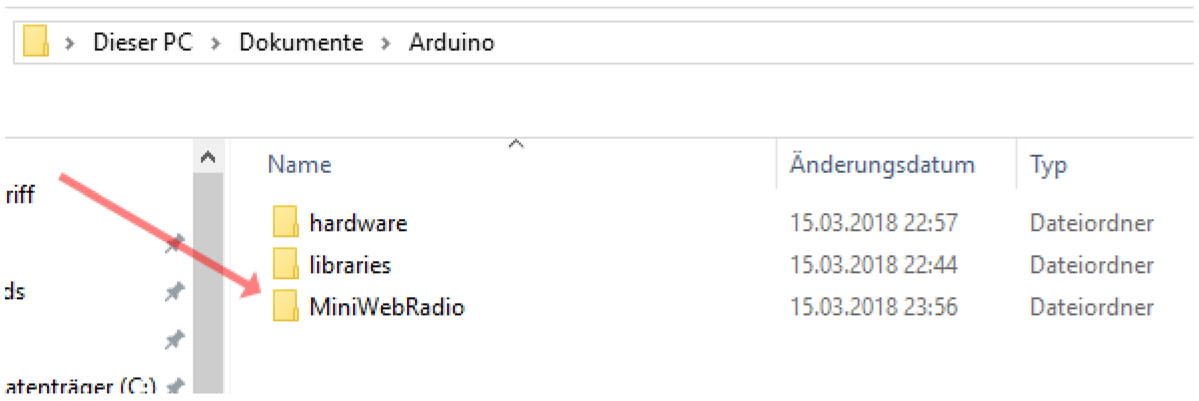
Notes on programming with the Arduino IDE

The Adruino IDE must be installed and the libraries for the ESP32 be included.

Create a new sketch and save it as MiniWebRadio. The IDE creates a new folder named MiniWebRadio.



› Dieser PC › Dokumente › Arduino

Name	Änderungsdatum	Typ
hardware	15.03.2018 22:57	Dateiordner
libraries	15.03.2018 22:44	Dateiordner
MiniWebRadio	15.03.2018 23:56	Dateiordner

The easiest way to do this is to add all the libraries you need in this folder. The required files Can be found in my repositories.

Https://github.com/schreibfaul1/ESP32-vs1053_ext

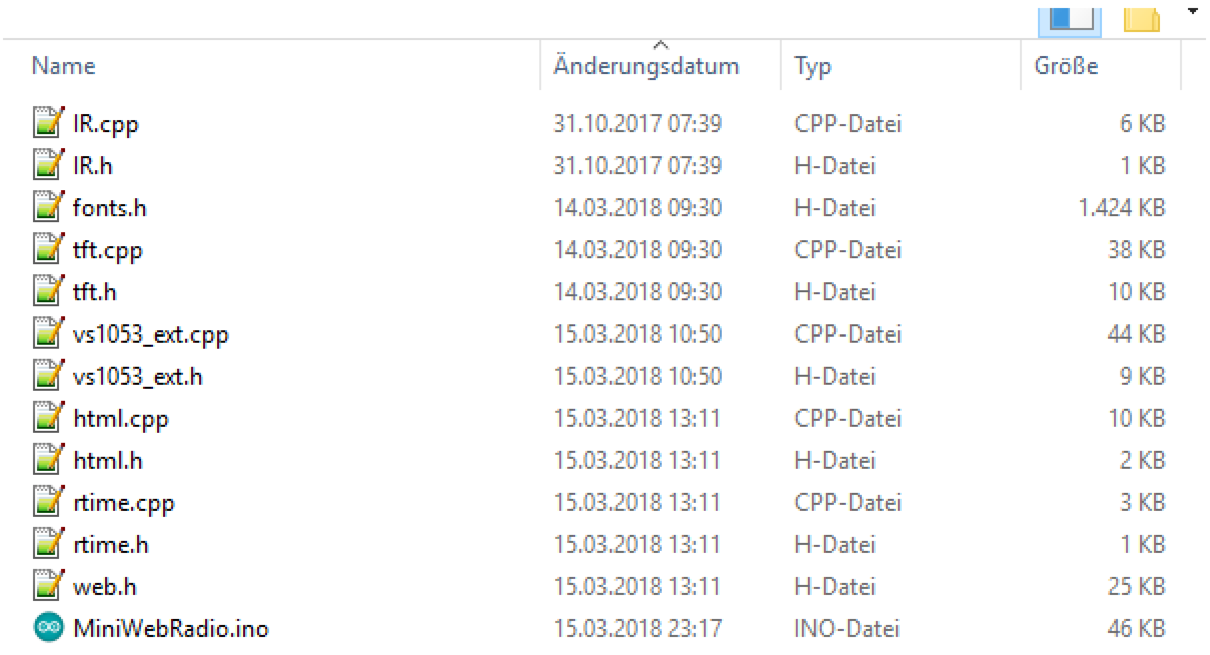
Https://github.com/schreibfaul1/ESP32-IR-Remote-Control Optional, for a IR Remote Control)

