A brief Introduction to Mixly

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2016.3

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Introduction

Mixly, also known as Mixly_Arduino, is an open source graphical programming software. It is developed by Professor Fu Qian and his team from School of Education Technology of Beijing Normal University. With the development of maker culture, there are more and more new products for STEM education, especially in K-12 education. In order to help more students to learn programming, Professor Fu and his team create the software, which is one of the most popular graphical programming software in China.

As we all know, we are increasingly put a high value on STEM(Science, Technology, Engineering and Mathematics) Education. Programming has been more and more popular in senior high school or even primary school. Scratch is a typical successful case and the graphical programming becomes a fashion and an easy way to teach programming. Although the traditional programming languages such as C, C++ and Java are great languages, they are too difficult to understand for students or kids. The most valuable advantage of graphical language such as Mixly is very interesting and easy to learn programming. Our concept is “learn by doing, learn by playing”. Mixly is a pioneer in the graphical programming software in China.

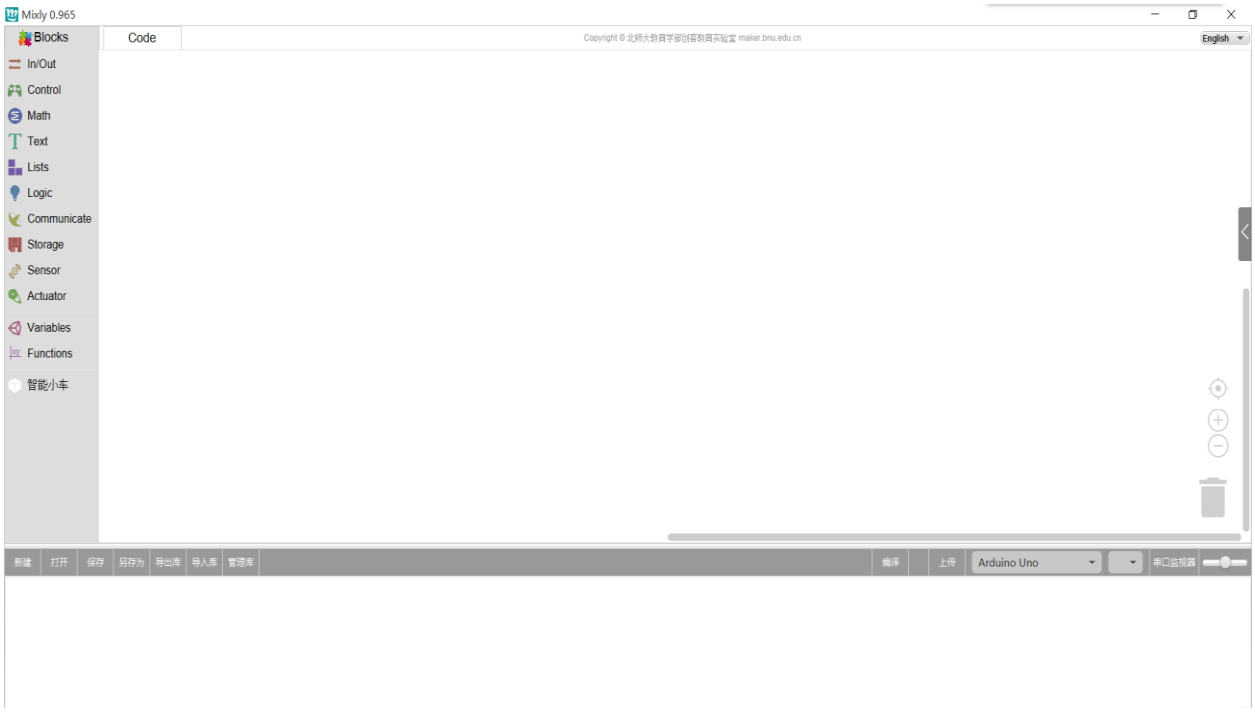


Figure 1The main interface

Function

1. Powerful Programming function

Users can select the graphical programming interface and also can select the text code programming interface. Programming is the basic function of Mixly. We can write our code by dragging blocks.

The basic modules are digital input and output, analog input and output, interrupt control, time delay, conditional structure, loop structure, acquisition time, using array, logic computing. The advanced modules are sensors such as ultrasonic sensor, infrared transducer and so on. We can also define functions, create variable, play musical scale even play a song as long as you finish the programming using the scale.

