2.3 Software installation

We will need softwate listed bellow:

1. Arduino IDE is basics "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

2.3.1 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.

2.3.1.1 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 transfere 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 [x] upload
   4. `[x] Display linenumbers`
   5. `[x] Enable code folding`

2.3.2 RobDuino

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

2.3.2.1 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]`

2.3.3 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.

2.3.3.1 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. `[x]` `Add Python to PATH` in
   2. choose `Clasic Instalation`

2.3.3.2 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 dirrectory of your choice e.g. `C:\\Program Files(x86)`

5. That is it! Installation is complete.

2.3.3.2.1 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 apear 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`.

2.3.3.3 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`].

2.3.4 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`.

2.3.4.1 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:

```
#include <Arduino.h>
void setup() {
  pinMode(13, OUTPUT);
}

void loop() {
  digitalWrite(13,HIGH);
  delay(500);
  digitalWrite(13,LOW);
  delay(500);
}
```

8. Run Build and Upload.