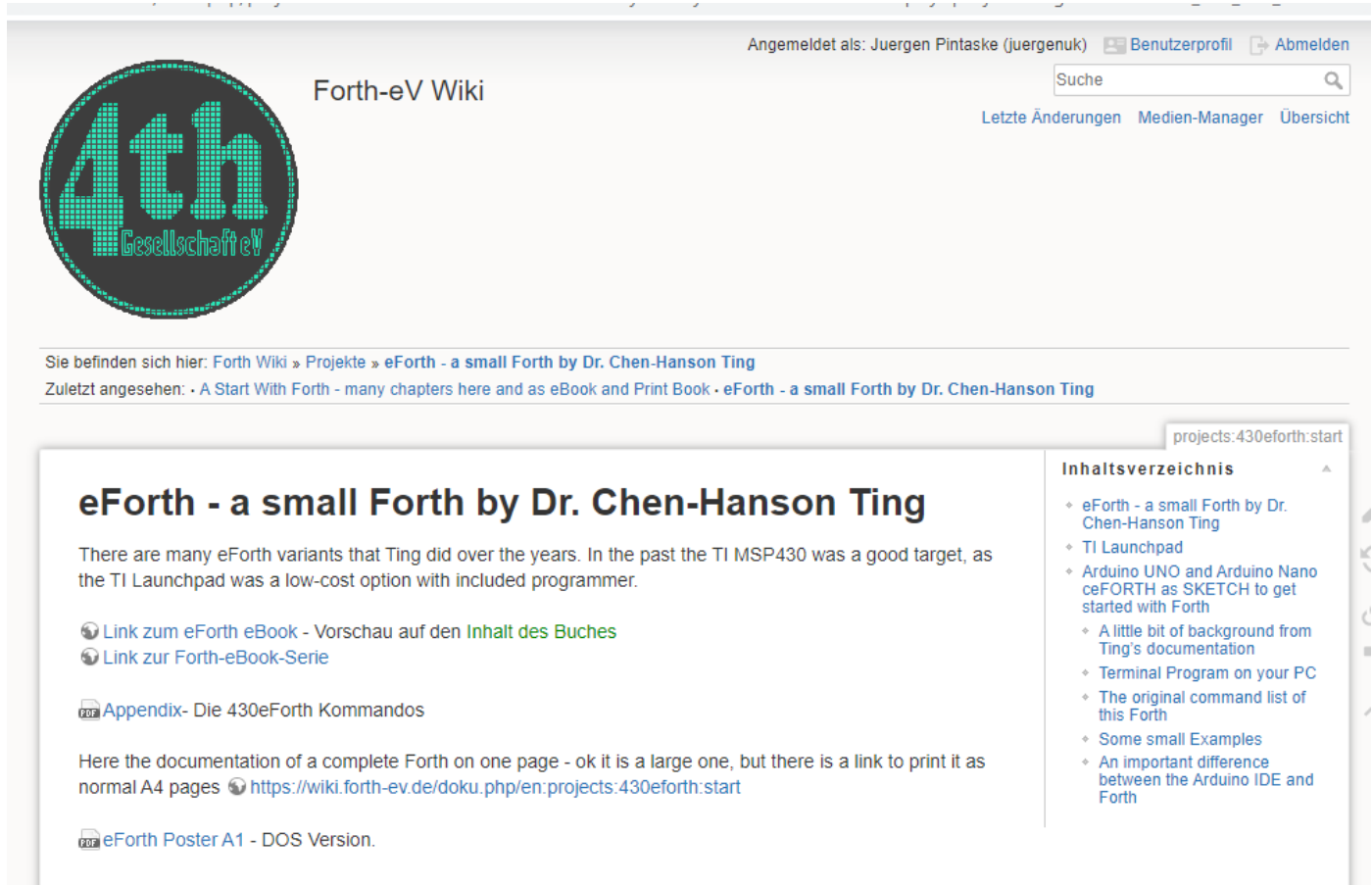# 39 Steps  - no, not Hitchcock, but

## How to get started with eFoprth as Arduino Sketch and control LEDs in Forth and more.

The procedure described here is not optimized, but works as I have worked my way through it exactly as is with the shown results. And then asked others to replicate it in the same way.

1.  Click on the picture with the nano, and you end up here



2.  Scroll down to Arduino

3. There you find the line with the link to download the Sketch

> **for example using an ATmega328P Nano V3 Development Board (Geekcreit).**
> eForth as Arduino Sketch (C Sourcecode), and in txt.

