Tips: 1. Flash address used by LPC51U68 flash commands such as flash-erase-region, -flash-write-memory, flash-fill-memory should be page-aligned(256Byte-aligned), Otherwise, normal functions cannot be realized.

2. In this flash-resident version, the first flash sector(0x0000 0000 – 0x0000 7FFF) is used to store flash loader. So user application should not use sector 0 and sector 1 – sector 7 can be used to store user application.

1. LPC51U68 Flash Loader project is located in \boards\lpcxpresso51u68\bootloader\_examples\flashloader\mdk.
2. Connect LPCXpress51U68 Rev A board(OM40005) using USB cable to PC as the figure 1 shown.



Fig 1. Connection between LPC51U68 Expresso board to PC

1. Connect JP10 using jumper as the figure 2 shown to establish a connection between J5 (USB Header) to LPC51U68 VBUS pin.

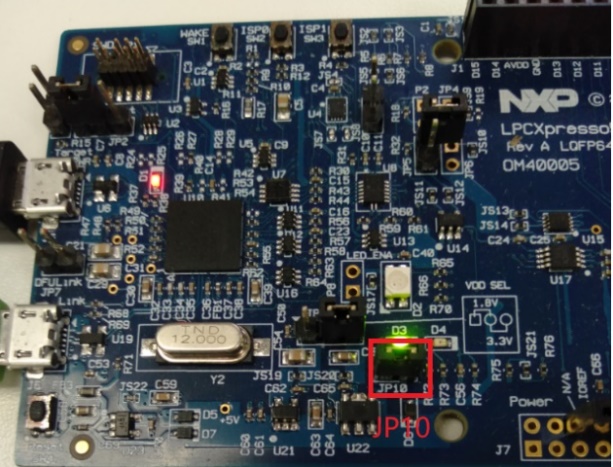


Fig 2. Connect JP10 jumper

1. Configure and compile user application MDK project. Specify entry address in flash where user application binary file is placed. Here, GPIO project which is located in \boards\lpcxpresso51u68\driver\_examples\gpio\led\_output is adopted as user application binary file. Open scatter file of this project and set m\_text\_start macro to proper value. Here, m\_text\_start is set to 0x8000.

