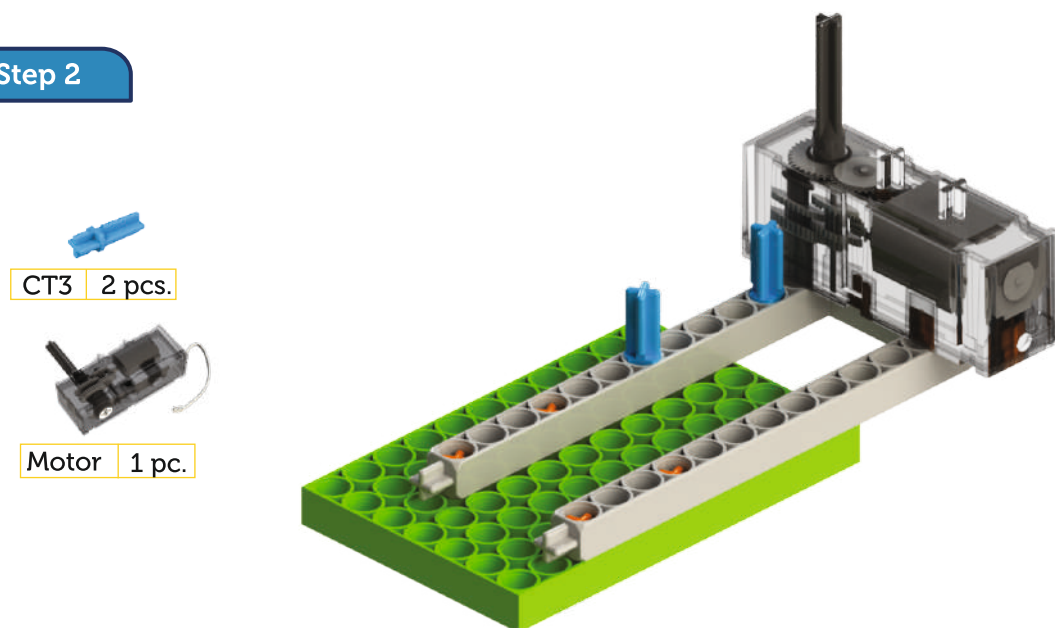
How amazing would it be if we compose the music ourselves and ask our robot to play?

Distance Block	Buzzer Block	Motor Block
1		
0		

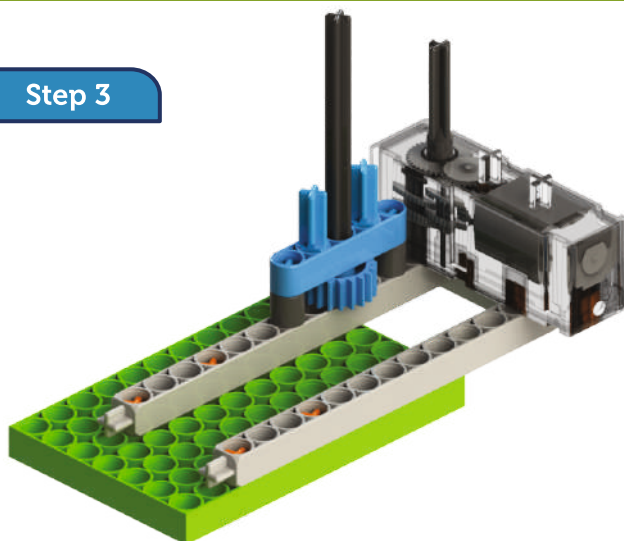
Step 1



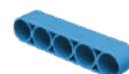
Step 2



Step 3



TW1 2 pcs.



P5 1 pc.



G20 Plus 1 pc.



SH100 1 pc.



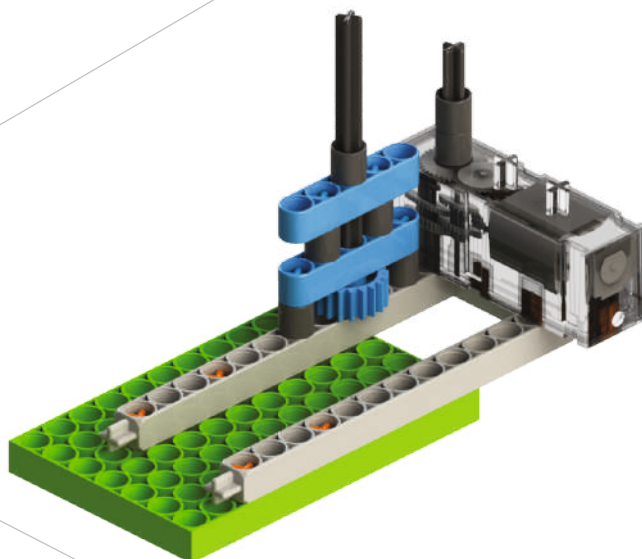
CT3 2 pcs.

Step 4

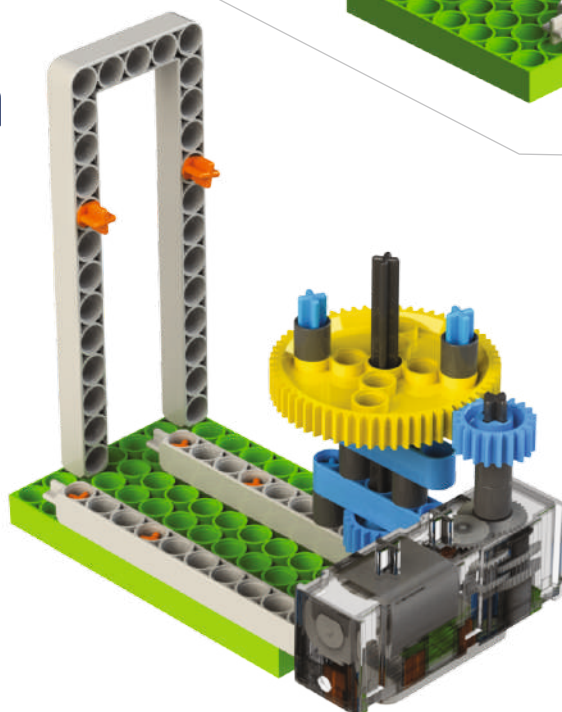


TW1 5 pcs.

P5 1 pc.



Step 5



CT2 2 pcs.



TW1 2 pcs.



CT3 2 pcs.



G60 1 pc.

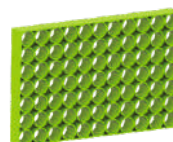
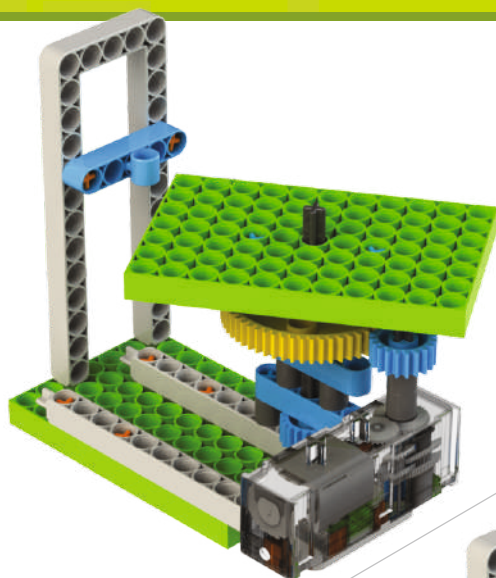


G20 Plus 1 pc.



