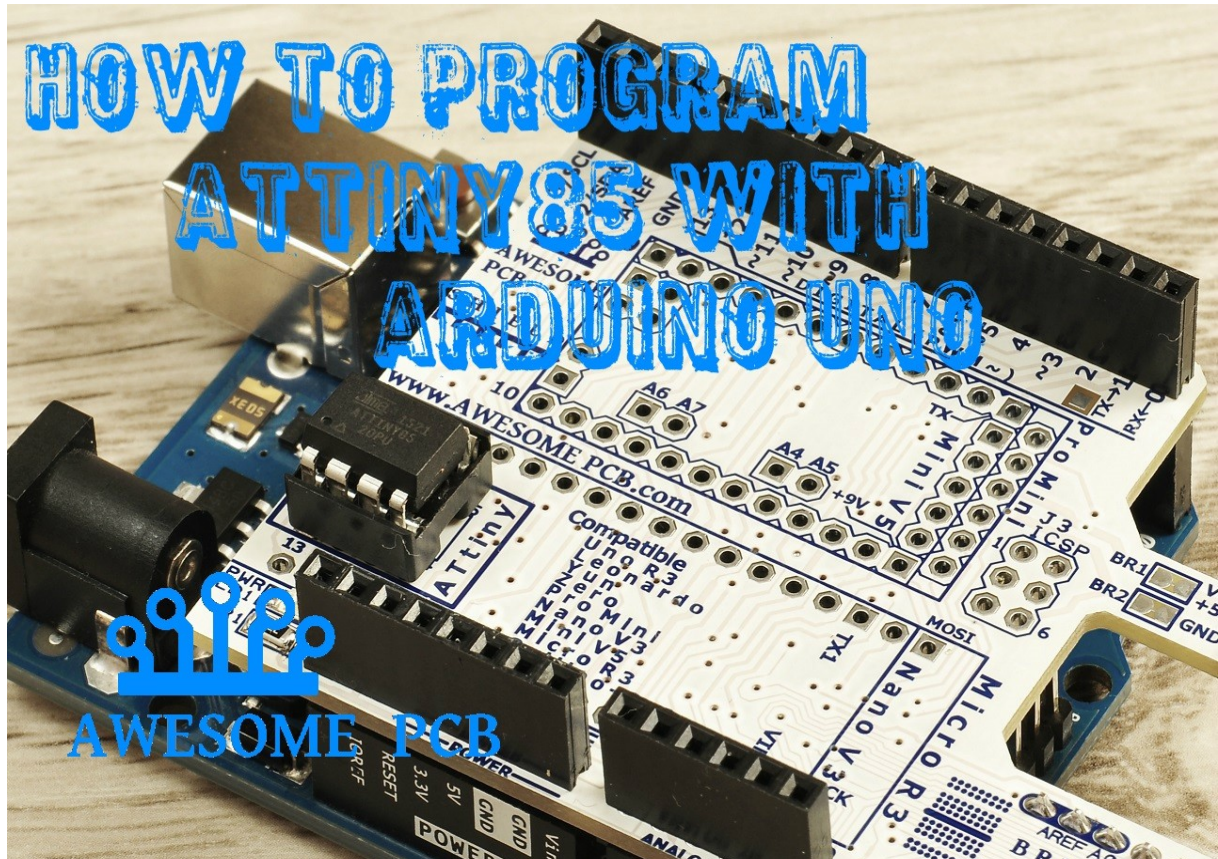**AWESOME PCB**

How to program Attiny85 with Arduino UNO in most easy way

Step by step tutorial, with no steps to skip by Awesome PCB.

Step 1 - What do we need?

Step 2 – Connecting Arduino boards with ArduShield and ATtiny85

Step 3 – Setup Arduino IDE

Step 4 – LED setu up on bread board

Step 5 – Programming and veryfiacation

Step 6 – Additional tips hot to improve your experience with Arduino and ArduShield
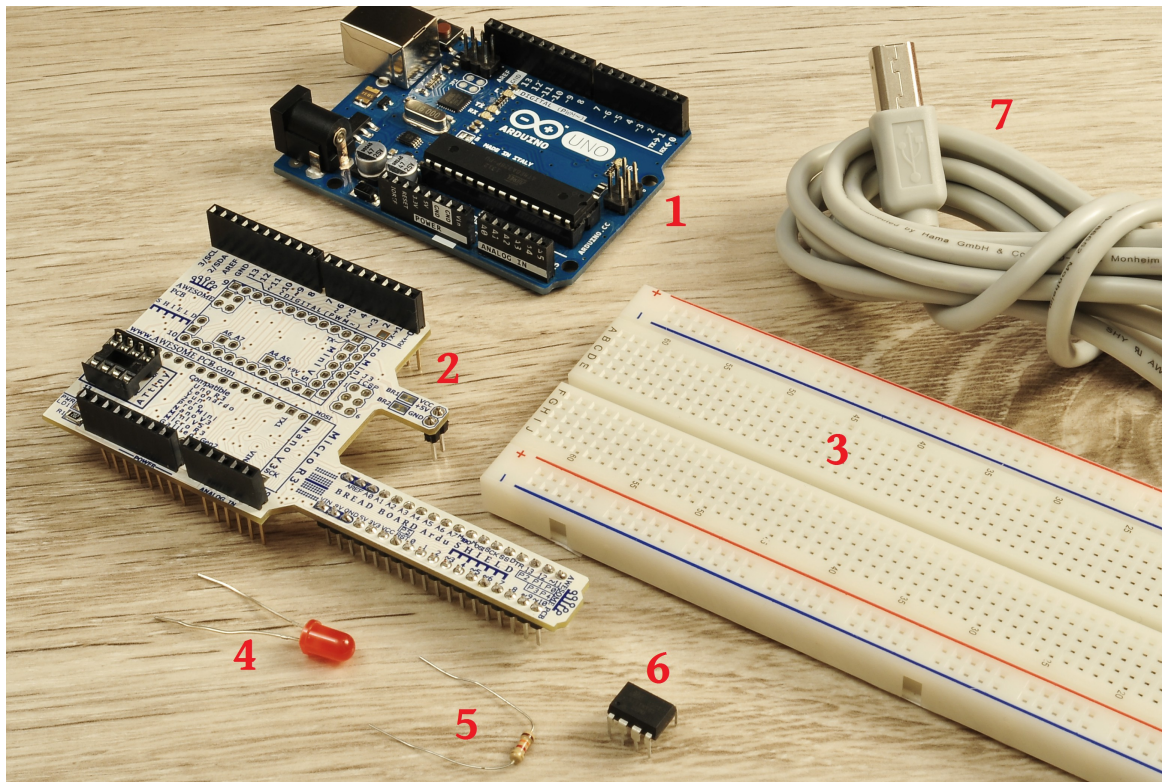
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Word of introduction

As it is known, we can program ATtiny25/45/85 with Arduino UNO. Thear lot of way to do this. You can connect Attiny85 to Arduino UNO via cables, but there is an easier way to do this.