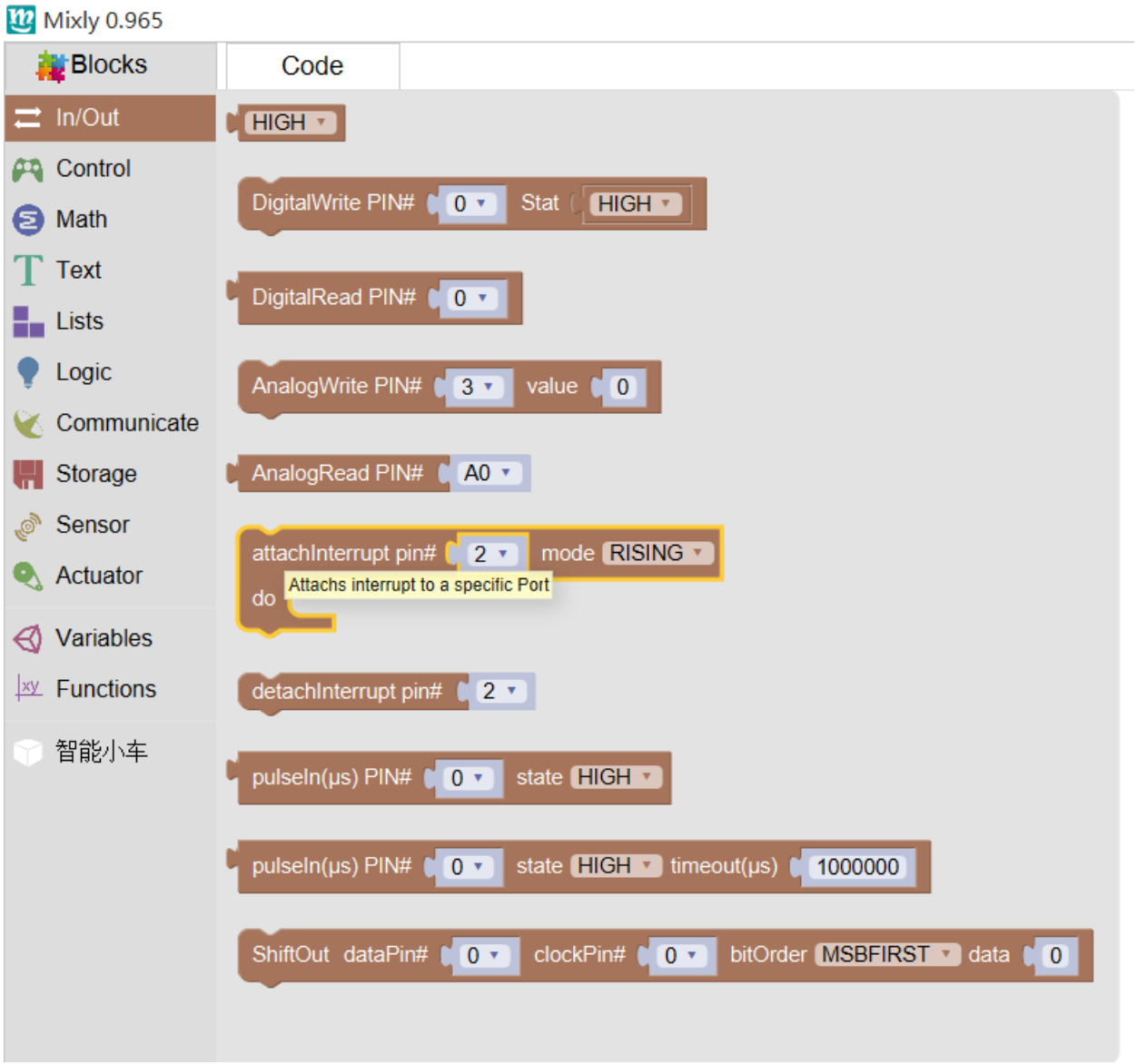


Figure 2Input and Output Blocks

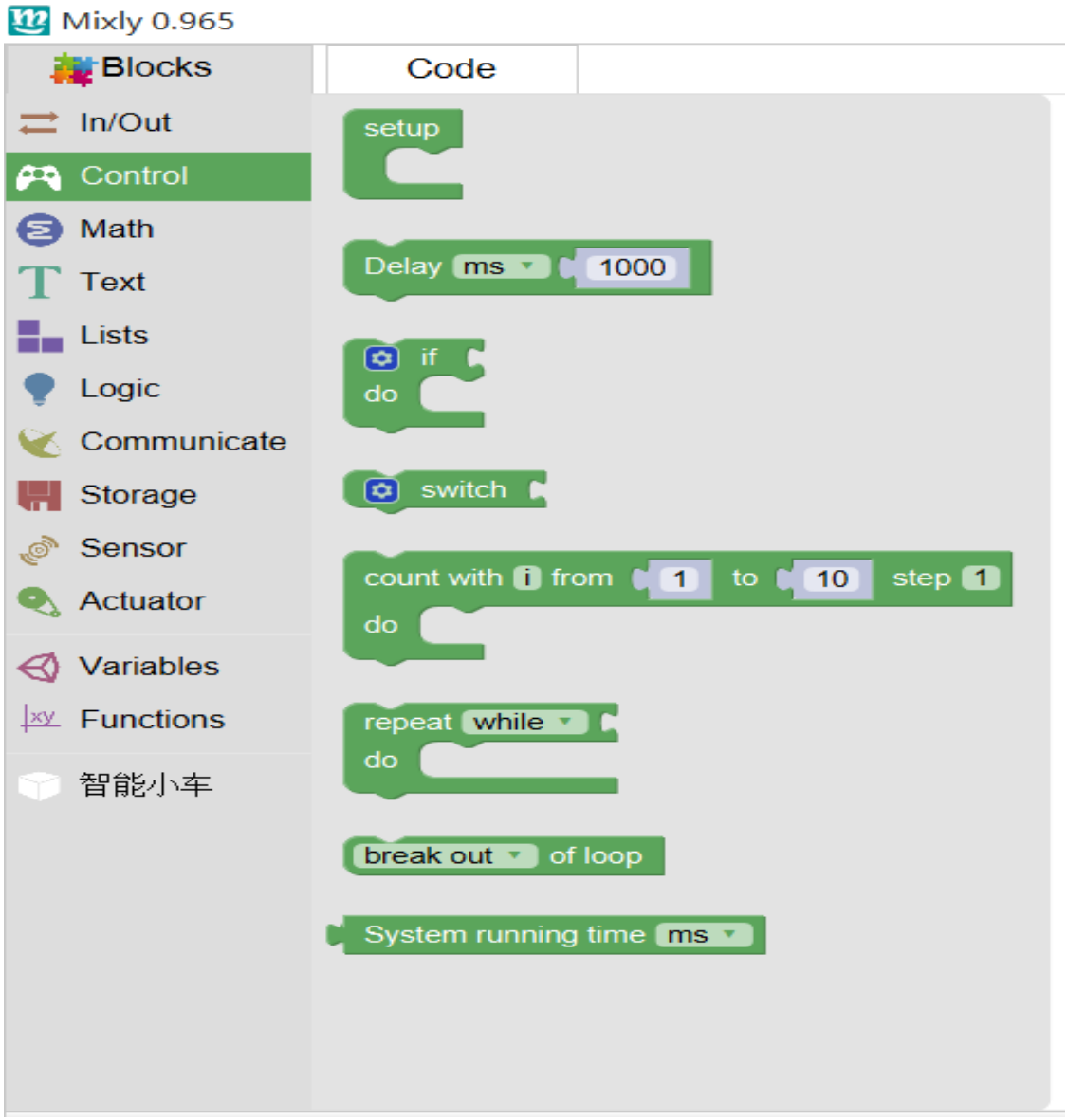


Figure 3 Control Blocks

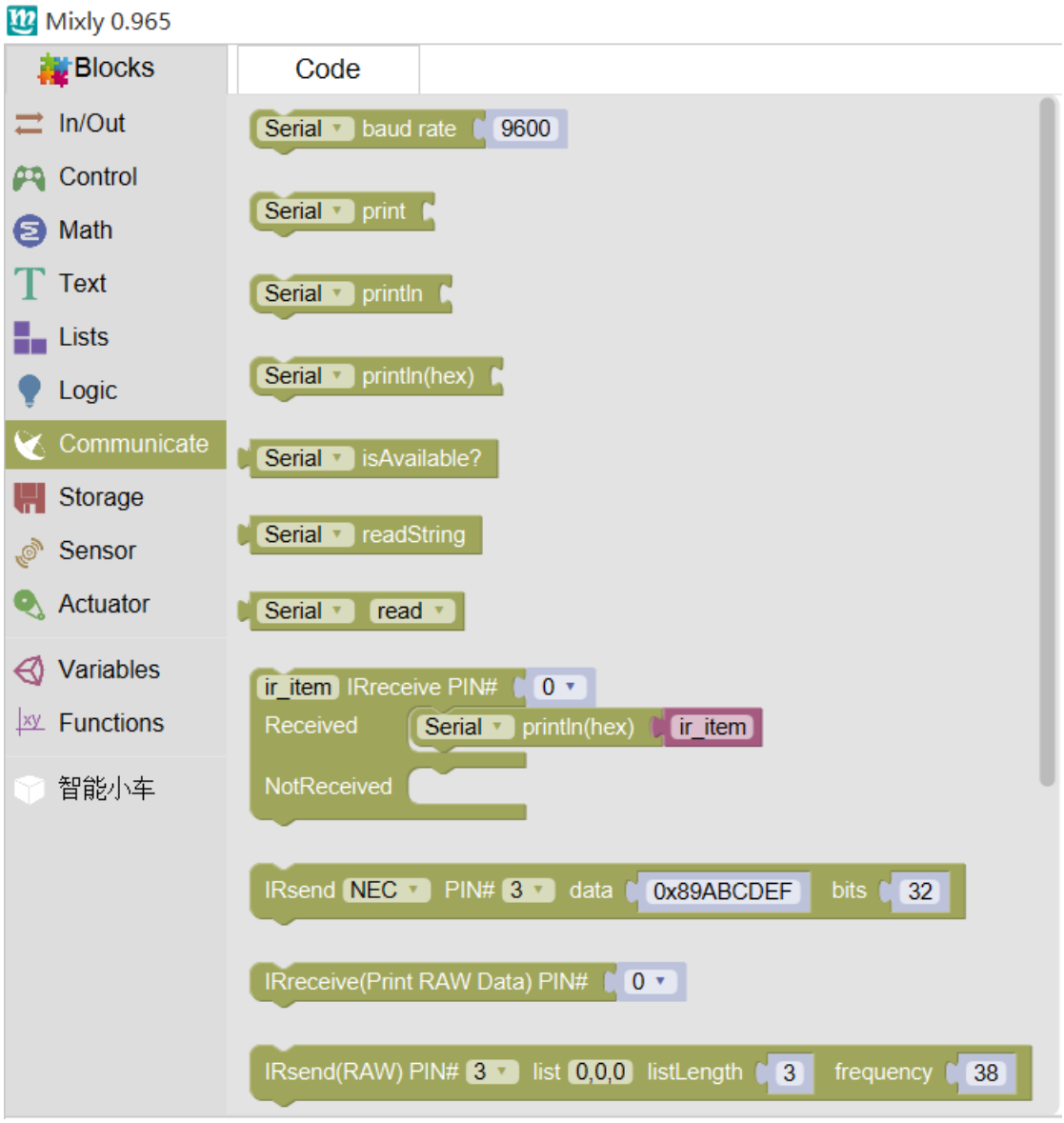


Figure 4 Communicate Blocks

2. Supporting extensions

Mixly is an open source software and it is also support extensions such as DFROBOT, MAKEBLOCK and so on. We can use the extensions provided by DFTOBOT to help us realize more functions.

3. Handy compilation and Uploading

Users can click the “Compile” button to compile the program. Click the "Upload" button in the Mixly interface to complete the process of uploading work.

4. Code Open and Save
   Users can "Open", "Save" or "Save As" graphical code.

5. Zooming Interface
   we can freely adjust the screen zoom, which is much easier for tablet users.

6. Import and export modules
   Graphical programs can be exported or imported, which is convenient for users to call and integrate graphical code

7. MPU choice
   Mixly support all the Arduino board, which is convenient to choose hardware.

Characteristic

1. Simple user interface

Graphical programming approach greatly reduces the technical threshold of programming, graphical programming software has become an indispensable tool for programming in Arduino student users, such as after repeated revision of the Arduino IDE graphical programming plug Ardublock.

