



ARWACHIN SCHOOL'S

CTI Lab - ROBOTICS

The World Around Us is Changing Rapidly



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3D Printing

Print anything that you need



Smart Robots

Your machine friend runs errands for you



Drones

A watchful guardian, Delivery-boy, and toy



Learning Machines

Why code, if it can rote ?



Augmented Reality

Make reality stranger than fiction



Nano-Medicine

A robotic capsule a day to keep the doctor away



Driverless Cars

Your chauffer is invisible

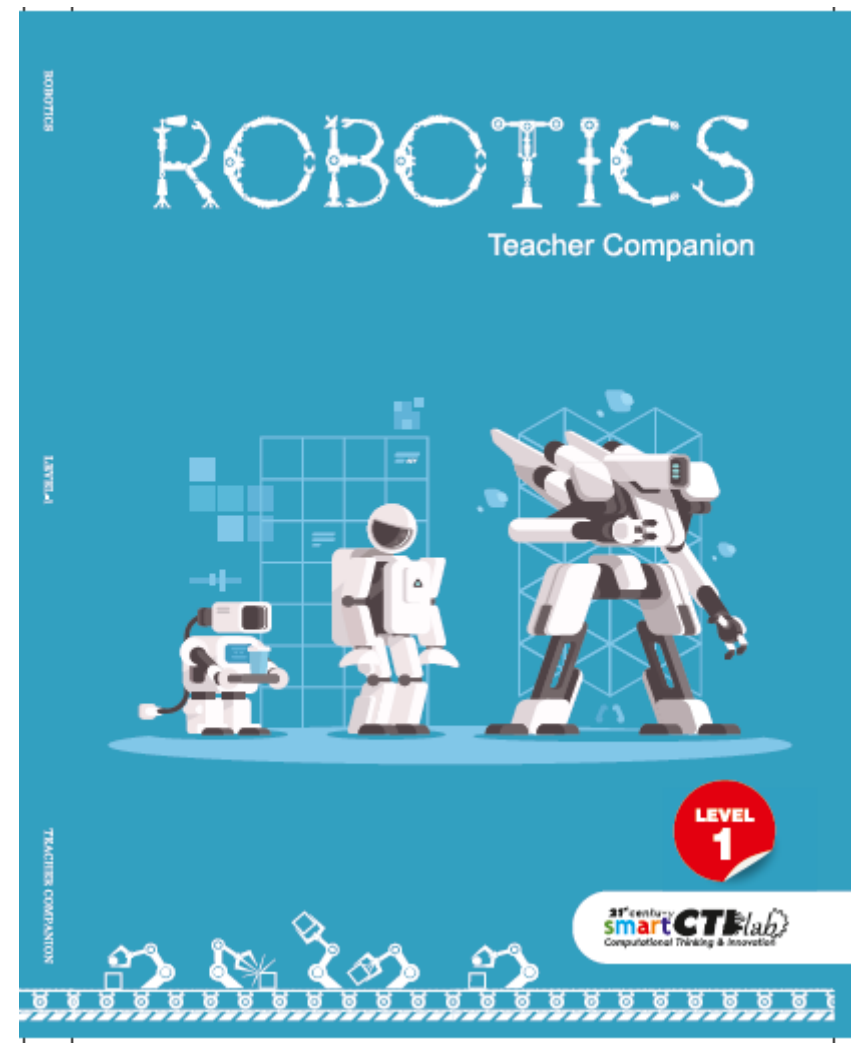
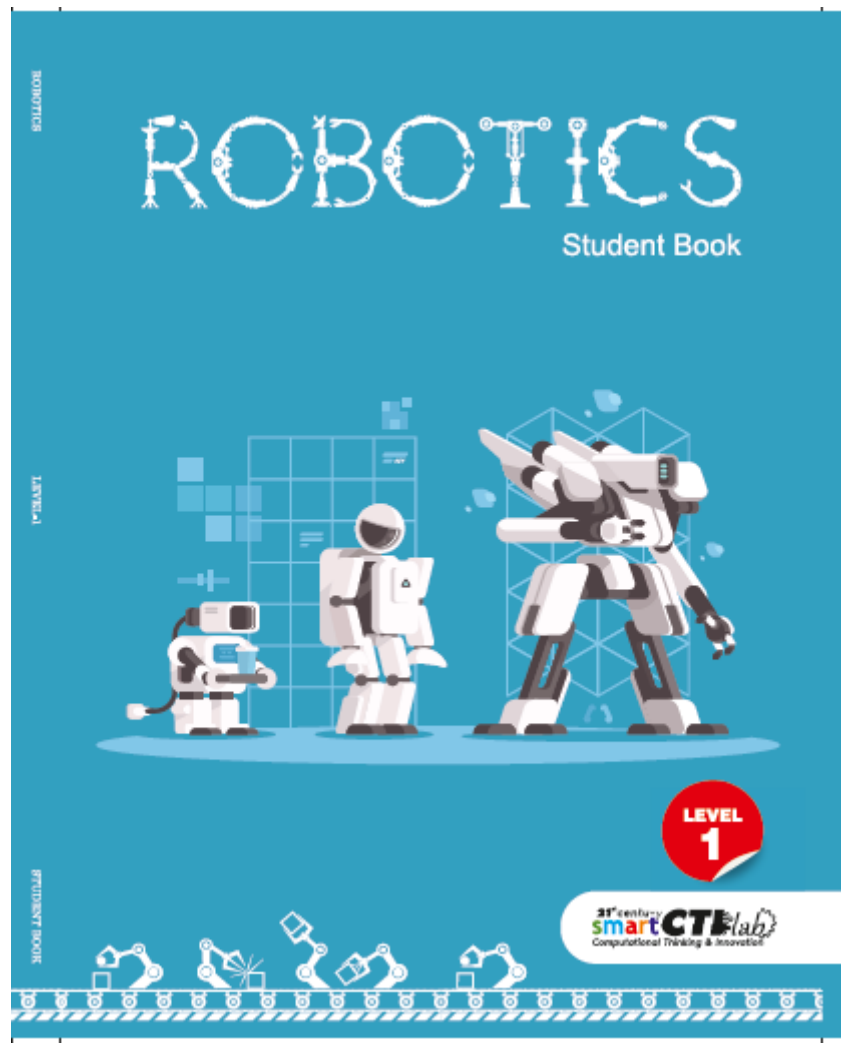


