GigaDevice Semiconductor Inc.

Arm® Cortex®-M3/4/23/33 32-bit MCU

Application Note

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1. Introduction

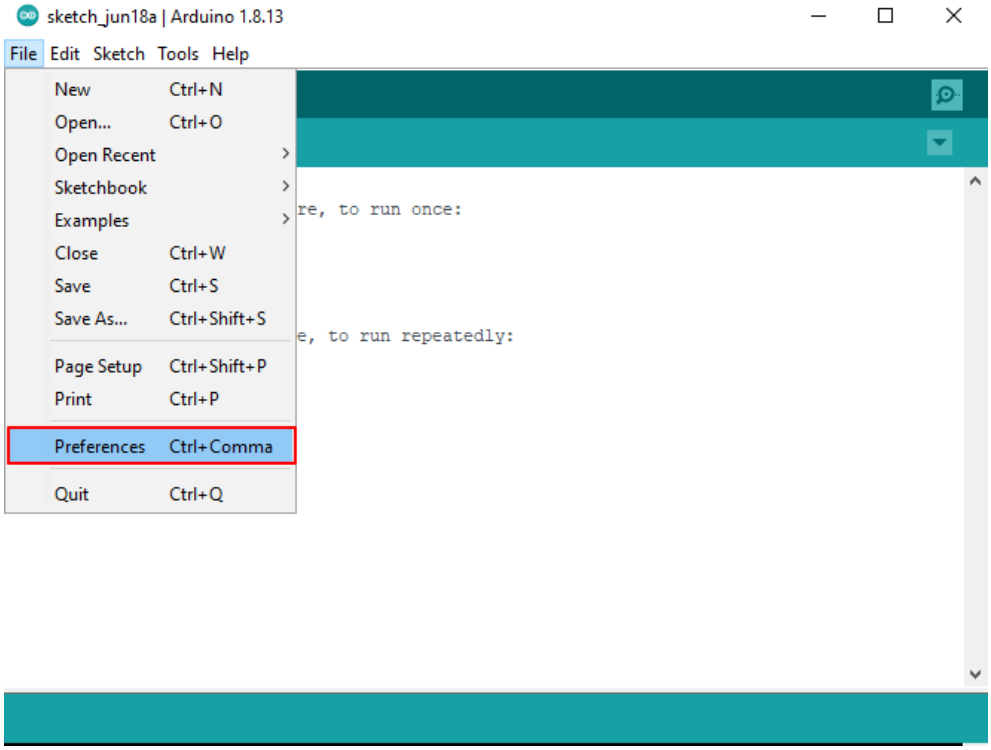
This Application Note describes how to configure and develop a GD32 MCU project using the Arduino IDE, the processes are described in the following paragraphs.

2. Install gd32 library

Users can install the gd32 library by the following steps.