PU5 X 13 1 pc.

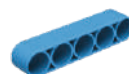
Step 6



P7 X 11 1 pc.



CH2 1 pc.



P5 1 pc.

Step 7



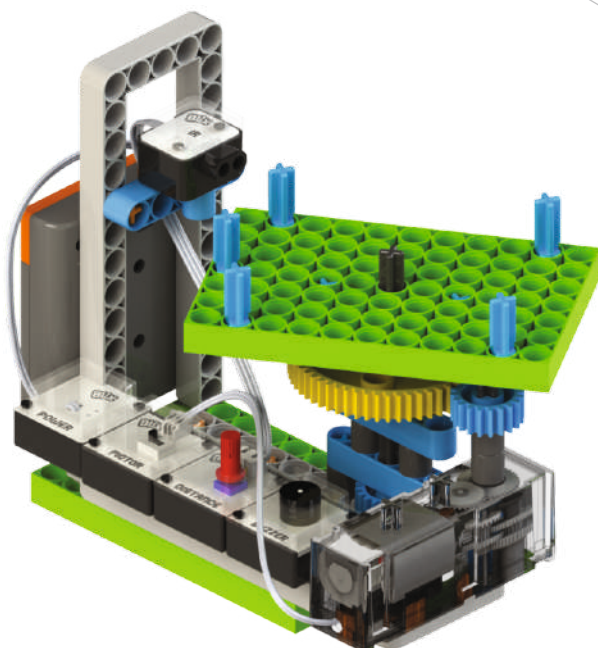
CT2 4 pcs.



CT3 5 pcs.



Step 8



6V Battery Box
1 pc.



Buzzer Block 1 pc.



IR Block 1 pc.



Power Block 1 pc.



Motor Block 1 pc.



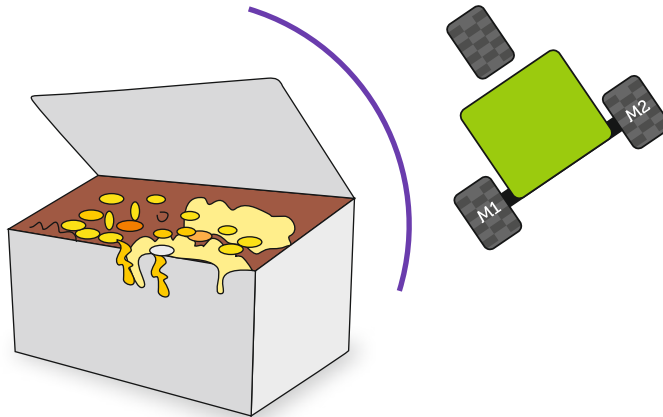
Distance Block
1 pc.

Challenge: Guard Robot

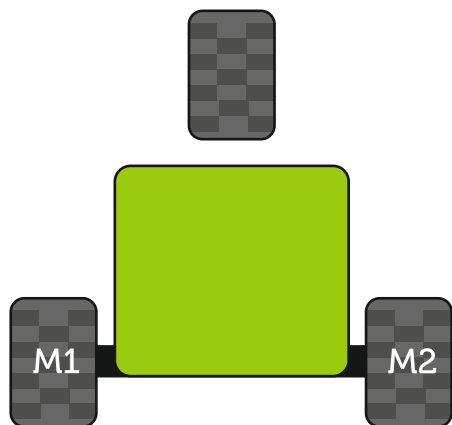


We need to guard our treasure, a human can do it but he might rest and might fall asleep on duty. Can we make a robot to guard the treasure?

This robot should always take rounds around our treasure, to safeguard.



Distance Block	Motor Block 1	Motor Block 2
1		
0		

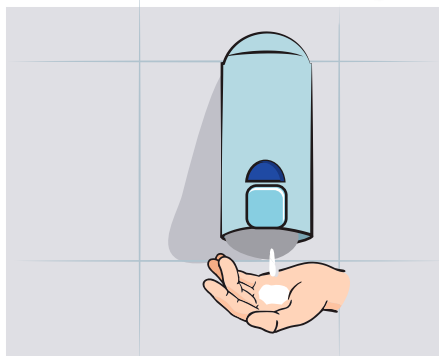


AUTOMATIC DISPENSER

Blix

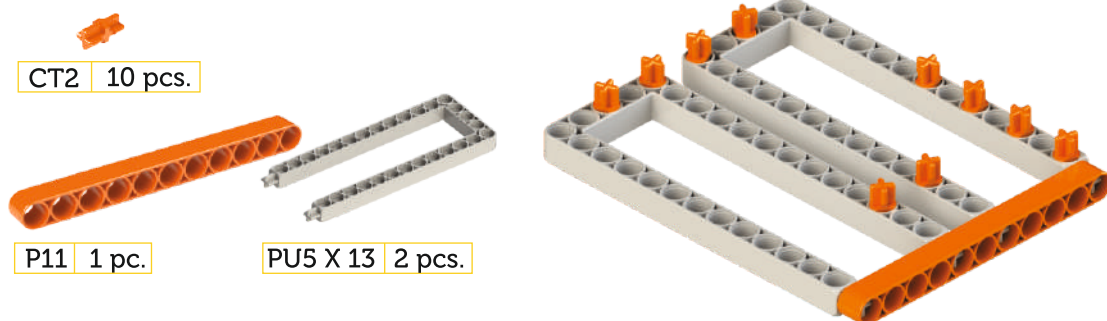
Do you know how an automatic soap dispenser works?

Let's make our own automatic dispenser which can dispense gears (G20).