Than main target of this instructable is to show you how to do this with low effort and with only USB cabel.

Step 1

What do we need?

1. Arduino UNO (could be also Arduino Micro or Arduino Nano).
2. ArduSHIELD – most universal shield for Arduino boards.
3. Bread board.
4. LED to check result if everything is working fine.zz
5. Resistor from the range 220R to 2k – current limiter for LED.
6. ATtiny85
7. USB B cable (depent what type of Arduino board you will use)
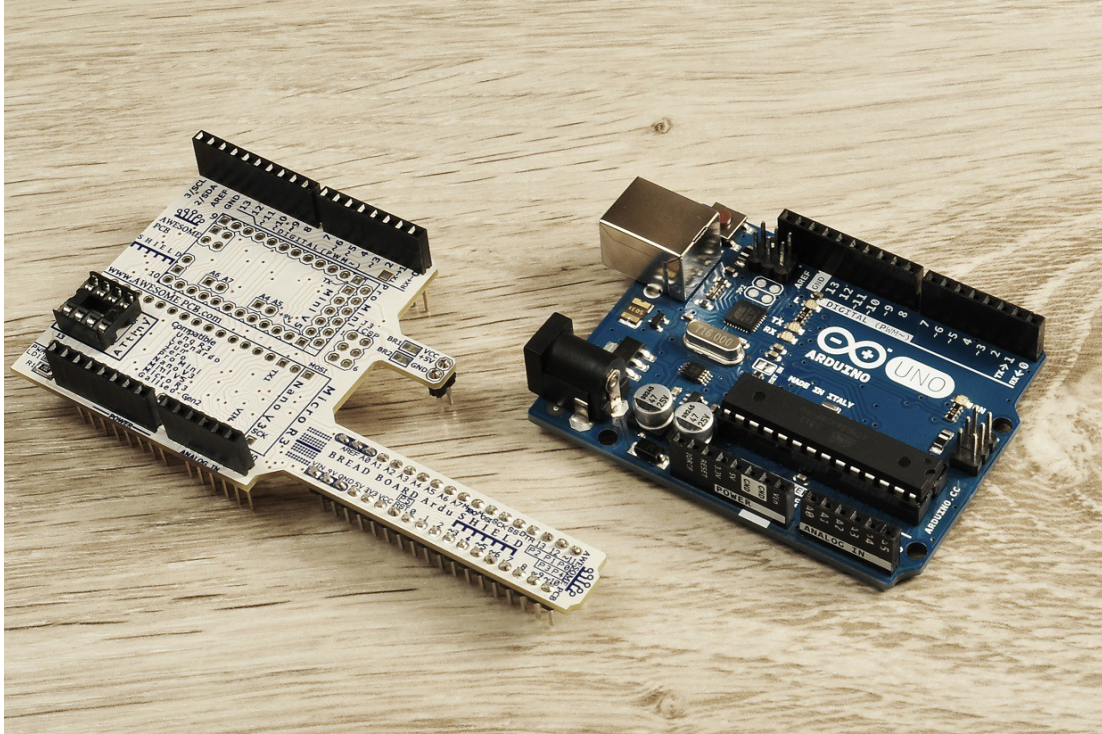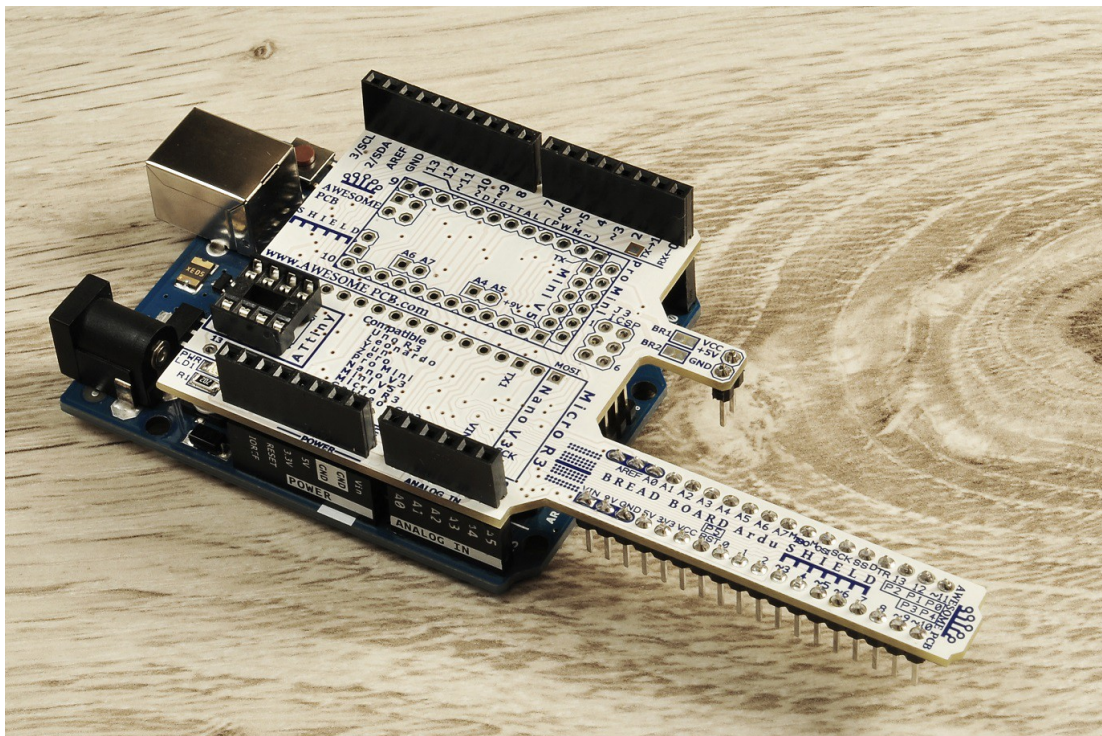8. Arduino IDE