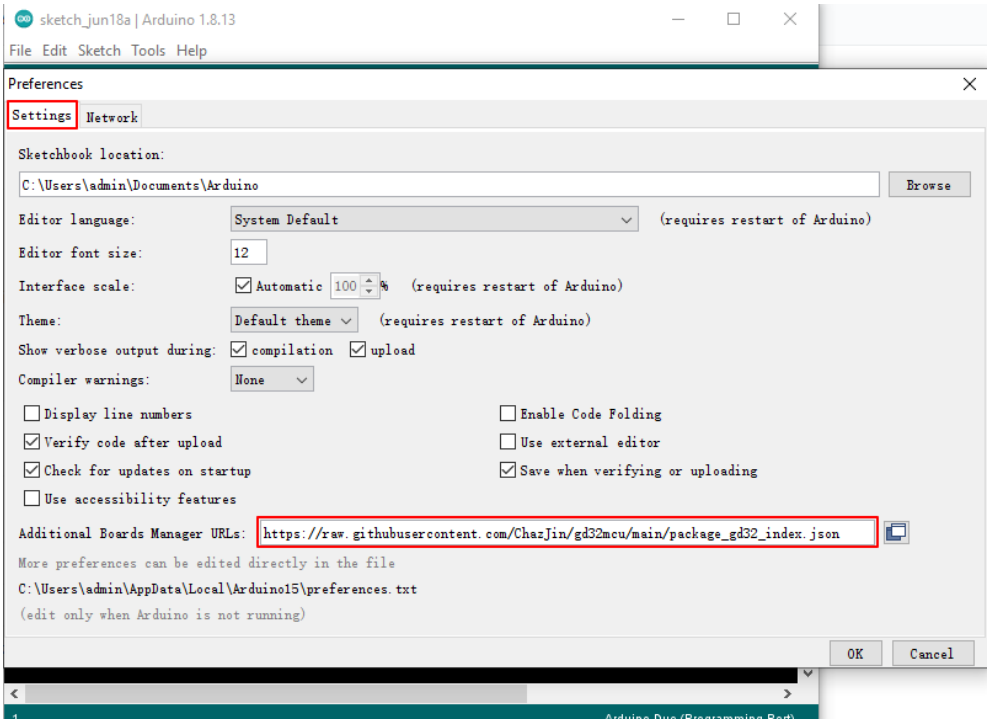
1. Open the Preferences

Figure 2-1. Open the Preferences



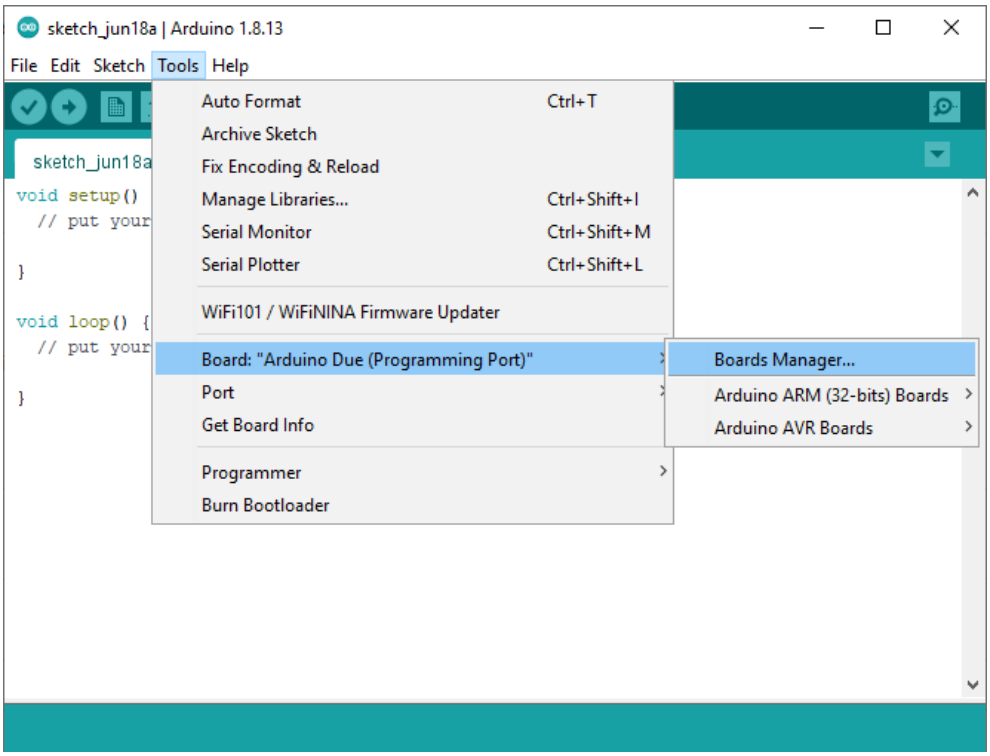
2. Add gd32 package url, then click "OK" button.

