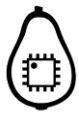


**PICado**

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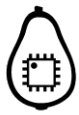
**USB Programming (with Bootloader)  
PICado Mega**

Programming over USB direct from:  
AtmelStudio  
Arduino IDE



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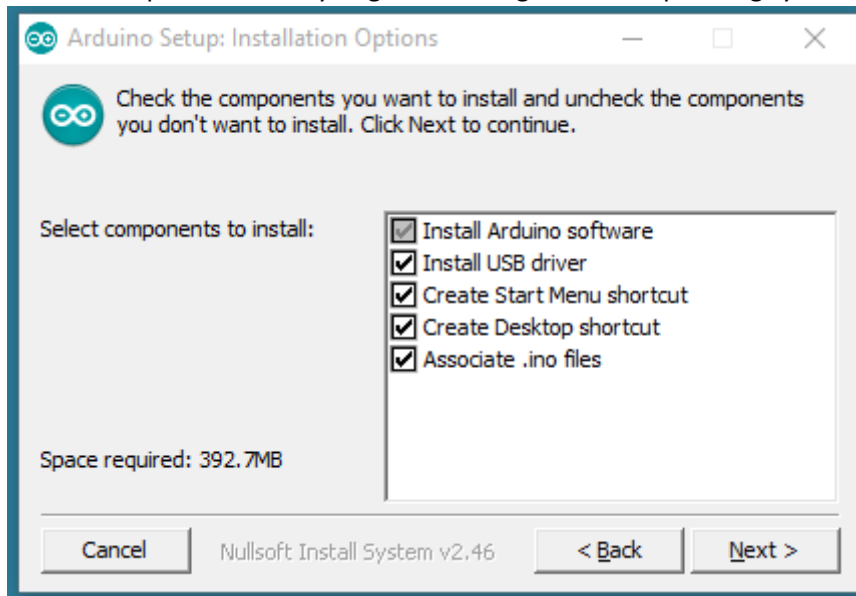
## 1. Installation

### 1.1. Arduino IDE

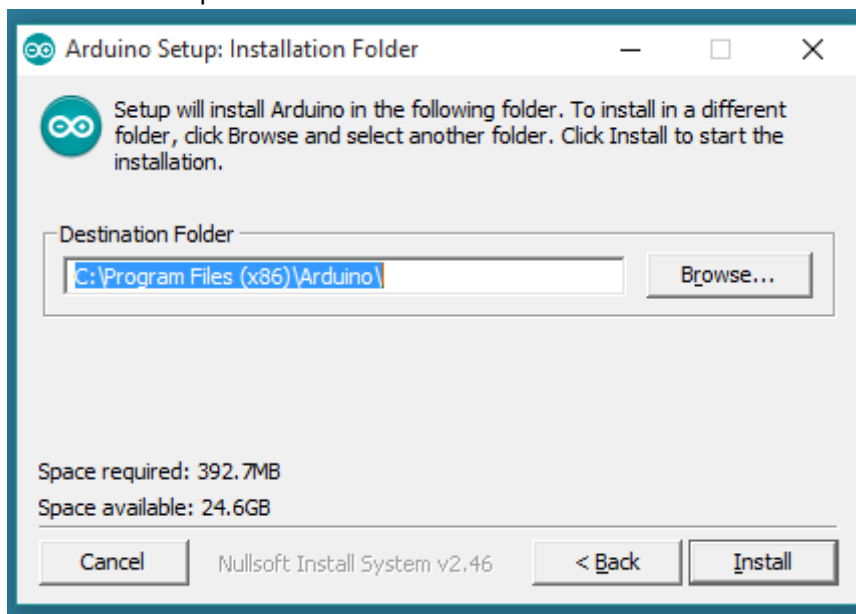
Download the current Arduino IDE from the Official Arduino website.

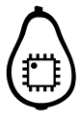
<https://www.arduino.cc/en/Main/Software>

When the download finishes, proceed with the installation and please allow the driver installation process when you get a warning from the operating system.

