

Introduction to ROKIDS Plus and the Electronics

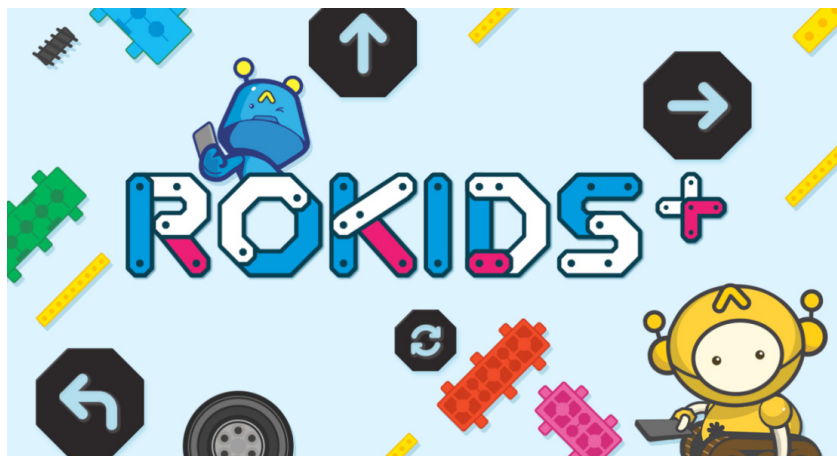
Chapter 1

What is ROKIDS Plus?

ROKIDS Plus is a mobile app that lets you study coding in-depth by using a variety of buttons and sensors. Using basic coding, you'll be able to send commands to your robot to make it move forward, backward, left or right using DC motors.

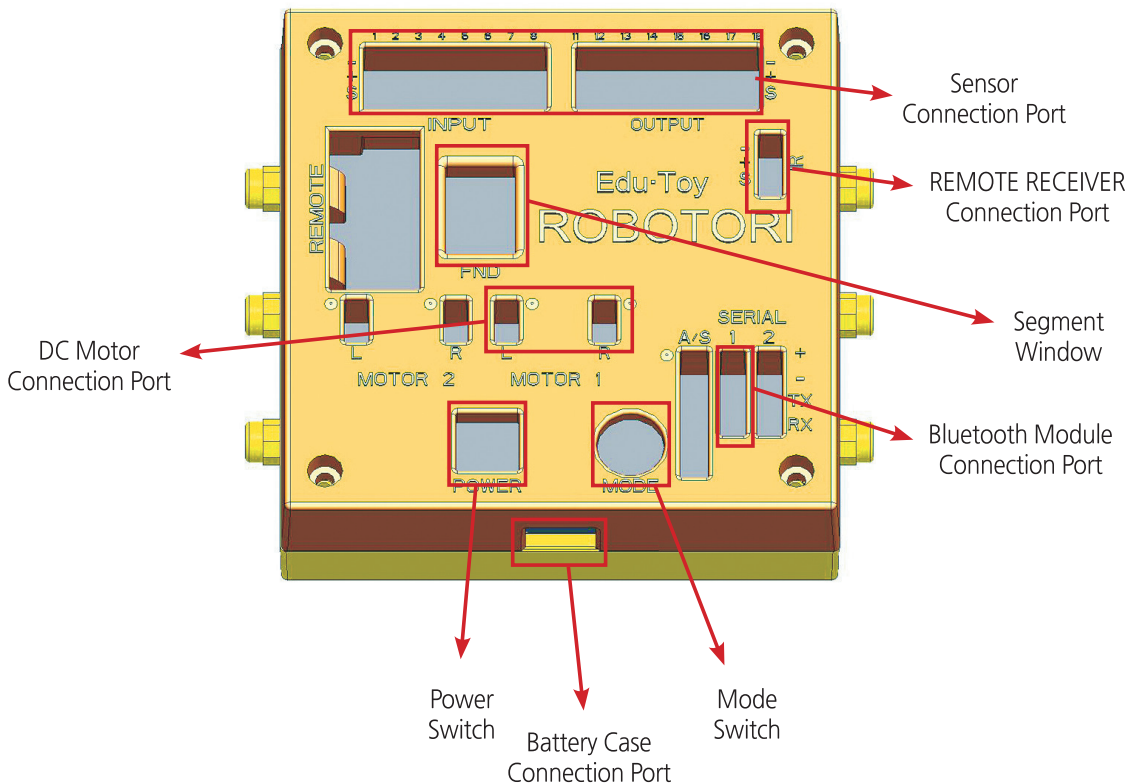
In addition to this, you'll also be able to program your creations to various other things, like blink a light, react to light and darkness, and even both of those at the same time! You'll even be able to program your creations to play music.

The ROKIDS app is available for free download in that Apple App Store. Simply search for ROKIDS Plus! Note: Make sure to download ROKIDS Plus, not ROKIDS.