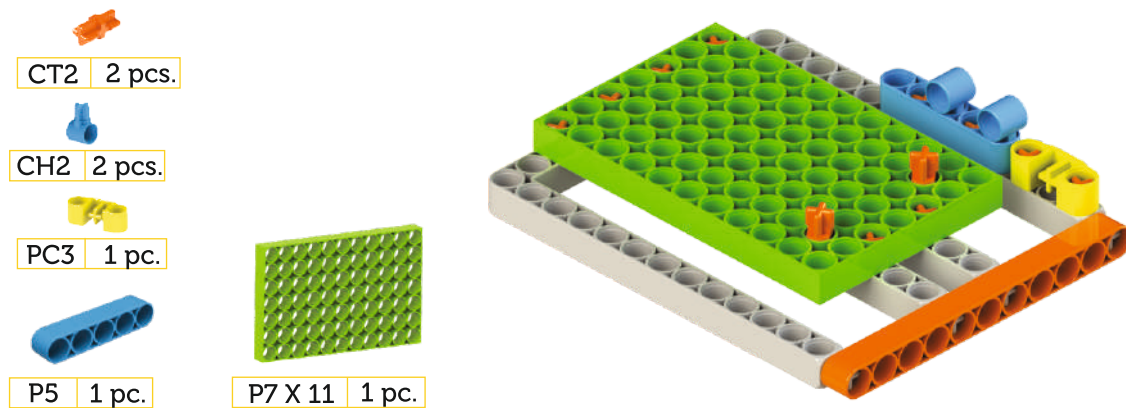


Distance Block	Motor Block
1	
0	

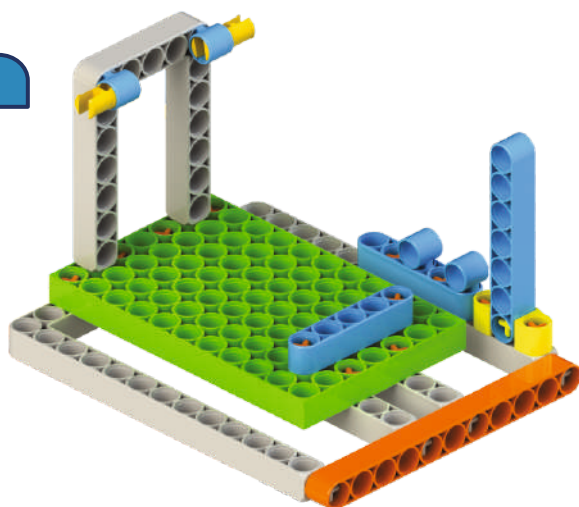
Step 1



Step 2



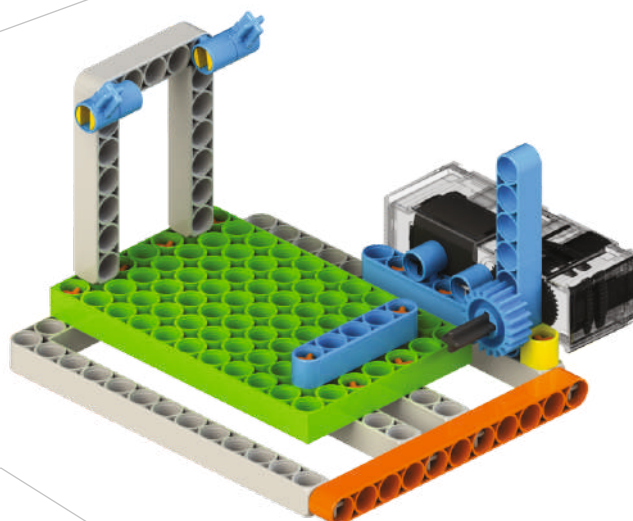
Step 3



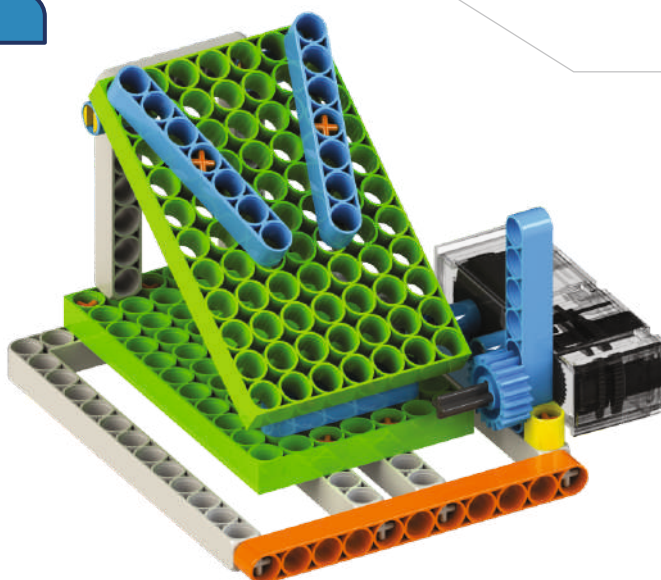
- CL2 2 pcs.
- CH2 2 pcs.
- P5 1 pc.
- P7 1 pc.
- PU5 X 7 1 pc.

Step 4

- CH2 2 pcs.
- G(20) 1 pc.
- Motor 1 pc.

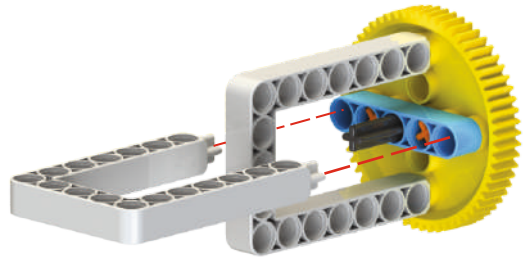
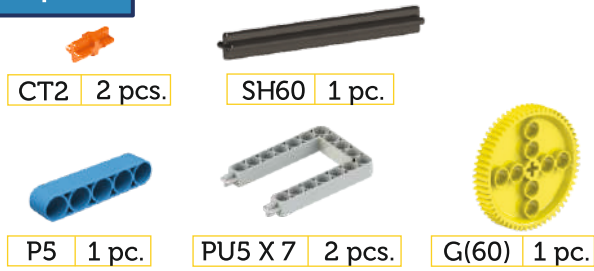


Step 5



- CT2 2 pcs.
- P5 1 pc.
- P7 2 pcs.
- P7 X 11 1 pc.

Step 6



Step 7

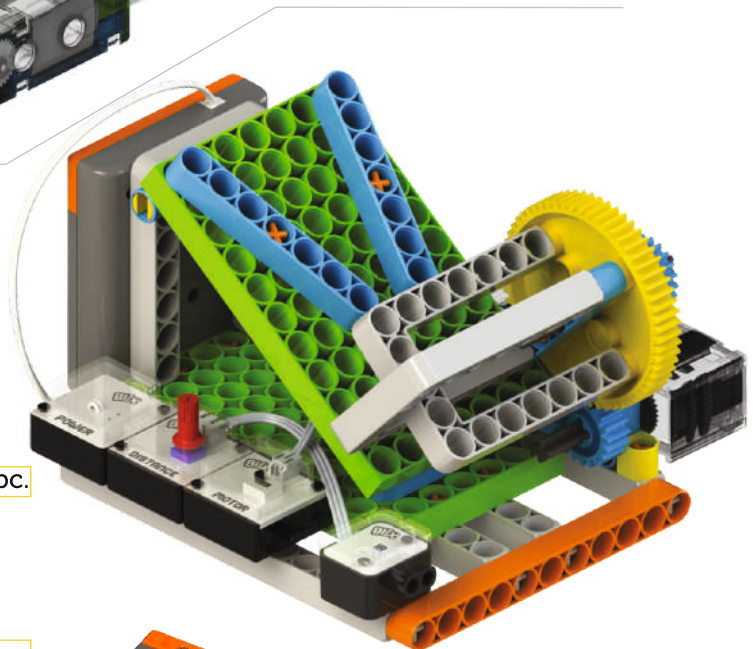
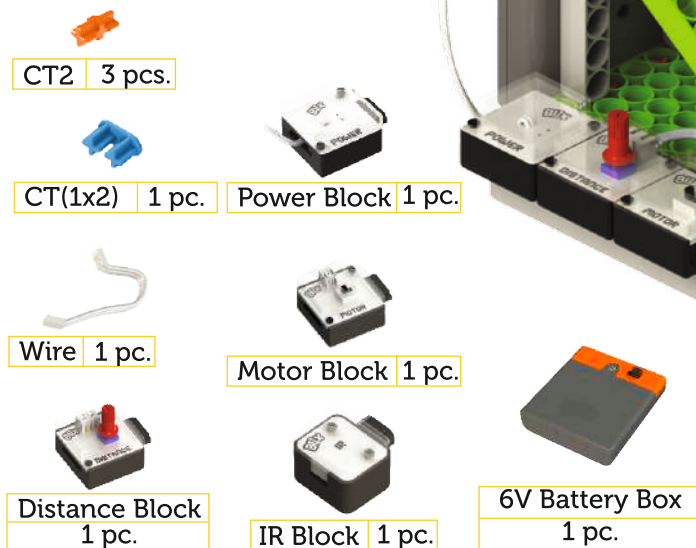


Assembly of step 5 and step 6



G(20) 1 pc.