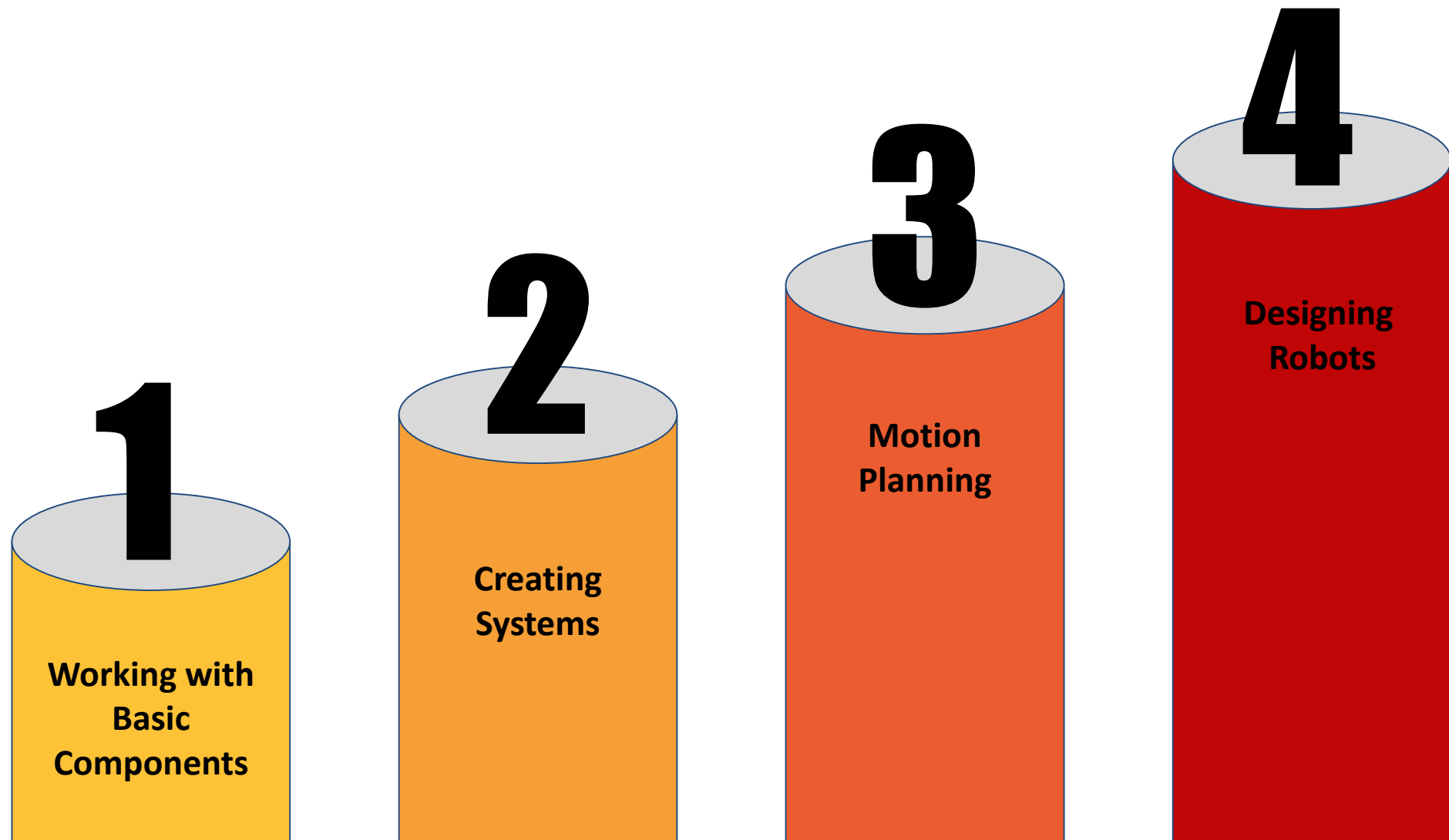
Anything Imaginable

!!

Robotics helps students develop these 21st century Skills

- Constructivist Approach
- Engineering
- Teamwork
- Real-world applications
- Logical Thinking
- Multi-Disciplinary
- Cognitive Development
- Creativity
- Problem Solving
- Life Skills
- Coding





Bricks




































Humanoid








BOM (Bill Of Materials)



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Cube x84	Half cube x30	Slope cube x8	Beam 240 x1	Beam 300 x2	Small slab x10	1# Slab x6	2# Slab x5	3# Slab x3
								
4# Slab x5	Cube connector x15	Short bolt x18	Long bolt x4	Middle L connector x26	Middle H connector x8	Middle A connector x3	Small A connector x6	Tiny A connector x14
								
Tube R40 x2	Tube R80 x2	Ladder x12	12-tooth gear x13	14-tooth gear x2	20-tooth gear x2	28-tooth gear x6	52-tooth gear x6	Worm x1
								
12-tooth coupler x1	Rack x4	Tube S20 x6	Tube S40 x7	Tube S55 x12	Tube S80 x4	Short square tube x1	Long square tube x1	Tube SR20 x3
								