Introduction to the Mainboard

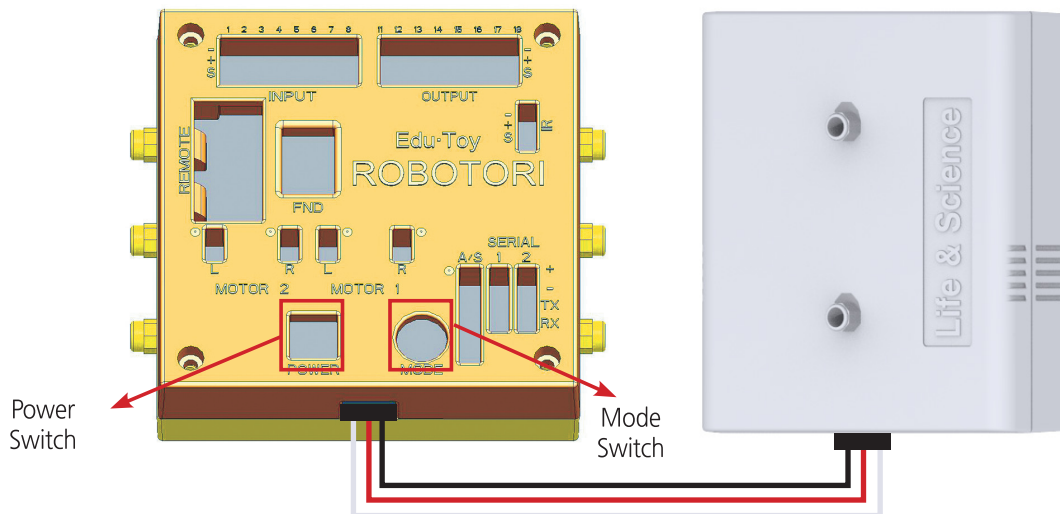
The mainboard is essentially the brain that controls the robot. Without the mainboard, your robot will be unable to function. This board enables the robot to move when it receives commands via the mobile app or Bluetooth.



- Power Switch: Turns on or off the power
- Mode Switch: Changes the mode
- Segment Window: Displays operation mode for mainboard
- Battery Case Connection Port: Connects to the battery case
- Bluetooth Module Connection Port:: Connects to Bluetooth module
- Sensor Connection Port: Connects to Sensors
- DC Motor Connection Port: Connects to DC Motor

Introduction to the Battery Case

The battery case supplies the mainboard with power using the connection jack. You can turn on the power by pressing the power switch after connecting the battery case.



※ How to Set the Mode on the Mainboard

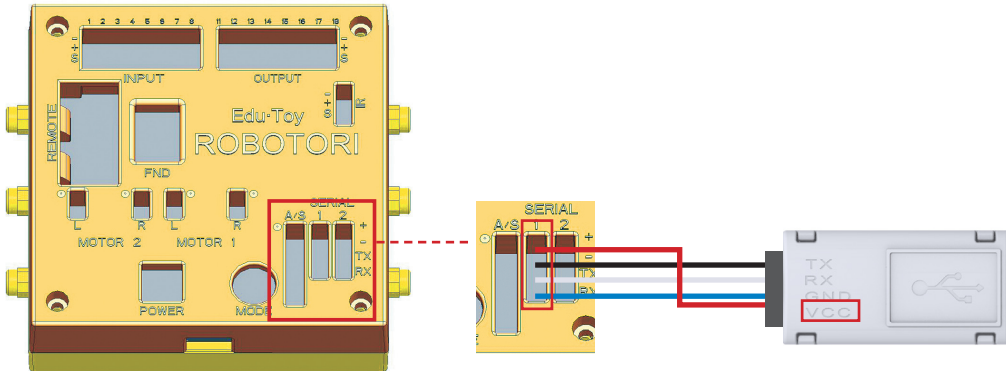
Setting the mode on the mainboard is simple. Each of the mainboard modes has its own special function, but only one will be important when using ROKIDS Plus.

1. Power on the mainboard and press “Mode” switch multiple times.
2. If “J” is displayed on the segments window, pause and wait for the LED to stop blinking.
3. After the screen blinks three times, the mainboard will be set to whichever setting is displayed.

※Caution : When using the ROKIDS Plus app, make sure that your mainboard is set to “J”!

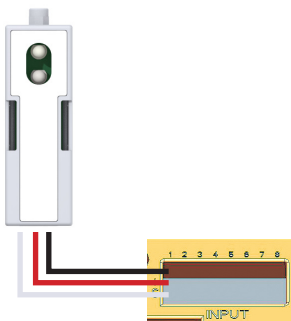
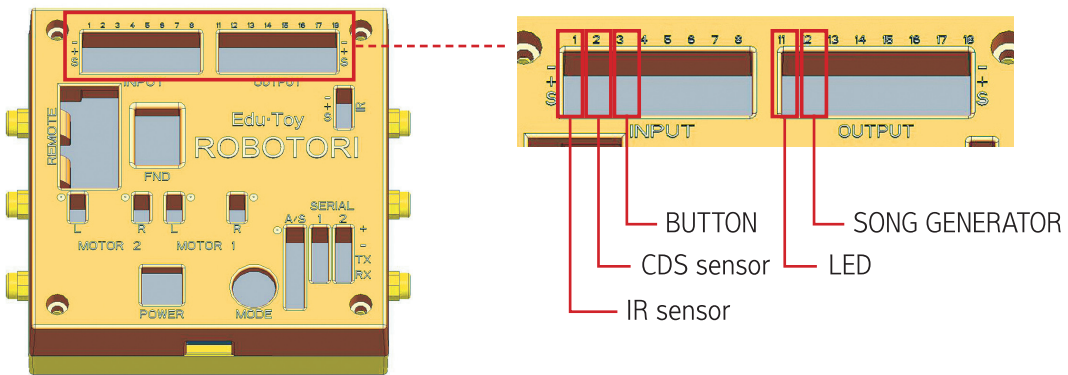
Introduction to the Bluetooth Module

