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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
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 programme upload method

Users can select gd32flash(serial), GDlink(SWD) or jlink(SWD) 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**

![Select the download method](image)

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 GD32F307VG-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 GD32F307VG-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 RX and PD6 to serial TX. Refer to **Table 4-1. Boot modes** and **Figure 4-1. Description of GD32F307VG-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**

<table>
<thead>
<tr>
<th>Selected boot source</th>
<th>Boot mode selection pins</th>
<th>Boot1</th>
<th>Boot0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Flash Memory</td>
<td>x</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Boot loader</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>On-chip SRAM</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 4-1. Description of GD32F307VG-MBED board**
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. JLink debugging port of GD32F307VG-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. JLink debugging port of GD32F307VG-MBED board
4.3. **GDLink (SWD)**

Choose upload method: GDLink (SWD). Jump the BOOT0 jumper cap to 2-3, BOOT1 jumper cap to 2-3. The SWD port is as shown in Figure 4-5. **GDLink debugging port of GD32F307VG-MBED board.** Use SWD connection between GDLINK and GD32 MCU. The programming result is as shown in **Figure 4-6. Programming successfully using GDLink (SWD) upload method.**

Figure 4-5. GDLink debugging port of GD32F307VG-MBED board
Figure 4-6. Programming successfully using GDLINK (SWD) upload method
5. Revision history

Table 5-1. Revision history

<table>
<thead>
<tr>
<th>Revision No.</th>
<th>Description</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Initial Release</td>
<td>Jul.1, 2021</td>
</tr>
</tbody>
</table>
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