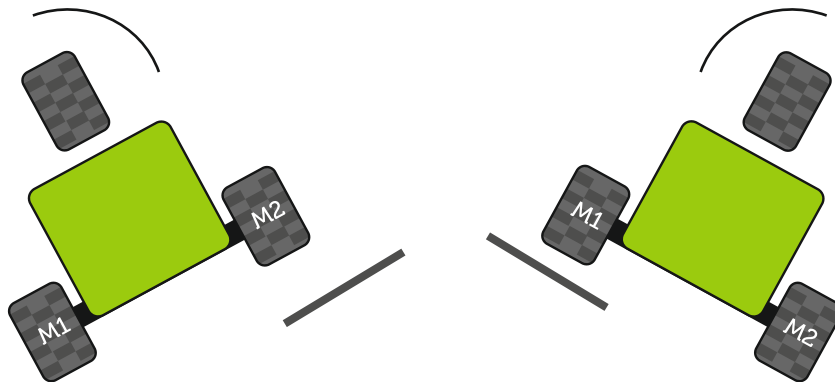
Step 8



Challenge: Shy Robot



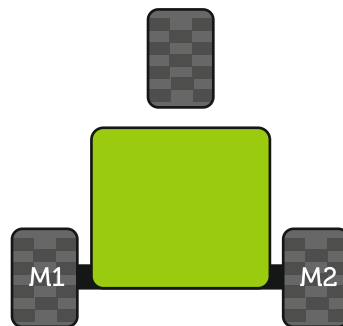
A robot which is very shy, can you imagine? The moment you go close from one side, it turns the other way.



Can you take this challenge and build it?

Distance Block	Motor Block 1
1	
0	

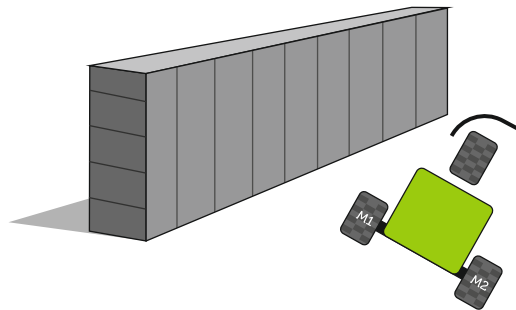
Distance Block	Motor Block 2
1	
0	



Challenge: Obstacle Avider



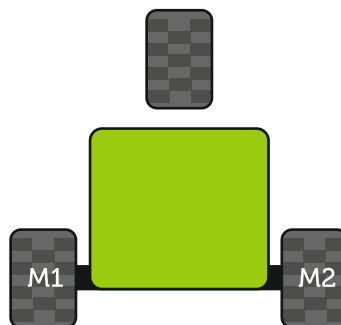
Remember the autonomous car? Can we make the car turn when anything comes on the front? Just the way an actual autonomous car would work on the roads.



Let's try and see how it moves.

Distance Block	Motor Block 1
1	
0	

Distance Block	Motor Block 2
1	
0	

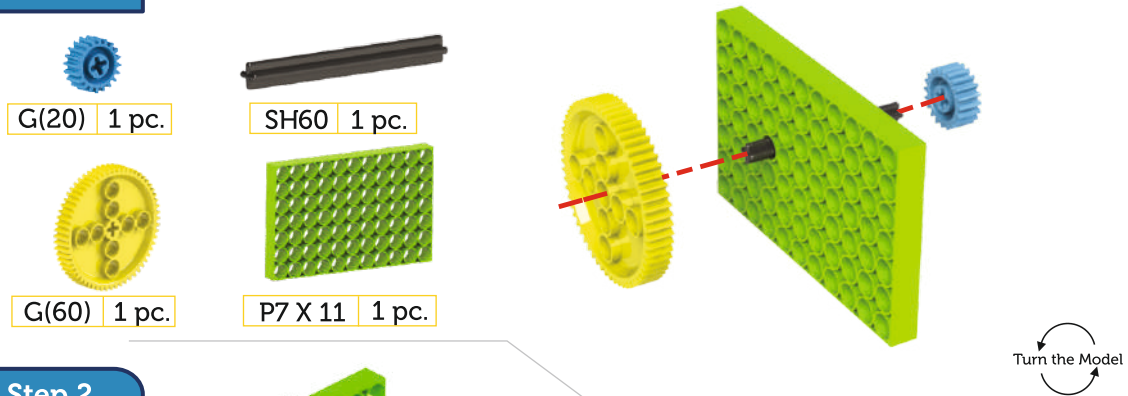


This is an angry robot who doesn't like anything on its table, so it just pushes everything off the table.

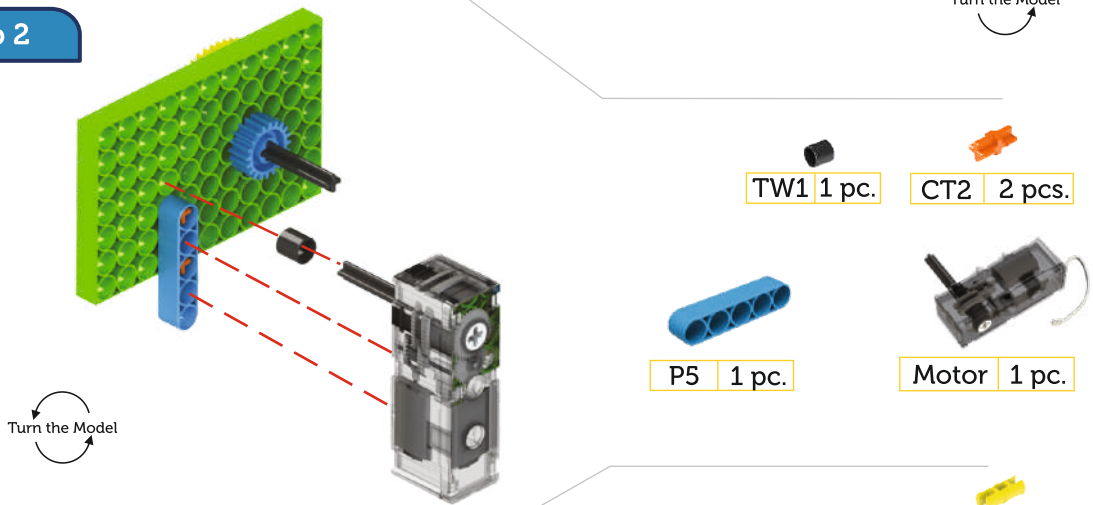
Let's discuss the logic for it.

