Maker's Home

"Quiet Zone" Reminder

Energy-Saving Light

Auto-adjustable
Clothes Drying Rack

Visual Door Remote
Control System

Smart Pill Box

Plant Guard

Name of Work: Energy- Saving Light

Video Link: http://static.education.makeblock.com/EnergysavingLamp.mp4

Difficulty: Basic

Time: 30 Minutes

Lesson Description:

When the night falls, the lights will be lit up in the house, giving family the warmth of home. When the daylight comes, the light will automatically turn off, saving electric energy.

Teaching Procedure

Objectives:

The main modules used in this work include the light sensor and the LED driver.

1) Know and learn functions of the light sensor and LED driver

2) Learn the online functions of the light sensor

3) Master the knowledge of software node: comparison

Step1: Inspire

We often see these scenarios. When night is falling, a lot of road lamps, signs and household appliances will automatically be turned on; when the daylight comes, the lights will be automatically turned off. How does this happen? We can also install these kinds of lights in our home, which are beautiful and energy saving.

Step2: Thinking

What can we do to enable the light to distinguish nighttime and daytime. And how can we let the light off in the night and on at daytime? Which module can realize this kind of effect?

Step3: Programming

By means of Neuron APP's online programming, we can let the lights off at daytime and on at nighttime according to the various values obtained from the light sensor;

Step 4: Make and Tinker

After the function is achieved, we will begin to make various small works, such as energy-saving desk lamps, signs, and home appliances models!

Step5: Test and Share

The work is completed, share your experience and skills, show your work to others, and let more people witness your creativity!

Thinking after Class

- **Review on Key Points:**
  11. Functions of the light sensor
  12. Use of software nodes

List of Materials

Module List

Name	Qty	Unit
Power supply	1	PCS
Bluetooth	1	PCS
Light sensor	1	PCS
LED driver	1	PCS
LED	1	Pack
Connection cable 10CM	1	PCS

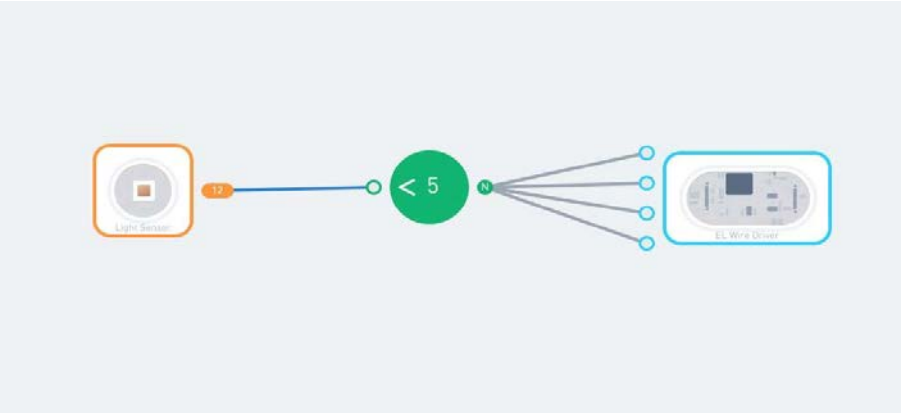
Material List

Name	Qty.	Unit
Paper-based house model	1	Set
Double-sided tape	1	Roll

Work Production Procedure

➢ Work Production Process:

➢ Demonstration for online programming



Tips

- ✓ Descriptions for hardware modules and software nodes can be found in the appendix at the end of the page;
- ✓ For paper-based models of the same design, please find in the appendix at the end of the page~
- ✓ The works with "✪" are under online modes. Download Neuron APP on IPad or smart phone for programming;
- ✓ Download video of the work from official educational website: http://education.makeblock.com/
- ✓ Neuron APP Software version: 1.3.2

Name of Work: “Quiet Zone” Reminder✪

Difficulty: Intermediate

Time: 30 Minutes

Viedo link:http://static.education.makeblock.com/SilenceKeeper.mp4

Lesson Description:

When you are reading a book in the library, someone is talking very loudly. Sometimes it is not impolite to remind the person directly. Now you can use this “quiet zone” reminder to remind that person~

By using the Neuron module, you can easily achieve the desired effects. You should try it ~

Teaching Procedure

Objectives:

Create works using the Neuron's electronic modules: 1) Sound sensor, which can activate the servo when a large volume is sensed; 2) Servo, which can control the opening and closing angles; 3) Display, which can show the volume of voice;

Use Neuron APP to achieve the function of the works: 1) online adjustment of the servo angle accurately, so that the 2 displays can rotate at the same speed; 2) using the comparison and digit nodes to setup, so that if the volume of sound is greater than a certain value, the “quiet zone” reminding sign will be lit up;

Step1: Inspire

The teacher can play video or show the sample finished work to the students; let the students observe the work and think: in what everyday life scenarios can we use the “quiet zone” reminder.