Mixly has the simple and friendly user interface. It is not only pretty but also very easy to make programming. If you want to do a loop structure, you don't need to write "for sentence" in many lines code as Language C, you can just drag the "for blocks". It is so easy that as long as you have basic logic, you can do programming, avoiding complicated code.

2. scalability programming features

Mixly is an open source software and it is also support extensions such as DFROBOT, MAKEBLOCK and so on. We can use the extensions provided by DFTOBOT to help us realize more functions.

3. Rich graphical programming module

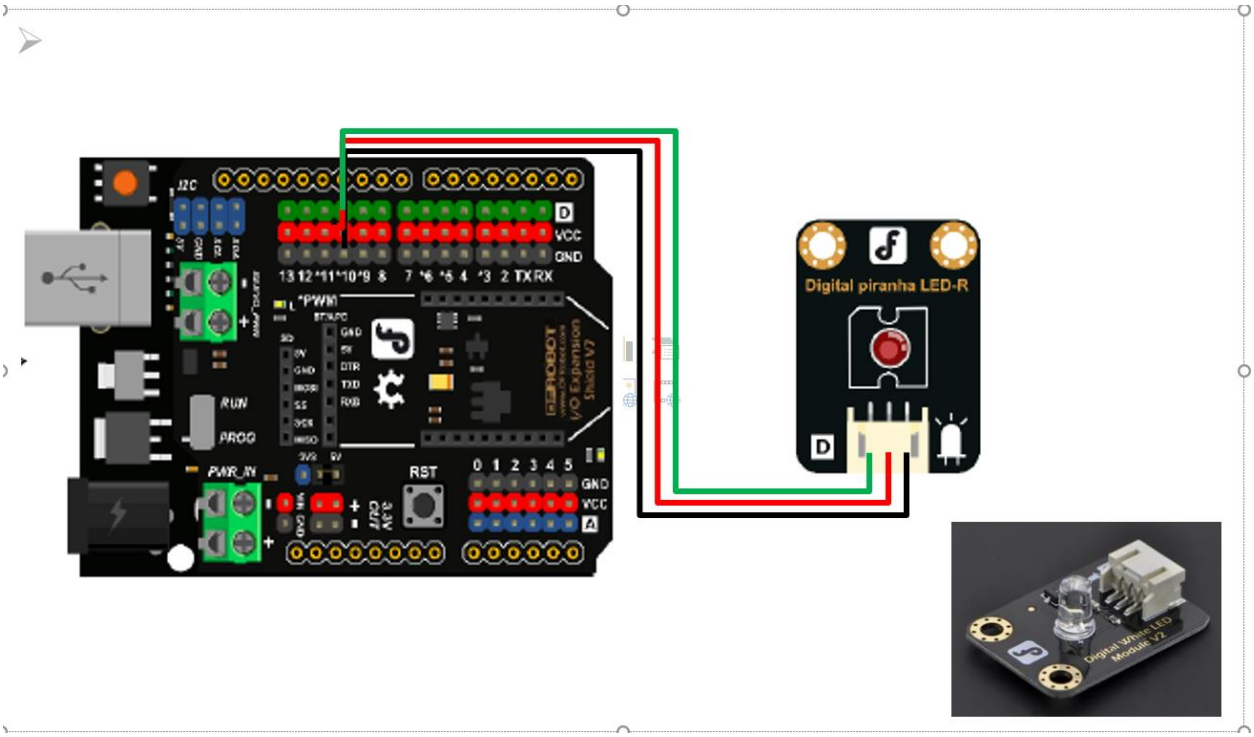
Using the Mixly, you can not only do basic input and output function but you can also have more advanced modules such as ultrasonic sensor, infrared transducer and so on. We can also define functions, create variable, play musical scale even play a song as long as you finish the programming using the scale.