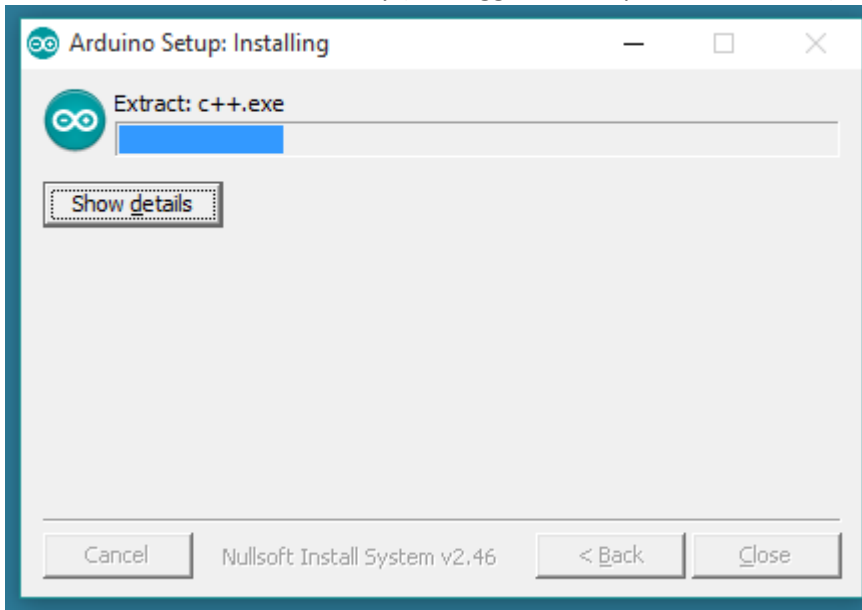


Choose the components to install





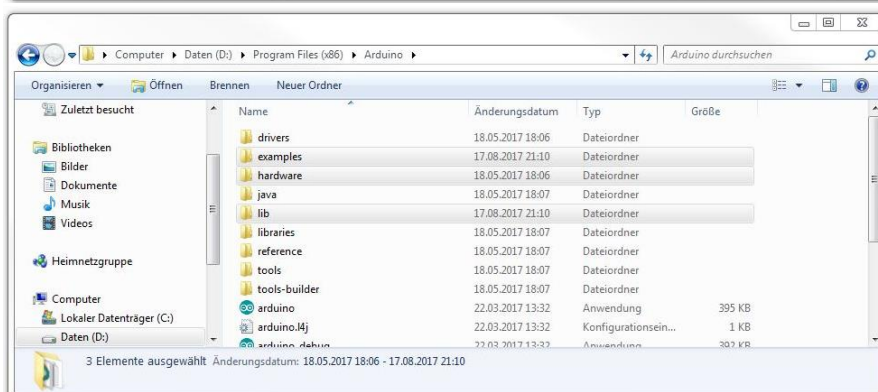
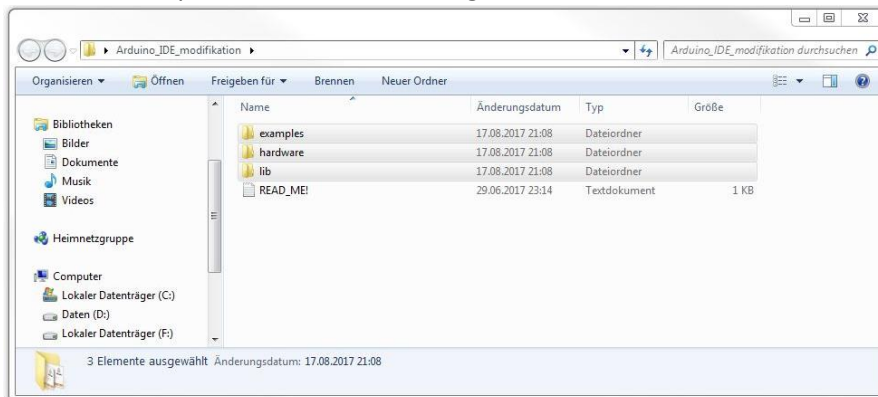
Choose the installation directory (we suggest to keep the default one)

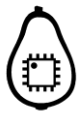


The process will extract and install all the required files to execute properly the Arduino Software (IDE)

### 1.2. PICado / Arduino IDE modification

Copy all files from the *PICado Modification* folder to the Arduino IDE installation directory. Confirm the replacement of the existing files with OK.