Step2: Thinking

What modules does this work use? Which effects have these modules achieved respectively? What are the difficulties in using double- servos?

Step3: Make and Tinker

What materials do we need for this work? The functions of the modules need continuous debugging to achieve the best results;

Step 4: Programming

Use the Neuron APP for online programming, try the nodes such as comparison, digit and others;

Step5: Test and Share

The work is completed, share your experience and skills, show your work to others, and let more people witness your creativity!

Thinking after Class

- **Review on Key Points:**
  1. Adjust the angle and direction of double-servo;
  2. Method to Use comparison and numbers digit nodes.
- **Improvement and Optimization:**
  1. How about adding an LED module?

List of Materials

Module List

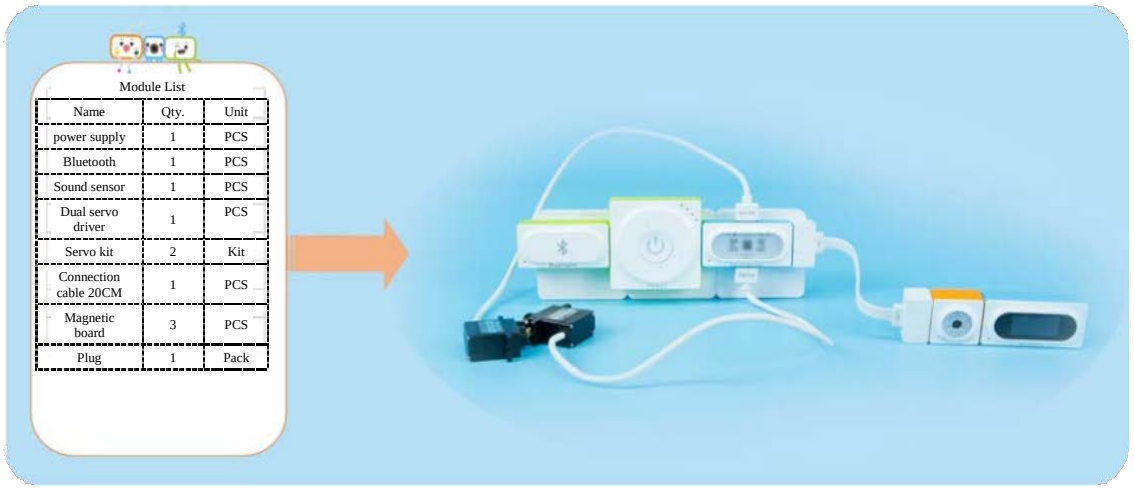
Name	Qty.	Unit
power supply	1	PCS
Bluetooth	1	PCS
Sound sensor	1	PCS
Dual servo driver	1	PCS
Servo kit	2	Kit
Connection cable 20CM	1	PCS
Magnetic board	3	PCS
Plug	1	Pack

Material List

Name	Qty.	Unit
Paper-based box model	1	PCS
Ice cream stick	2	PCS
Color cardboard	3	PCS
Transparent double-sided tape	2	Roll
Double-sided tape	1	Roll

Work Production Procedure

➢ Work Production Process:

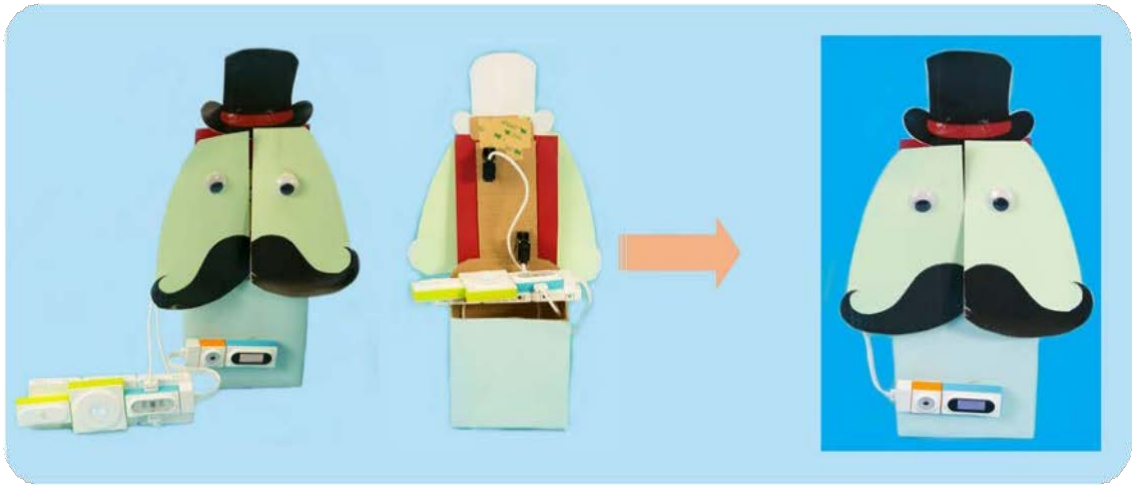


Module List

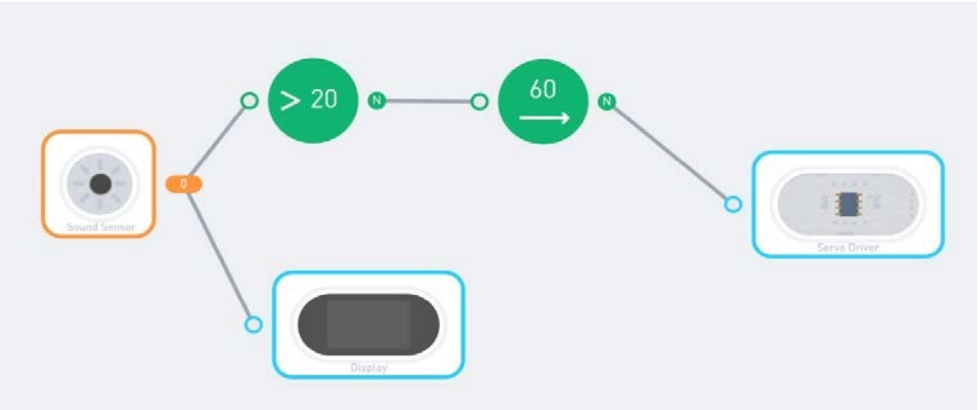
Name	Qty.	Unit
power supply	1	PCS
Bluetooth	1	PCS
Sound sensor	1	PCS
Dual servo driver	1	PCS
Servo kit	2	Kit
Connection cable 20CM	1	PCS
Magnetic board	3	PCS
Plug	1	Pack

Material List

Name	Qty.	Unit
Paper-based box model	1	PCS
Ice cream stick	2	PCS
Color cardboard	3	PCS
Transparent double-sided tape	2	Roll
Double-sided tape	1	Roll



➢ Demonstration for online programming



Tips

- ✓ Descriptions for hardware modules and software nodes can be found in the appendix at the end of the page;
- ✓ For paper-based models of the same design, please find in the appendix at the end of the page~
- ✓ The works with "✪" are under online modes. Download Neuron APP on IPad or smart phone for programming;
- ✓ Download video of the work from official educational website: http://education.makeblock.com/
- ✓ Neuron APP Software version: 1.3.2

Name of Work: Auto-adjustable Clothes Drying Rack✪

Video Link:http://static.education.makeblock.com/ClothesHanger.mp4

Difficulty: Intermediate

Time: 30 Minutes

Lesson Description:

It's raining, but the clothes are still hanging on the drying rack. And there is no one at home to bring the clothes home. You can make an automatic drying rack. By using the Neuron module, you can easily achieve the desired effects. You should try it ~

Teaching Process

Contents:

Create works using the Neuron's electronic modules: 1) Use servo module to control the rotating angle of the servo; 2) temperature and humidity sensor can sense the humidity in the environment;

Use Neuron APP to achieve the effects of the works: 1) Perform an accurate online adjustment of the angle of the servo to allow the consistency of the rotating angles for 2 servos; 2) the comparison, digit and NOT nodes can let the automatic drying rack to collect the clothes if the humidity is greater than a certain value, and put the clothes on the rack if the humidity is lower than this value;

Step1: Inspire

The teacher can play videos or show the sample finished works to the students; the students observe the work and focus on learning the angles and installation directions for the double servos?

Step2: Thinking

What modules does this work use? Which effects have these modules achieved respectively?