Simple cases

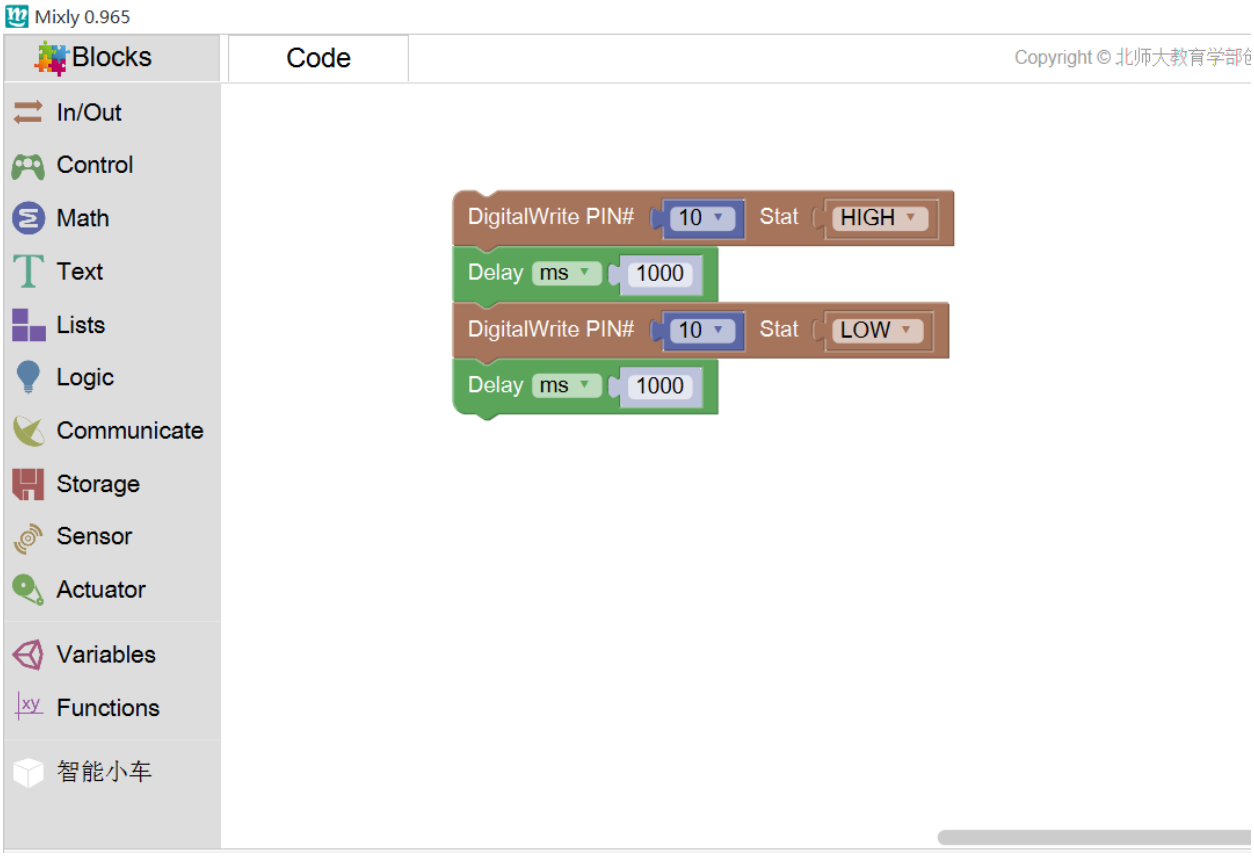
1. Hello World

“Hello World” is our first case. We use Arduino UNO and mixly to light LED.

First, we should connect the UNO with LED according to picture as following:



Then, we start the first program:



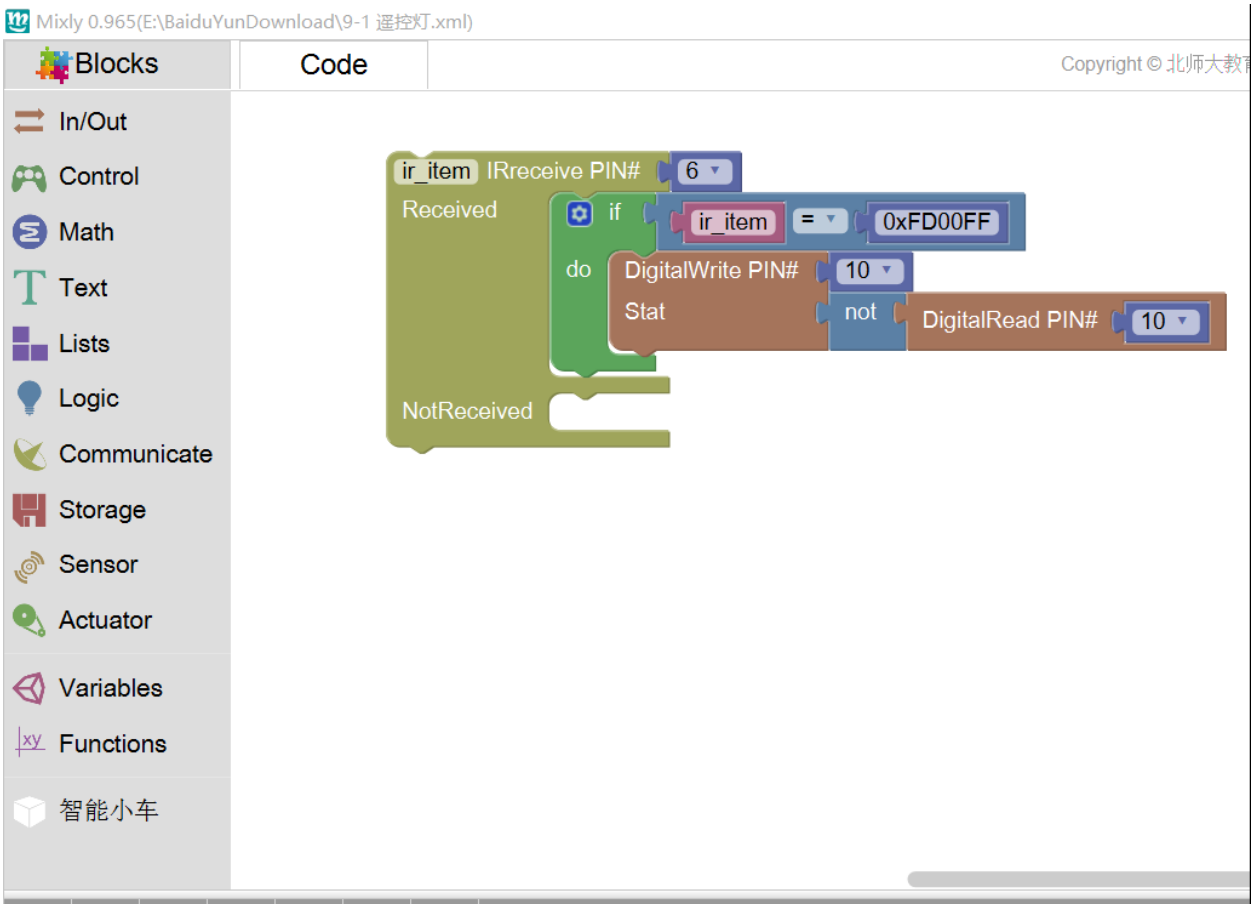
We just need to drag the blocks and connect them.

Click the “compile” and ”upload”, you will find your LED be lighted.

2. Remote Control Lights

We can use the remote control to control LED.