Step 2
Connecting Arduino boards with ArduShield and Attiny85
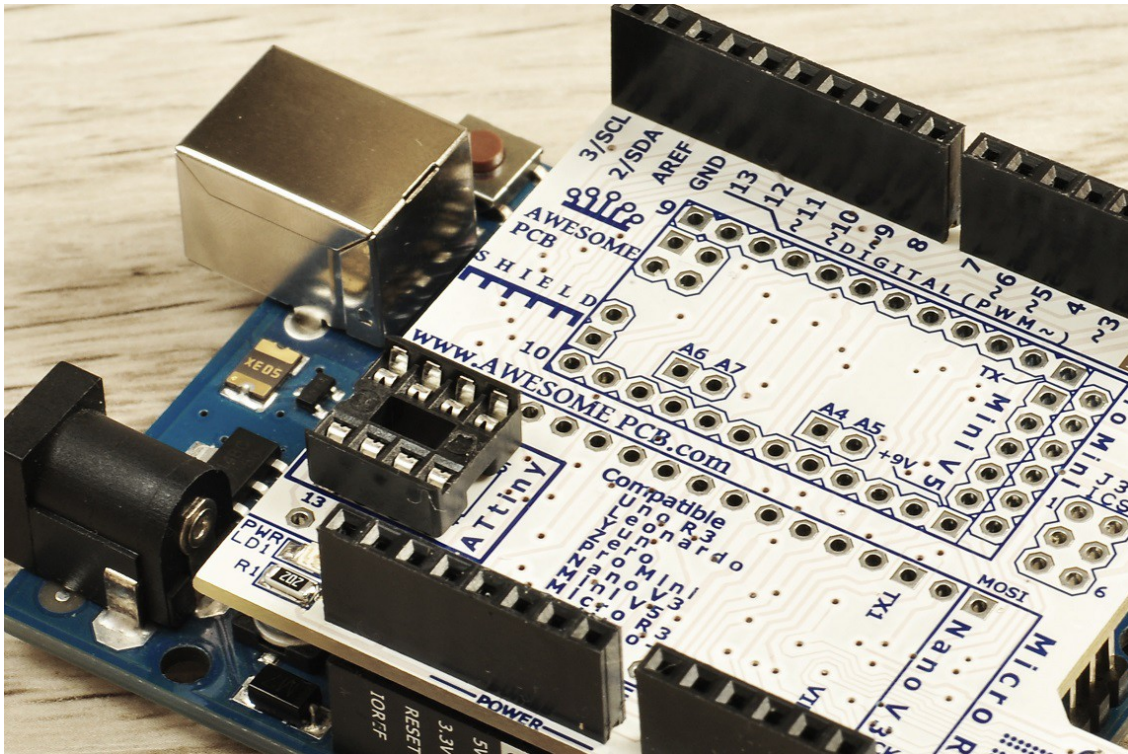
Connect ArduShield with Arduino Uno board.

Put the ArduShield on the Arduino Uno and press down gently up to the point where it stops.
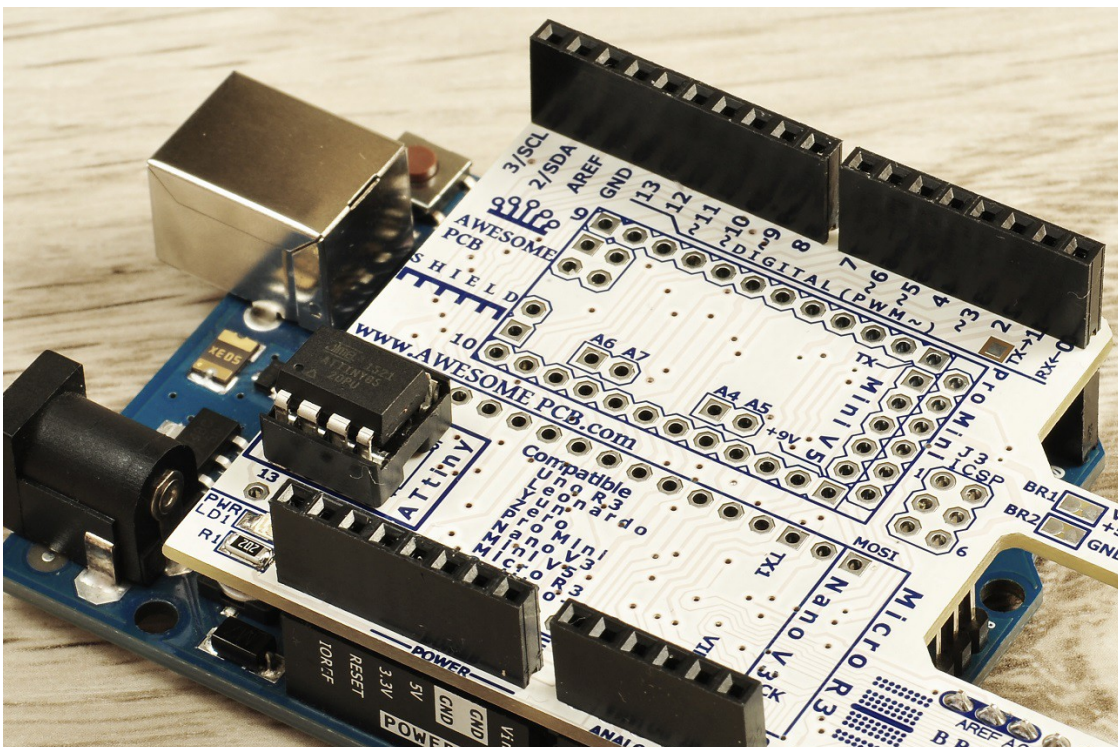
ArduShield have dedicated socket for programming ATtiny85.

