

KAKU R2 Programming guide

Rev 1.0

Rev	Changes	Date	Remark
Rev1.0	Guide Release	2015/5/4	--

1.Introduction to programming

Step1:Software download (used the software in folder)

You can download the Arduino IDE form the Link:

<http://www.arduino.cc/en/Main/Software>



Download the Arduino Software

The image shows a section of the Arduino website dedicated to downloading the software. On the left is the Arduino logo. To its right, the text reads "ARDUINO 1.6.4" followed by a description: "The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software. This software can be used with any Arduino board. Refer to the Getting Started page for Installation Instructions." On the right side of this section, there are links for "Windows Installer", "Windows ZIP file for non admin install", "Mac OS X 10.7 Lion or newer", "Linux 32 bits", and "Linux 64 bits". At the bottom of this section are links for "Release Notes", "Source Code", and "Checksums".

Then install the software normally.

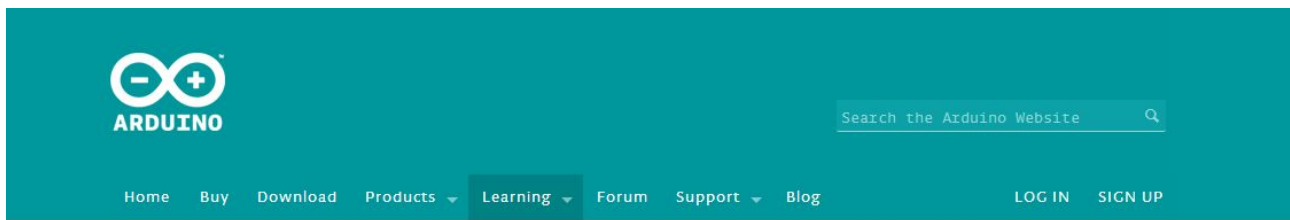
Step2:Get start with the arduino

You can reference the link:

<http://www.arduino.cc/en/Guide/HomePage>

Notice:

- Nano Robot Controller should select Boards [Arduino nano](#) &Processor [ATmega328](#)
- Micro Robot Controller should select Boards [Arduino micro](#)



Getting Started with Arduino

Introduction: What Arduino is and why you'd want to use it.

Foundations: Basic principle just to get started!

Installation: Step-by-step instructions for setting up the Arduino software and connecting it to an Arduino Uno, Mega2560, Duemilanove, Mega, or Diecimila.

- Windows
- Mac OS X
- Linux (on the playground wiki)

Environment: Description of the Arduino development environment and how to change the default language.

Libraries: Using and installing Arduino libraries.

Cores: How to manage different Arduino cores

Troubleshooting: Advice on what to do if things don't work.

Instructions for other boards:

- Arduino BT
- Arduino Due
- Arduino Esplora
- Arduino Fio
- Arduino Gemma
- Arduino ISP
- Arduino Leonardo and Micro
- Arduino Mini
- Arduino Nano
- Arduino Pro
- Arduino Pro Mini
- Arduino Robot
- Arduino Yún
- Ethernet shield
- GSM shield
- Intel Edison
- Intel Galileo Gen2
- LilyPad Arduino
- LilyPad Arduino USB