Figure 2-2. Add gd32 package url



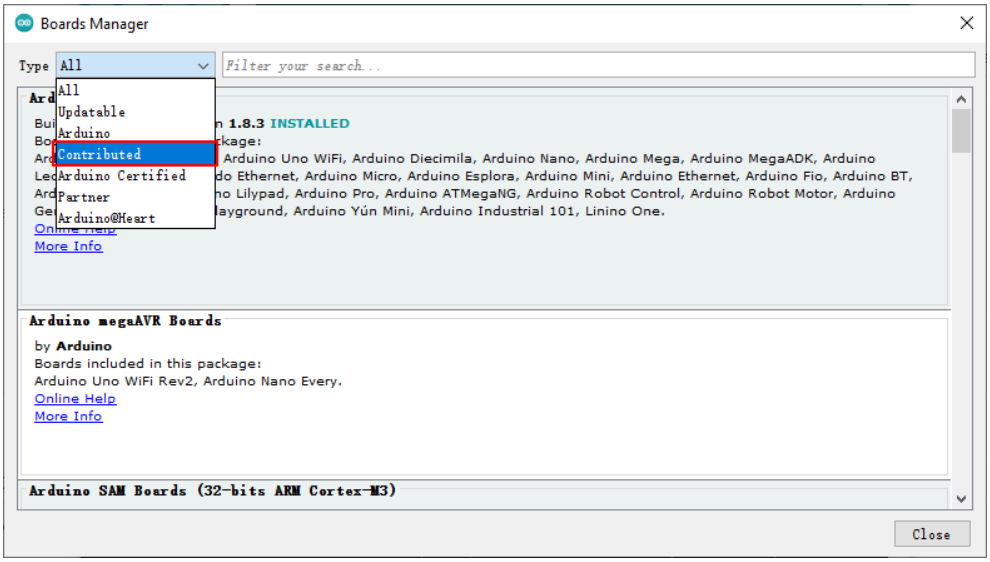
3. Open boards manager

Figure 2-3. Open boards manager



4. Select contributed type.

Figure 2-4. Select contributed type



5. Select GD32 ARM Boards to install.

Figure 2-5. Select GD32 ARM Boards to install

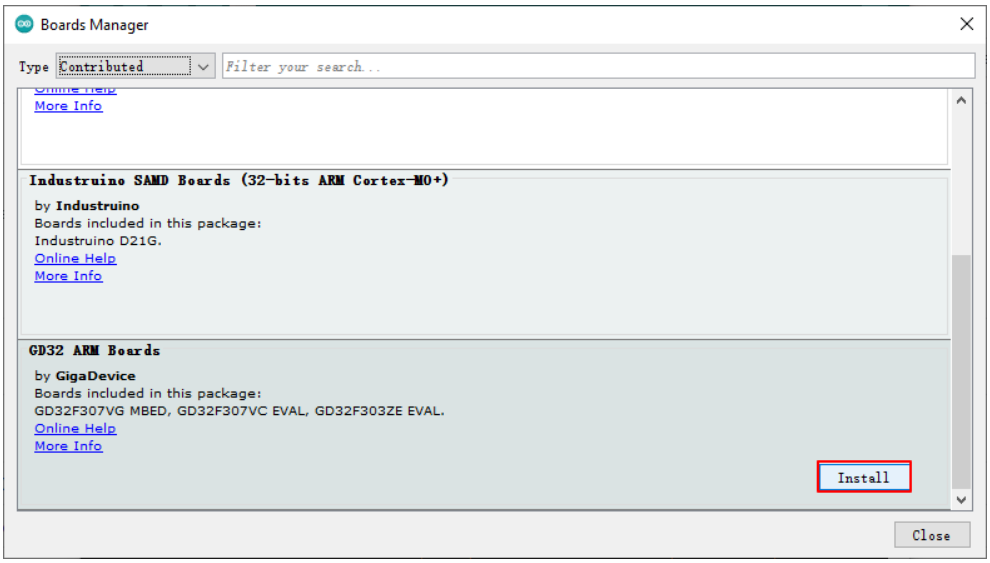
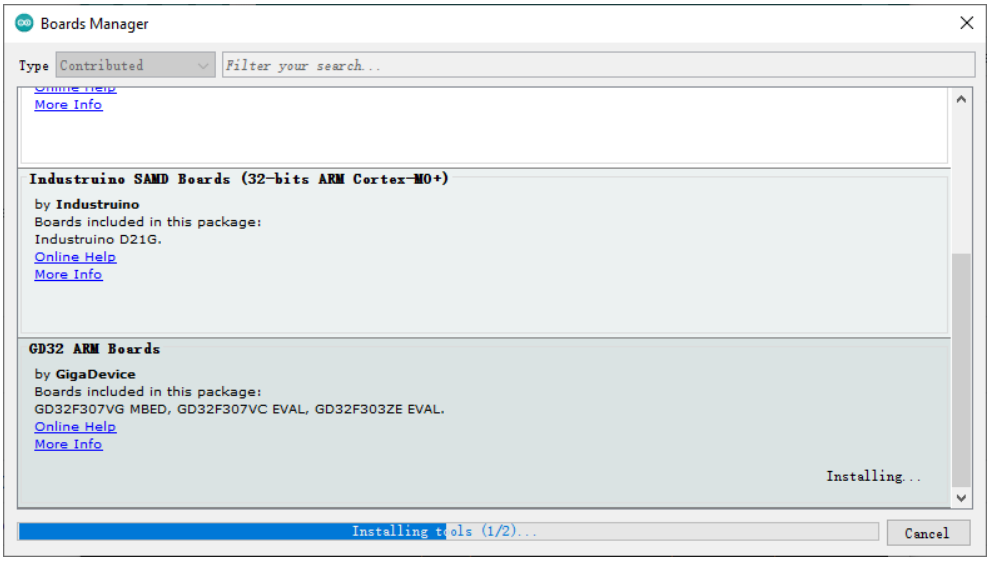


Figure 2-6. Install the board

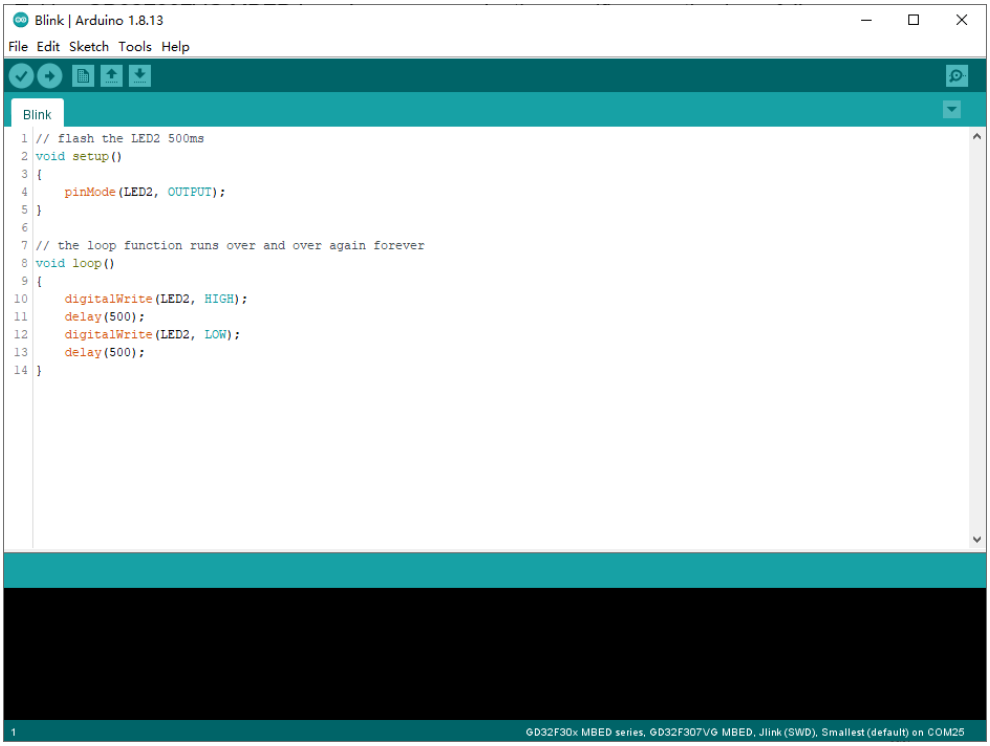

Boards Manager
Type
Contributed
Filter your search...
More Info
Industruino SAMD Boards (32-bits ARM Cortex-M0+)
by Industruino
Boards included in this package:
Industruino D21G.
Online Help
More Info
GD32 ARM Boards
by GigaDevice
Boards included in this package:
GD32F307VG MBED, GD32F307VC EVAL, GD32F303ZE EVAL.
Online Help
More Info
Installing...
Installing tools (1/2)...
Cancel

3. Develop gd32 Arduino project

Taking GD32F307VG MBED board as an example, the specific operation is as follows.