This module connects the mobile app to the robot. This is how you control the robot from the app, don't forget to include it in your build!



Introduction to Sensors

A sensor will input or output signal to or from the mainboard. For example, there is a sensor that detects light, but there's also a sensor that outputs an LED light.

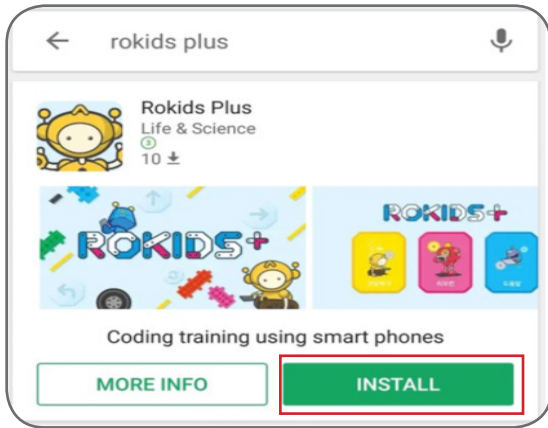


When connected into the sensor, the wires should be arranged:
White - Red - Black

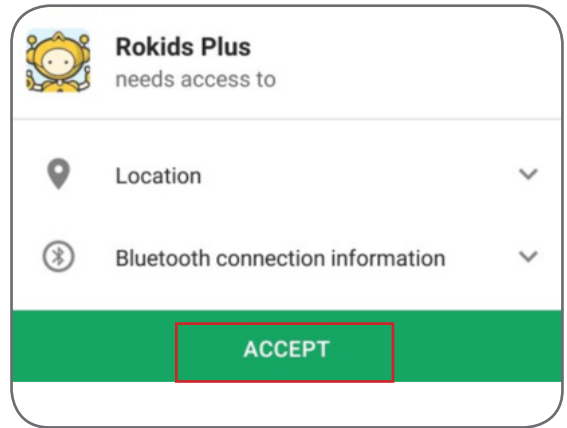
When connected into the mainboard, the wires should be arranged:
Black - Red - White

Remember: Always connect sensors and the mainboard so that the white cable is always in the S-slot.

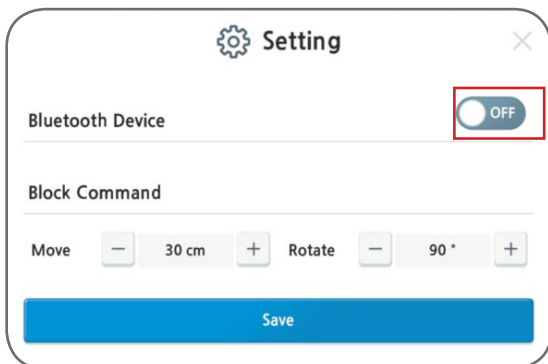
Installing the ROKIDS Plus App



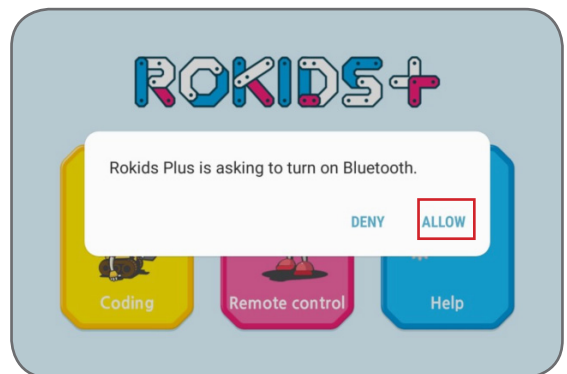
1. Search 'ROKIDS Plus' from the Apple App Store