2. Case1:shake,When the KAKU robot's eyes have obstacles ahead, will swing back and forth and began waving his arms up and down!

```
#include <Servo.h>
```

```
int ardublockUltrasonicSensorCodeAutoGeneratedReturnCM(int trigPin, int echoPin)
{
  long duration;
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(20);
  digitalWrite(trigPin, LOW);
  duration = pulseIn(echoPin, HIGH);
  duration = duration / 59;
  if ((duration < 2) || (duration > 300)) return false;
  return duration;
}
```

```
int _ABVAR_1_i = 0 ;
void setRomeoMotor(int motorId, int speed)
{
  int speedPin, directionPin;
  if (motorId == 1)
  {
    speedPin = 5;
    directionPin = 4;
  }
  else
  {
    if (motorId == 2)
    {
      speedPin = 6;
      directionPin = 7;
    }
    else
    {
      return;
    }
  }

  if (speed == 0)
  {
    digitalWrite(speedPin, LOW);
  }
  if (speed > 0)
  {
    digitalWrite(directionPin, HIGH);
    analogWrite(speedPin, speed);
  }
  else
  {
    digitalWrite(directionPin, LOW);
    analogWrite(speedPin, -speed);
  }
}
Servo servo_pin_9;
Servo servo_pin_10;

void stop();
void shake();
```

```
void setup()
{
  pinMode( 7, OUTPUT);
  pinMode( 6, OUTPUT);
  pinMode( 5, OUTPUT);
  pinMode( 4, OUTPUT);
  digitalWrite( 2 , LOW );

  digitalWrite(4, LOW);

  digitalWrite(5, LOW);

  digitalWrite(6, LOW);

  digitalWrite(7, LOW);

  servo_pin_9.attach(9);
  servo_pin_10.attach(10);
}

void loop()
{
  if((( ( ardublockUltrasonicSensorCodeAutoGeneratedReturnCM( 2 , 3 ) ) < ( 5 ) ) && ( ( ardublockUltrasonicSensorCodeAutoGeneratedReturnCM( 2 , 3 ) ) != ( 0 ) )))
  {
    shake();
  }
  else
  {
    stop();
  }
}

void shake()
{
  for ( _ABVAR_1_i= 1; _ABVAR_1_i<= ( 2 ); _ABVAR_1_i++)
  {
    setRomeoMotor(1, 100);
    setRomeoMotor(2, 100);
    servo_pin_9.write( 60 );
    servo_pin_10.write( 60 );
    delay( 200 );
    setRomeoMotor(1, -100);
```

```
setRomeoMotor(2, -100);
servo_pin_9.write( 120 );
servo_pin_10.write( 120 );
delay( 200 );
stop();
}
}
```

```
void stop()
{
  setRomeoMotor(1, 0);
  setRomeoMotor(2, 0);
}
```

3.Case2:IR Remote,Number "2" infrared remote control, infrared remote control figure "8" retreat, infrared remote control number "4" turn left, infrared remote control number "6" right, infrared remote control number "5" to stop,Others you can custom.

```
#include <IRremote00.h>
#include <ctype.h>
#include <Wire.h>

IRrecv __ab_irrecv(12);
void __ab_setupIrReceiver()
{
  __ab_irrecv.enableIRIn();
  __ab_irrecv.resume();
}
void charsToUpper(char *str)
{
  int p=0;
  while(str[p] != 0)
  {
    str[p] = toupper(str[p]);
    ++p;
  }
}
void __ab_getIrCommand(char *receivedCommand)
{
  decode_results result;
  if (__ab_irrecv.decode(&result))
```

```
{
  ltoa(result.value, receivedCommand, 16);
  charsToUpper(receivedCommand);
  __ab_irrecv.resume();
}
else
{
  receivedCommand[0] = '\0';
}
}
char _ABVAR_1_HY[64] = "";
void setRomeoMotor(int motorId, int speed)
{
  int speedPin, directionPin;
  if (motorId == 1)
  {
    speedPin = 5;
    directionPin = 4;
  }
  else
  {
    if (motorId == 2)
    {
      speedPin = 6;
      directionPin = 7;
    }
    else
    {
      return;
    }
  }
}

if (speed == 0)
{
  digitalWrite(speedPin, LOW);
}
if (speed > 0)
{
  digitalWrite(directionPin, HIGH);
  analogWrite(speedPin, speed);
}
else
{
```

```
digitalWrite(directionPin, LOW);
analogWrite(speedPin, -speed);
}
}

void setup()
{
  pinMode( 7, OUTPUT);
  pinMode( 6, OUTPUT);
  pinMode( 5, OUTPUT);
  pinMode( 4, OUTPUT);
  __ab_setupIrReceiver();
  Serial.begin(9600);
  digitalWrite(4, LOW);

  digitalWrite(5, LOW);

  digitalWrite(6, LOW);

  digitalWrite(7, LOW);

}

void loop()
{
  __ab_getIrCommand(_ABVAR_1_HY);
  Serial.print(_ABVAR_1_HY);
  Serial.println();
  if (strcmp(_ABVAR_1_HY, "FF18E7") == 0)
  {
    setRomeoMotor(1, 150);
    setRomeoMotor(2, -150);
  }
  if (strcmp(_ABVAR_1_HY, "FF4AB5") == 0)
  {
    setRomeoMotor(1, -150);
    setRomeoMotor(2, 150);
  }
  if (strcmp(_ABVAR_1_HY, "FF10EF") == 0)
  {
    setRomeoMotor(1, -75);
    setRomeoMotor(2, -75);
  }
  if (strcmp(_ABVAR_1_HY, "FF5AA5") == 0)
```

```
{
  setRomeoMotor(1, 75);
  setRomeoMotor(2, 75);
}
if (strcmp(_ABVAR_1_HY, "FF38C7") == 0)
{
  setRomeoMotor(1, 255);
  setRomeoMotor(2, 255);
  delay( 200 );
  setRomeoMotor(1, -255);
  setRomeoMotor(2, -255);
  delay( 200 );
  setRomeoMotor(1, 0);
  setRomeoMotor(2, 0);
}
}
```