Now it is time to place ATtiny85 on socket.
Make sure that pin 1 of the ATtiny85 will be placed properly on ArduShield.
Place Attiny85 on ArduSHIELD, and press down gently ATtiny85 up to the point
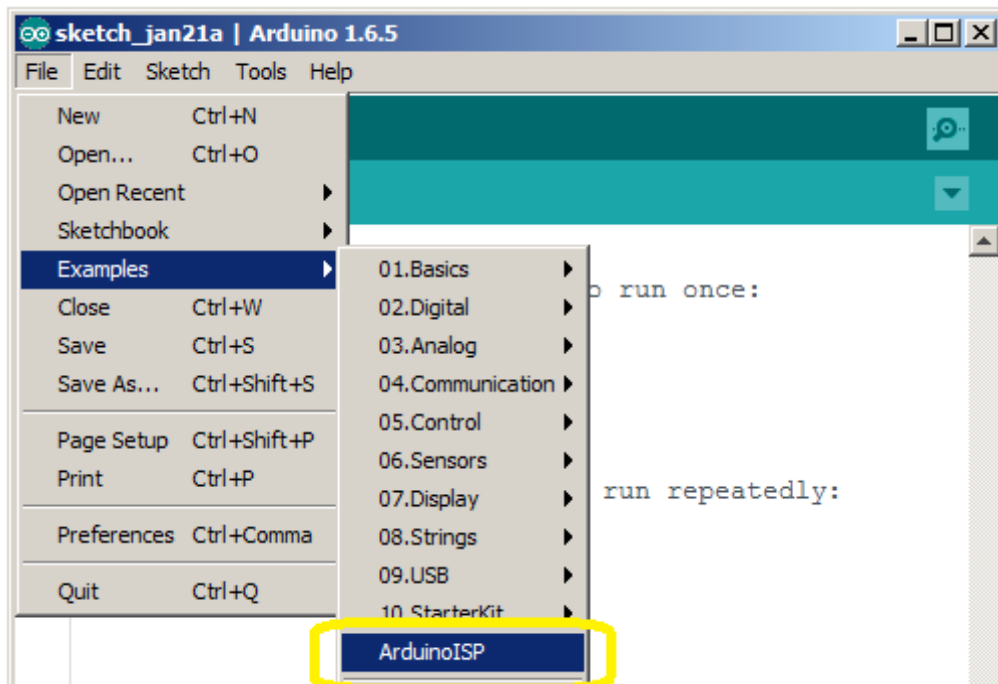where it stops.

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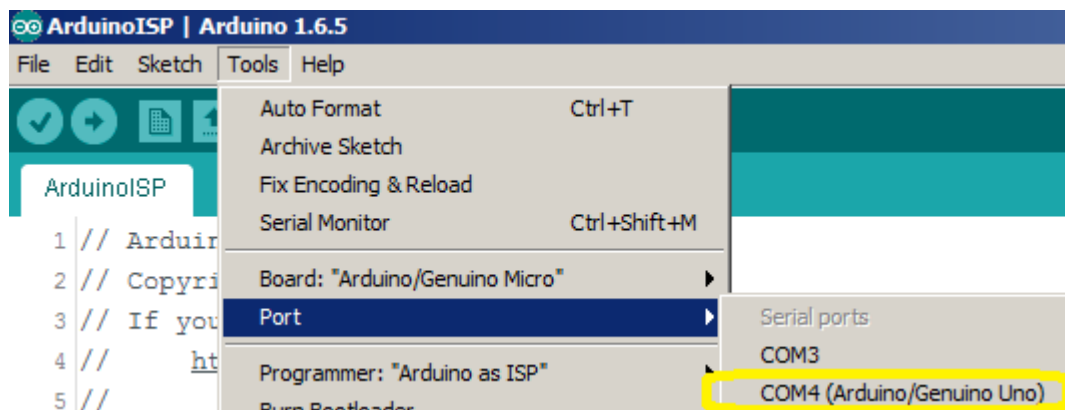
Step 3
Setup Arduino IDE

Now when you are ready with hardware, it's time to configure the Arduino IDE.
Open Arduino IDE.
First we need to setup Arduino UNO in ISP programming mode
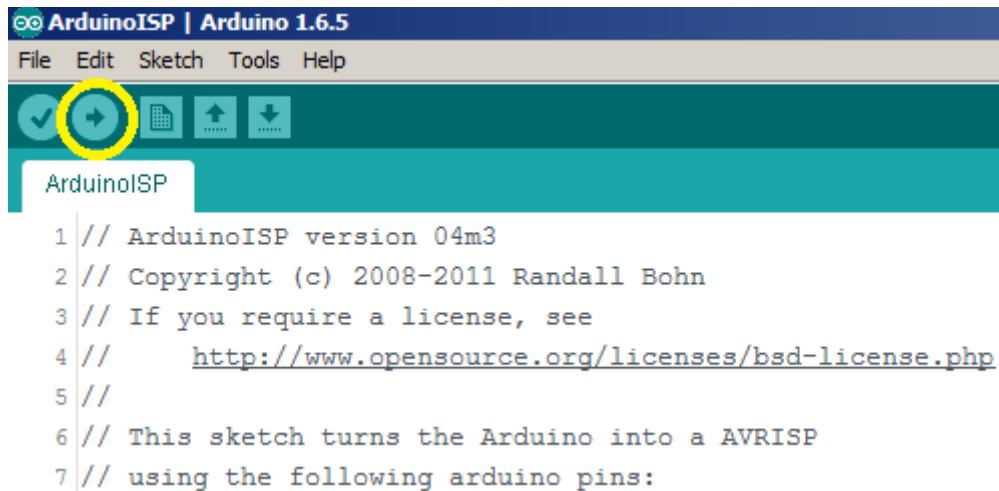Go to top toolbar and open **File > Examples > ArduinoISP**
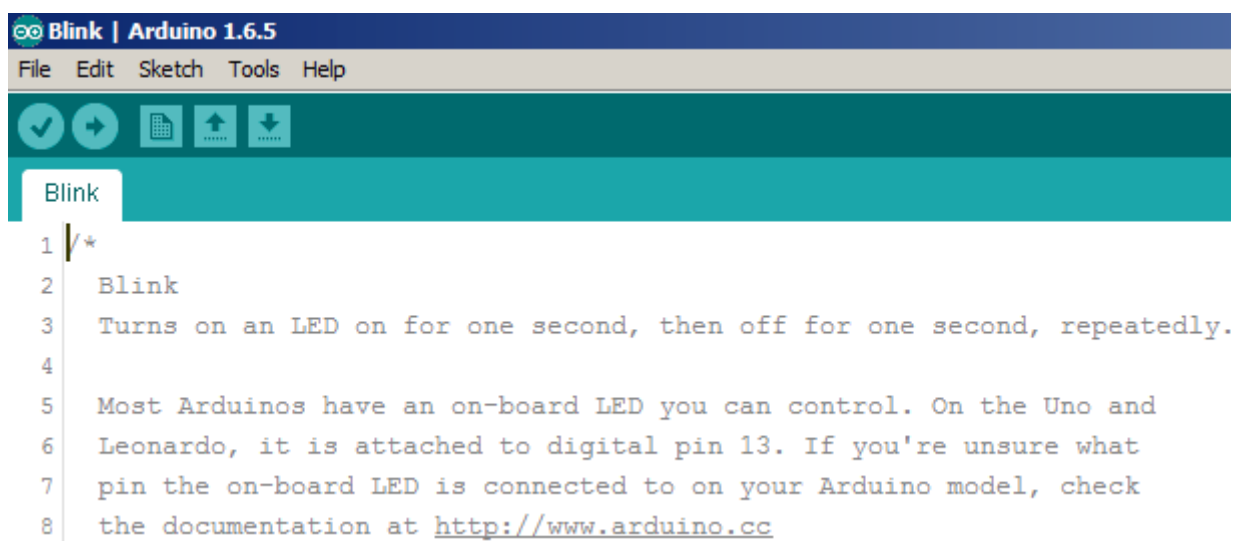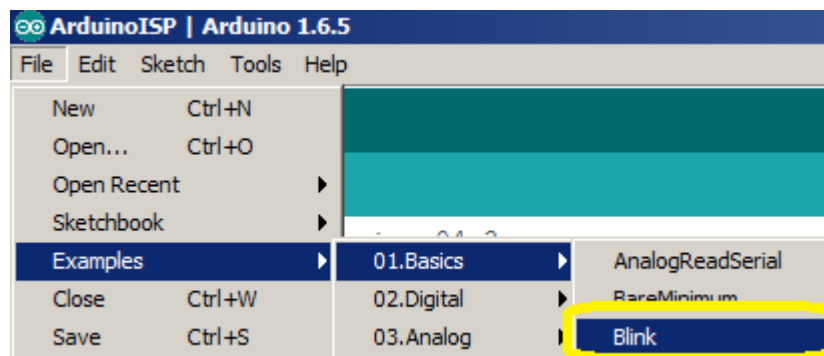
Second set up comunication chanel between PC and Arduino