4. Click on the link to download the sketch as zip

5. Create folder, for example call it ArduinoForth_test

6. Go to the folder where you downloaded the zip ( I downloaded it 3x as you can see)

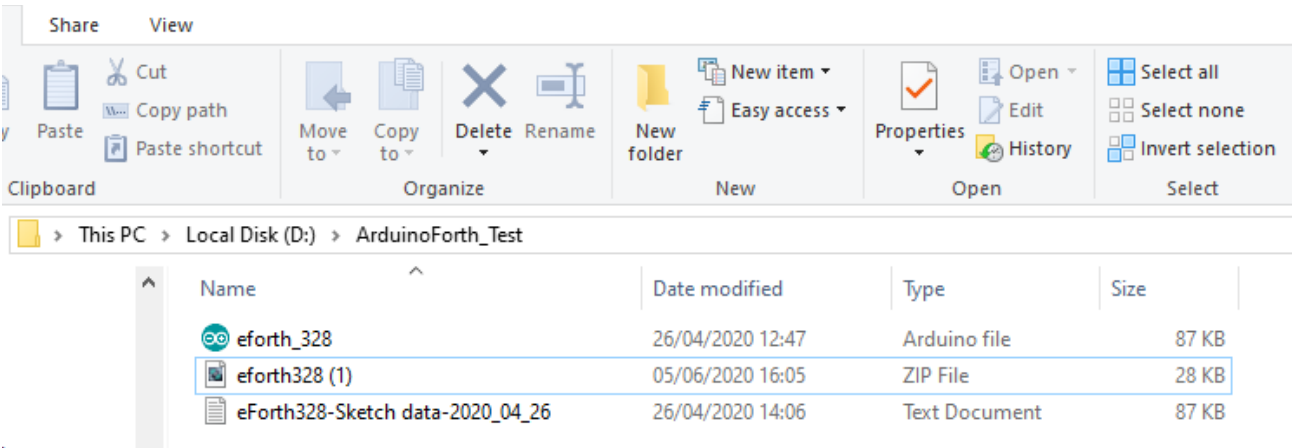| | | | |
|---|---|---|---|
| eforth328 (1) | 05/06/2020 16:05 | ZIP File | 28 KB |
| eforth328 (2) | 05/06/2020 16:05 | ZIP File | 28 KB |
| eforth328 | 05/06/2020 16:05 | ZIP File | 28 KB |

7. Copy it from there and paste it into the ArduinoForth_test folder

> Local Disk (D:) › ArduinoForth_Test ›

| Name | Date modified | Type | Size |
|---|---|---|---|
| eforth328 (1) | 05/06/2020 16:05 | ZIP File | 28 KB |

8. Unzip thezip- file and 2 additional files have been added.
   One of them is the sketch, the other one the same as ASCII file

> This PC › Local Disk (D:) › ArduinoForth_Test

| Name | Date modified | Type | Size |
|---|---|---|---|
| eforth_328 | 26/04/2020 12:47 | Arduino file | 87 KB |
| eforth328 (1) | 05/06/2020 16:05 | ZIP File | 28 KB |
| eForth328-Sketch data-2020_04_26 | 26/04/2020 14:06 | Text Document | 87 KB |
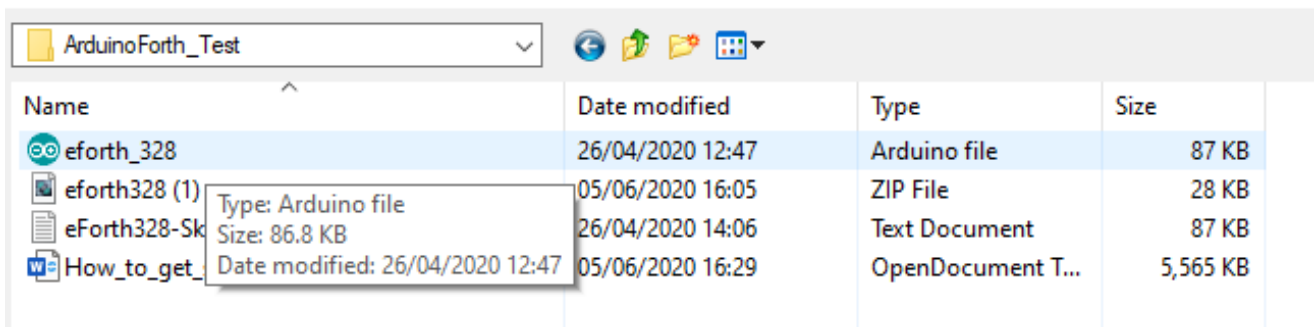
9. This file we use now, describing the set-up procedure I have added now as well as you can see.