### 1.3. AtmelStudio

Download the current AtmelStudio from the Official Microchip website.

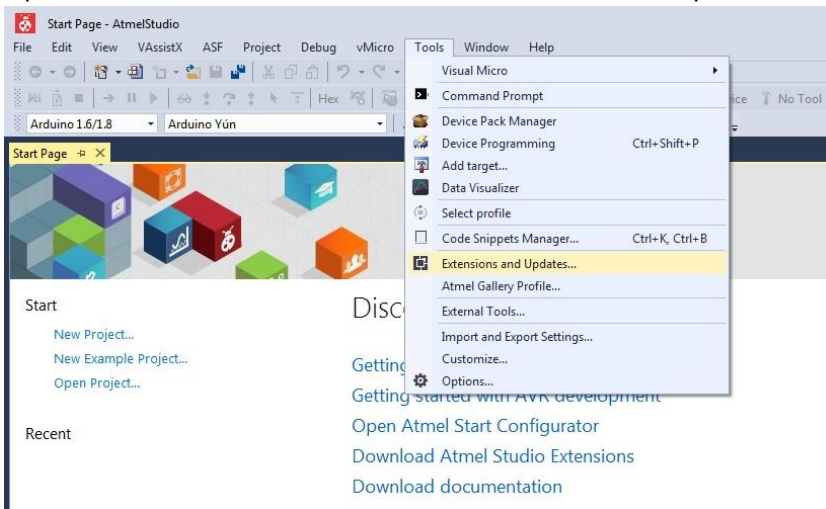
<http://www.microchip.com/development-tools/atmel-studio-7>

For installation instructions, please use the official user guide of the AtmelStudio.

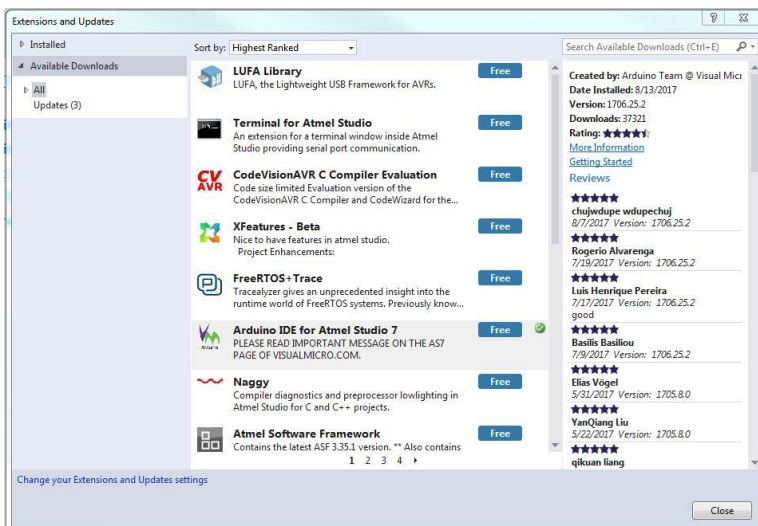
[http://ww1.microchip.com/downloads/en/DeviceDoc/Atmel-42167-Atmel-Studio\\_User%20Guide.pdf](http://ww1.microchip.com/downloads/en/DeviceDoc/Atmel-42167-Atmel-Studio_User%20Guide.pdf)

### 1.4. Arduino for AtmelStudio (Plugin)

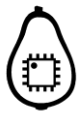
Open the Atmel Studio and click **>Tools >Extensions and Updates**.



Navigate to **>Available Downloads** and install **Arduino IDE for AtmelStudio 7**.