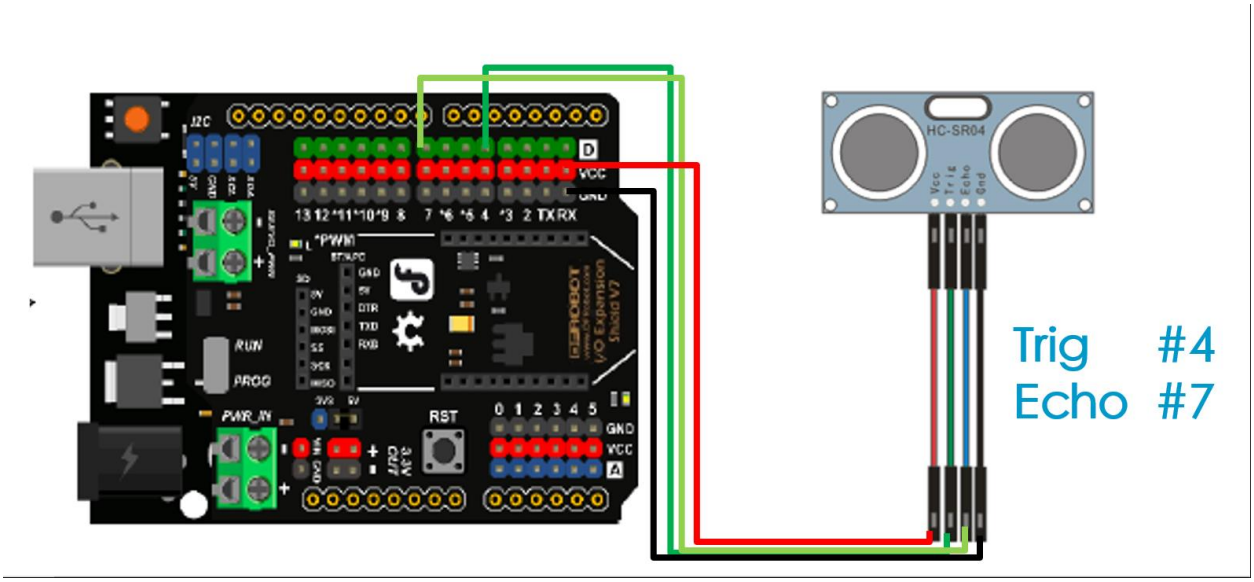
First, we connect the remote control to the Arduino UNO with an infrared remote control module, which can connect the UNO with the remote control. And then we drag blocks as following. Then we can realize a remote control light, whose brightness and on/off can be controlled by the remote control.



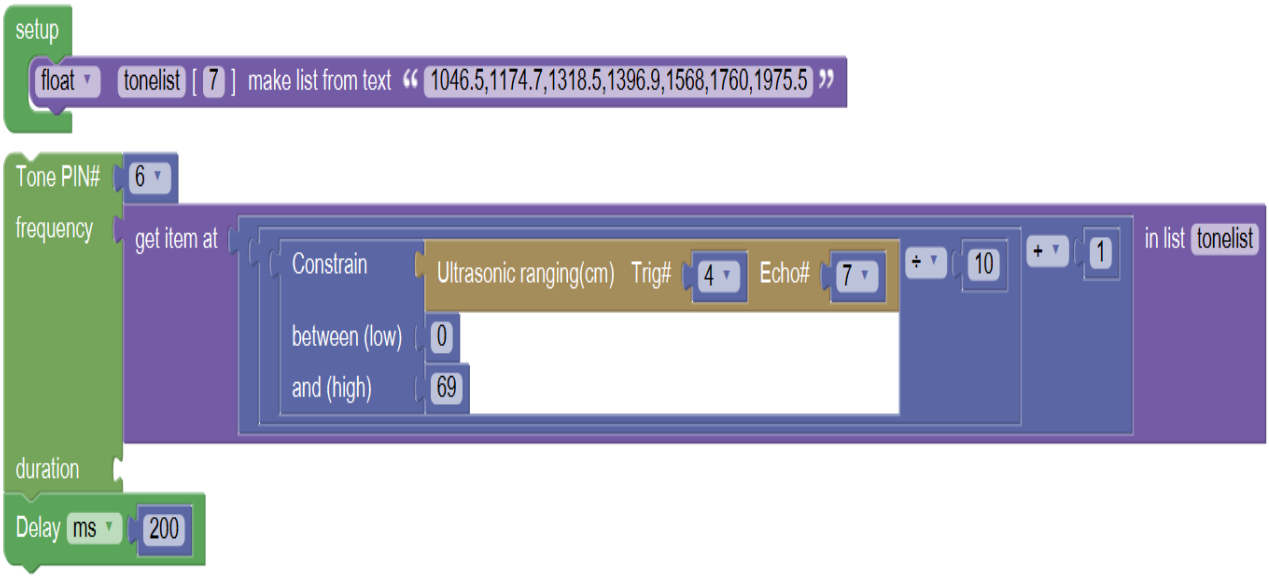
3. An Interesting Keyboard

We also can use mixly and buzzer to create an interesting keyboard.

First, we connect the UNO with buzzer as following:



The programming code are like this:



Then we can let the buzzer play music scale depended on the distance, which is detected by the distance sensor.