> This PC › Local Disk (D:) › ArduinoForth_Test

| Name | Date modified | Type | Size |
|---|---|---|---|
| eforth_328 | 26/04/2020 12:47 | Arduino file | 87 KB |
| eforth328 (1) | 05/06/2020 16:05 | ZIP File | 28 KB |
| eForth328-Sketch data-2020_04_26 | 26/04/2020 14:06 | Text Document | 87 KB |
| How_to_get_started_and_control_some_L... | 05/06/2020 16:25 | OpenDocument T... | 4,658 KB |

10. Now grab your Arduino, I used the nano, and start the IDE

11. Point to the file you want to upload
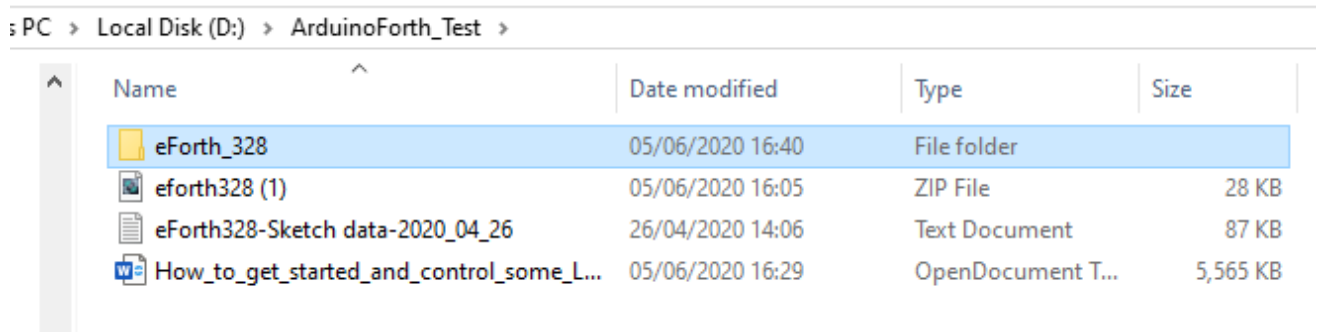


12. You get a message that you had probably expected:
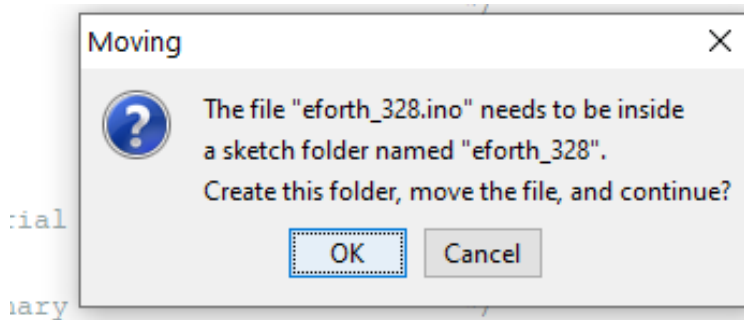


13. Folder created and sketch moved