Tube SR40 x4	Tube RS20 x2	Joint x4	Belt wheel x2	Hub x2	Tire x2	Belt(20) x1	Pulley x2	
								
Thread x2	Slide bearing x13	Guide wheel x10	Black bottle x1	White bottle x1	Green bottle x1	Bearing x18	Gear combination x9	Spindle combination x2
								
Wheel combination x1	Leading screw x3	5:1 Gear case x6	1:1 Gear case A x2	1:1 Gear case B x4	Magnet x5	Magnetic switch x3	Touch sensor x3	Temperature sensor x1

								
Light sensor x2	Counter x2	Grayscale sensor x1	Sound sensor x1	Flame sensor x1	Red light x1	Green light x1	Yellow light x1	Electromagnet x1
			Data line x1	Adapter x1	Spiral wrapping band x1	Project building Manual x1	CD x1	
Motor x4	Motor wire x4	Controller x1						



Strong & Powerful Controller

With abundant interfaces, the output and input ends can be tested on the controller directly.



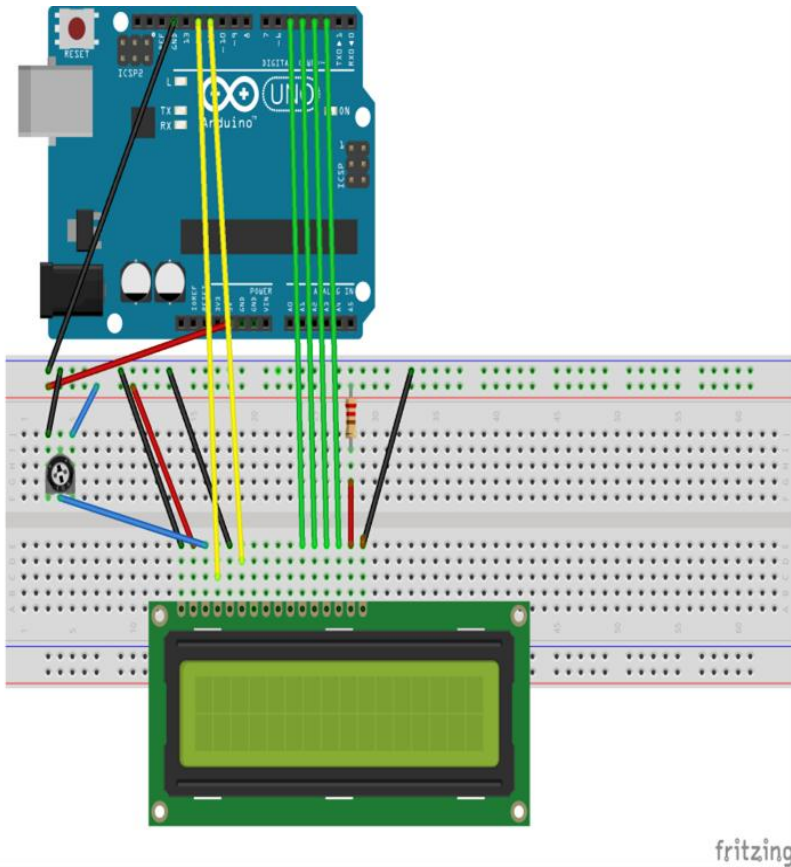
Dedicated lithium battery 8.4V 1500MAH; maximum discharge current: 6A; built-in protection circuit.