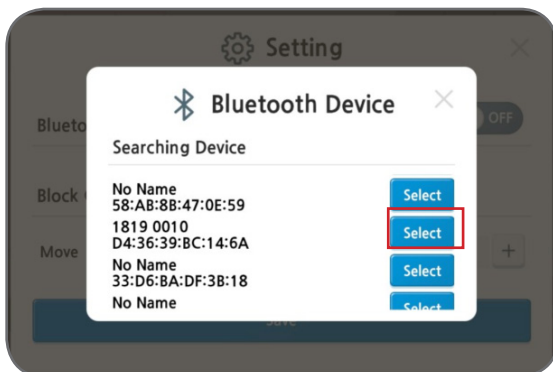
2. Confirm and install the app



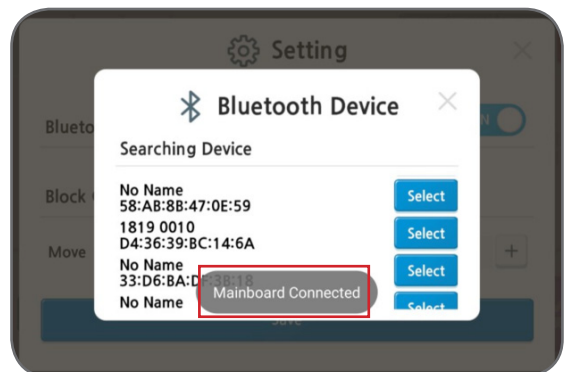
3. Turn on the Bluetooth in the settings menu by pressing the button in the top corner of the app



4. Activate the Bluetooth function



5. Make sure that the correct Bluetooth module is synced up to the ROKIDS Plus app



6. The Bluetooth connection should be complete

HOME MENU OPTIONS



Coding: This is the menu you use for “free” coding

Remote Con: This menu allows you to adjust the robot’s position, forward backward, left or right using a remote control

Help: This menu will help explain how to use the ROKIDS Plus app

Learning the ROKIDS Plus Menu

The screenshot shows the ROKIDS Plus app interface with several annotated elements:

- Home Icon:** This will take you back to the home screen of the app.
- Setting Icon:** This is where you make sure your robot is connected to the Bluetooth. In addition, this is where you adjust the values for the Move and Rotate commands.
- File:** This is where you’ll save and retrieve coding data you’ve made.
- Clear:** This will delete your commands.
- IR Sensor Icon:** This will take you to the IR menu.
- CDS Sensor Icon:** This button will take you to the CDS menu.
- Button Icon:** This will open the button menu.
- Coding Area:** This is where you will drag and drop the icons from the Command Area. One code fits in each slot, and the codes will always be executed from left to right.
- Command Area:** This is where you can find all the commands that you can make your creation perform.

Learning the ROKIDS Plus Menu



Forward Button:
Commands your robot to move forward



Backward Button:
Commands your robot to move backward



Left Rotation Button:
Commands your robot to turn left, counter-clockwise



Right Rotation Button:
Commands your robot to turn right, clock-wise



Repeat Button: Commands your robot to repeat a specified set of commands



Pause Icon: Commands your robot to halt for a set period of time.



Turn On LED Button: When the LED Sensor is installed, this will turn the LED on



Turn Off LED Button: When the LED Sensor is installed, this will turn the LED off



Turn On Song Generator:
When the Song Generator is installed, this will turn the Song Generator on



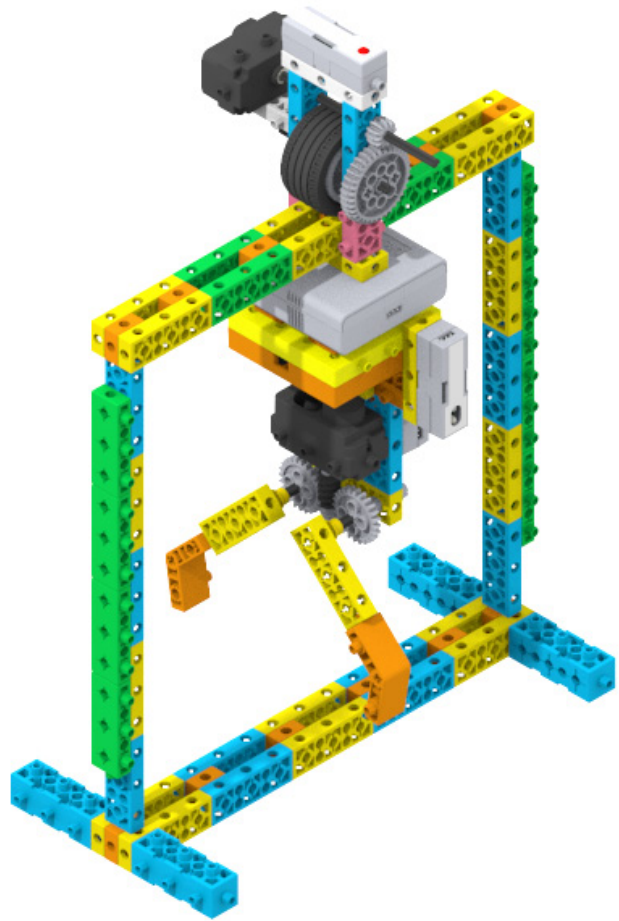
Turn Off Song Generator:
When the Song Generator is installed, this will turn the Song Generator off



Finish Button: Commands your robot to stop performing whatever actions are programmed.