4. Case 3: Bluetooth Remote, install app on android mobile phone, then you can touch different faces to control the robot to move, the Others you can custom.

```
char _ABVAR_1_x;
void setRomeoMotor(int motorId, int speed)
{
  int speedPin, directionPin;
  if (motorId == 1)
  {
    speedPin = 5;
    directionPin = 4;
  }
  else
  {
    if (motorId == 2)
    {
      speedPin = 6;
      directionPin = 7;
    }
    else
    {
      return;
    }
  }
}
```

```
if (speed == 0)
{
    digitalWrite(speedPin, LOW);
}
if (speed > 0)
{
    digitalWrite(directionPin, HIGH);
    analogWrite(speedPin, speed);
}
else
{
    digitalWrite(directionPin, LOW);
    analogWrite(speedPin, -speed);
}
}
void Stop()
{
    setRomeoMotor(1, 0);
    setRomeoMotor(2, 0);
}

int arduinoUltrasonicSensorCodeAutoGeneratedReturnCM(int trigPin, int echoPin)
{
    long duration;
    pinMode(trigPin, OUTPUT);
    pinMode(echoPin, INPUT);
    digitalWrite(trigPin, LOW);
    delayMicroseconds(2);
    digitalWrite(trigPin, HIGH);
    delayMicroseconds(20);
    digitalWrite(trigPin, LOW);
    duration = pulseIn(echoPin, HIGH);
    duration = duration / 59;
    if ((duration < 2) || (duration > 300)) return false;
    return duration;
}

bool _ABVAR_2_flag= false ;
int _ABVAR_3_i = 0 ;

void shake();

void setup()
{
```

```
pinMode( 7, OUTPUT);
pinMode( 6, OUTPUT);
pinMode( 5, OUTPUT);
pinMode( 4, OUTPUT);
Serial1.begin(9600);
digitalWrite(4, LOW);
digitalWrite(5, LOW);
digitalWrite(6, LOW);
digitalWrite(7, LOW);

}

void loop()
{
  if( ( ( ( ardublockUltrasonicSensorCodeAutoGeneratedReturnCM( 2 , 3 ) ) < ( 10 ) ) &&
( ( ardublockUltrasonicSensorCodeAutoGeneratedReturnCM( 2 , 3 ) ) != ( 0 ) ) ) )
  {
    shake();
    Stop();
  }
  while (Serial1.available() > 0)
  {
    _ABVAR_1_x = Serial1.read();
    if ( _ABVAR_1_x == '2' )
    {
      setRomeoMotor(1, -100);
      setRomeoMotor(2, 100);
    }
    else if ( _ABVAR_1_x == '8' )
    {
      setRomeoMotor(1, 100);
      setRomeoMotor(2, -100);
    }
    else if ( _ABVAR_1_x == '5' )
    {
      shake();
      setRomeoMotor(1, 0);
      setRomeoMotor(2, 0);
    }
    else if ( _ABVAR_1_x == '6' )
    {
      setRomeoMotor(1, -80);
      setRomeoMotor(2, -80);
    }
  }
}
```

```
else if (_ABVAR_1_x == '4')
{
    setRomeoMotor(1, 80);
    setRomeoMotor(2, 80);
}
else if (_ABVAR_1_x == '9')
{
    setRomeoMotor(1, 0);
    setRomeoMotor(2, -200);
}
else if (_ABVAR_1_x == '7')
{
    setRomeoMotor(1, 200);
    setRomeoMotor(2, 0);
}
else if (_ABVAR_1_x == '1')
{
    setRomeoMotor(1, -200);
    setRomeoMotor(2, 0);
}
else if (_ABVAR_1_x == '3')
{
    setRomeoMotor(1, 0);
    setRomeoMotor(2, 200);
}
}
}

void shake()
{
    if (_ABVAR_2_flag)
    {
        for (_ABVAR_3_i= 1; _ABVAR_3_i<= ( 2 ); _ABVAR_3_i++)
        {
            setRomeoMotor(1, 200);
            setRomeoMotor(2, 200);
            delay( 200 );
            setRomeoMotor(1, -200);
            setRomeoMotor(2, -200);
            delay( 200 );
        }
        _ABVAR_2_flag = LOW ;
    }
    else
```

```
{  
  for (_ABVAR_3_i= 1; _ABVAR_3_i<= ( 2 ); _ABVAR_3_i++)  
  {  
    setRomeoMotor(1, -200);  
    setRomeoMotor(2, -200);  
    delay( 200 );  
    setRomeoMotor(1, 200);  
    setRomeoMotor(2, 200);  
    delay( 200 );  
  }  
  _ABVAR_2_flag = HIGH ;  
}  
}
```