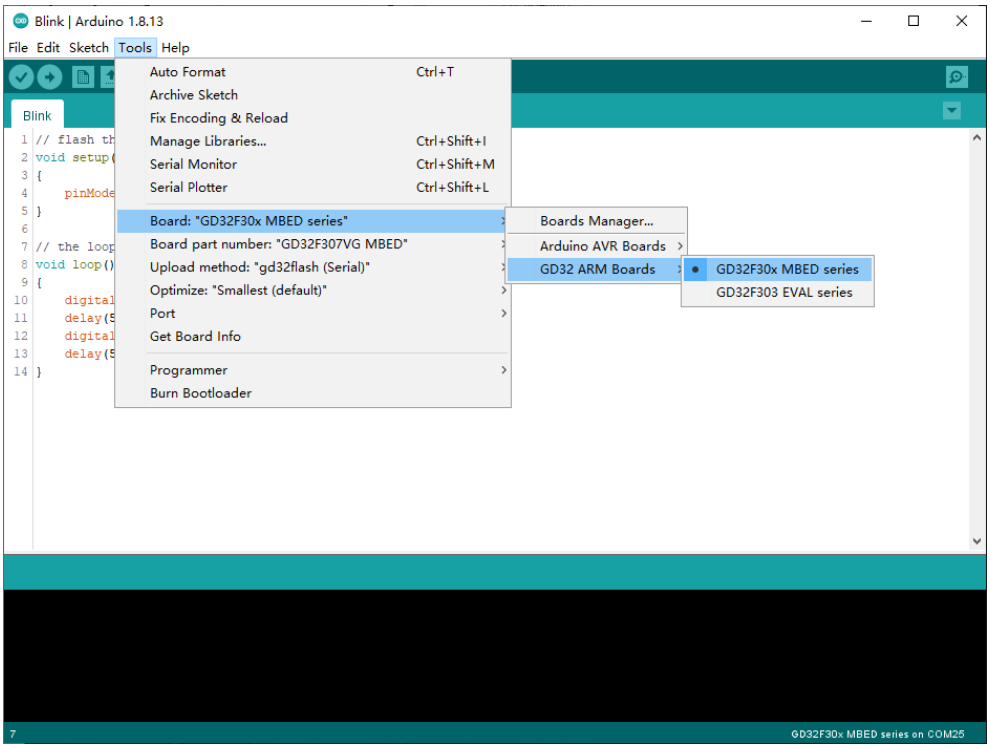
1. Open the Arduino IDE

Figure 3-1. Open the Arduino IDE



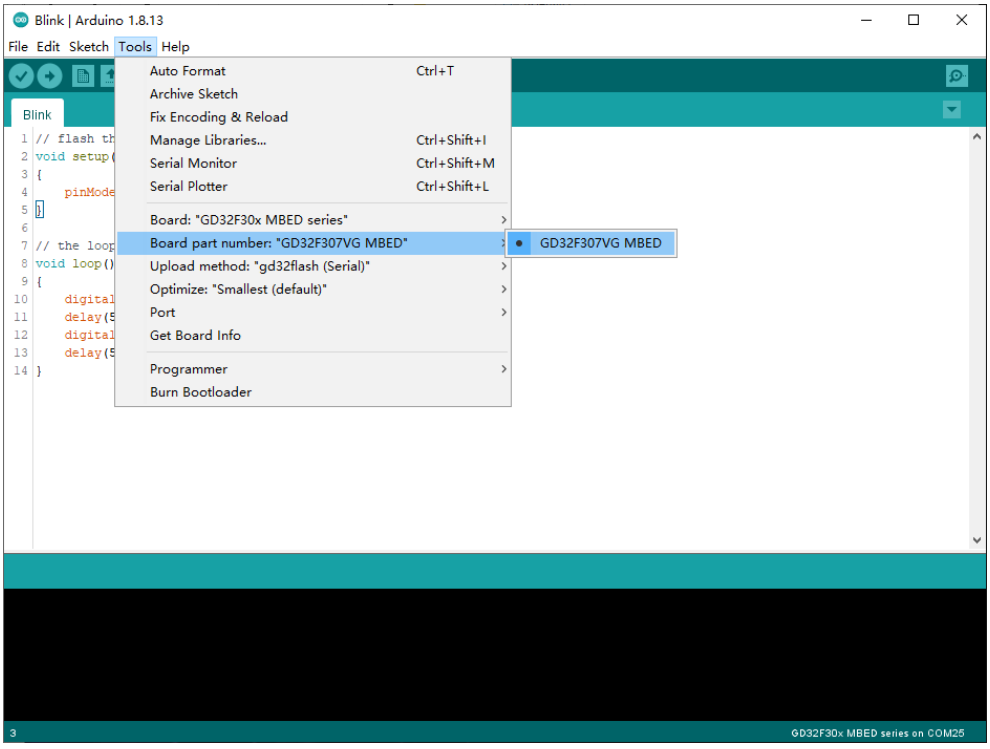
2. Select the GD32 MCU development board series