08

Overhead Crane

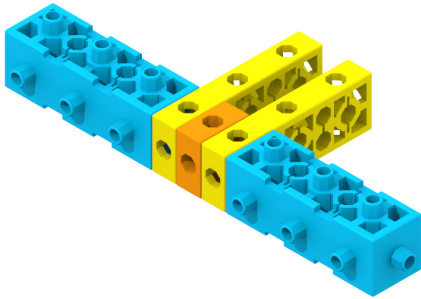


Assembling the Overhead Crane

| | | | | | | | | | | | | |
|-----------------|--------------------|-----------------|---------------|---------------------|----------------------|----------------|------------|------------|-------------|-------------------|----------------|-------------------|
| | | | | | | | | | | | | |
| Diamond V8 (4) | Rubi 7 (1) | Rubi 2 (14) | Rubi 2 (4) | Rubi 0 (1) | Rubi 0 (22) | Mini 2 (2) | Mini 2 (2) | Mini 2 (1) | Mini 1 (16) | Dia mini 8 (4) | Dia mini 6 (4) | Curve (2) |
| | | | | | | | | | | | | |
| Sawtooth 12 (1) | Sawtooth 24 (2) | Sawtooth 36 (1) | Worm (1) | Middle Connector(6) | Motor connector(2) | Link (2) | A45 (3) | A64 (1) | A96 (1) | Formula wheel (1) | DC motor (2) | BUTTON SENSOR (1) |
| | | | | | | | | | | | | |
| IR SENSOR (1) | SONG GENERATOR (1) | LED SENSOR (1) | Connector (5) | Battery case (1) | Bluetooth module (1) | Main board (1) | | | | | | |

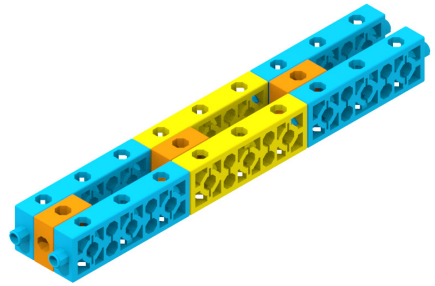
1

-  x2
-  x2
-  x1



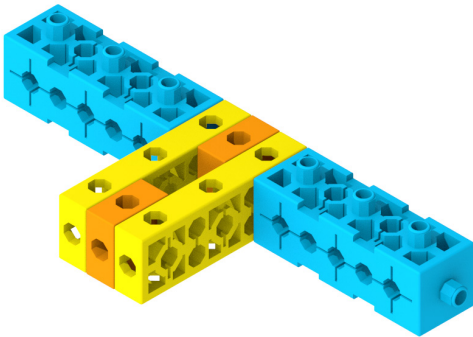
2

-  x4
-  x2
-  x3

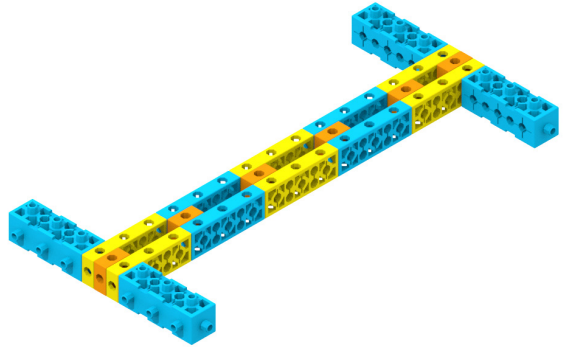


3

-  x2
-  x2
-  x2

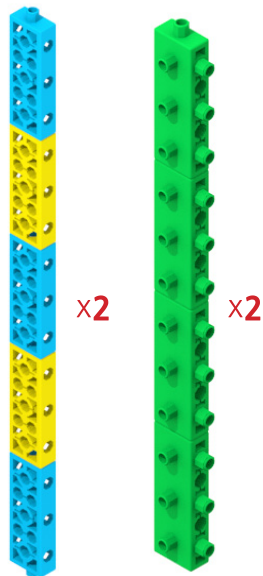


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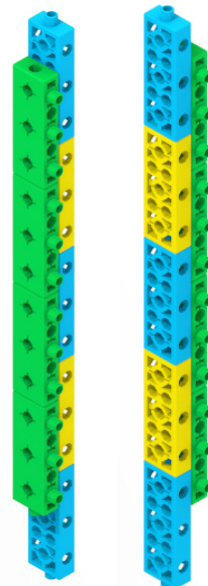


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-  x6
-  x4
-  x4
-  x4

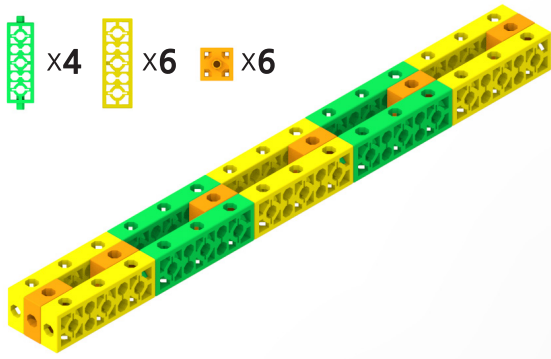


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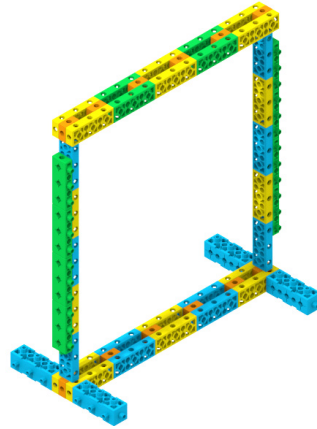