Upload (**Ctrl+U**) program to Arduino UNO

Now open classic Arduino blink LED sketch.

Now make small modyfication in the code.

Blinking sketch is connected with **pin 13** of Arduino Uno. We need to change this.
ATtiny85 have only **6 I/O** pins, so instead of **pin 13** setup **pin 0**.

```
17  // the setup function runs once when you press reset or power the board
18  void setup() {
19    // initialize digital pin 0 as an output.
20    pinMode(0, OUTPUT);
21  }
22
23  // the loop function runs over and over again forever
24  void loop() {
25    digitalWrite(0, HIGH);   // turn the LED on (HIGH is the voltage level)
26    delay(1000);              // wait for a second
27    digitalWrite(0, LOW);    // turn the LED off by making the voltage LOW
28    delay(1000);              // wait for a second
29  }
```

Save your sketch in convinient place on PC drive(**Ctrl+Shift+S**)
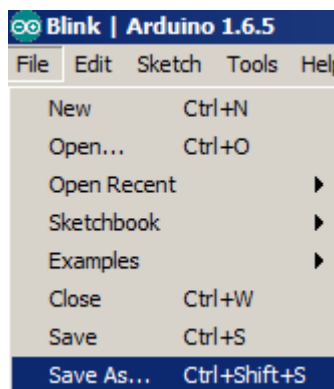
Now go to top toolbar and set up proper ATtiny85 like a target device
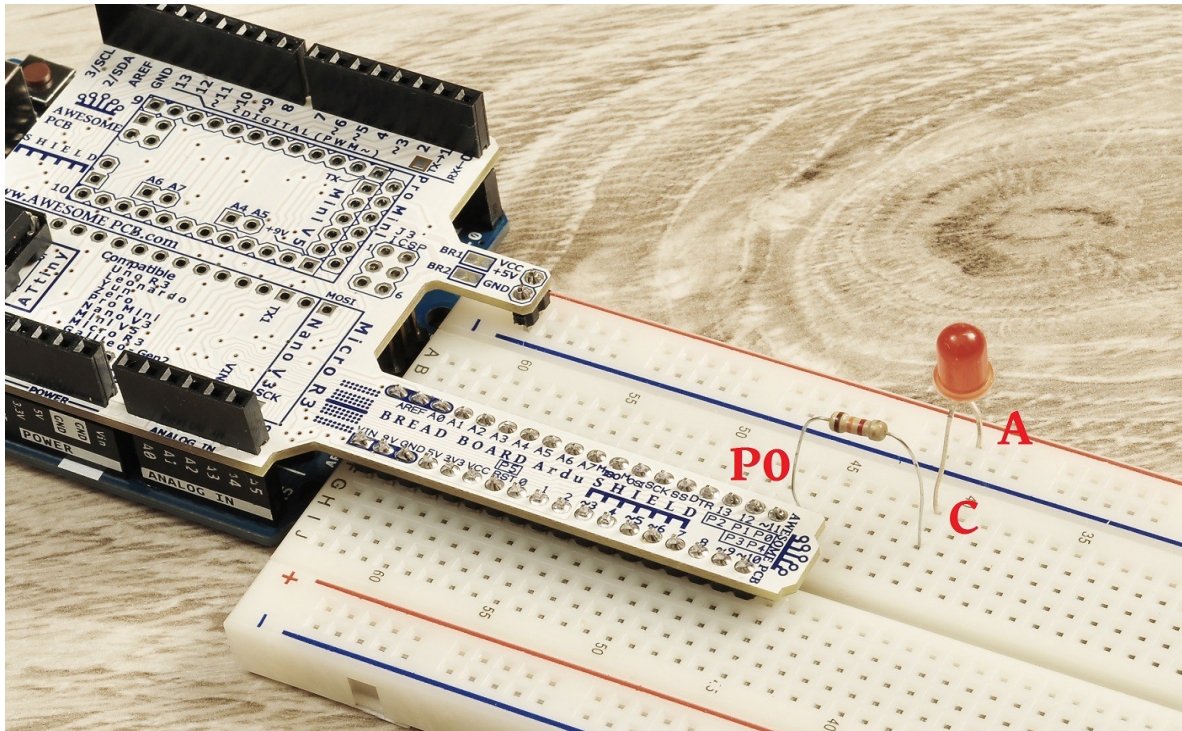**Tools > Board > ATtiny85**
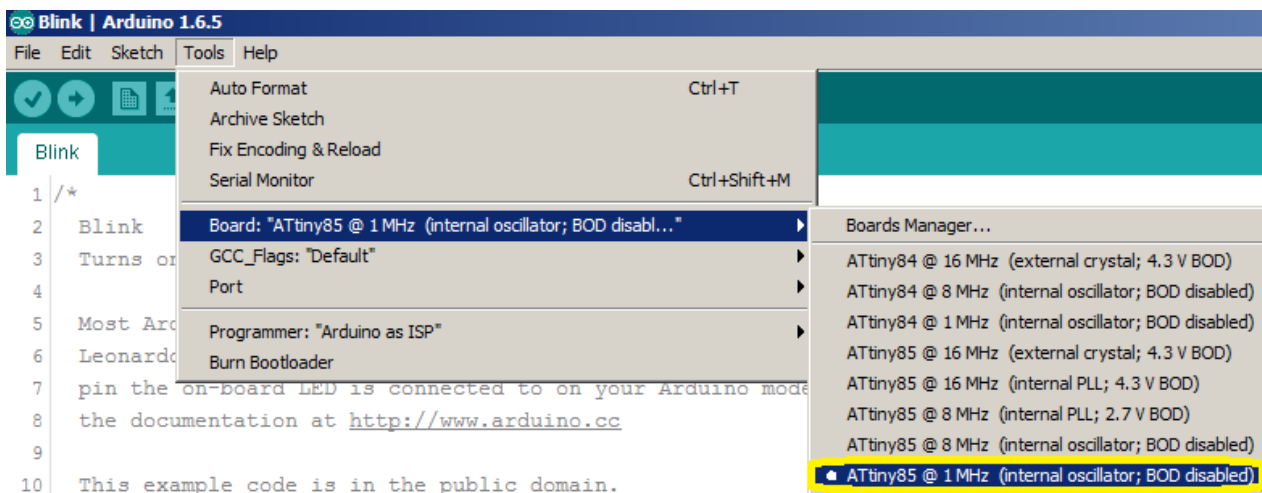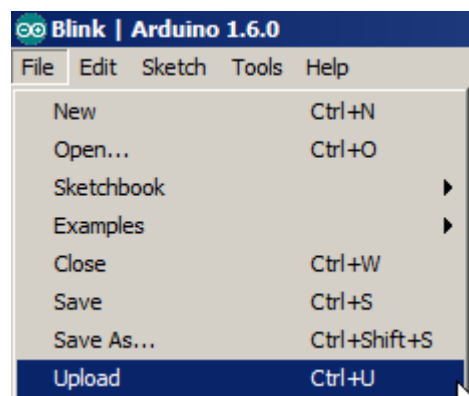
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Step 4
LED setu up on bread board