Distance Block	Motor Block
1	
0	

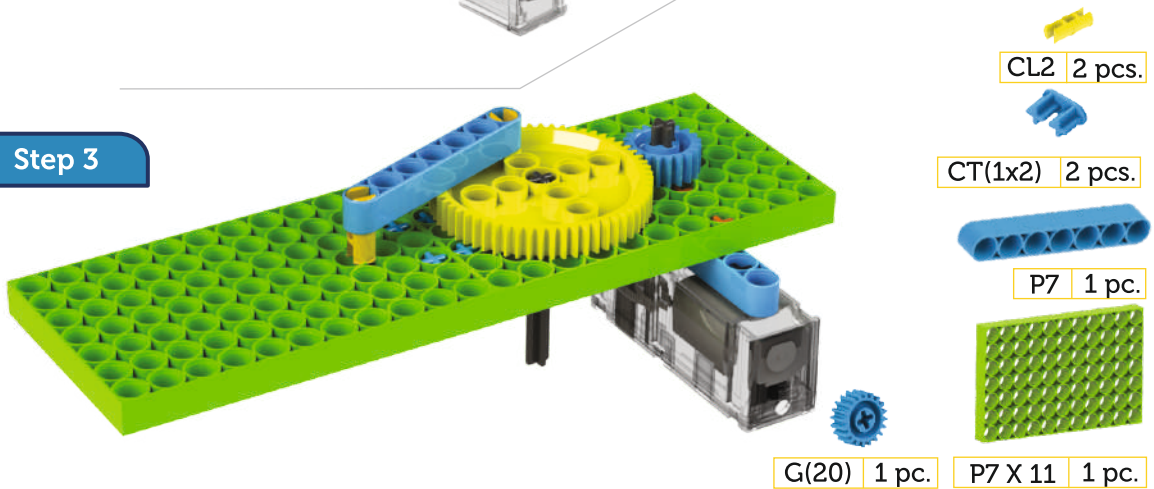
Step 1



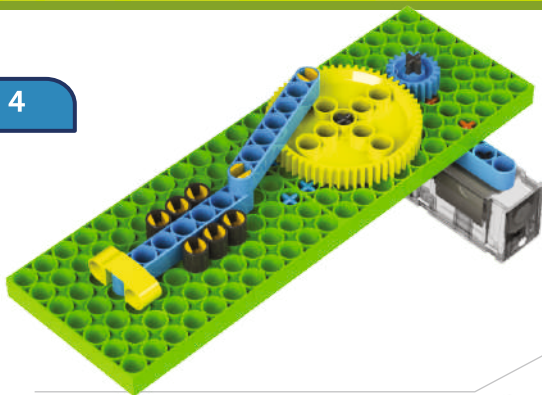
Step 2



Step 3



Step 4



TW1 6 pcs.

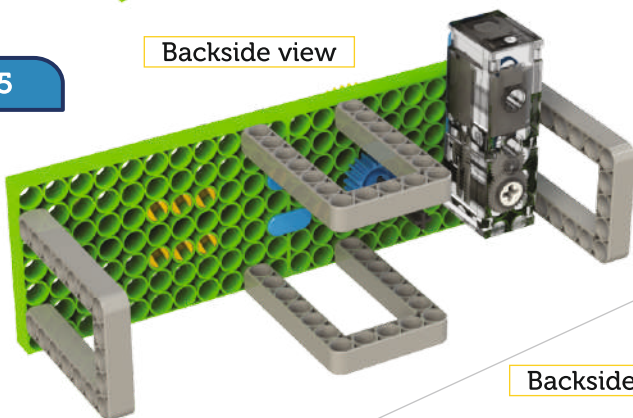
CL2 6 pcs.

PC3 1 pc.

P7 1 pc.

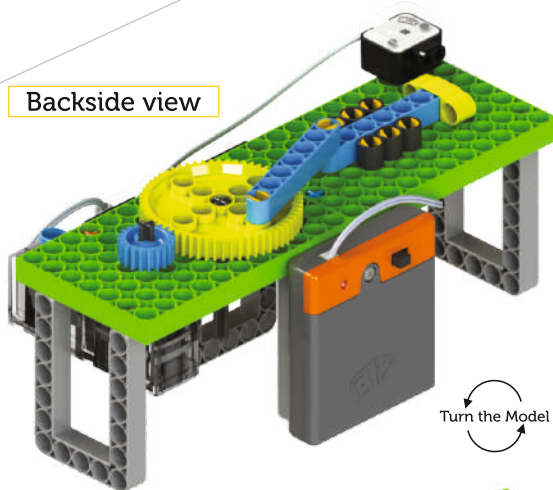
Step 5

Backside view



PU5 X 7 4 pcs.

Backside view



Turn the Model

Step 6

CT2 5 pcs.

Motor Block 1 pc.

Distance Block 1 pc.

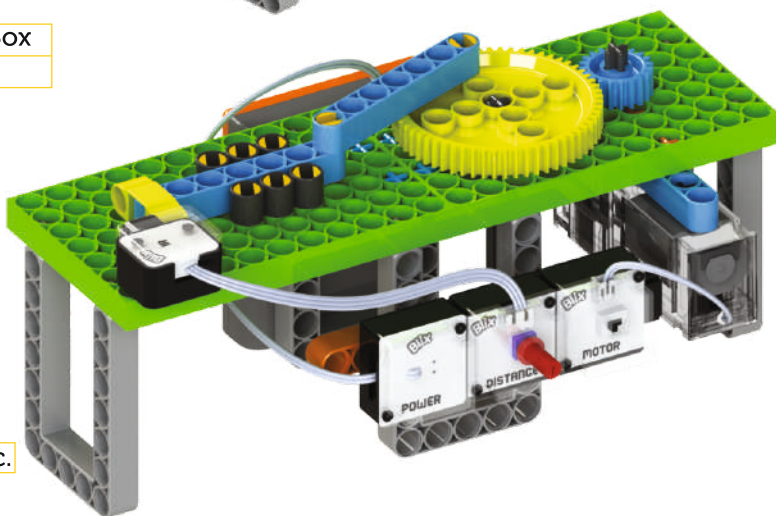
6V Battery Box 1 pc.

Wire 1 pc.

Power Block 1 pc.

P11 1 pc.

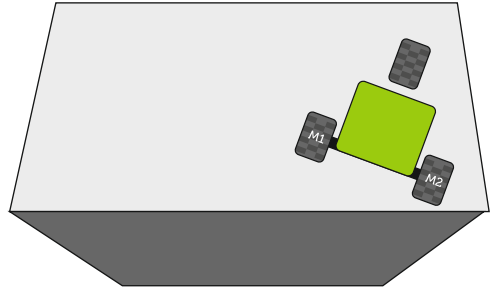
IR Block 1 pc.



Challenge: Edge Avoider



Can we take a challenge to design a robot which can check for the edges of a table and keep itself away from falling?



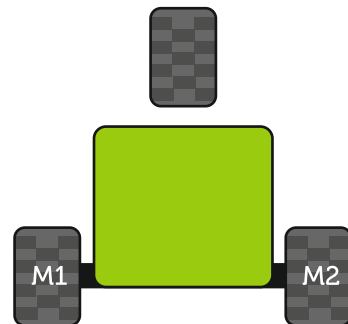
Distance Block	Motor Block 1
1	
0	

Distance Block	Motor Block 2
1	
0	

Challenge: Sweeper Robot

This robot is a hygiene freak, it just wants to sweep everything which comes in front of it. Can you design it?