14. Select the sketch and open file - and there it is

15. Make sure you select the correct board – I use the nano
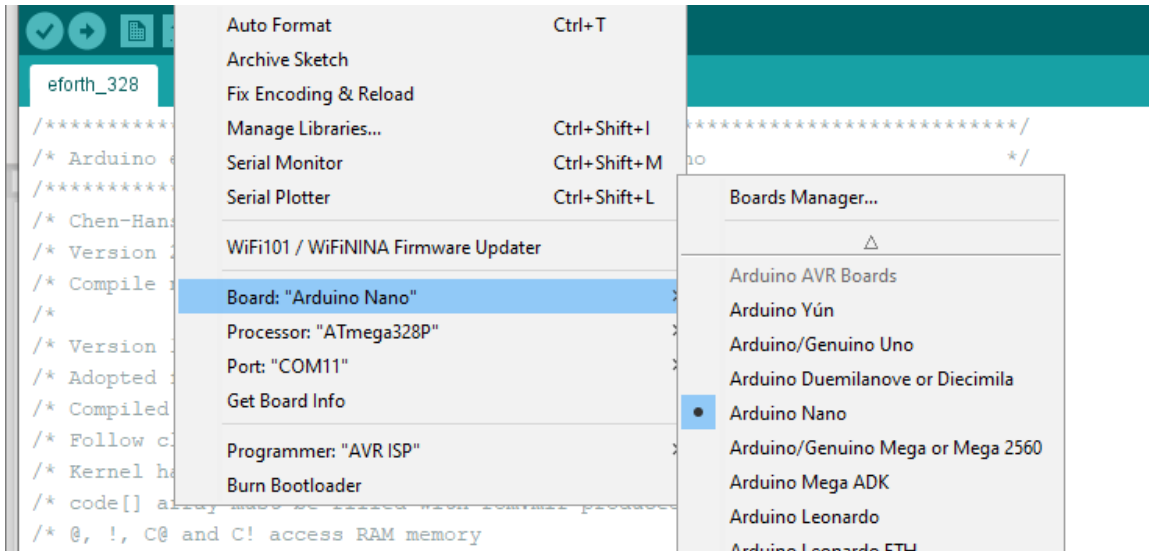


16. And the serial connection, here COMM11
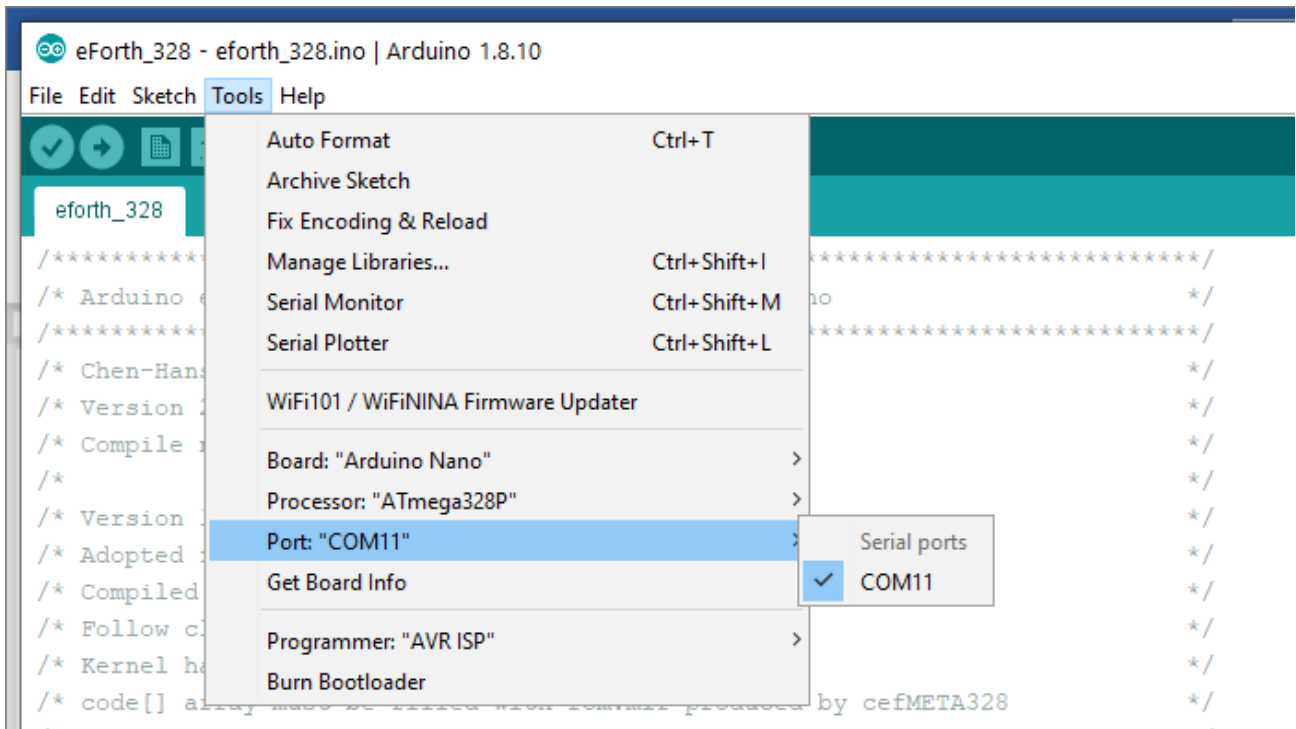


17. Compile the sketch
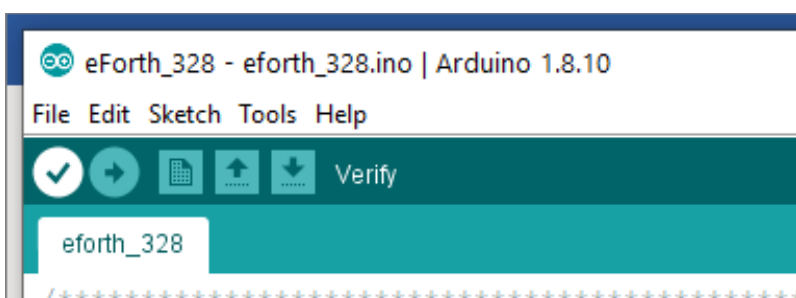
18.    No problems seen

```
Done compiling.

Sketch uses 12058 bytes (39%) of program storage space. Maximum is 30720 bytes.
Global variables use 494 bytes (24%) of dynamic memory, leaving 1554 bytes for local variables. Maximum is 2048 bytes.

1                                                                    Arduino Nano, ATmega328P on COM11
```