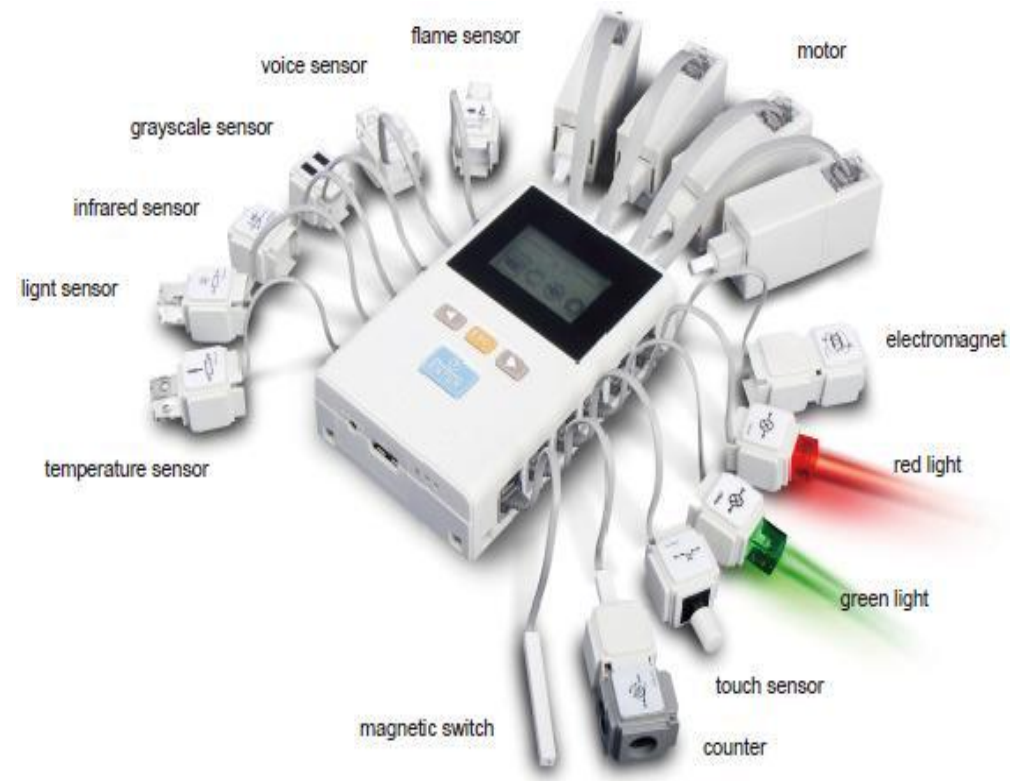
4 motor ports, which can control motors' speed, rotation orientation; maximum current that single port supports: 2A