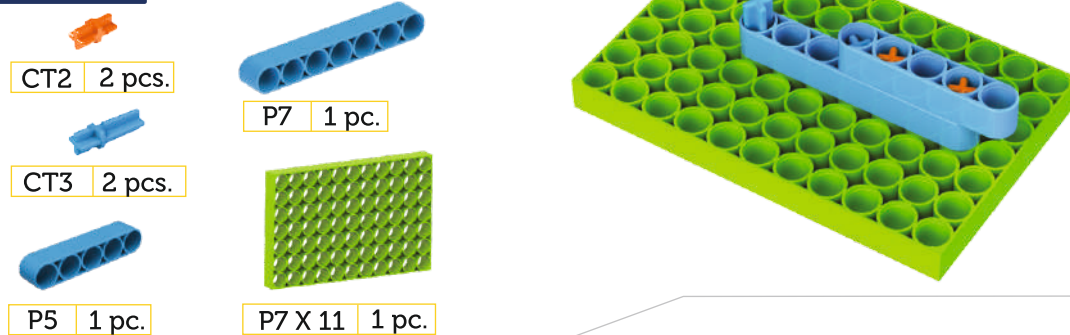
Distance Block	Motor Block 1	Motor Block 2
1		
0		



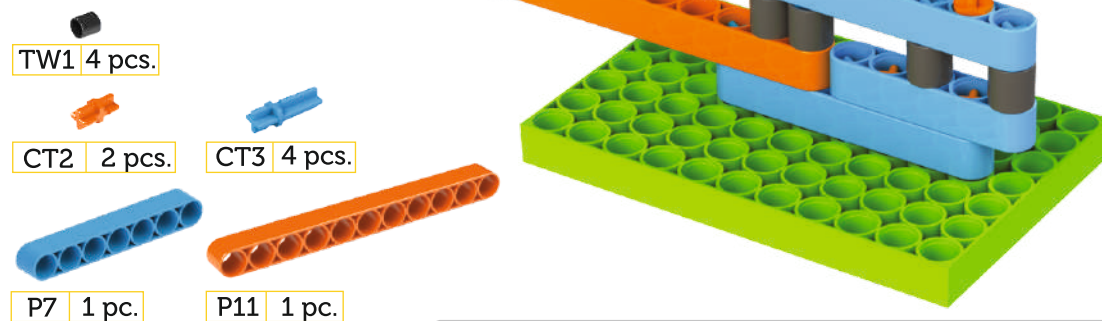
Every industry has a quality control department, where quality of products are checked.

Here we will make a robot from a wheel assembly unit of an industry, Robot has to identify and kick off the wheel which doesn't have the tyre.

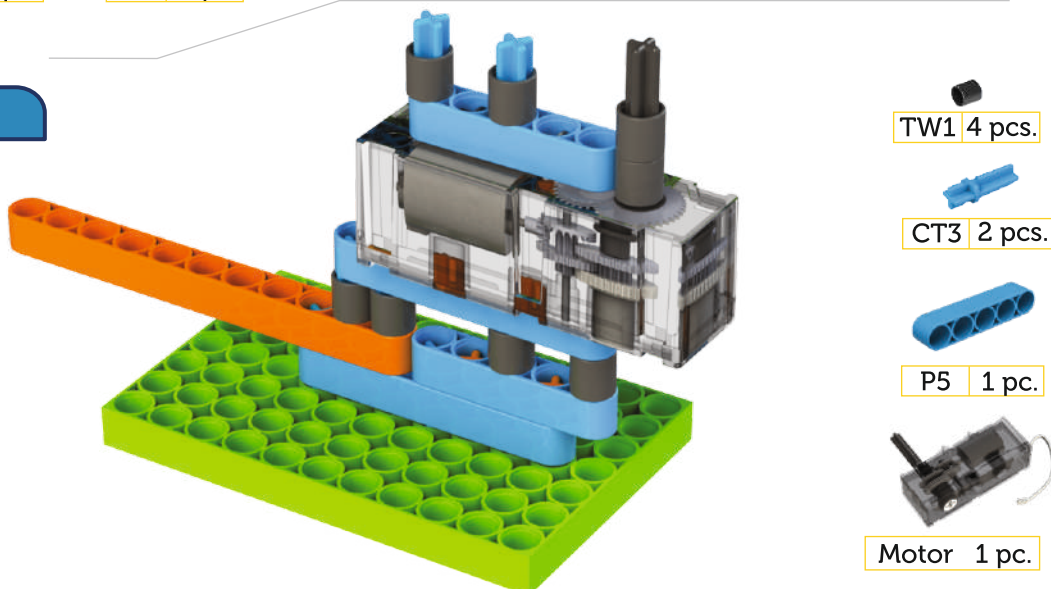
Step 1



Step 2



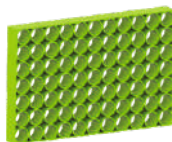
Step 3



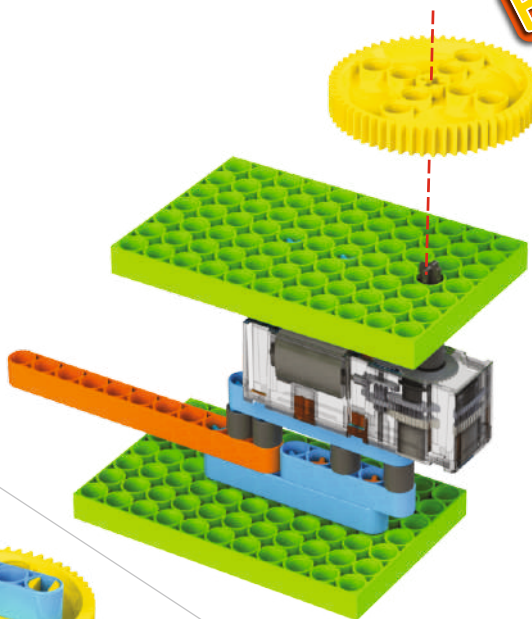
Step 4



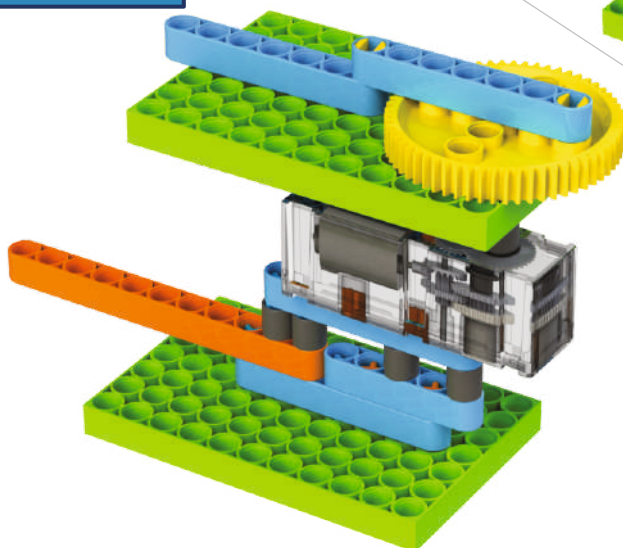
G(60) 1 pc.



P7 X 11 1 pc.



Step 5



CL2 2 pcs.



P7 2 pcs.

Step 6



TW1 7 pcs.



CT2 2 pcs.



CL2 6 pcs.



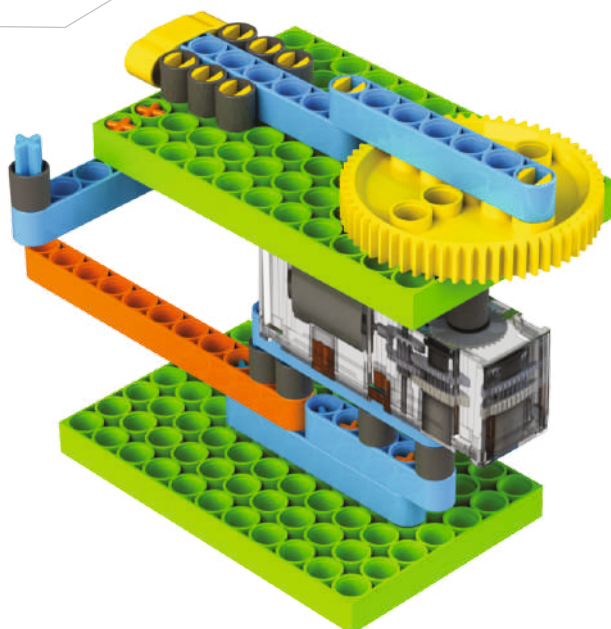
PC3 1 pc.