Step3: Make and Tinker

What materials do we need for this work? The functions of the modules need continuous debugging to achieve the best results;

Step 4: Programming

Use the Neuron APP for online programming, try the functions such as comparison, digit, NOT and other nodes;

Step5: Test and Share

The work is completed, share your experience and skills, show your work to others, and let more people witness your creativity!

Thinking after Class

- **Review on Key Points:**
  1. Adjusting the angle and direction of double-servo; programming for distance sensing of the ultrasonic sensors;
  2. Use of Comparison, Digit, NOT and other nodes.
- **Improvement and Optimization:**
  1. Use the cloud control (IoT) to remotely control the rack.

List of Materials

Module List

Name	Qty.	Unit
Power supply	1	PCS
Bluetooth	1	PCS
Temperature and humidity sensor	1	PCS
Dual servo driver	1	PCS
Servo kit	2	Kit
Connection cable 20CM	1	PCS
Magnetic board	8	PCS
Plug	1	Pack
Transparent rubber band	1	Pack

Material List

Name	Qty.	Unit
Paper-based house model	1	PCS
Paper-based balcony model	1	PCS
Ice cream stick	2	PCS
Transparent wire	1	PCS
Transparent double-sided tape	2	Roll
Double-sided tape	1	Roll
Color cardboard	3	PCS

Work Production Procedure

➢ Work Production Process:

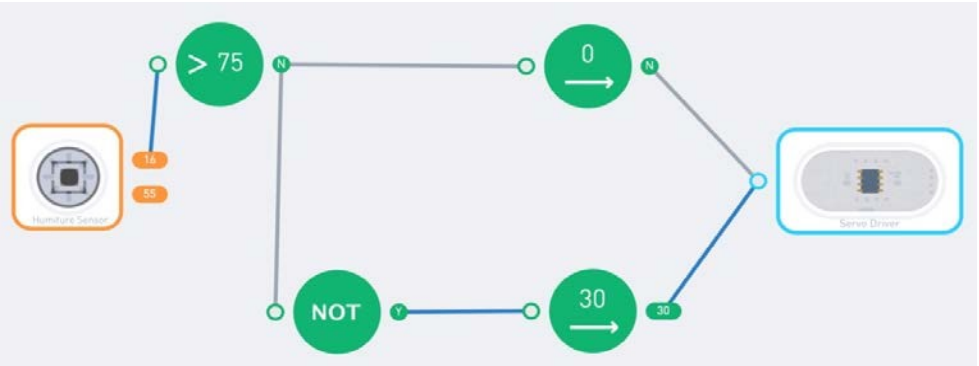
Material List

Name	Qty.	Unit
Paper-based house model	1	PCS
Paper-based balcony model	1	PCS
Ice cream stick	2	PCS
Transparent wire	1	PCS
Transparent double-sided tape	2	Roll
Double-sided tape	1	Roll
Color cardboard	3	PCS

Module List

Name	Qty.	Unit
Power supply	1	PCS
Bluetooth	1	PCS
Temperature and humidity sensor	1	PCS
Dual servo driver	1	PCS
Servo kit	2	Kit
Connection cable 20CM	1	PCS
Magnetic board	8	PCS
Plug	1	Pack
Transparent rubber band	1	Pack

➢ Demonstration for online programming



Tips

- ✓ Descriptions for hardware modules and software nodes can be found in the appendix at the end of the page;
- ✓ For paper-based models of the same design, please find in the appendix at the end of the page~
- ✓ The works with "✪" are under online modes. Download Neuron APP on IPad or smart phone for programming;
- ✓ Download video of the work from official educational website: http://education.makeblock.com/
- ✓ Neuron APP Software version: 1.3.2

Name of Work: Smart Pill Box✪

Video Link: http://static.education.makeblock.com/SmartPillBox.mp4

Difficulty: Intermediate

Time: 30 Minutes

Lesson Description:
Grandma/Grandpa often forgets to take medicine on time. What should I do? The smart pill box reminds you to take medicine at scheduled time. It can help grandpa and grandma to remember taking medicines on time.

Teaching Process

Objectives:

The main modules used in this work include the light sensor and the buzzer.

1) Learn the functions of the light sensor and buzzer.

2) Learn the functions of software nodes, such as time, digit, comparison and “AND”, etc.

Step1: Inspire

Grandma/Grandpa often forgets to take medicine on time. How should I remind them to take medicine? If the pill box can automatically remind them to take medicine, that will be terrific.

Step2: Thinking

First of all, I need a timer and a small alarm that can remind me at scheduled time. Second, when grandma/grandpa opens the pill box and takes the medicine, the alarm would automatically stop. In this way, it won’t bother grandma/grandpa too much.