Figure 3-2. Select the board series



3. Select the specific GD32 MCU development board

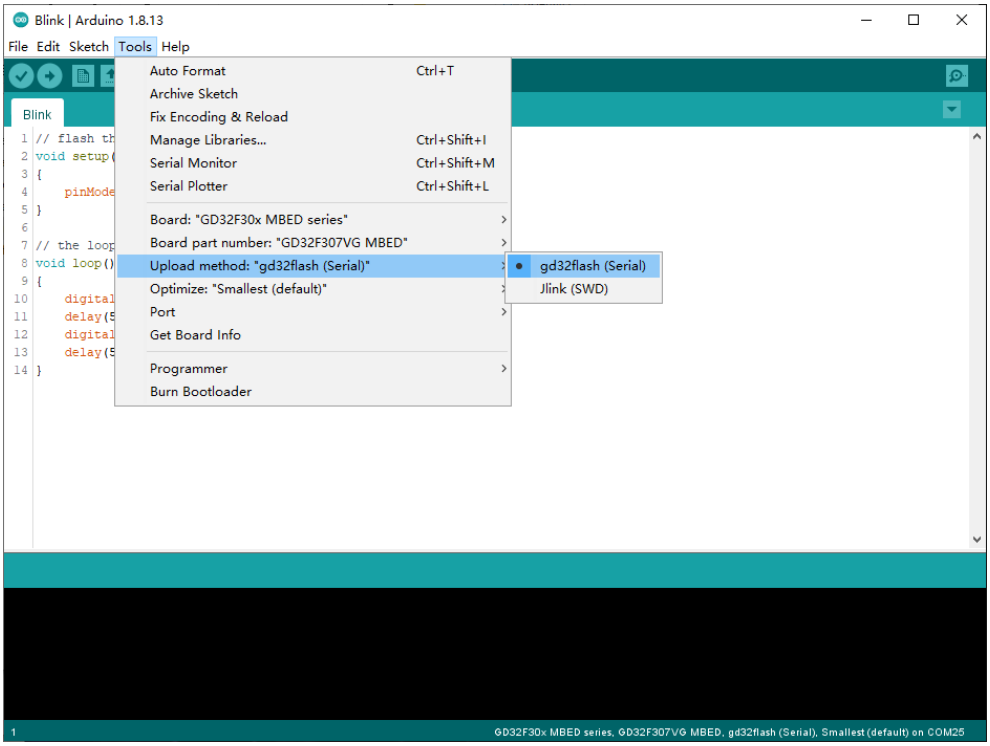
Figure 3-3. Select the specific board



4. Select the GD32 MCU upload method

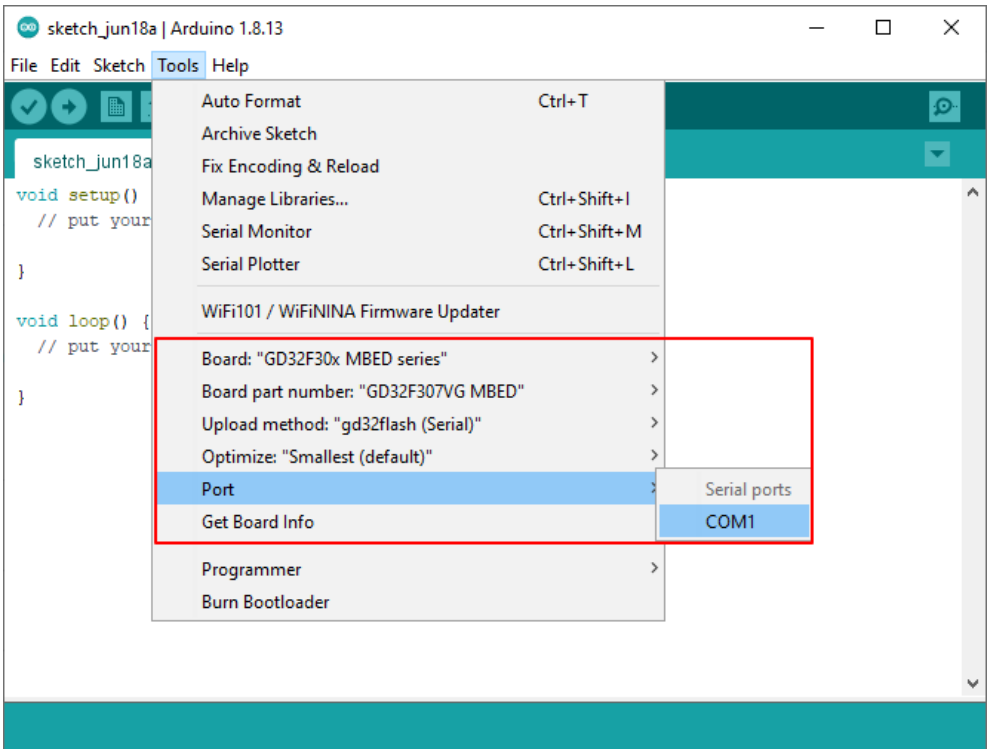
Users can select serial or jlink upload methods. For GD32F307VG MBED board, if use serial upload method, you need connect PD5 pin and PD6 pin to RX and TX of a serial port respectively.