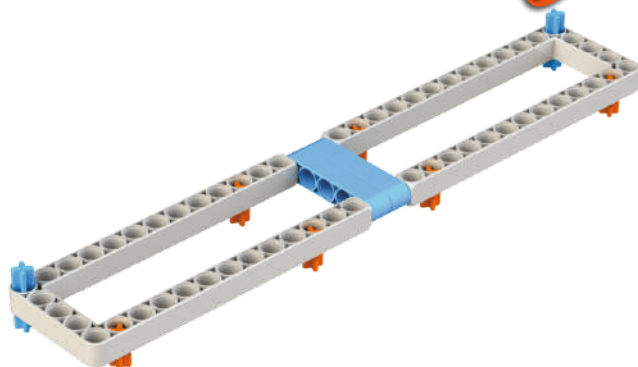
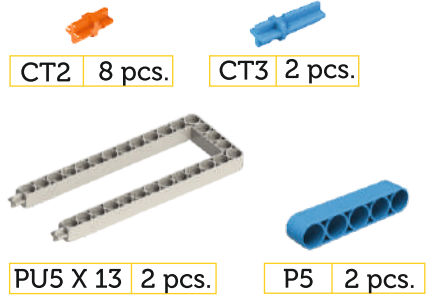
CT3 1 pc.



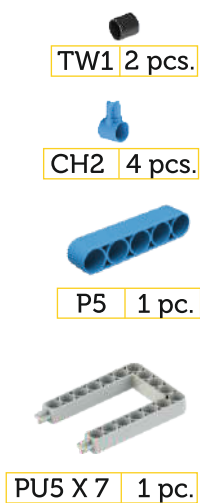
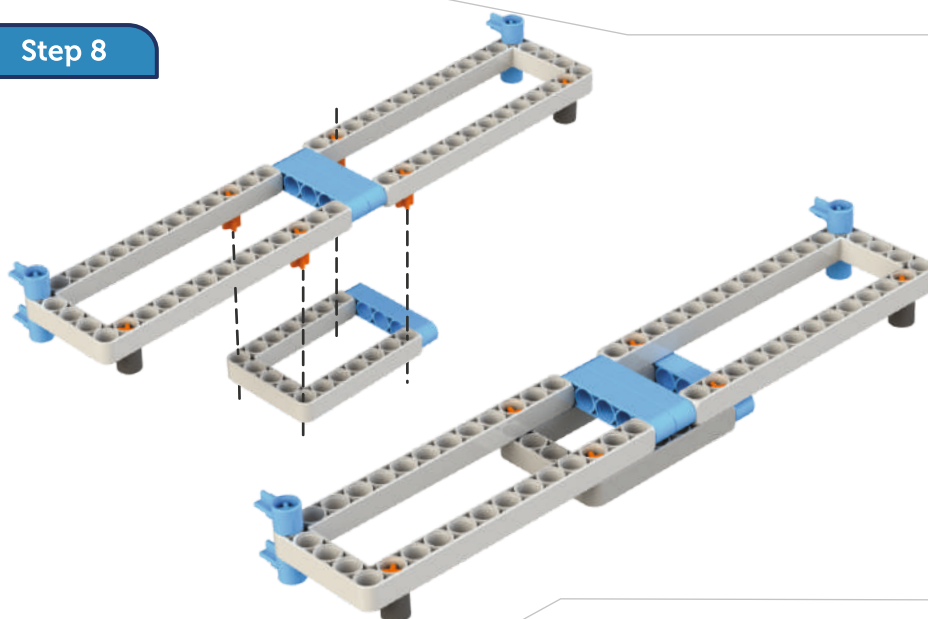
P5 1 pc.



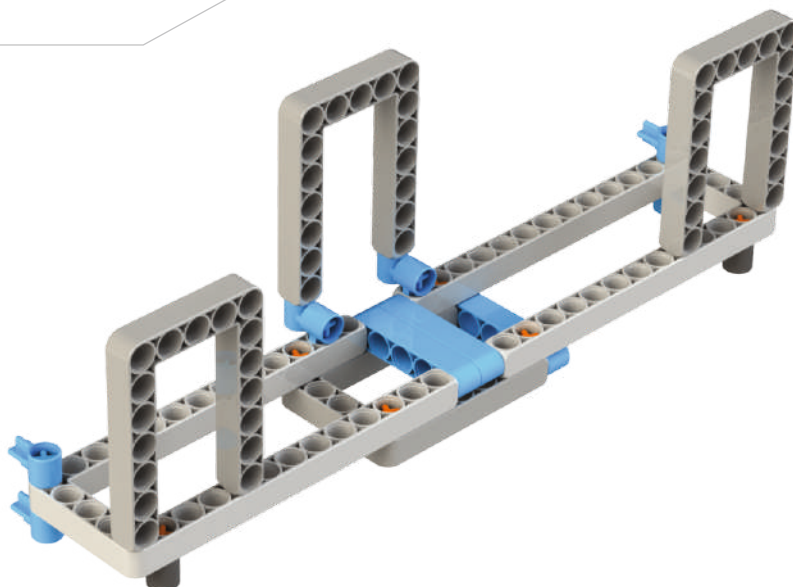
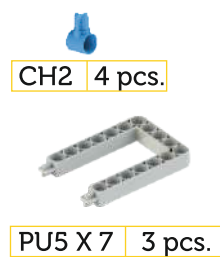
Step 7



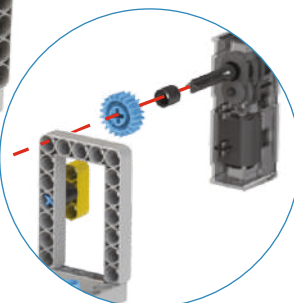
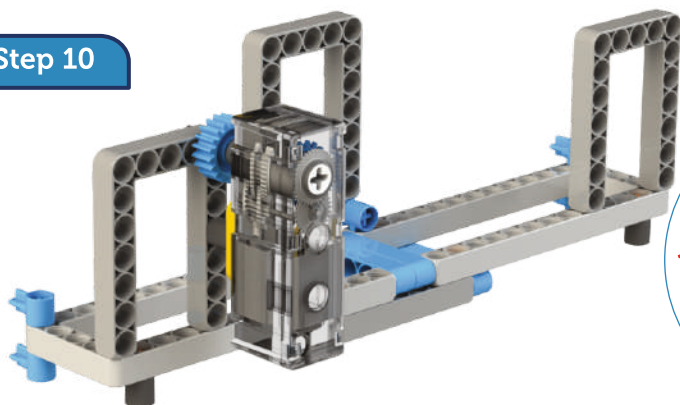
Step 8



Step 9



Step 10



TW1 2 pcs.