Place LED and resistor like it is shown on the picture.

Step 5
Programming and verification
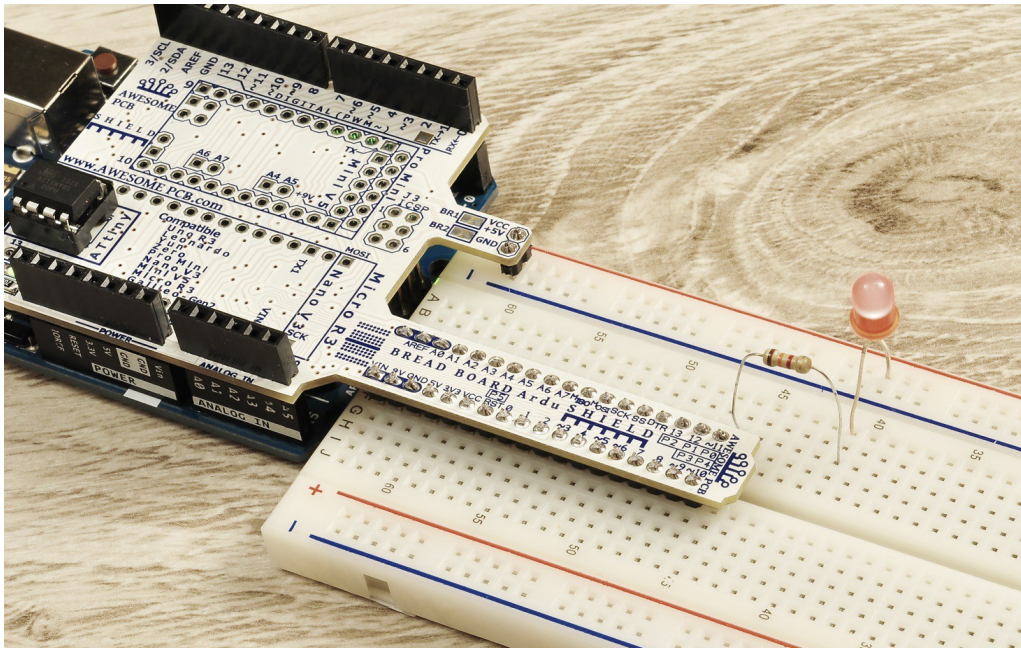
Up load to (CTRL + U)

After successfully uploading a program to **ATtiny85** level of digital pin **4** shoud change with frequency ~1sec. LED shoud blink.

Step 6
## Additional tips how to improve your experience with Arduino and ArduShield