Figure 3-4. Select the download method



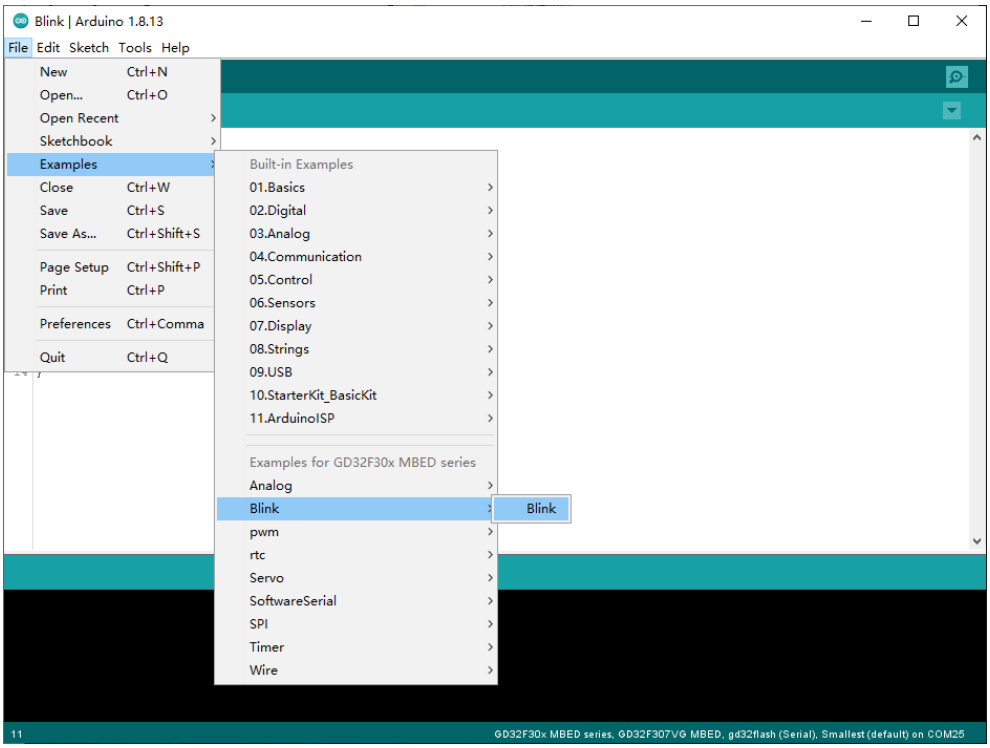
5. Select the GD32 MCU serial port

Figure 3-5. Select the serial port



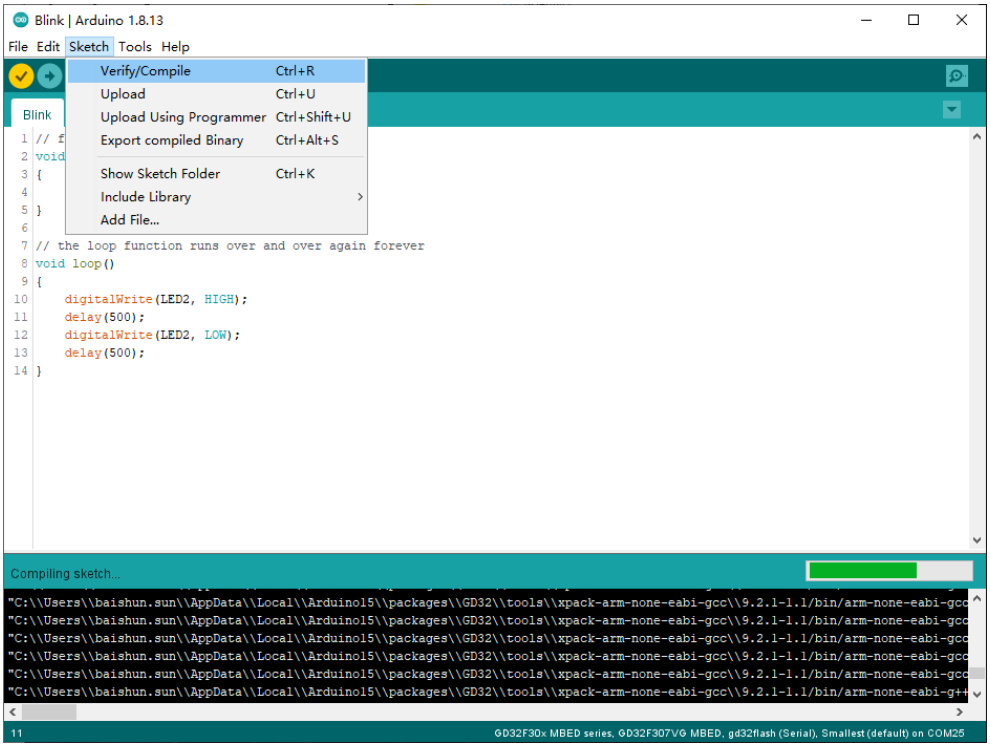
6. Select the GD32 MCU development board example, eg. Blink.

Figure 3-6. Select the board example



7. Compile the project

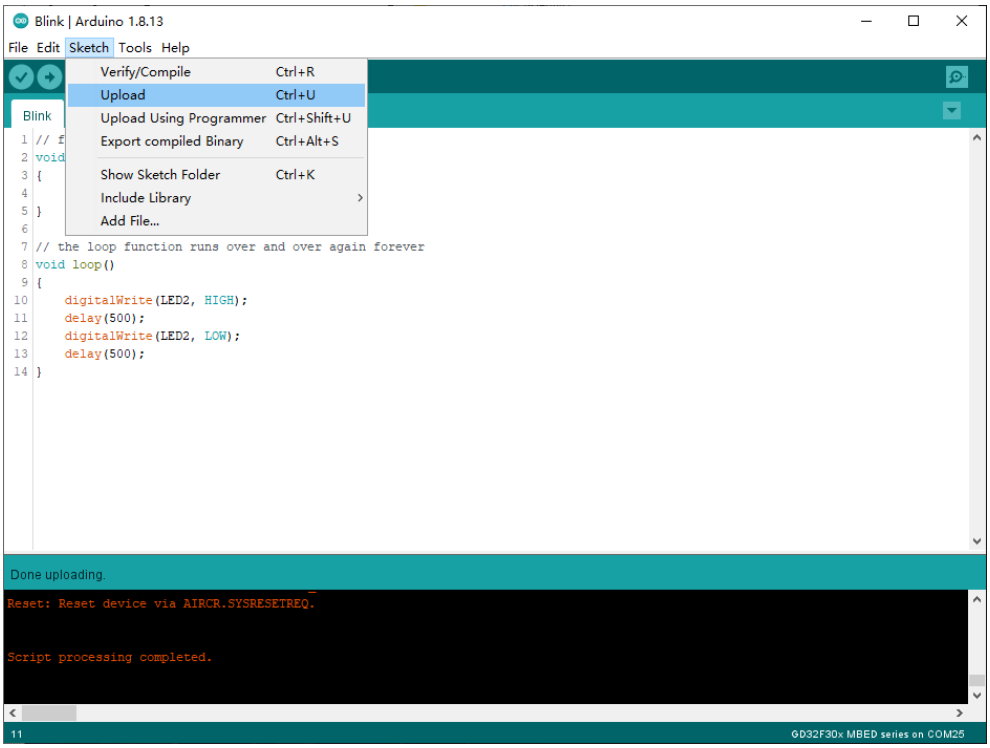
Figure 3-7. Compile the project



8. Upload the project

When the Blink sketch uploading is done, the LED2 on the board will flash every 500ms.

Figure 3-8. Upload the project



4. Download Program to GD32F307-MBED board

4.1. gd32flash (Serial)

In GD32F307 series, the boot loader is located in the internal boot ROM memory (system memory). It is used to reprogram the Flash memory by using USART0 (PA9 and PA10), USART1 (PD5 and PD6) and USBFS (PA9, PA11 and PA12) is available for boot functions. In GD32F307-MBED board, since PA9 and PA10 are occupied, PD5 and PD6 are suitable.