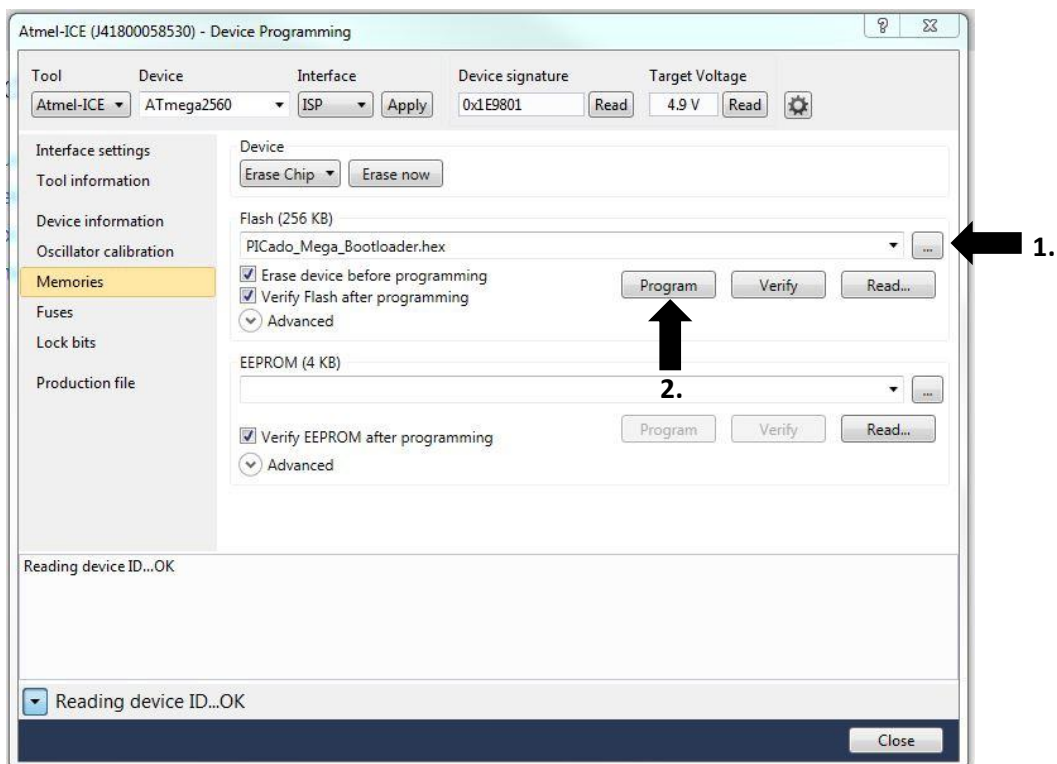
An AtmelStudio account is required for the installation!

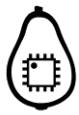


## 2. Bootloader

Program the bootloader (\*.hex file) using the programmer of your choice.  
Here as an example with the Atmel JTAG ICE.

Open the Atmel Studio and click *>Tools >Device Programming >Memories*.  
Select the \*.hex file of the bootloader for the flash memory.  
Then press *Program*.