Step3: Programming

Which modules can help me achieve these functions? The software can help me achieve the timing function. The buzzer can act as a small alarm. But how does the pill box know whether grandma/grandpa has opened the pill box and taken the medicine? The light sensor can sense when the pill box is opened (because the light will reach inside the box) .

Step4: Make and Tinker

How should I design the pill box? How should I put the modules in the pill box and make it sense the light and make sounds? (Double-layer structure)

Step4: Testand Share

The work is completed, share your experience and skills, show your work to others, and let more people witness your creativity!

Thinking after Class

- **Review on Key Points:**
  13. Functions of software nodes
  14. Functional logic: When it's time to take medicine but the pill box hasn't been opened, grandma/grandpa should be reminded of taking medicine. When the pillbox is opened, stop reminding.

- **Improvement and Optimization:**
  1. Add an LED panel, so as to show some reminders on it.

List of Materials

Module List

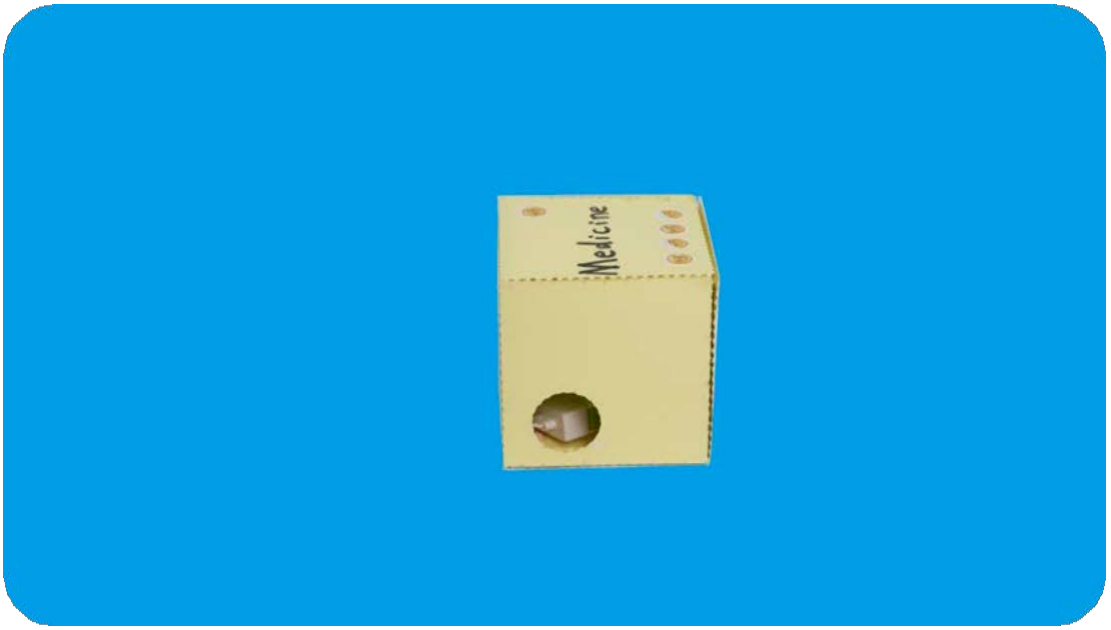
Name	Qty.	Unit
Power supply	1	PCS
Bluetooth	1	PCS
Light sensor	1	PCS
Buzzer	1	PCS
Connection cable 10cm	1	PCS