In addition, the driver for an SPI display with Touchpad is required. For the Waveshare 2.8 inch display, the:

https://github.com/schreibfaul1/ESP32-TFT-Library-ILI9431-HX8347D

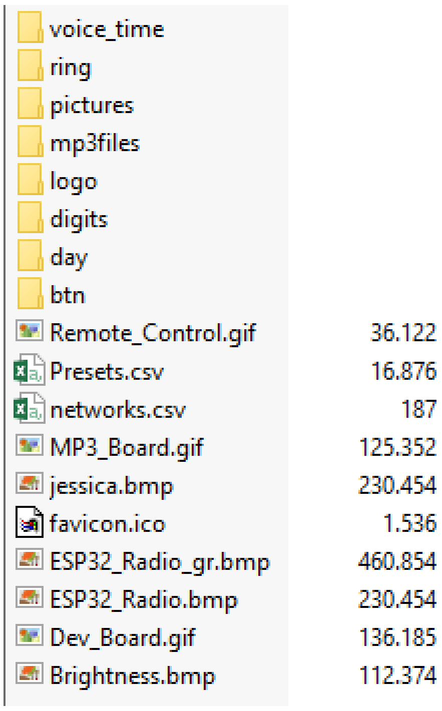
For other displays an adjustment is necessary. The TFT libraries from Adafruit are well suited.

If everything is included, the contents of the folder will look like this:



Name	Änderungsdatum	Typ	Größe
IR.cpp	31.10.2017 07:39	CPP-Datei	6 KB
IR.h	31.10.2017 07:39	H-Datei	1 KB
fonts.h	14.03.2018 09:30	H-Datei	1.424 KB
tft.cpp	14.03.2018 09:30	CPP-Datei	38 KB
tft.h	14.03.2018 09:30	H-Datei	10 KB
vs1053_ext.cpp	15.03.2018 10:50	CPP-Datei	44 KB
vs1053_ext.h	15.03.2018 10:50	H-Datei	9 KB
html.cpp	15.03.2018 13:11	CPP-Datei	10 KB
html.h	15.03.2018 13:11	H-Datei	2 KB
rtime.cpp	15.03.2018 13:11	CPP-Datei	3 KB
rtime.h	15.03.2018 13:11	H-Datei	1 KB
web.h	15.03.2018 13:11	H-Datei	25 KB
MiniWebRadio.ino	15.03.2018 23:17	INO-Datei	46 KB

The contents of the archive „Content_on_SD_Card. zip " Https://github.com/schreibfaul1/ESP32-MiniWebRadio/blob/master/Content_on_SD_Card.zip will be unzipped to the SD card.



voice_time	
ring	
pictures	
mp3files	
logo	
digits	
day	
btn	
Remote_Control.gif	36.122
Presets.csv	16.876
networks.csv	187
MP3_Board.gif	125.352
jessica.bmp	230.454
favicon.ico	1.536
ESP32_Radio_gr.bmp	460.854
ESP32_Radio.bmp	230.454
Dev_Board.gif	136.185
Brightness.bmp	112.374