19.    So, let's upload

```
⊙⊙ eForth_328 - eforth_328.ino | Arduino 1.8.10

File  Edit  Sketch  Tools  Help

eforth_328
/*******************************************
```

```
#include <avr/pgmspace.h>

Done uploading.

Sketch uses 12058 bytes (39%) of program storage space. Maximum is 30720 bytes.
Global variables use 494 bytes (24%) of dynamic memory, leaving 1554 bytes for local variables. Maximum is 2048 bytes.

1
```

20.  Done uploading, so the nano is prepared.
     Unfortunately, this sketch needs an external Terminal program on the PC to to run. This is easily done.

     Let us use Teraterm. The link is on the website:

```
wiki.forth-ev.de/doku.php/projects:430eforth:start?fbclid=IwAR2hhxZGBiyinzanhy4DaJ9ILwVJraVWZuMN3pHyvip1rijr3RMBcgX8F2Y#arduino_uno_und_arduino...

m_campaign=pla-gbg-rm-all-purchase-pc&ad_id=323612825005&gclid=CjUKCQjw-
_j1BRDkARIsAJcfmTHNbV23SI9zuJK9eh8oCP9oIJHQtR3dcUMdgcX3EYMRVgHzdnaJYtYaAiUTEALw_wcB&cur_warehouse=CN

The eForth is loaded as 📄Arduino Sketch (C Sourcecode), similar to a text file, then compiled via the Arduino IDE and uploaded into the board.
Generate a folder on your PC, download the ZIP, unpack it and flash it into the Arduino UNO or the nano via the Arduino IDE.