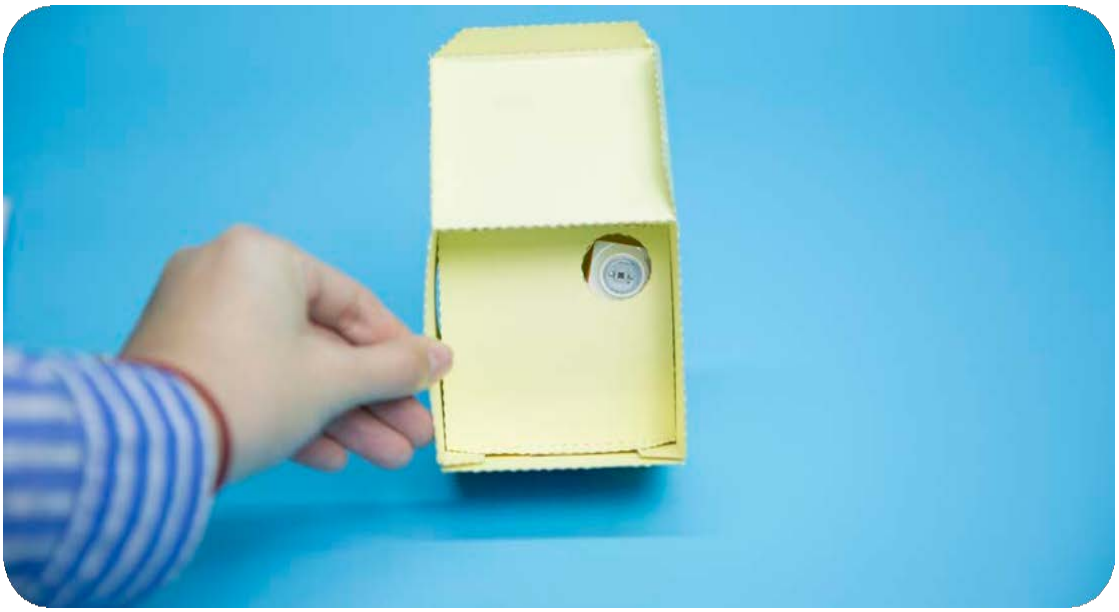
Material List

Name	Qty.	Unit
Paper-based pill box model	1	PCS
Scissors	1	Pair
Double-sided tape	1	Roll

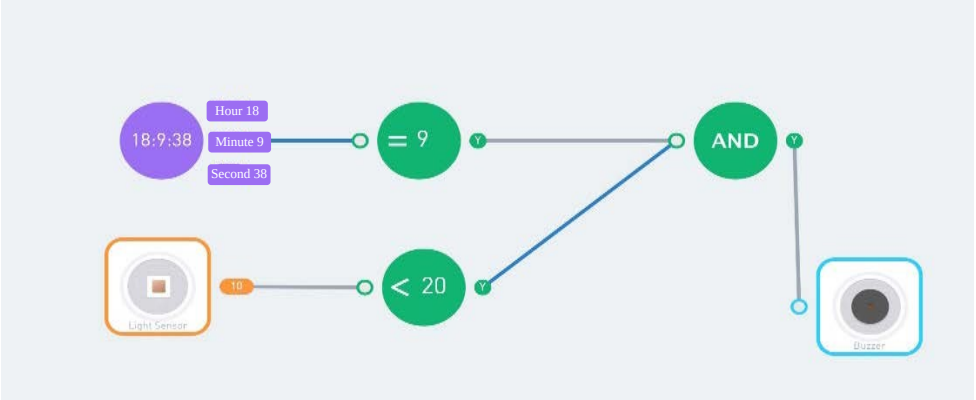
Work Production Procedure

➢ Work Production Process:


Medicine



➢ Demonstration for online programming



Tips

- ✓ Descriptions for hardware modules and software nodes can be found in the appendix at the end of the page;
- ✓ For paper-based models of the same design, please find in the appendix at the end of the page~
- ✓ The works with "✪" are under online modes. Download Neuron APP on IPad or smart phone for programming;
- ✓ Download video of the work from official educational website: http://education.makeblock.com/
- ✓ Neuron APP Software version: 1.3.2

Name of Work: Plant Guard✪

Video Link: http://static.education.makeblock.com/VisualizedDoorbellSystem.mp4

Difficulty: Intermediate

Time: 30 Minutes

Lesson Description:

Make use of the conductivity of the touch switch and use the Neuron APP programming function to make an alarm system. When the system is triggered, the buzzer makes alarming sounds and the LED flashes.

Teaching Procedure

Objectives:

1. Know and learn how to use touch switch.
2. Make an alarm system.

Teaching Process:

Step 1: Exploring "How to Protect Plants from being Destroyed by Little Animals"

Step 2: Through self-study, the students learn the knowledge covered in this lesson, such as Neuron modules and software nodes.

Step 3: Show the sample finished work and explain the modules and nodes. Provide necessary materials.

Step 5: After discussions and observing the sample finished work, start making an alarm system.

Step 6: Share works with each other.

Thinking after Class

- **Review on Key Points:**
  1. The use and principle of touch switch.
  2. Alarm system
- **Improvement and Optimization:** Can you make an anti-theft system for your own room?