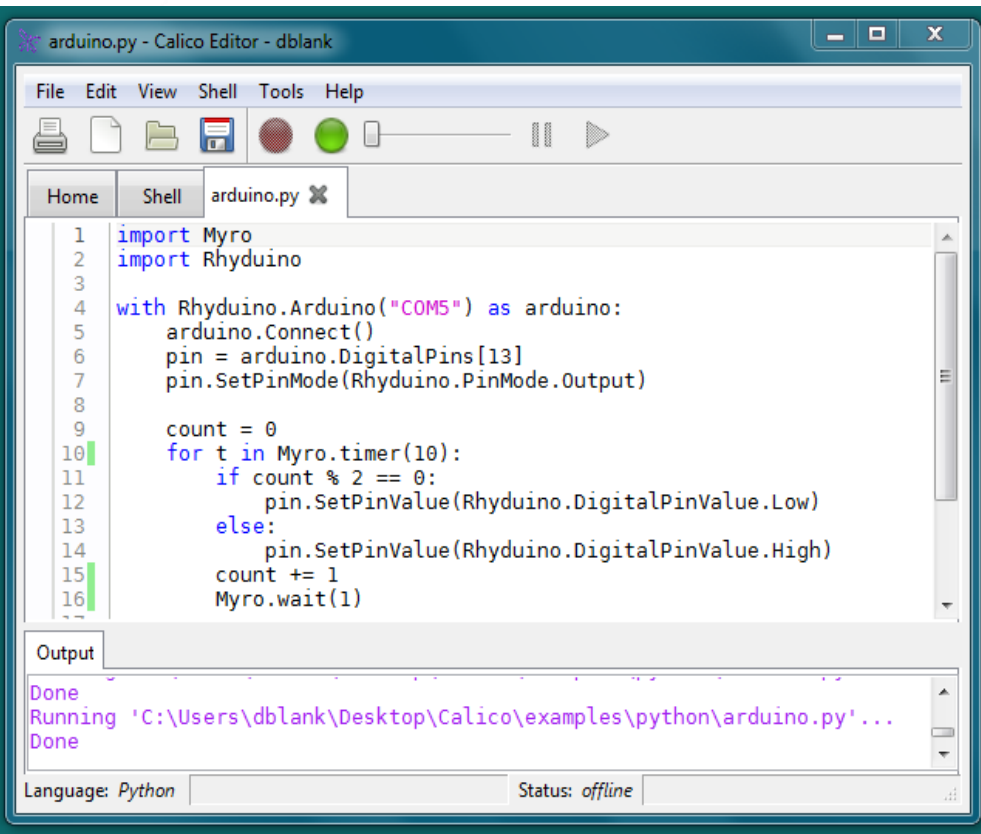
Download via cable; Storage space: 3.96M



Vs



Vs

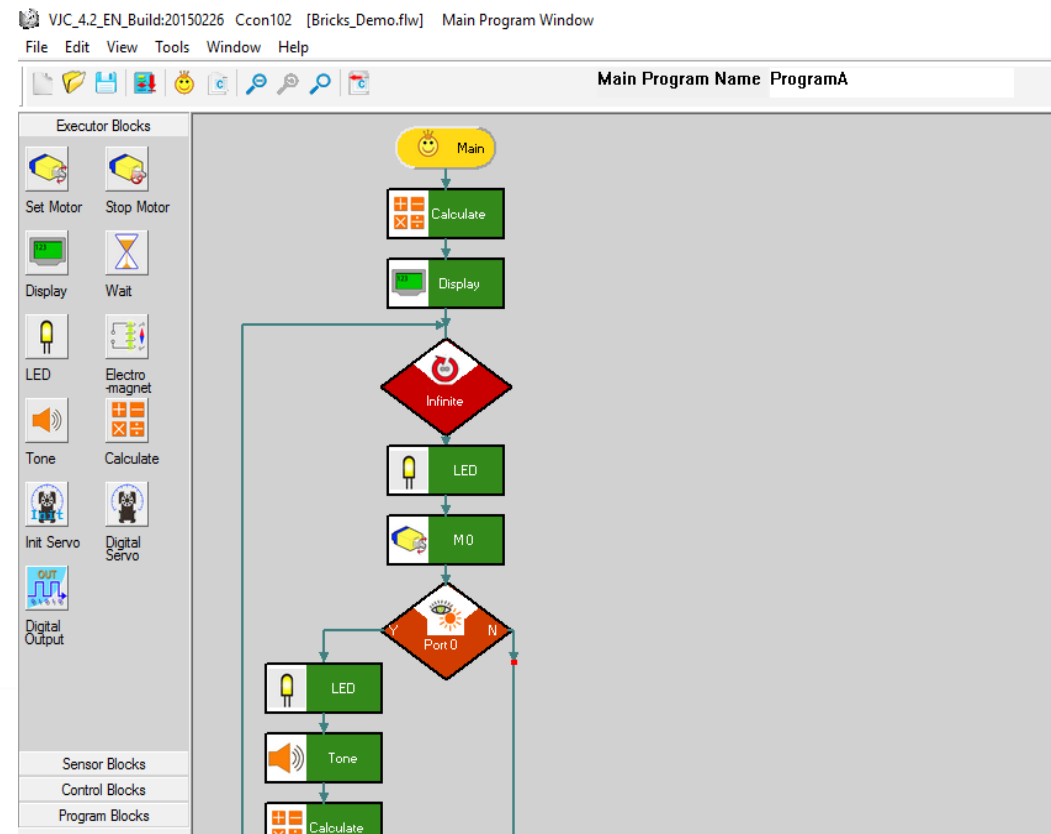


The screenshot shows the Calico Editor interface with a Python script for an Arduino. The code imports 'Myro' and 'Rhyduino', connects to an Arduino at COM5, sets pin 13 as an output, and uses a timer to toggle the pin state every 10 seconds. The output window shows the script running successfully.

```
1 import Myro
2 import Rhyduino
3
4 with Rhyduino.Arduino("COM5") as arduino:
5     arduino.Connect()
6     pin = arduino.DigitalPins[13]
7     pin.SetPinMode(Rhyduino.PinMode.Output)
8
9     count = 0
10    for t in Myro.timer(10):
11        if count % 2 == 0:
12            pin.SetPinValue(Rhyduino.DigitalPinValue.Low)
13        else:
14            pin.SetPinValue(Rhyduino.DigitalPinValue.High)
15        count += 1
16    Myro.wait(1)
```