ArduShield it is most versatile development shield for most popular **Arduino** boards like a **Arduino UNO R3, Mini, Pro Mini V5, Nano V3, MicroR3, Leonardo, Yun, Zero, Galileo Gen2** and many other derivative boards created by great community of people.
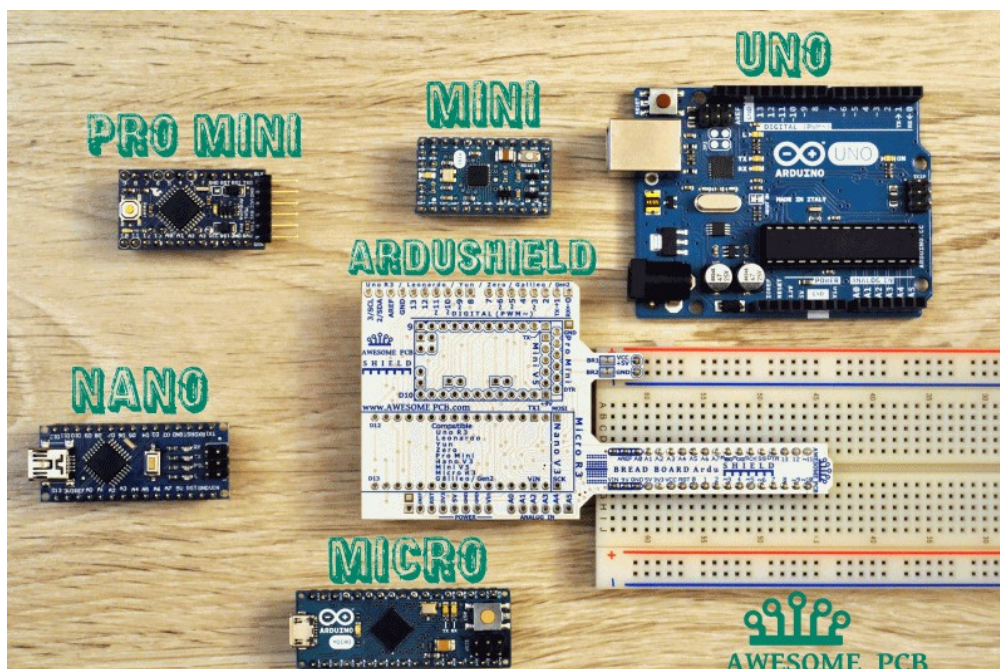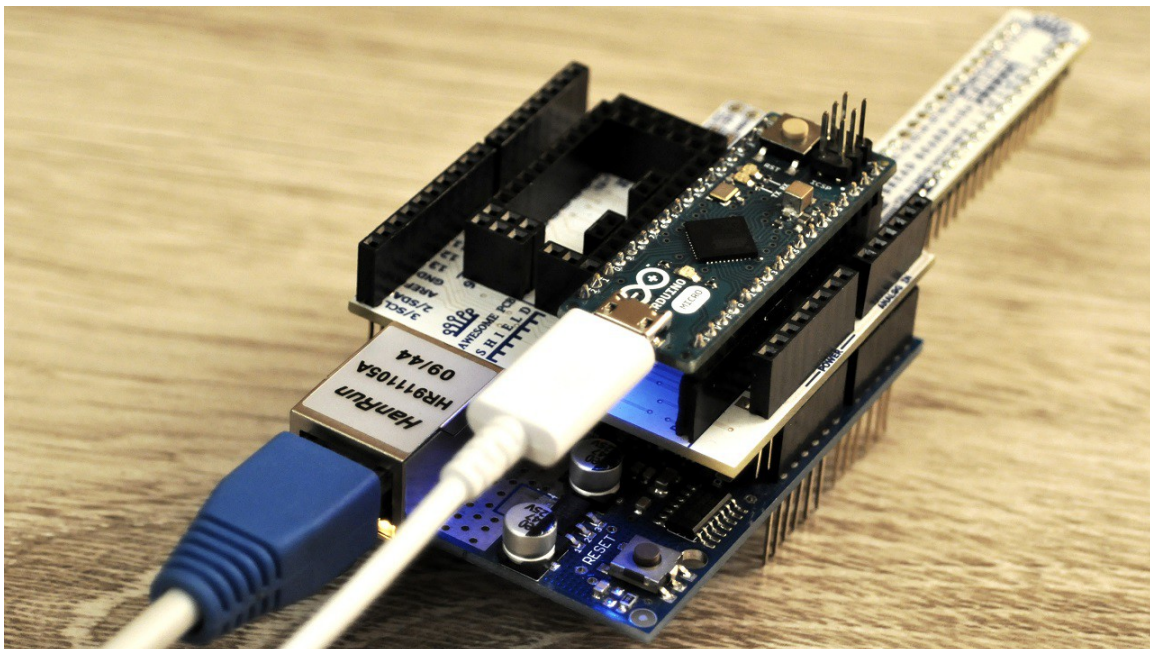
Tip 1.

How to save space on bread board with ArduShield and get immediate access for pins Arduino UNO, Nano, Mini, Micro, Pro Mini and other derivative boards.
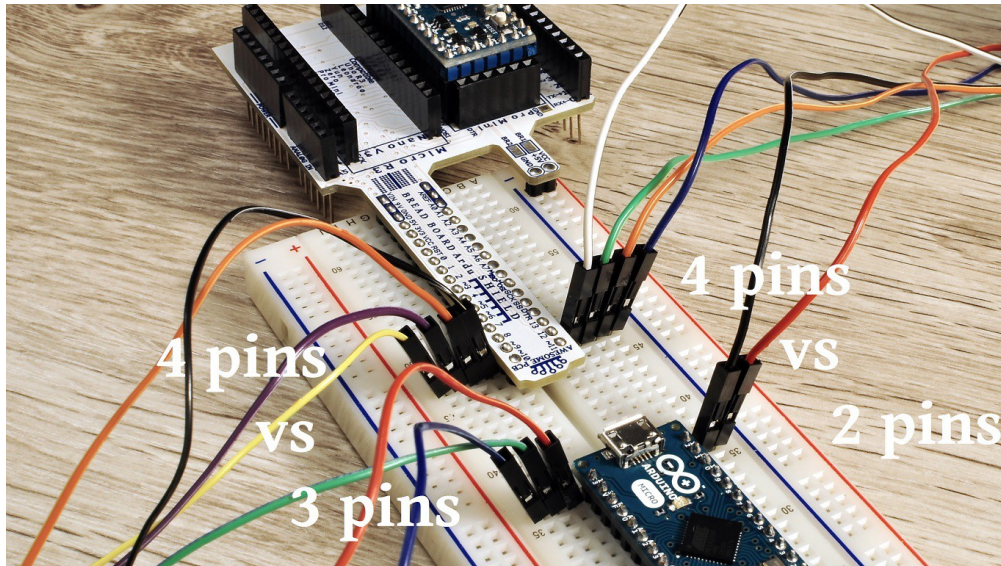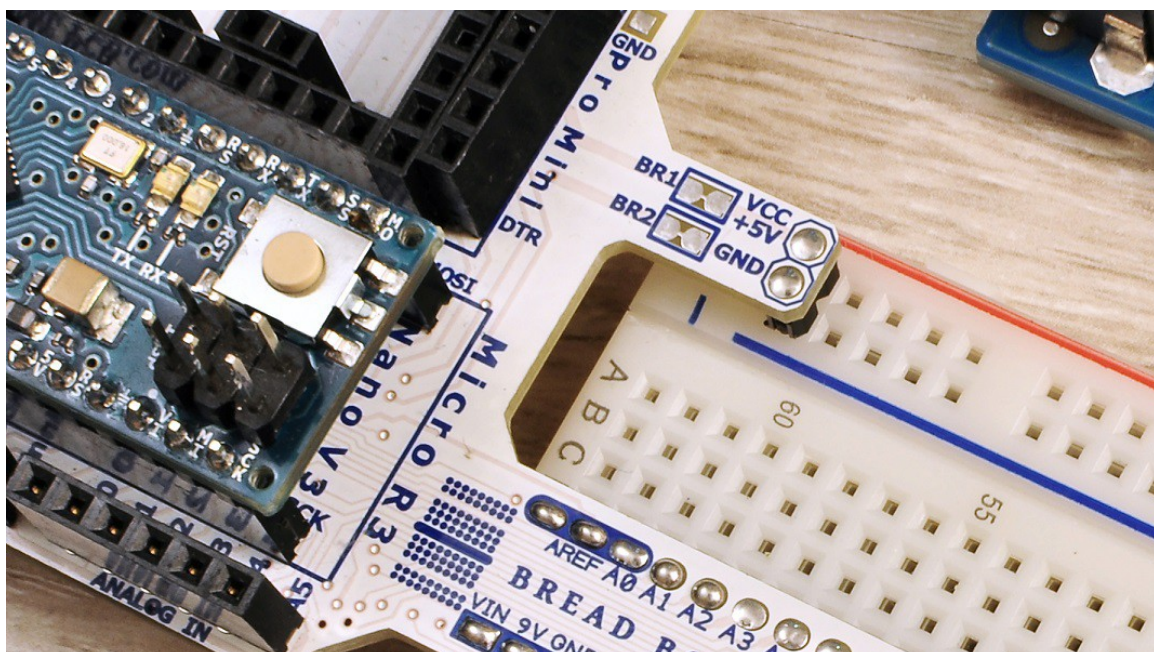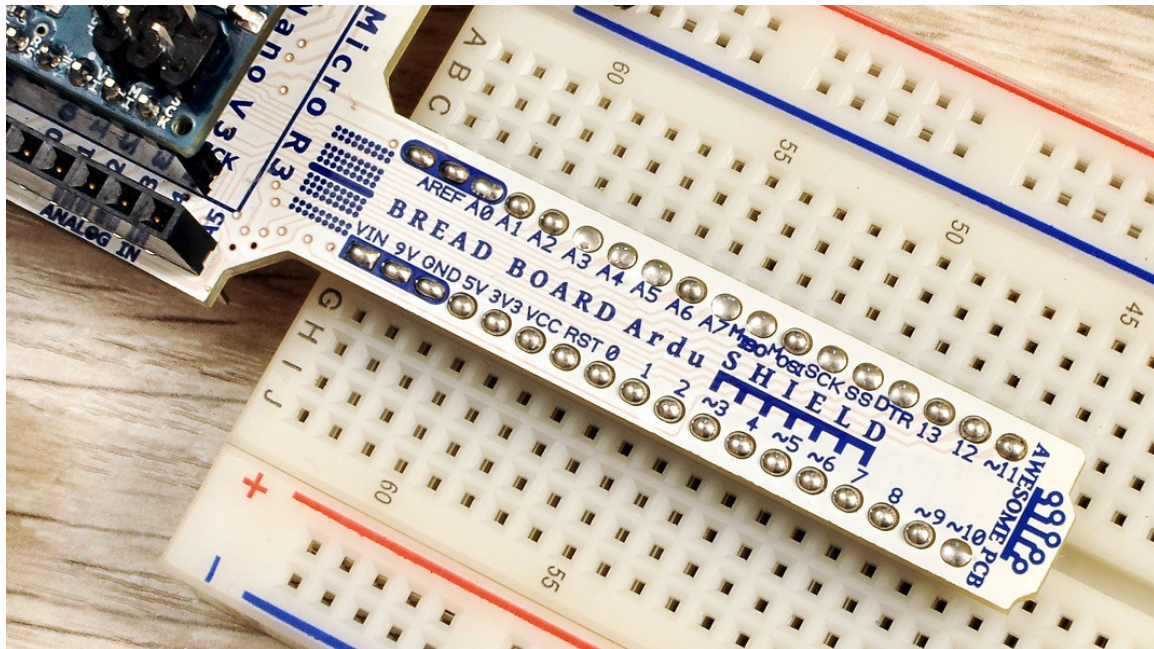