Choose upload method: gd32flash (Serial). Jump the BOOT0 jumper cap to 1-2, BOOT1 jumper cap to 2-3. Connect PD5 to serial TX and PD6 to serial RX. Refer to ***Table 4-1. Boot modes*** and ***Figure 4-1. Description of GD32F307-MBED board*** for details. The programming result is as shown in ***Figure 4-2. Programming successfully using gd32flash (Serial) upload method***.

Table 4-1. Boot modes

Selected boot source	Boot mode selection pins	
	Boot1	Boot0
Main Flash Memory	x	0
Boot loader	0	1
On-chip SRAM	1	1

Figure 4-1. Description of GD32F307-MBED board

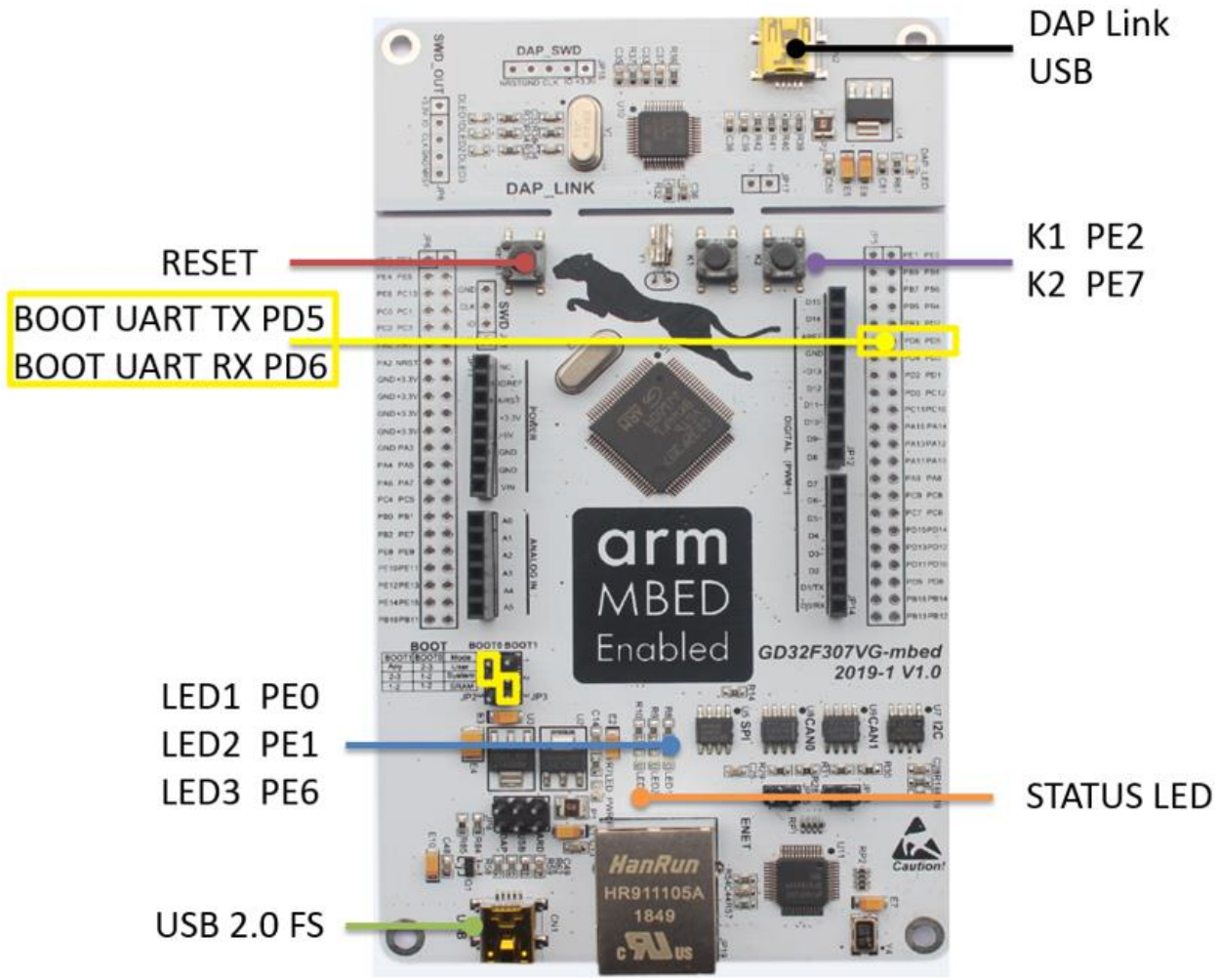


Figure 4-2. Programming successfully using gd32flash (Serial) upload method

```
Opening port     [OK]

Device  GD32F307VGT6

Disabling write protection        [OK]

Reseting device      [OK]

DOWNLOADING ...

Downloading     page 0        8000000          size 2.00    <KB>    [OK]
Downloading     page 1        8000800          size 2.00    <KB>    [OK]
Downloading     page 2        8001000          size 2.00    <KB>    [OK]
Downloading     page 3        8001800          size 1.55    <KB>    [OK]

2.892000 seconds

VERIFYING...

Verifying     page 0        8000000          size 2.00    <KB>    [OK]
Verifying     page 1        8000800          size 2.00    <KB>    [OK]
Verifying     page 2        8001000          size 2.00    <KB>    [OK]
Verifying     page 3        8001800          size 1.55    <KB>    [OK]

1.782000 seconds
```

4.2. JLink (SWD)

Choose upload method: JLink (SWD). Jump the BOOT0 jumper cap to 2-3, BOOT1 jumper cap to 2-3. The SWD port is as shown in ***Figure 4-3. Debugging port of GD32F307-MBED board***. Use SWD connection between JLINK and GD32 MCU. The programming result is as shown in ***Figure 4-4. Programming successfully using JLink (SWD) upload method***.