                                                                                          Bearbeiten

A little bit of background from Ting's documentation

Ting's introductory chapter and background to this version: This Forth can be easily loaded as an Arduino sketch and is immediately executable via
a terminal program on the PC. OK, with a few drawbacks - but nothing is for free, 📄 please read the introductory chapter.

                                                                                          Bearbeiten

Terminal Program on your PC

Download and install a terminal program, if you do not have one already, e.g. Teraterm or termite, and then you are ready to go. Set to 115k baud
rate.

🌐 https://ttssh2.osdn.jp/index.html.en

Enter (CR) and you see 0 0 0 0 ok> Test by entering words (CR) showing the list od words/commands

                                                                                          Bearbeiten
```
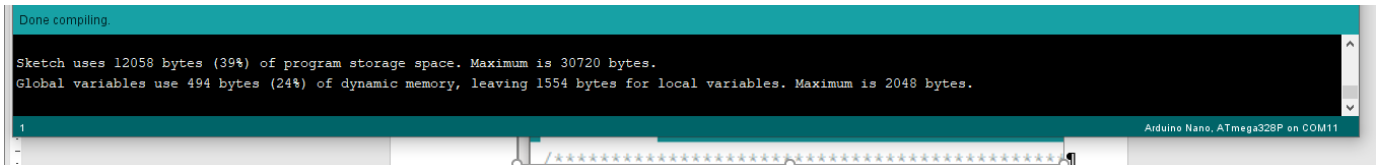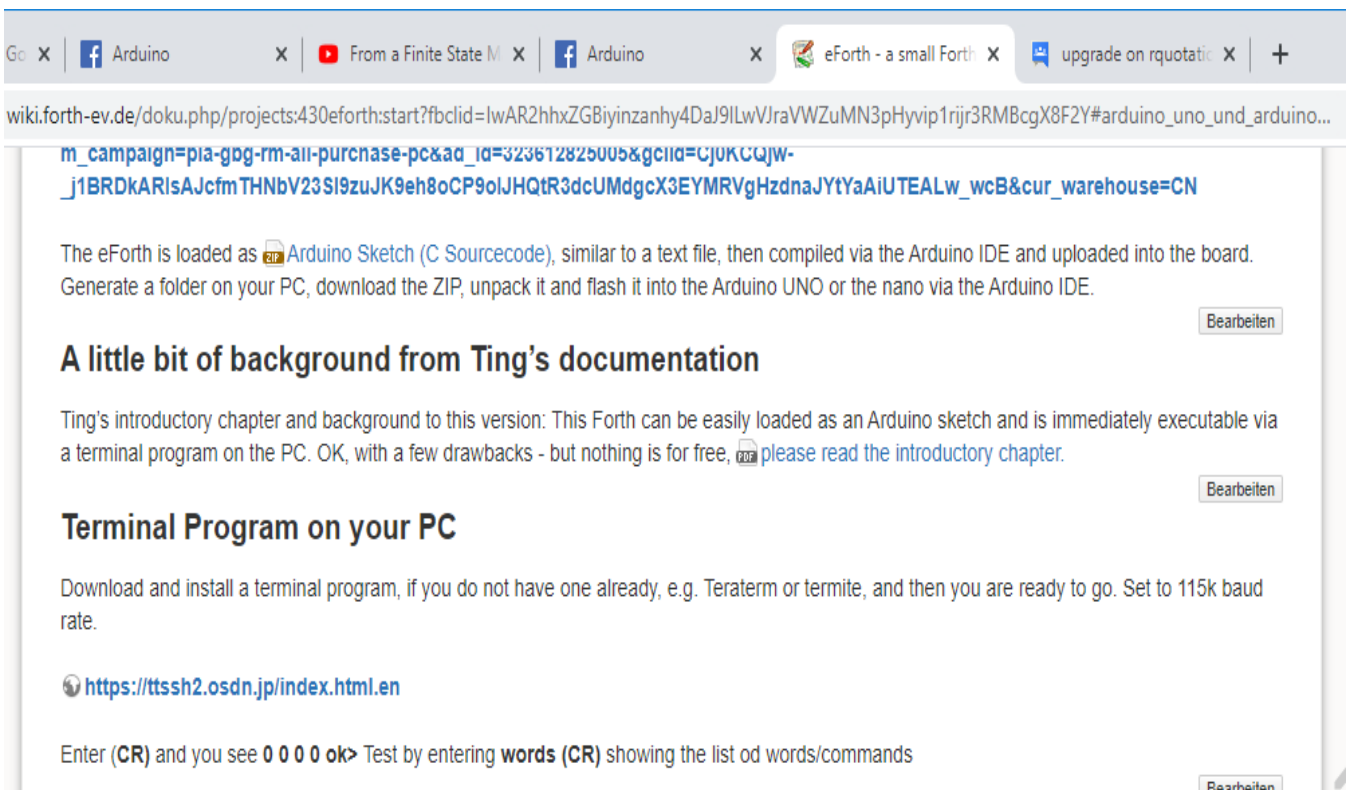
21.  The link for download there: **https://ttssh2.osdn.jp/index.html.en**