7

 x4  x6  x6

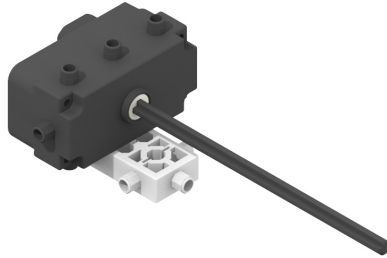


8








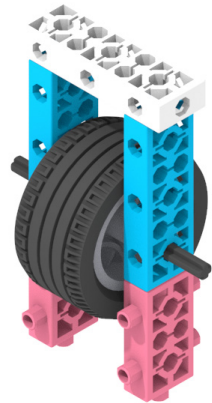
9

 x1  x1 A96  x1



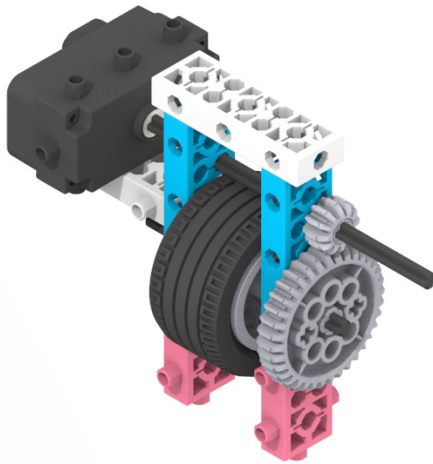
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 x2  x2
 x1  x1 A64
 x1



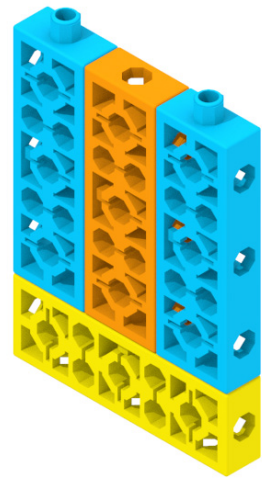
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 x1  x1







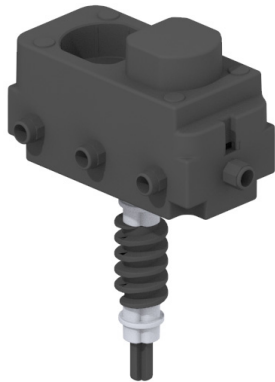
12

 x1
 x2
 x1



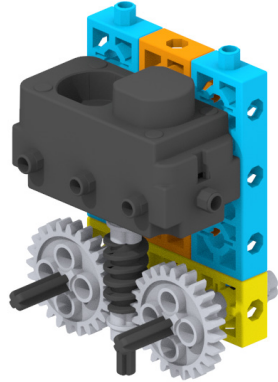
13

-  x1
-  x1
-  x1
-  x2



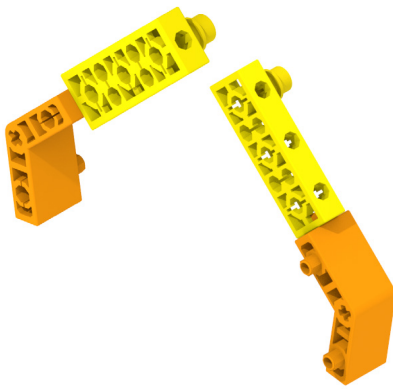
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-  x2
-  x4
-  x2
-  x2

