

Brachiozaur: Building Instruction For The Lego Wedo 2 0 Set + Program Code

Lego WeDo 2.0 is an innovative educational robotics platform designed to foster creativity, problem-solving skills, and computational thinking in young learners. At the heart of every WeDo 2.0 project lies the Smart Hub – a programmable brick that serves as the brain of the device and enables seamless interaction with motors, sensors, and other components.

This article provides comprehensive step-by-step instructions on building the Lego WeDo 2.0 Smart Hub, accompanied by detailed photos and clear explanations. Additionally, we will delve into the programming aspects of the Smart Hub, guiding beginners through the fundamentals of block-based coding and the WeDo 2.0 software.

Step-by-Step Building Instructions

Materials Required:



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by Educational Partners International LLC

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- Lego WeDo 2.0 Core Set (45300) or Expansion Set (45301)
- Phillips head screwdriver (optional)

Building Process:

1. Step 1: Assemble the Base Plate

- Begin by connecting four 2x4 Bricks to form the base plate. Ensure the studs face upwards.

2. Step 2: Attach the Motor Module

- Locate the Motor Module and its two Technic Axles. Slide one Axle through the two holes on the base plate, then secure it with a Pin. Repeat this step to attach the second Axle and Motor Module.

3. Step 3: Connect the Smart Hub

- Position the Smart Hub on top of the Motor Module and insert the Axle through the hole. Secure it with a Pin.

4. Step 4: Add the Sensor Ports

- Connect a 2x6 Brick to each side of the Smart Hub to serve as sensor ports.

5. Step 5: Attach the LED Matrix

- Snap the LED Matrix onto the front of the Smart Hub.

6. **Step 6: Secure the Battery Box**

- Locate the Battery Box and insert 6 AAA batteries. Connect the Battery Box to the underside of the base plate using the two Technic Connectors.

7. **Step 7: Test the Smart Hub (Optional)**

- To test the functionality of the Smart Hub, press the large blue button. The LED Matrix should light up and the motors should spin.

8. **Step 8: Finishing Touches**

- Once satisfied with the test, attach the two 2x6 Bricks to the front of the Smart Hub to complete the build.

Programming the WeDo 2.0 Smart Hub

** to Block-Based Coding**

Block-based coding uses visual building blocks to represent different programming concepts, making it accessible even for beginners. WeDo 2.0 employs a block-based programming software that allows users to create programs by dragging and dropping blocks onto a canvas.

WeDo 2.0 Software

1. **Installing the Software**

- Download the WeDo 2.0 software from the official Lego Education website. Follow the on-screen instructions to complete the installation.

2. Connecting to the Smart Hub

- Connect the WeDo 2.0 Smart Hub to your computer using a USB cable. The software will automatically detect the device.

Basic Programming Concepts

1. Inputs and Outputs

- The WeDo 2.0 Smart Hub has two main types of blocks: Input blocks and Output blocks. Input blocks represent sensors (e.g., Tilt Sensor, Distance Sensor), while Output blocks represent motors (e.g., Motor Rotation block) or other actions (e.g., Sound block).

2. Loops and Conditions

- Loops and conditions are essential concepts in programming. Loops allow you to repeat a set of actions multiple times, while conditions allow you to change the flow of a program based on specific inputs.

3. Events

- Events are triggers that initiate specific actions in a program. WeDo 2.0 has three main types of events: Start Event, Time

Event, and Sensor Event.

Example Program Code

To illustrate the programming process, let's create a simple program that makes a robot move forward when the Tilt Sensor is tilted to the right.

1. Start the Software

- Launch the WeDo 2.0 software and create a new project.

2. Add Input and Output Blocks

- Drag the Tilt Sensor block onto the canvas. Next, add a Motor Rotation block to control the robot's movement.

3. Connect the Blocks

- Connect the Tilt Sensor block to the Motor Rotation block. This creates a dependency where the Motor Rotation block only executes when the Tilt Sensor detects a tilt to the right.

4. Set the Parameters

- Click on the Motor Rotation block and set the following parameters: Angle: 360°, Speed: Medium.

5. Upload the Program

- Click the "Upload to Smart Hub" button to transfer the program to the device.

6. Test the Program

- Tilting the Tilt Sensor to the right should now trigger the robot to move forward.

Building and programming the Lego WeDo 2.0 Smart Hub is a rewarding experience that can ignite a passion for STEM and computational thinking in young minds. By following the instructions outlined in this article, you can confidently construct the Smart Hub and embark on your coding journey.

Remember, learning to code is an iterative process that requires patience and experimentation. By exploring different block combinations and experimenting with program parameters, you will gain a deeper understanding of programming concepts and unlock the full potential of your WeDo 2.0 robot.



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