22. Download it, as you downloaded the sketch, add it to our folder

Language: {English} {Japanese}

## Tera Term Home Page

[Project page] [License] [Download] [Document] [Snapshot] [SourceCode] [Users ML] [Commit ML] [Development]

7933588 (Today: 117 Yesterday: 2405)

### TeraTerm Project

TeraTerm Project would have been developed terminal emulator "Tera Term" and SSH module "TTSSH". This software is open source software under succession version and is being officially recognized by the original author. Development is continuing in Project Page on OSDN.

### Download

Latest version is available from OSDN download page. Current latest release is 4.105.

If you can get latest development version, the source code is available from SVN repository. And snapshot is here. Here is the Old release, however we recommend using the latest release as possible.

### Manual

Following manuals are available.
These manuals are the latest contents. New feature not including the release version will be written.
However, a user can check next version contents. Tera Term developer can preliminarily respond the user request.

- Tera Term Help Index
- MACRO for Tera Term

23. Click on the link Go to the download page

Download    Magazine    Develop    Contribut

OSDN > Find Software > Terminals > Serial > Tera Term > **Download File List**

## Tera Term

Description ▾    Downloads ▾    Source Code ▾    Ticket ▾    Documents ▾    C

**Download List**

Project Description

24. Scroll down to
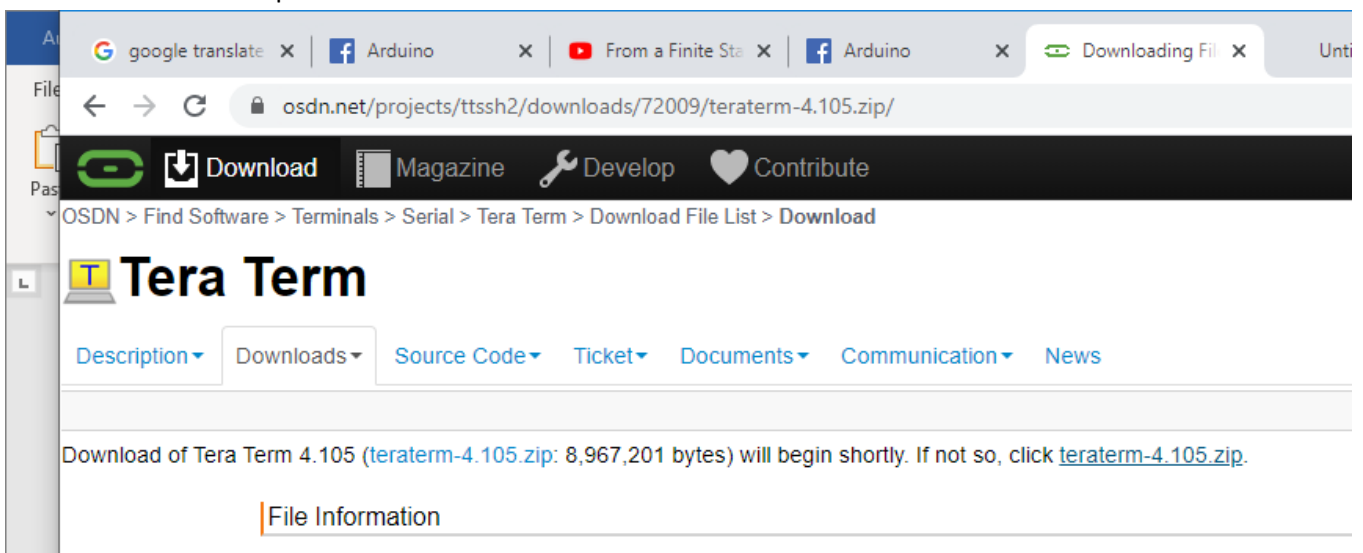


25. Download the zip as before



26. Copy the downloaded zip into the same folder

Local Disk (D:) > ArduinoForth_Test >

| Name | Date modified | Type | Size |
|------|---------------|------|------|
| eForth_328 | 05/06/2020 16:40 | File folder | |
| eforth328 (1) | 05/06/2020 16:05 | ZIP File | 28 KB |
| eForth328-Sketch data-2020_04_26 | 26/04/2020 14:06 | Text Document | 87 KB |
| How_to_get_started_and_control_some_L... | 05/06/2020 17:05 | OpenDocument T... | 15,267 KB |
| teraterm-4.105 | 05/06/2020 17:14 | ZIP File | 8,758 KB |

27.    Unzip Teraterm.zip, and the view is
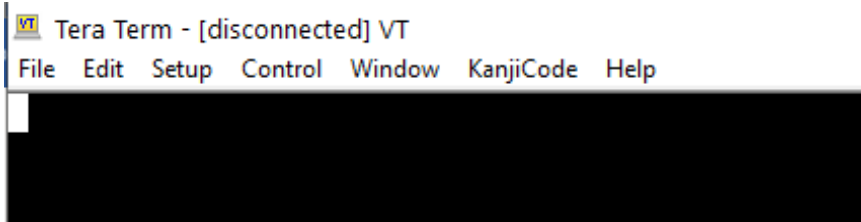
Local Disk (D:) > ArduinoForth_Test >

| Name | Date modified | Type | Size |
|------|---------------|------|------|
| eForth_328 | 05/06/2020 16:40 | File folder | |
| teraterm-4.105 | 05/06/2020 17:21 | File folder | |
| eforth328 (1) | 05/06/2020 16:05 | ZIP File | 28 KB |
| eForth328-Sketch data-2020_04_26 | 26/04/2020 14:06 | Text Document | 87 KB |
| How_to_get_started_and_control_some_L... | 05/06/2020 17:05 | OpenDocument T... | 15,267 KB |
| teraterm-4.105 | 05/06/2020 17:14 | ZIP File | 8,758 KB |