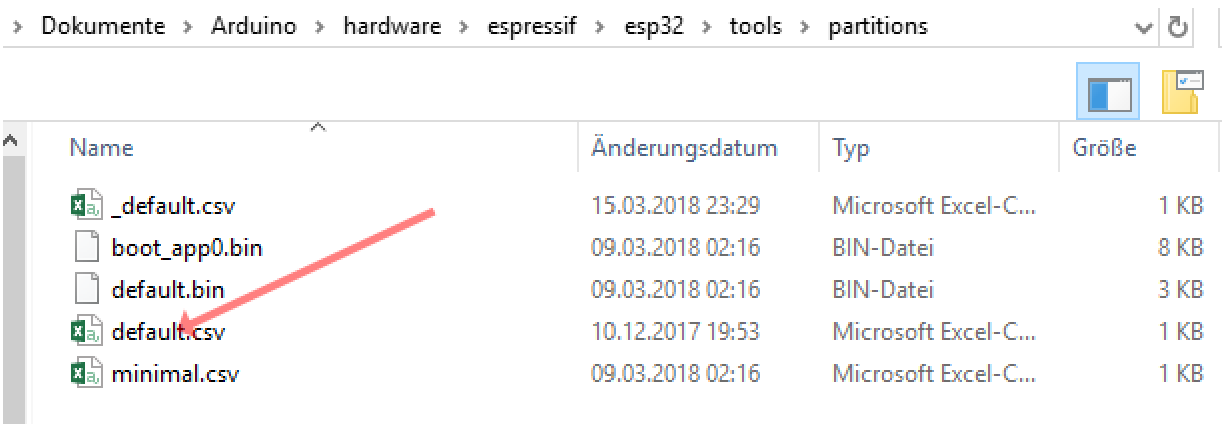
voice_time	Language files for the time (can be played at any hour)
ring	MP3 file for the alarm tone
pictures	Bitmaps to test the display (not strictly required)
mp3files	Music files etc. for the MP3 player
logo	Sender logos as bitmap (96x96 pixels in size)
digits	Alarm clock and time bitmaps
day	Bitmaps for the day (alarm on/off)
btn	Bitmaps for the buttons

preset.csv	The channel list can be edited, the first 256 entries are displayed in the internal nvs stored
networks.csv	If more than one WiFi network exists, the access data can be entered here
favicon.ico	is displayed by the browser on the Web portal. The default URL is: http://esp32radio/index.html
ESP32_Radio.bmp	The Home screen
Brightness.bmp	Display Brightness menu graphic

Because more NVS memory is required for the channel list, the partition table must be changed.

```
//  if not enough space in nvs: change defaut.cvs
//
//  Name,     Type, SubType, Offset,   Size,     Flags
//  otadata,  data, ota,     0xe000,   0x2000,
//  app0,     app,  ota_0,   0x10000,  0x140000,
//  app1,     app,  ota_1,   0x150000, 0x130000,
//  nvs,      data, nvs,     0x280000, 0x10000,
//  eeprom,   data, 0x99,    0x290000, 0x1000,
//  spiffs,   data, spiffs,  0x291000, 0x169000
//
```