Output: Done
Running 'C:\Users\dblank\Desktop\Calico\examples\python\arduino.py'...
Done

Language: Python Status: offline



BOM (Bill Of Materials)



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H-CON101 x 1	RC x 1	BATTERY x 1	H-S100 x 1	Tire x 6	Wheel x 6	Bearing x 2	FUSE x 1	
								
H-M24 x 18	P1 x 1	P2 x 1	P3 x 1	SMPS x 1	CHARGER x 1	CONNECTOR-CABLE x 1		
								
P4 x 1	P5 x 1	P6 x 2	S5 x 2	USB-CABLE x 1				
								
F1 x 12	F2 x 6	F3 x 12	F4 x 6					
								
T1 x 5	T2 x 38	T3 x 18	LH x 11	SH x 6				
								
S4 x 7	S3 x 7	S1 x 24	S2 x 14	S6 x 10		CABLE-12 x 14	CABLE-21 x 10	

H-CON101 Controller

The controller adds a gyroscope and Bluetooth module and supports the ability to dual program.

It uses ARM Cortex M3/32 bit as the main chip, which is more power-saving and provides faster computing.



All the electronic and mechanical parts are designed to be modular, based on which 3D models can be constructed.



Gyroscope



More Power-saving



Bluetooth



Dual Programs Download

Integrated Sensor H-S100

The H-S100 combines a distance measuring sensor, a light sensor, a sound sensor and buzzer.



Distance measuring sensor



Light sensor



Sound sensor



Buzzer





Remote Controller

Chip: ARM Cortex M3/32bit; Bluetooth;

Power: 2 standard AAA batteries, On/Off switch. Automatic Off Timer.

Buttons: 1 Power Switch button, 10 Control Buttons.

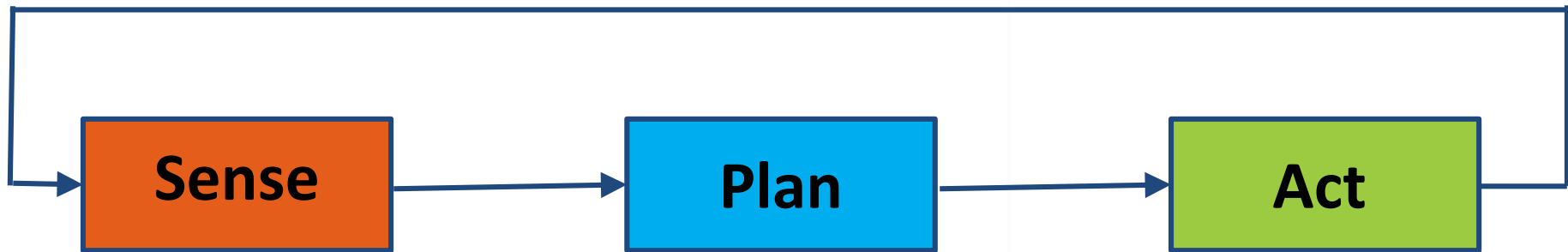


Intelligent Motor H-M24

Real-time reflection on position, speed, load, current and temperature. RS-485 communication, bus control which can connect 254 motors at the same time in a serial connection.