Tip 2.

Use Arduino Micro and other Arduino with other shields
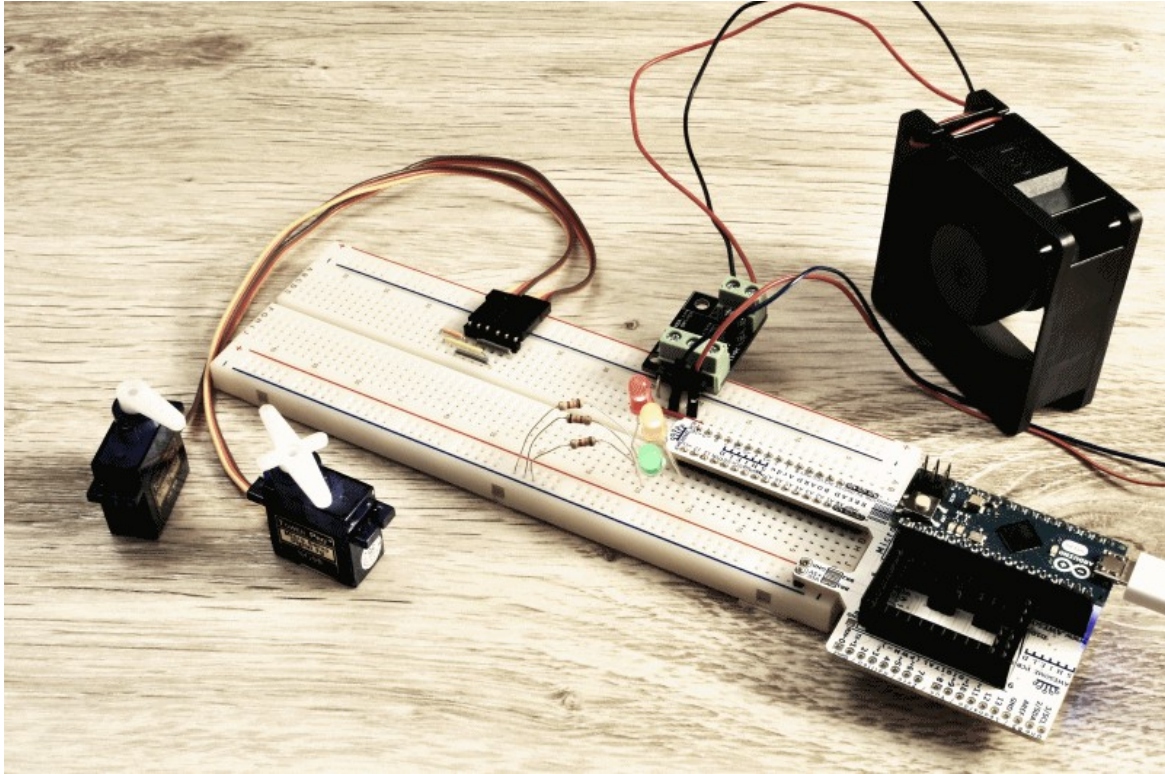
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Tip 3.

Move Arduino pins and power supply to bread board

Tip 4.

Develope two prototype on one bread board with ArduShield

Check rest of the great feature about **ArduShield** here.