Figure 4-3. Debugging port of GD32F307-MBED board

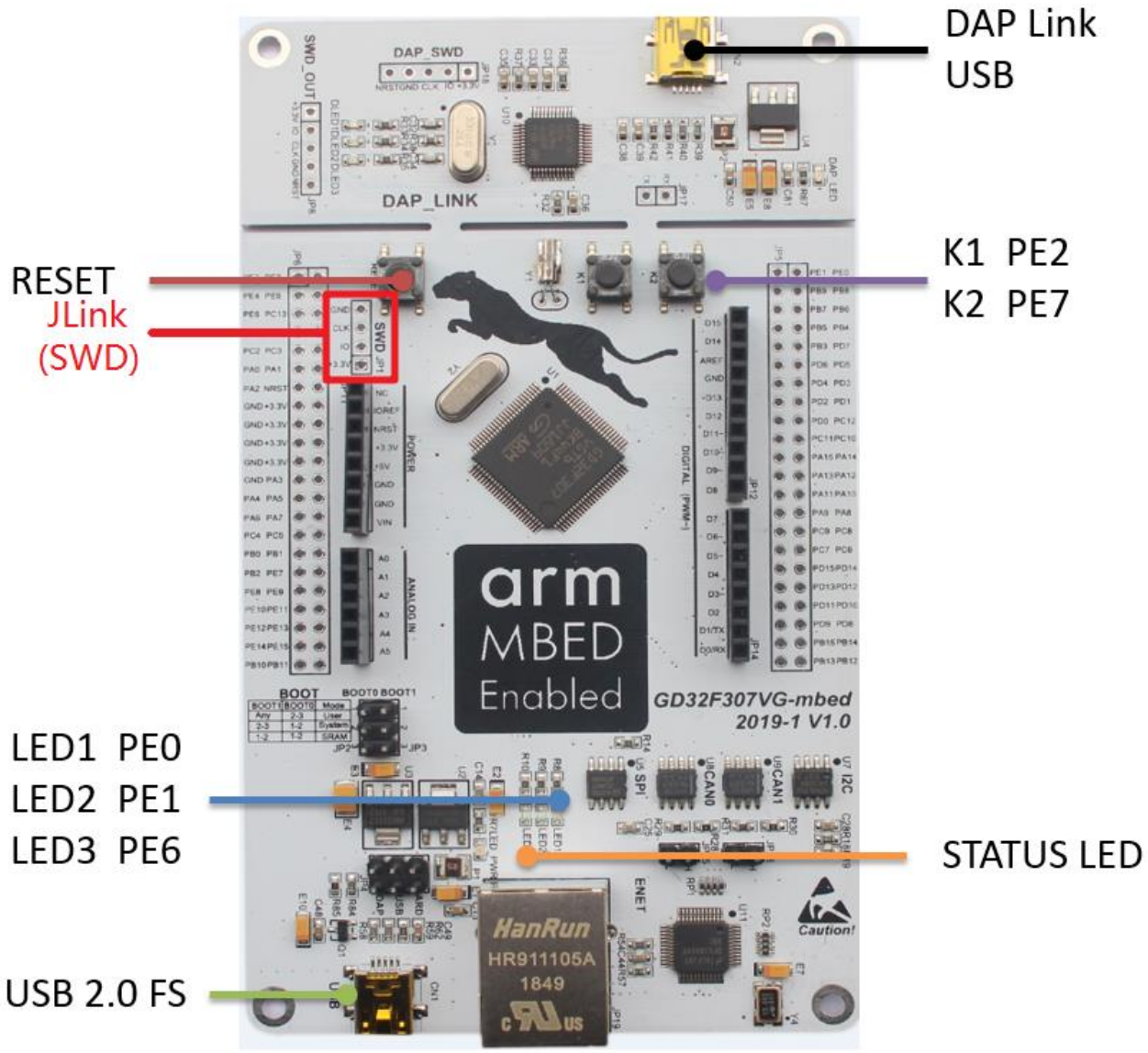


Figure 4-4. Programming successfully using JLink (SWD) upload method

```
J-Link Command File read successfully.
Processing script file...

J-Link connection not established yet but required for command.
Connecting to J-Link via USB...O.K.
Firmware: J-Link V9 compiled May 17 2019 09:50:41
Hardware version: V9.40
S/N: 59400616
License(s): RDI, FlashBP, FlashDL, JFlash, GDB
VTref=3.346V
Target connection not established yet but required for command.
Device "GD32F307VG" selected.


Connecting to target via SWD
Found SW-DP with ID 0x2BA01477
Found SW-DP with ID 0x2BA01477

****** Error: DAP error while reading DP-Ctrl-Stat register.
Found SW-DP with ID 0x2BA01477
Found SW-DP with ID 0x2BA01477
Cannot connect to target.

Target connection not established yet but required for command.
Device "GD32F307VG" selected.


Connecting to target via SWD
Found SW-DP with ID 0x2BA01477
Found SW-DP with ID 0x2BA01477
Found SW-DP with ID 0x2BA01477
Found SW-DP with ID 0x2BA01477
Scanning AP map to find all available APs
AP[0]: Stopped AP scan as end of AP map seems to be reached
Iterating through AP map to find AHB-AP to use
Cannot connect to target.

Target connection not established yet but required for command.
Device "GD32F307VG" selected.


Connecting to target via SWD
Found SW-DP with ID 0x2BA01477
Scanning AP map to find all available APs
AP[0]: Stopped AP scan as end of AP map seems to be reached
Iterating through AP map to find AHB-AP to use
Found SW-DP with ID 0x2BA01477
Found SW-DP with ID 0x2BA01477
Found SW-DP with ID 0x2BA01477
Cannot connect to target.


Script processing completed.
```

5. Revision history

Table 5-1. Revision history

Revision No.	Description	Date
1.0	Initial Release	Jul.1, 2021

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