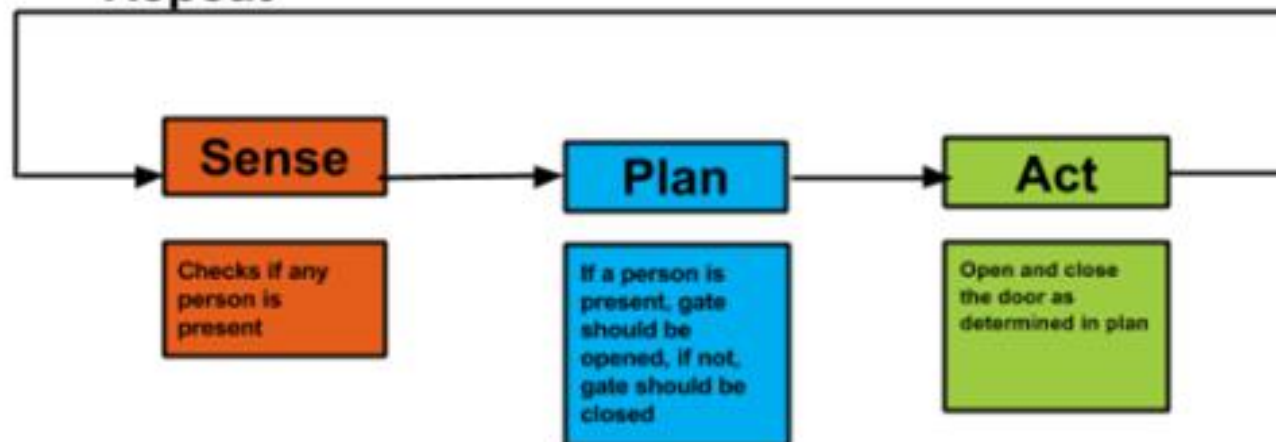
Largest torque: 24kg; 360-degree rotation is supported.

Repeat





Repeat

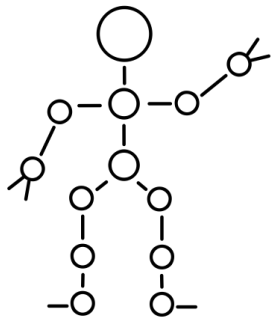


3 Steps of Humanoid

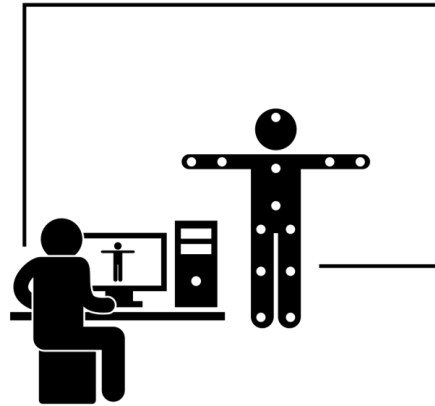


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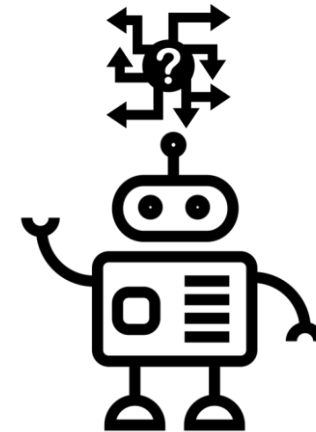
01 Model



02 Behaviour



03 Action



Software – Flowchart, Text (C Language)



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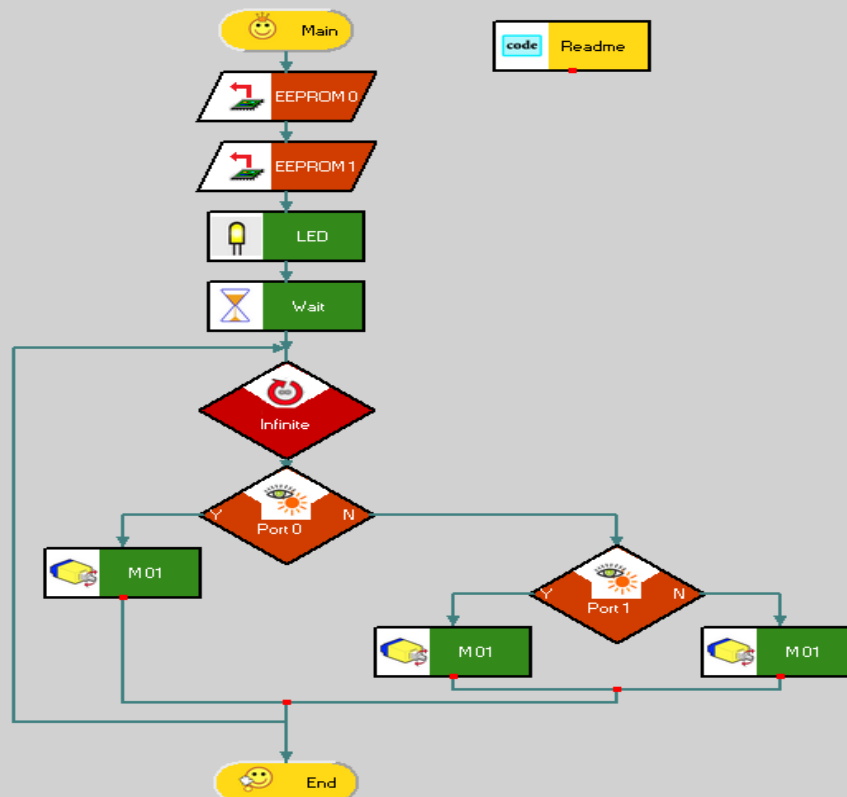
VJC_4.2_EN_Build:20150226 Ccon102 [15.Auto-car.flw] Main Program Window