List of Materials

Module List

Name	Qty.	Unit
Power supply	1	PCS
Bluetooth module	1	PCS
Touch switch (four control buttons)	1	PCS
RGB light	1	PCS
Buzzer	1	PCS

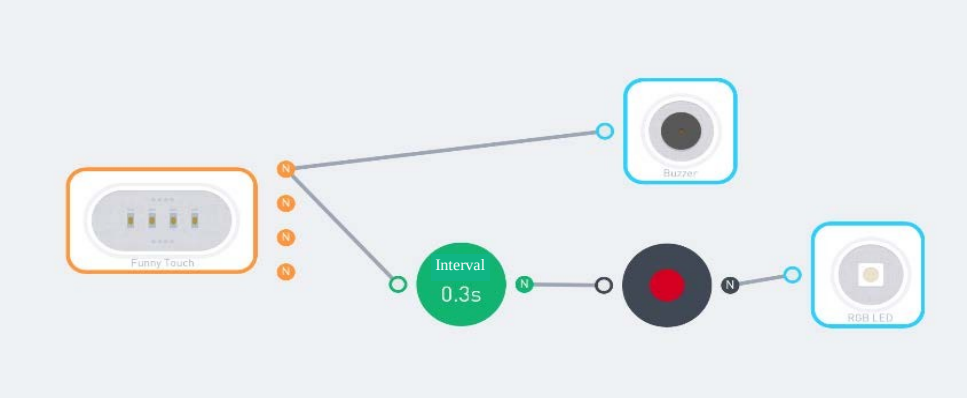
Material List

Name	Qty.	Unit
Cardboard	1	PCS
Scissors	1	Pair

Work Production Procedure

➢ Work Production Process:

➢ Demonstration for online programming



Tips

- ✓ Descriptions for hardware modules and software nodes can be found in the appendix at the end of the page;
- ✓ For paper-based models of the same design, please find in the appendix at the end of the page~
- ✓ The works with "✪" are under online modes. Download Neuron APP on IPad or smart phone for programming;
- ✓ Download video of the work from official educational website: http://education.makeblock.com/
- ✓ Neuron APP Software version: 1.3.2

Name of Work: Visual Door Remote Control System✪

Difficulty: Advanced

Time: 30 Minutes

Video Link: http://education.makeblock.com/zh-hans/resource/neuron-kskmxt/

Lesson Description:
The doorbell is ringing. Who's this? Do you want to open the door? Use remote identification to see who the visitor is, and then decide whether you want to open the door (remotely) or not. By using the Neuron module, you can easily achieve the desired effects. You should try it ~

Teaching Procedure

Contents:
Create works using the Neuron's electronic modules: 1) The gyro senses whether someone is knocking on the door outside; 2) The servo module controls the angle of the servo plate; 3) The camera can take photos and transfer photos in real time; 4) WIFI connects home network to the camera module.
Use Neuron APP to achieve the functions of the work: 1) online adjustment of the servo angle accurately, so that the doors can be opened and closed smoothly; 2) IoT to remotely control the door opening; 3) Customize the time interval to take photos;
Step1: Inspire
The teacher can play videos or show the sample finished works to the students; the students observe the sample and think: imagine the convenience that the smart home system can bring to our lives~
Step2: Thinking
What modules does this work use? Which effects have these modules achieved respectively?
Step3: Make and Tinker
What materials do we need for this work? The functions of the modules need continuous debugging to achieve the best results;
Step 4: Programming
Use the Neuron APP for online programming; try using nodes, such as IoT and others;
Step5: Test and Share
The work is completed, share your experience and skills, show your work to others, and let more people witness your creativity!

Thinking after Class

- **Review on Key Points:**
  1. Use of WIFI and camera module;
  2. Use for IoT.
- **Improvement and Optimization:**
  1. How about adding a buzzer module?