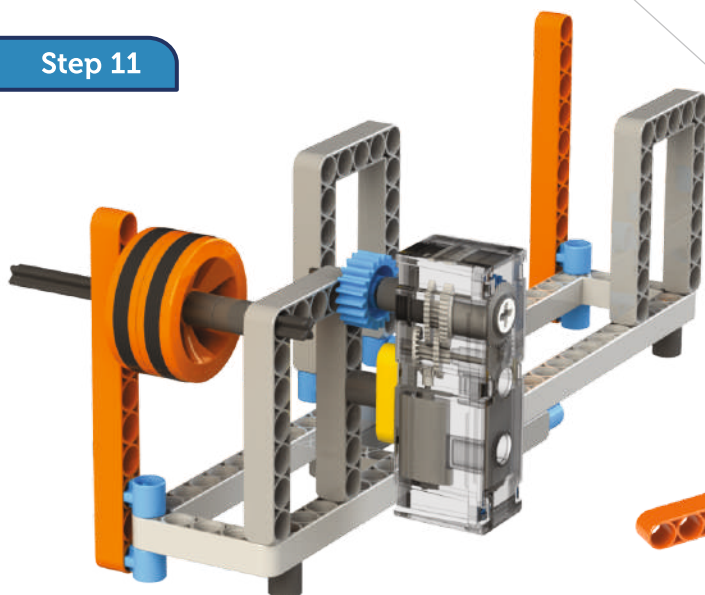
P3 1 pc.

CT3 1 pc.

Motor 1 pc.

G(20) 1 pc.

Step 11



TW1 2 pcs.

Rubber Band
2 pcs.

Wheel Without
Rubber 1 pc.

P11 2 pcs.

SH100 1 pc.

Step 12



TW1 4 pcs.

G(20) 2 pcs.

SH60 1 pc.

SH100 1 pc.

Rubber Band
4 pcs.

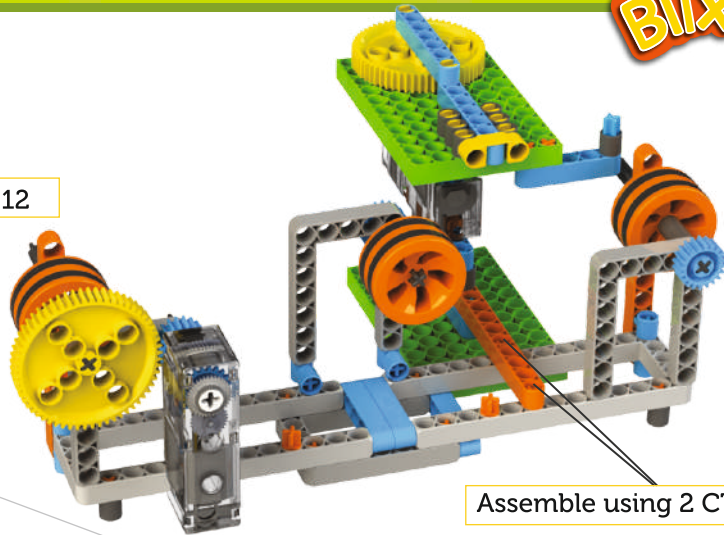
G(60) 1 pc.

Wheel Without
Rubber 2 pcs.

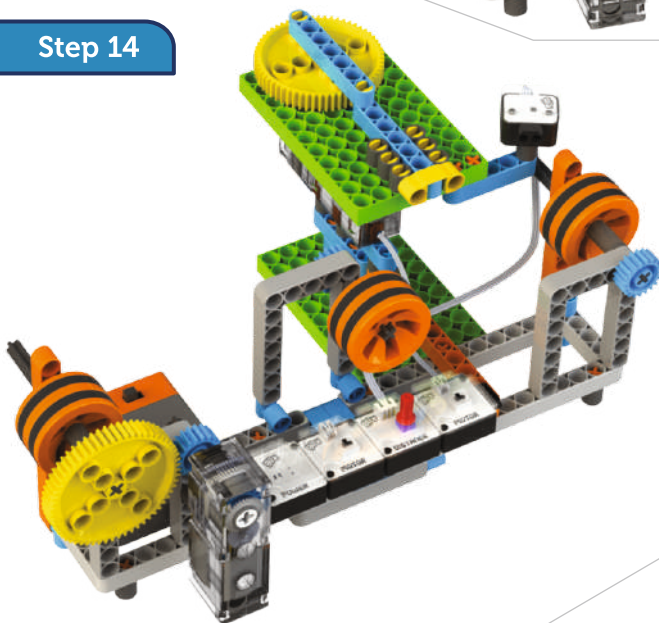
Step 13

Assembly of step 6 and step 12

CT2 4 pcs.



Step 14



Wire 1 pc.

Distance Block 1 pc.

6V Battery Box 1 pc.

Power Block 1 pc.

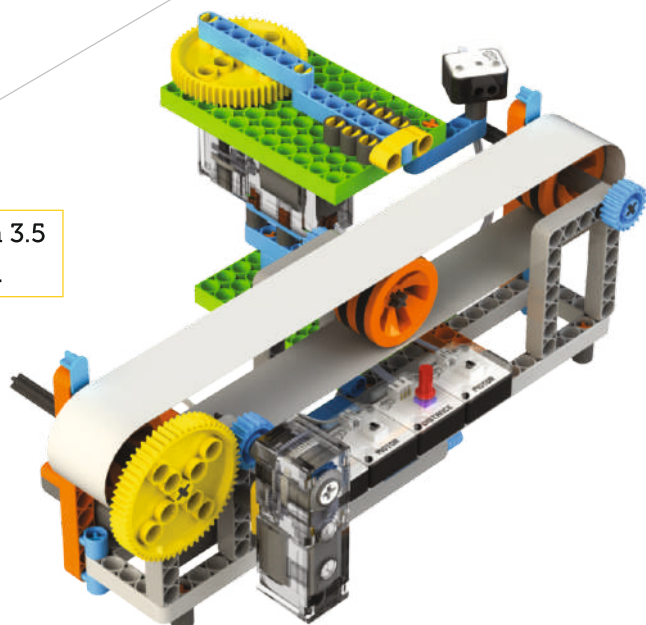
IR Block 1 pc.

Motor Block 2 pc.

Step 15

Take a 72 cm long strip of paper with 3.5 cm width to make the Conveyor belt.

CT(1x2) 2 pcs.



This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



LOGIC BLOCKS



TW1 30 pcs.



CT2 25 pcs.



CL2 12 pcs.



CH2 12 pcs.



CT3 16 pcs.



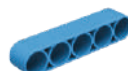
CT(1x2) 4 pcs.



PC3 1 pc.



P3 2 pcs.



P5 6 pcs.



P7 4 pcs.



G(20) 3 pcs.



G(60) 2 pcs.



SH60 1 pc.



SH100 2 pcs.



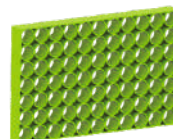
P11 3 pcs.



PU5 X 7 4 pcs.



PU5 X 13 2 pcs.



P7 X 11 2 pcs.



IR Block 2 pcs.



Buzzer Block 1 pc.



Power Block 1 pc.



Distance Block 2 pcs.



NOT Block 1 pc.



LED Block 1 pc.



Motor Block 2 pcs.



Motor 2 pcs.



6V Battery Box 1 pc.



Wheel 5 pcs.



Remover Tool 1 pc.



Rubber Band 6 pcs.



Wire 2 pcs.



For suggestions or feedback, please contact on

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