### 3. Fuses- / Lock-Bits

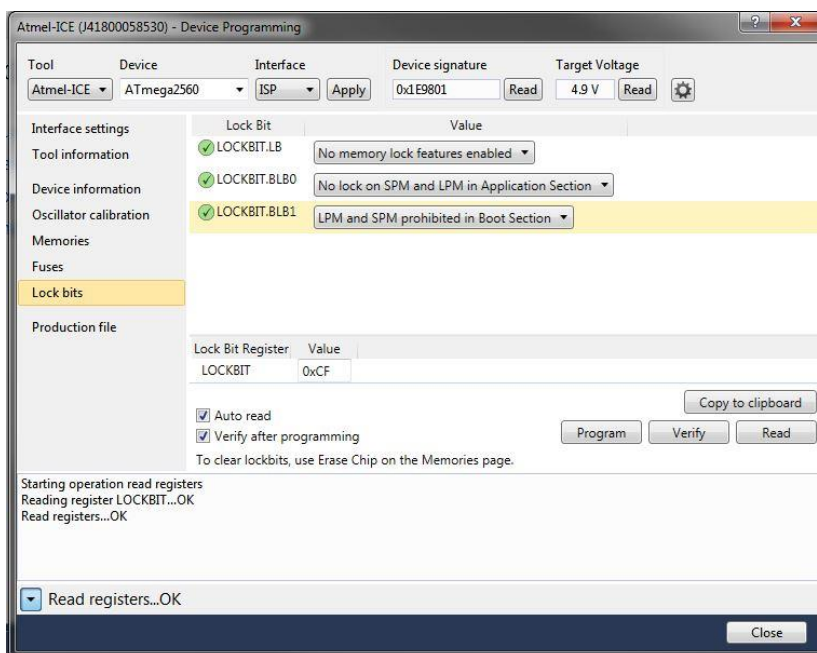
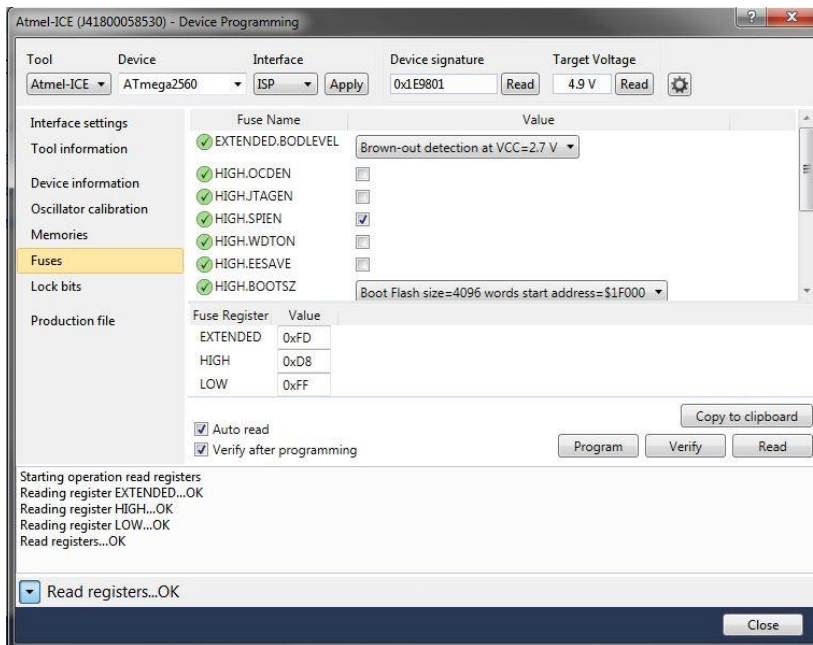
After the Bootloader programming set the fuses and lock bits as follow.

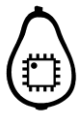
Fuse Register:

- EXTENDED = 0xFD
- HIGH = 0xD8
- LOW = 0xFF

Lock Bit Register:

- LOCKBIT = 0xCF

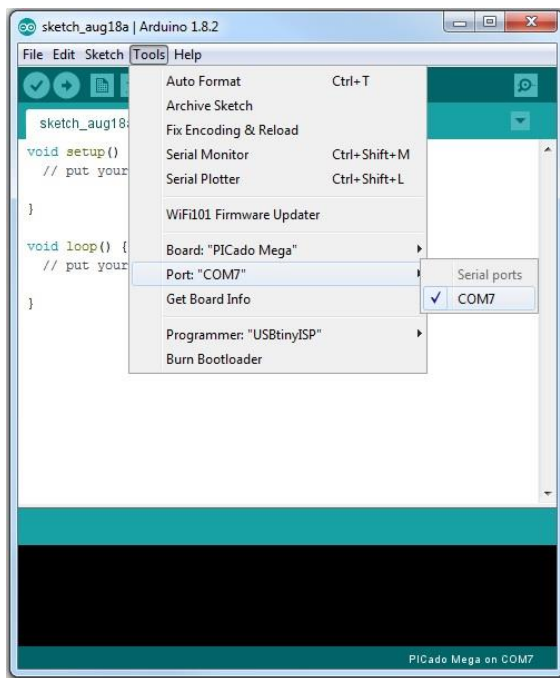




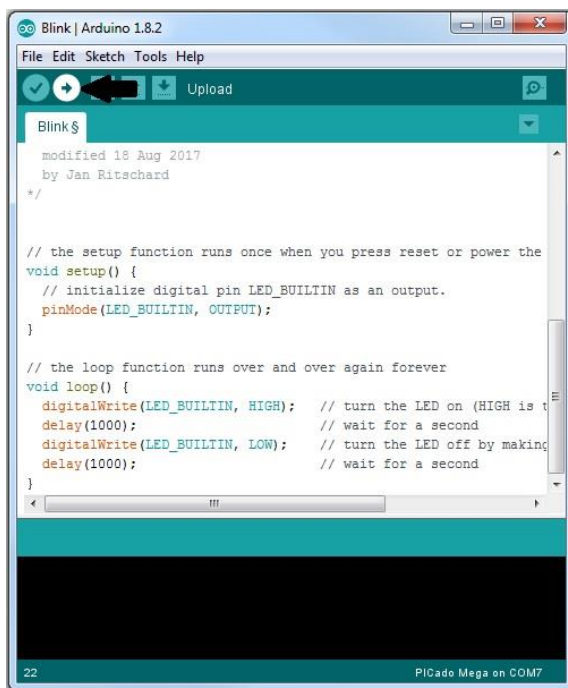
## 4. USB Programming

### 4.1. Arduino IDE

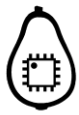
To program from the Arduino IDE, connect the PICado Mega Board to the PC via USB. Start the Arduino IDE and navigate to **>Tools**, select *PICado Mega* and the port you are using.



In the next step, open a project and then press the *Upload* button.

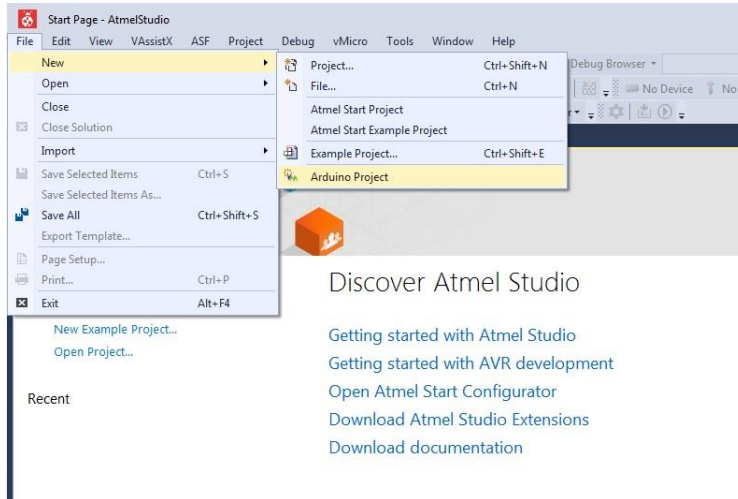




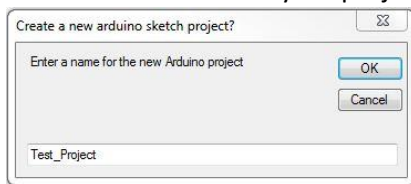


### 4.2. Atmel Studio with Arduino Plug-in

To program in Atmel Studio, first navigate to >File >New >Arduino Project.