File Edit View Tools Window Help

Main Program Name AUTO-CAR

Executor Blocks

- Set Motor
- Stop Motor
- Display
- Wait
- LED
- Electro-magnet
- Tone
- Calculate
- Init Servo
- Digital Servo
- Digital Output



```
#include "ASEIO.h"
```

```
int photo_1=0;
int rom_1=0;
int rom_2=0;
```

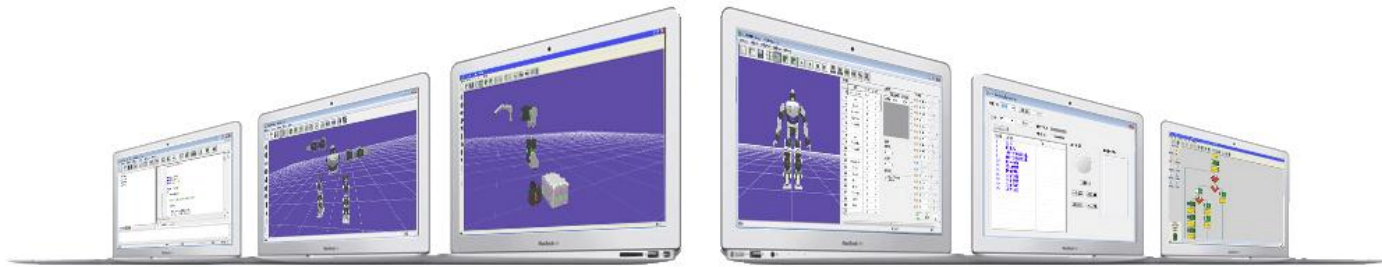
```
void main()
{
    rom_1 = ReadEEPROM(0);
    rom_2 = ReadEEPROM(1);
    SetDO( 0x7, 1 );
    wait( 0.500000 );
    while(1)
    {
        photo_1 = AI(0);
        if(photo_1 < rom_1)
        {
            SetMoto(0,-100);
            SetMoto(1,-100);
        }
        else
        {
            photo_1 = AI(1);
            if(photo_1 < rom_2)
            {
                SetMoto(0,100);
                SetMoto(1,100);
            }
            else
            {
                SetMoto(0,50);
                SetMoto(1,-50);
            }
        }
    }
}
```

Ready

NUM

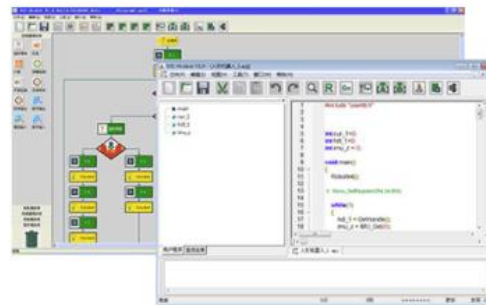
Unique Programming Software

Switchable Among Three Programming Interfaces



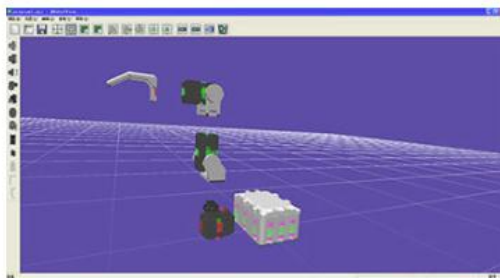
3D Construction Simulator

Students can analyze the structure and principle of the models by checking the 3D models. By mouse operation, students also can adjust and modify the models as they like.



Action Editor

With abundant action sequences, the actions of the robot can be easily set through clicking, dragging and dropping the mouse cursor. The movement will be shown in the review screen, which also can improve the editing efficiency.



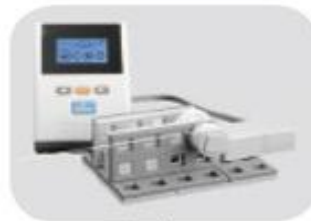
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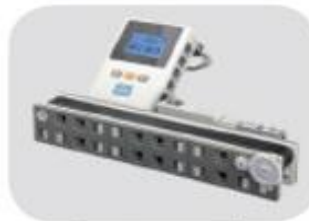




Traffic Light



Windlass



Conveyor Belt



Helicopter



Auto-car



Magnetic Secret Key



Washing Machine



Rotating Workbench



Strong Light Scanner



Blender



Auto-lathe



Wrecker

Live Demo



Excavator



Spider



Dinosaur



Humanoid

Live Demo



Thank You!