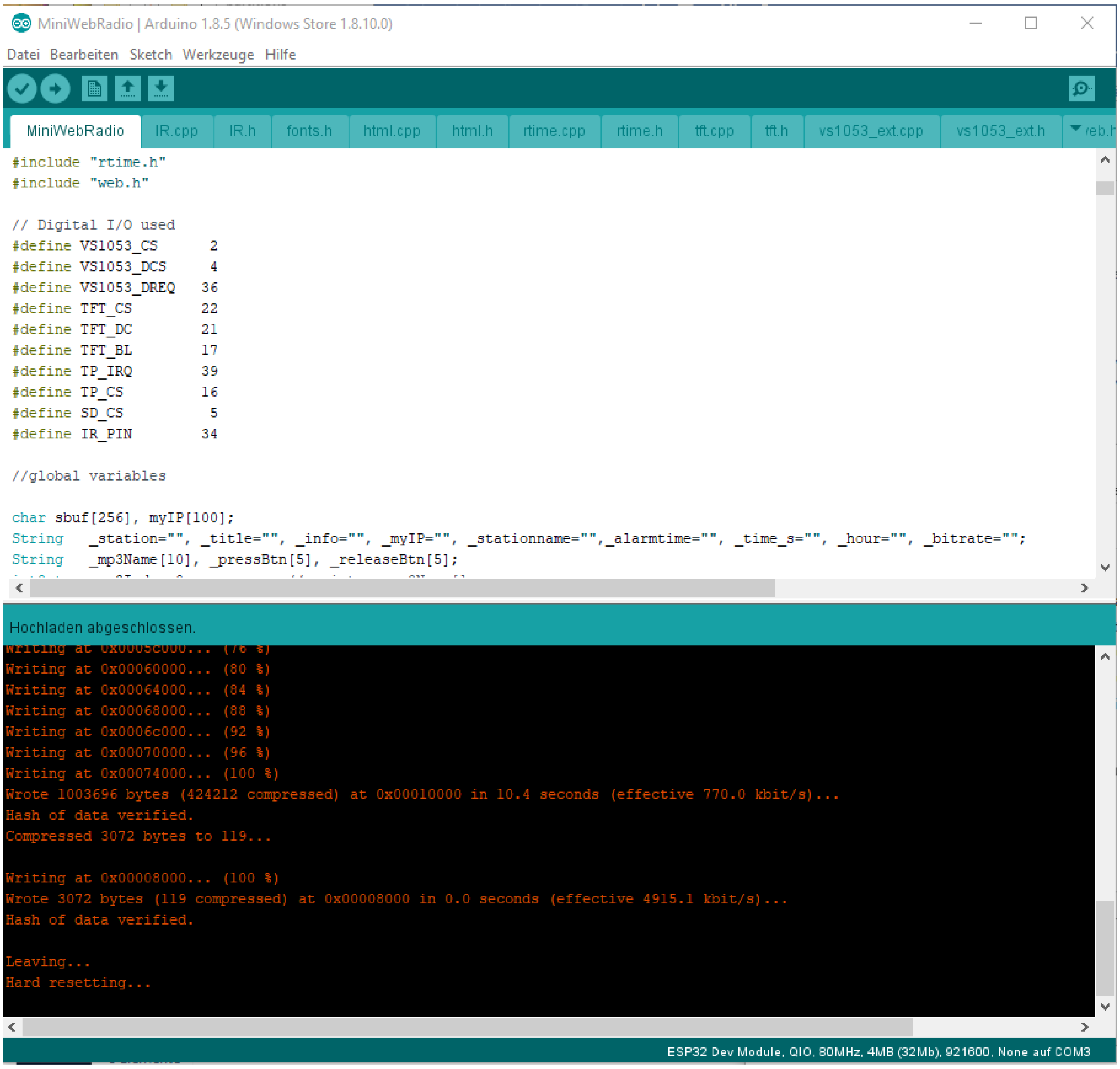
This can be done with a text editor.


› Dokumente › Arduino › hardware › espressif › esp32 › tools › partitions

Name	Änderungsdatum	Typ	Größe
_default.csv	15.03.2018 23:29	Microsoft Excel-C...	1 KB
boot_app0.bin	09.03.2018 02:16	BIN-Datei	8 KB
default.bin	09.03.2018 02:16	BIN-Datei	3 KB
default.csv	10.12.2017 19:53	Microsoft Excel-C...	1 KB
minimal.csv	09.03.2018 02:16	Microsoft Excel-C...	1 KB

Or alternatively, the default. csv will overwrite the file from the Additional_info.

After that, the sketch can be compiled and uploaded.



```
#include "rtime.h"
#include "web.h"

// Digital I/O used
#define VS1053_CS       2
#define VS1053_DCS      4
#define VS1053_DREQ    36
#define TFT_CS         22
#define TFT_DC         21
#define TFT_BL         17
#define TP_IRQ         39
#define TP_CS          16
#define SD_CS           5
#define IR_PIN         34

//global variables

char sbuf[256], myIP[100];
String   _station="", _title="", _info="", _myIP="", _stationname="",_alarmtime="", _time_s="", _hour="", _bitrate="";
String   _mp3Name[10], _pressBtn[5], _releaseBtn[5];
```

Hochladen abgeschlossen.

```
Writing at 0x0005c000... (76 %)
Writing at 0x00060000... (80 %)
Writing at 0x00064000... (84 %)
Writing at 0x00068000... (88 %)
Writing at 0x0006c000... (92 %)
Writing at 0x00070000... (96 %)
Writing at 0x00074000... (100 %)
Wrote 1003696 bytes (424212 compressed) at 0x00010000 in 10.4 seconds (effective 770.0 kbit/s)...
Hash of data verified.
Compressed 3072 bytes to 119...

Writing at 0x00008000... (100 %)
Wrote 3072 bytes (119 compressed) at 0x00008000 in 0.0 seconds (effective 4915.1 kbit/s)...
Hash of data verified.

Leaving...
Hard resetting...
```

ESP32 Dev Module, QIO, 80MHz, 4MB (32Mb), 921600, None auf COM3

Sincerely,

Wolle