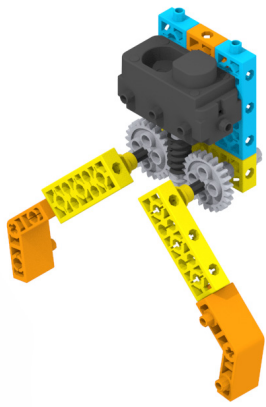


15

-  x2
-  x2
-  x2

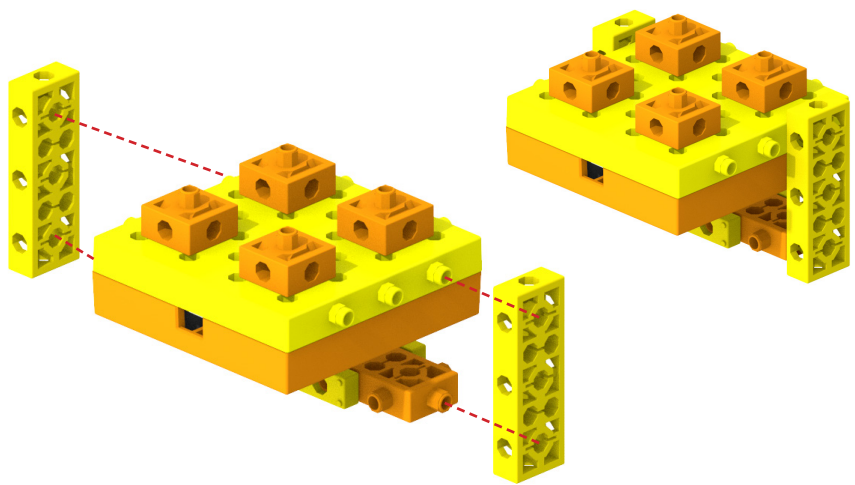


16



17

-  x1
-  x2
-  x2
-  x4
-  x2



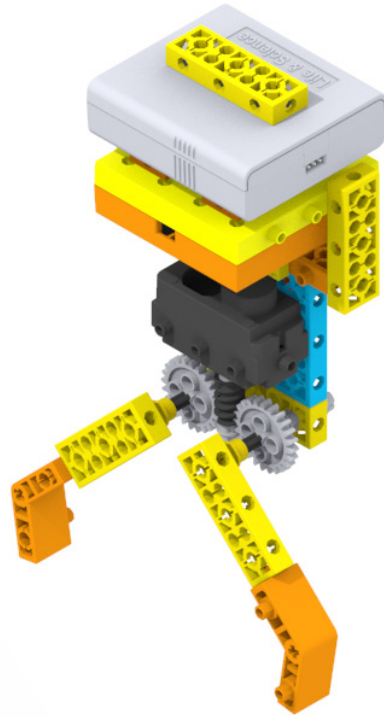
18

 x1

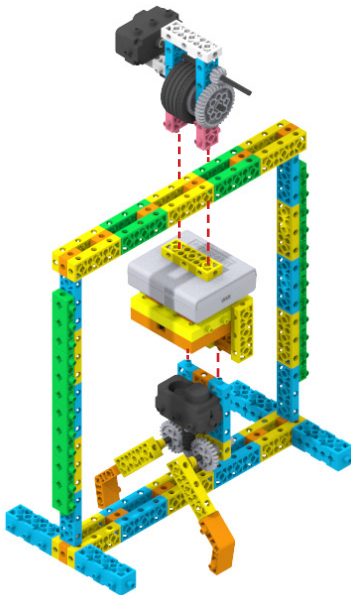
 x1









19

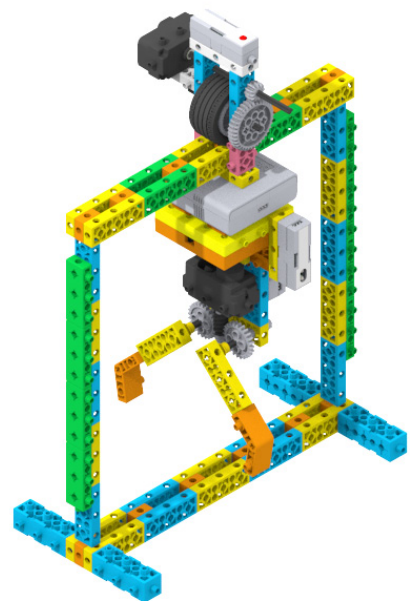


20



21

 x1
 x1
 x1
 x1
 x1
 x5



First, construct the overhead crane. Then, attach the electronics in the following order:

Step 1. Connect mainboard, battery case and Bluetooth together.