28.    Click on



29.  And you see

30. Click onto setup, then serial port
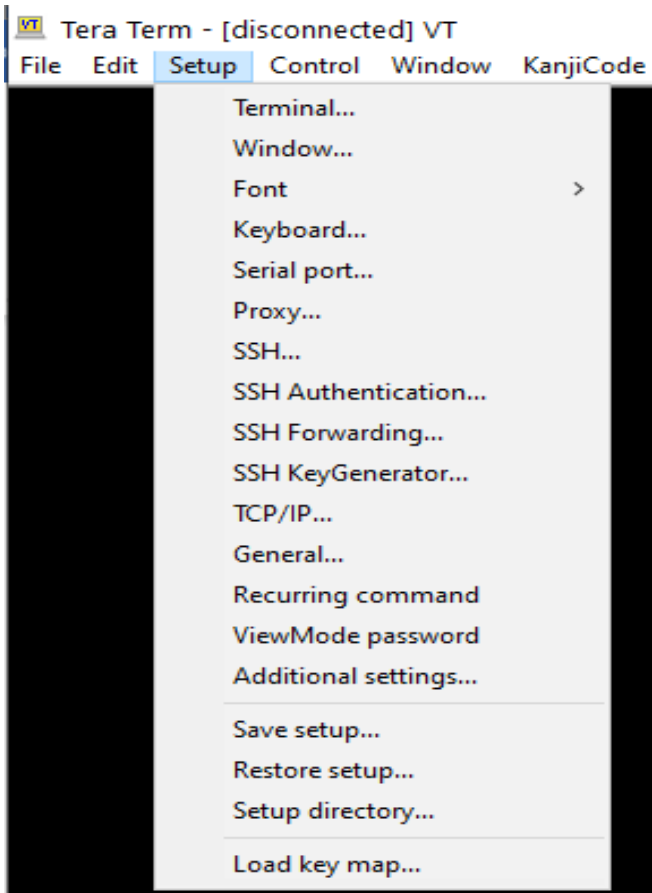


31. Select PORT, if not given, here 11, select 115k baud, add in the delays 5 and 500    and hit  **New setting**
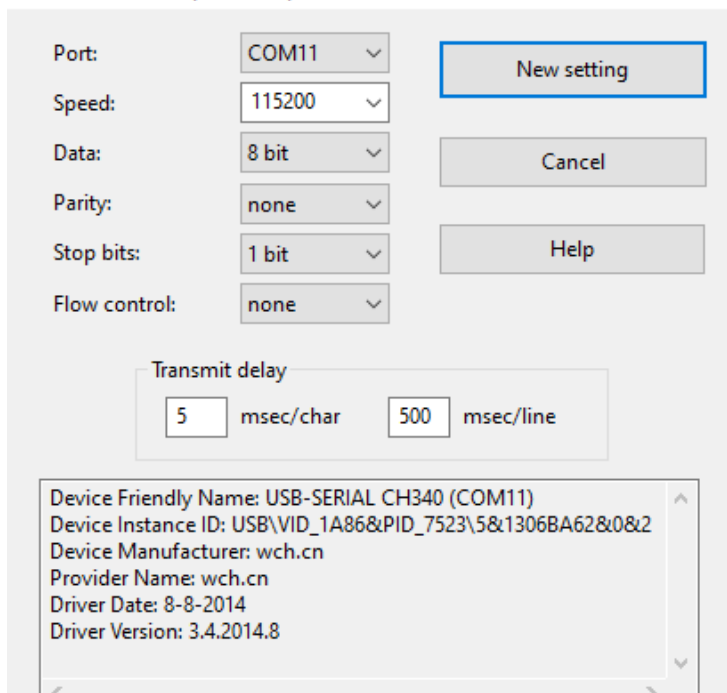
32.     AND YOU SEE SUCCESS



33.  Push the ENTER key ( I pushed 2x ) and you see and are in control, dispayed is 0 0 0 0 ok>



34.  As a first test type in  **words** and **Enter key** and you see the "commands", ready to be used. Some wrap around.



**35.  Now we have finished the installation and can have a rest.**

36.  We will add to this, but most of the relevant information is on the website.

37.  Then the fun bit starts with switching the on-board LED on/off first, and more.

38.  This will be for later, as the 39th step is the usual HELLO WORLD

39. Just as a little example: the usual **hello world** as two options using the Interactive Programming
    – **NO upload, NO Compile.:**

```
0 0 0 0 ok>: hello ." Hello Arduino People, welcome to Forth " ;
0 0 0 0 ok>helloHello Arduino People, welcome to Forth
0 0 0 0 ok>: hello2 CR ." Hello World / Arduino People, welcome to Forth " CR C
R ;
0 0 0 0 ok>hello2
Hello World / Arduino People, welcome to Forth


0 0 0 0 ok>
```

Yes, this is how easy it is to define and display text interactively.

Controlling the on-board LED and other 328 internal functions is similar:

   Define the relevant WORDS, Stick them together like LEGO,
and hen all has been stuck together , the "house" is ready – meaning the application is ready.

Juergen Pintaske 05/06/2020