

1 SOFTWARE INSTALLATION

We will need software listed below:

1. **Arduino IDE** is basic “development environment”
2. **Robduino** library for easier programming
3. **Ardublockly** is needed for introduction to programming
 - **Python** is needed for running Ardublockly
4. **VSC in PlatformIO** proper IDE include:
 - auto-completion,
 - error marking (e.g. forgotten ";"),
 - auto-detect USB port,
 - function information

1.1 Arduino IDE

1. Go to Arduino web page Arduino->Software->**Download**.
2. Download **Arduino IDE 1.8.9** choose **Windows Install...**
3. ... click **JUST DOWNLOAD**.
4. run **arduino-1.8.9.exe** and follow the instructions.
5. ... don't forget to install also 3rd party drivers (for Chinese version of Arduino UNO controller)...
6. if you do forget... Try this **Russian drivers** from **page**.

1.1.1 Getting started

1. Run **Arduino IDE**
2. Connect Arduino Uno controller to USB port.
Arduino Uno
3. Open simple basic program:
files -> examples -> 01.basics -> blink

```
1 void setup() {
2   pinMode(LED_BUILTIN, OUTPUT);
3 }
4
5 void loop() {
6   digitalWrite(LED_BUILTIN, HIGH); // turn the LED on (HIGH is the
   voltage level)
7   delay(1000); // wait for a second
8   digitalWrite(LED_BUILTIN, LOW); // turn the LED off by making the
   voltage LOW
9   delay(1000); // wait for a second
10 }
```

4. Make this settings in **Tools** menu ->

1. **Board:** Arduino/Genuino Uno
2. **Port:** COM3 or similar

5. Run :

Upload to transere the program to Arduino UNO controller.

6. If everything is OK you will get this message:

```
1 Done uploading.
2 Sketch uses 970 bytes (3%) of program storage space. Maximum is 32256
   bytes.
3 Global variables use 9 bytes (0%) of dynamic memory, leaving 2039 bytes
   for local variables. Maximum is 2048 bytes.
```

9. Optional this preferences are suggested:

File -> Preferences:

1. Editor Language: English
2. Editor font size: 20
3. Show verbose output during: compiling upload
4. Display linenumbers
5. Enable code folding

1.2 RobDuino

RobDuino is Arduino library which include some usefull functions for driving motors and on-board key usage...

1.2.1 RobDuino Library Installation

1. Download zip file:
 - [RobDuino-master.zip](#)
2. rename RobDuino-master.zip in:
 - **RobDuino.zip**
3. run Arduino IDE
4. choose:
 - Sketch -> Include Library -> Add .ZIP Library...
5. find
 - .../Download/RobDuino.zip
 - [OK]

1.3 Ardublockly

[Ardublockly](#) is [graphical programming environment](#) for programming Arduino controllers. A demo version of the program is also available [on-line](#).

Note: For actual programming you will need Arduino IDE installed.

Note: For running Ardublockly you will need to install Python program.

1.3.1 Python Installation

1. You will have to install [Python 3.7](#) or grater. First [Download](#) the newest version of Python.
2. Run installation file and set this settings:
 1. Add Python to PATH in
 2. choose [Clasic Instalation](#)

1.3.2 Ardublockly Installation

3. From [github.com/.../ardublockly](#) download **zip** file by clicking **Clone or download** and choosen [Download ZIP file](#).

4. Extract `ardublockly-master.zip` to directory of your choice e.g. `C:\Program Files(x86)`
5. That is it! Installation is complete.

1.3.2.1 Running Ardublockly

6. Find this file `C:\Program Files(x86)\ardublockly-master` and double-click on `start.py`. Python program should run and you should see:
 1. terminal window with some code running...
 2. and a new window should appear in your Internet Browser. If this is will not happend try to run `start.py` with right mouse button and `Start program with` then choose `Python 3.7`.

1.3.3 Settings

7. Click `menu` and choose `Settings`:
 1. `Compiler Location`: `C:\Program Files (x86)\Arduino\arduino_debug.exe`
 2. `Arduino Board`: `Uno`
 3. `Com port`: `COM3 or appropriate one`
 4. Click `[RETURN]`.

1.4 VSC in PlatformIO

Note: For programming Arduino controllers you will need Arduino IDE installed.

Download installation file:

1. run `VSCodeUserSetup-ia32-1.49.3.exe` installation file.
2. run VSC program and click `Extensions`
3. search for `PlatformIO IDE` and
4. run `Install`.
5. restart VSC or click `Reload now`.

1.4.1 Getting Started

Write basic program `Blink`:

1. plug in Arduino Uno.

2. open PlatformIO - Home Page:

- in left icon bar find PlatformIO
 - QUICK ACCESS -> PIO Home -> Open

3. choose + New Project

4. Setup:

- Name: ime_projekta
- Board: Arduino UNO
- Framework: Arduino Framework

5. click Finish

6. Find directory `src` (e.g. source code), where you can find main program code in file `main.cpp`

7. Copy-Paste this example:

```
1  #include <Arduino.h>
2  void setup() {
3      pinMode(13, OUTPUT);
4  }
5
6  void loop() {
7      digitalWrite(13,HIGH);
8      delay(500);
9      digitalWrite(13,LOW);
10     delay(500);
11 }
```

8. Run Build and Upload.