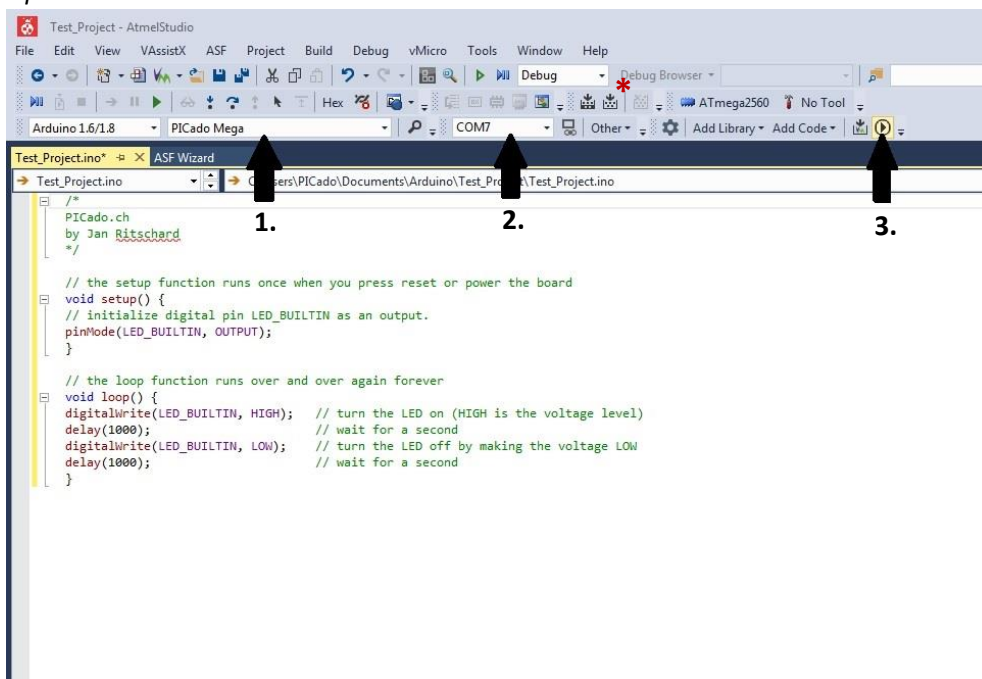


Then enter a name for your project.

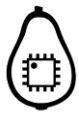


Write a program which you want to download.

To download select "PICado Mega" and the port you are using and then press the *Build and Upload* button.



\*It is recommended to switch from *Debug* to *Release* in the *Solution Configurations*.



### 4.3. Atmel Studio with Script

In order to program the Picado Mega without an Arduino project, a script must be used. This offers the advantage that normal AtmelStudio projects can be used and it is programmed in ANSI-C.

To set up the script, navigate to > Tools > External Tools.

Enter the following commands:

Title: ***"PICado Mega Programming"***

Command: ***"D:\Program Files (x86)\Arduino\hardware\tools\avr\bin\avrdude.exe"***

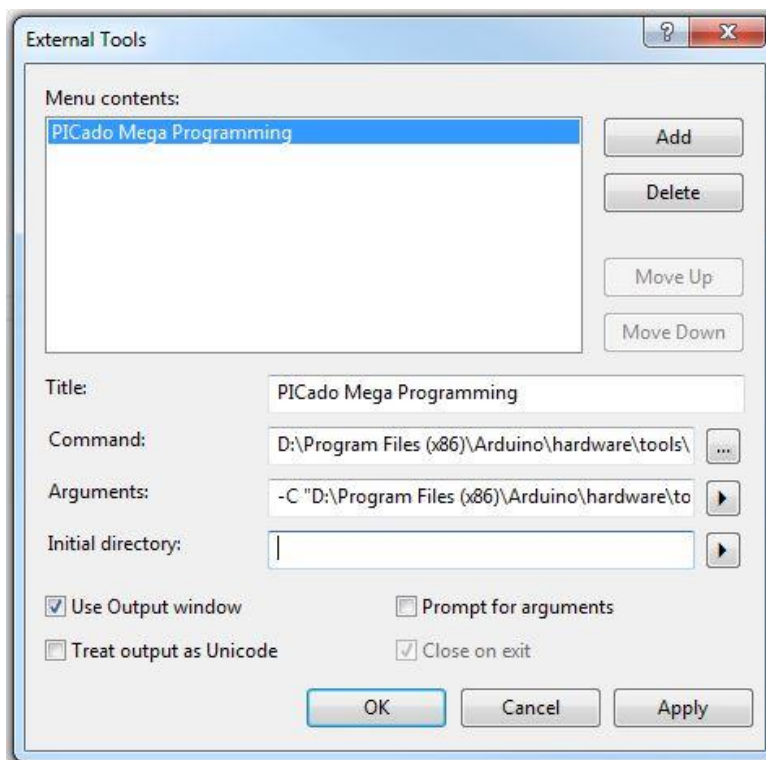
Arguments:

***"-C "D:\Program Files (x86)\Arduino\hardware\tools\avr\etc\avrdude.conf" -patmega2560 -  
cwiring -P\.\COM7 -b115200 -D -Uflash:w:"\$(ProjectDir)Debug\\$(TargetName).hex":I"***

Select "Use Output window"

Set the COM port in Arguments used at you PC!

Edit file directory to your Arduino IDE installation directory!



Compile the current project with the F7 key.

To download a program, navigate to >Tools> PICado Mega Programming.