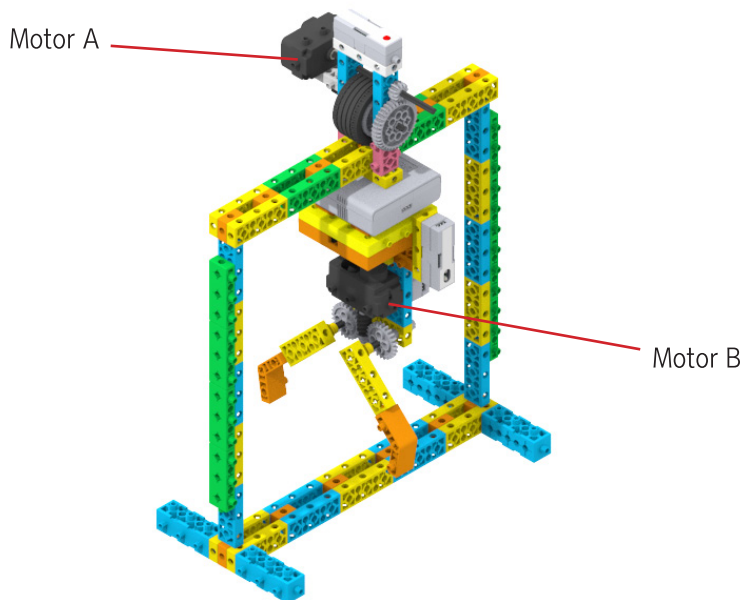
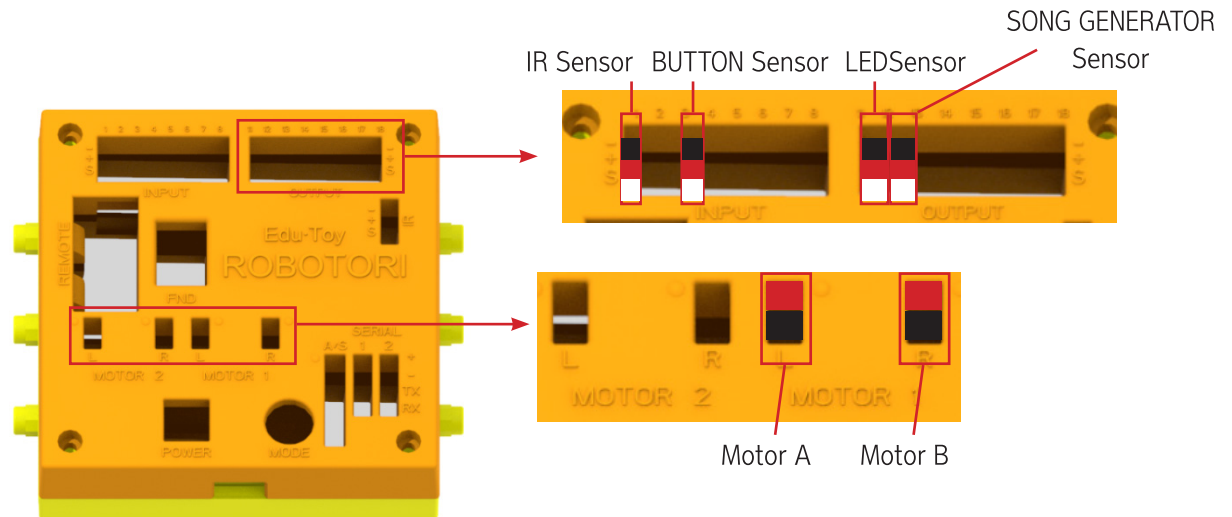
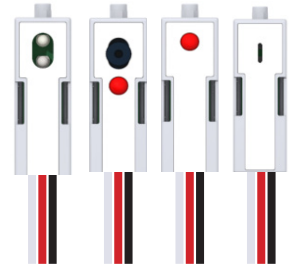
Step 2. Plug in two DC motors so that their red wires are facing the top of the mainboard and their black wires are facing the bottom.

Step 3. Plug the **IR sensor** into the **first section** of the **INPUT** using a connection jack.

Step 4. Plug the **button sensor** into the **third section** of the **INPUT** using a connection jack.

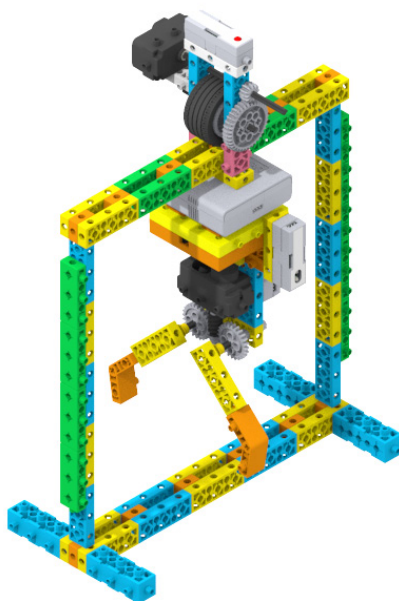
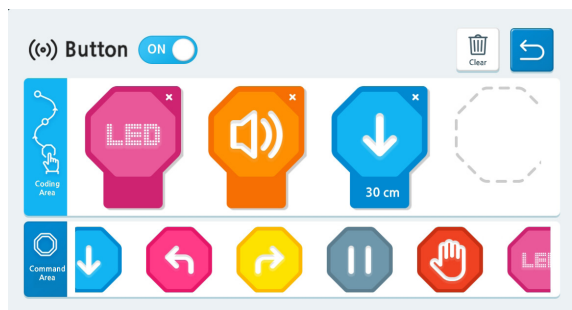
Step 5. Plug the **LED sensor** into the **first section** of the **OUTPUT** using a connection jack.

Step 6. Plug the **Song Generator sensor** into the **second section** of the **OUTPUT** using a connection jack.



Once you've finished building the crane, program it to perform the following actions:

Set your crane so that when you press "PLAY", the IR sensor will turn on, the music will play and the arm's grip will tighten. In addition, set it so that when you push the button sensor, the arm's grip will move to the left, loosen its grip and stop the song generator.



If you push IR sensor while play is executed, you can see that gripper moves to the right and gripper is tightened and LED is turned on and melody is turned on. If you push BUTTON sensor, gripper moves to the left and gripper is loosened and LED is turned on and melody is turned on.

Let's make codes for overhead crane as below and look into movement of it



If you execute play, then gripper repeats a motion that it moves to the right and is loosened and then moves to the left and is tightened. In this state, by pushing IR sensor, this performs a motion that melody sensor is turned on for a while and then turned off and by pushing BUTTON sensor then LED is turned on then off