6.Others you can login <http://ruilongmaker.cc/bbs/>

Arduino->arduino Robot or Kaku Robot

Disclaimer

- 1, Please read the instructions carefully before using this product, if not in accordance with the instructions to guide the operation of adverse consequences shall be borne by the user;
- 2, When using this product do you any application (such as experiment, contests, secondary development), to the user's own risk;
- 3, Due to the use of the products produced by the direct, indirect or incidental damages (including loss of personal safety, credibility loss profits, etc.), not be responsible;
- 4, Persons under the age of 14 children should be accompanied by adult below this

After-sales service

- 1, this shop sell all goods (except for imported products), before delivery, all pass strict quality test, to ensure the quality.
- 2, please buyer in a timely manner after receipt, check whether the parts is complete, and testing of goods, determine the correct installation again after use;
- 3, our sales will provide the relevant instructions, is limited to product information and technical support, for technical support within the scope of beyond the product itself has the right to not be provided, in case of technical problems in the process of using the product, can be registered login to our public community ruiolongmaker. Cc/BBS posts, 24 hours a day with engineer solution for you;
- 4, where the company product warranty scope, such as non-artificial reason damaged, belong to the product itself quality problem, the company will timely according to your request for a refund, replacement or repair;Such as damage caused by man-made factors, enjoy life-long free maintenance (including material cost), the buyer should will products sent to qc inspection company, produced by postage borne by the buyer;

About us



哈尔滨极趣客科技有限公司
Harbin Greatest Interest Maker Technology Co.,Ltd

Web: www.ruiolongmaker.cc

Add: No. 52 Diantan Road Xiangfang District, Harbin City, Heilongjiang Province, China

Tel: +86-0451-55132154 +86-13836123892

E-mail: ruiolongmaker@163.com