List of Materials

Module List

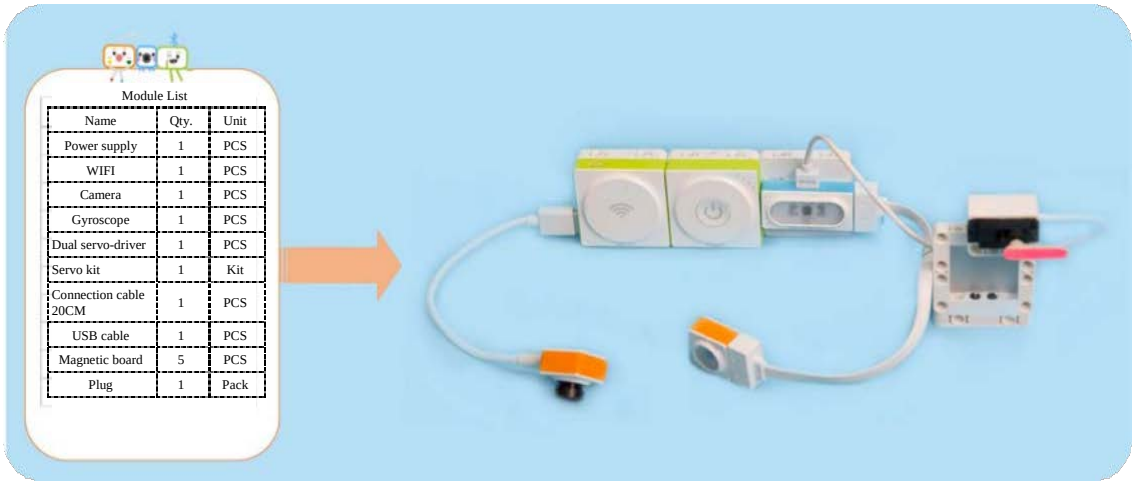
Name	Qty.	Unit
Power supply	1	PCS
WIFI	1	PCS
Camera	1	PCS
Gyroscope	1	PCS
Dual servo-driver	1	PCS
Servo kit	1	Kit
Connection cable 20CM	1	PCS
USB cable	1	PCS
Magnetic board	5	PCS
Plug	1	Pack

Material List

Name	Qty.	Unit
House-based model of house	1	PCS
Ice cream stick	1	PCS
Transparent double-sided tape	2	Roll
Double-sided tape	1	Roll
Colored marker (black)	1	PCS
Color cardboard	1	PCS

Work Production Procedure

➢ Work Production Process:

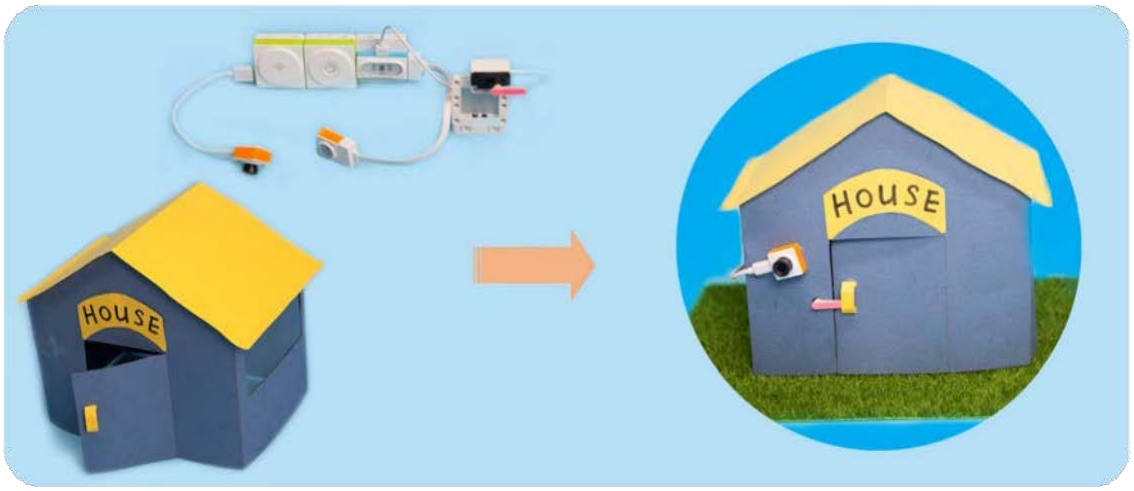


Module List

Name	Qty.	Unit
Power supply	1	PCS
WIFI	1	PCS
Camera	1	PCS
Gyroscope	1	PCS
Dual servo-driver	1	PCS
Servo kit	1	Kit
Connection cable 20CM	1	PCS
USB cable	1	PCS
Magnetic board	5	PCS
Plug	1	Pack

Material List

Name	Qty.	Unit
House-based model of house	1	PCS
Ice cream stick	1	PCS
Transparent double-sided tape	2	Roll
Double-sided tape	1	Roll
Colored marker (black)	1	PCS
Color cardboard	1	PCS



➢ Demonstration for online programming

Tips

- ✓ Descriptions for hardware modules and software nodes can be found in the appendix at the end of the page;
- ✓ For paper-based models of the same design, please find in the appendix at the end of the page~
- ✓ The works with "✪" are under online modes. Download Neuron APP on IPad or smart phone for programming;
- ✓ Download video of the work from official educational website: http://education.makeblock.com/
- ✓ Neuron APP Software version: 1.3.2