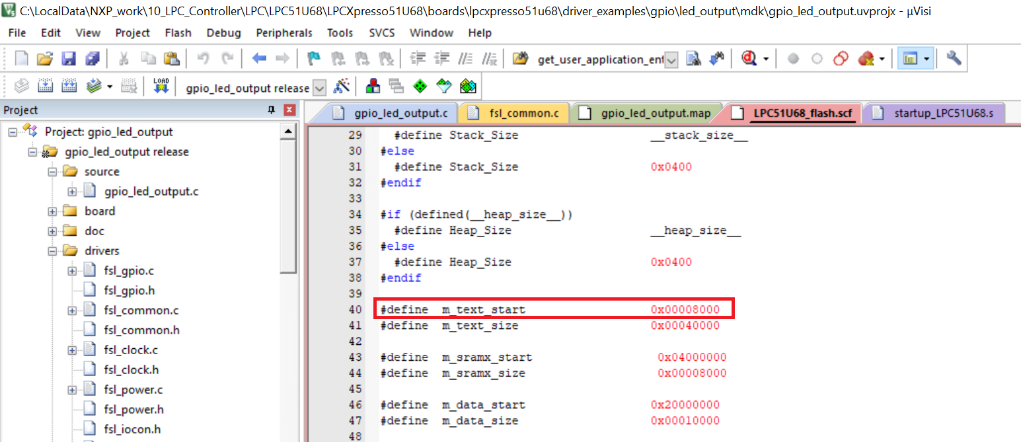


Fig 3. Specify user application entry address resident in flash

1. Open flash loader project and compile and program this project to flash. The operating steps are shown in figure 4.

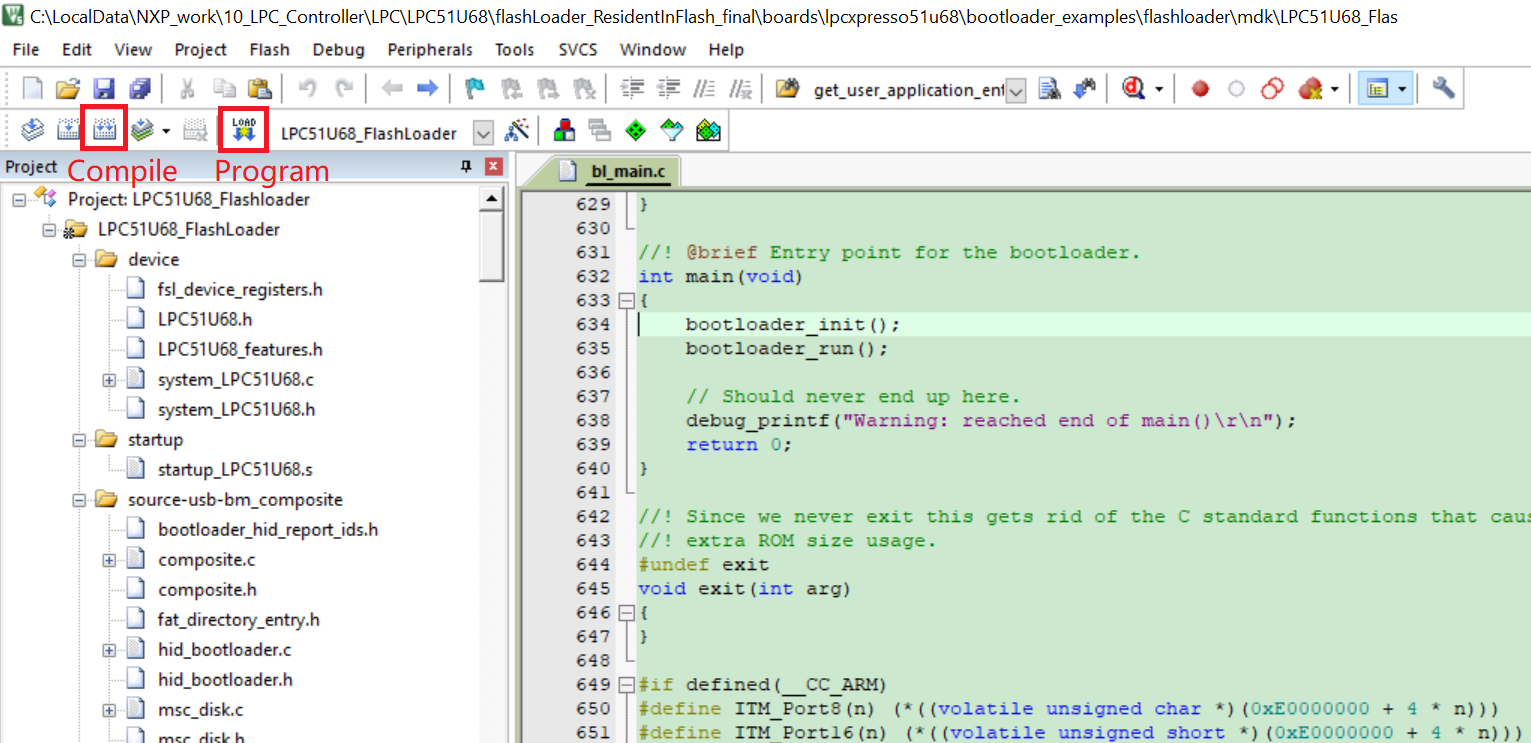


Fig 4. Compile and Program flash loader

1. Open blhost.exe located in \middleware\mcu-boot\bin\Tools\blhost\win as figure 5 shown.

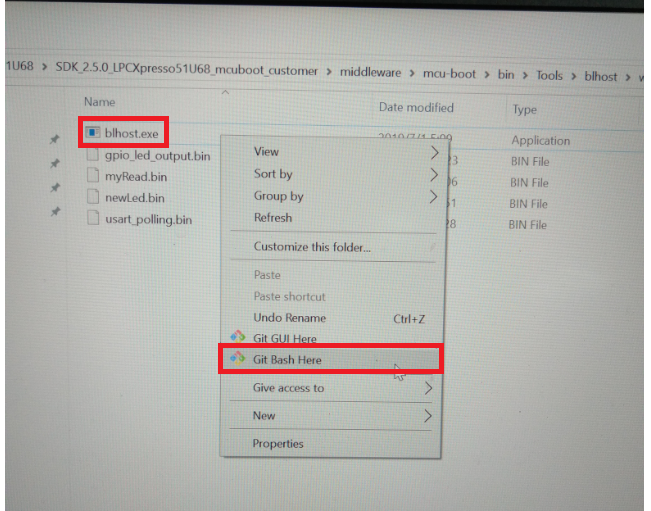


Fig 5. Open blhost.exe

1. A command line interface is shown as figure 6.

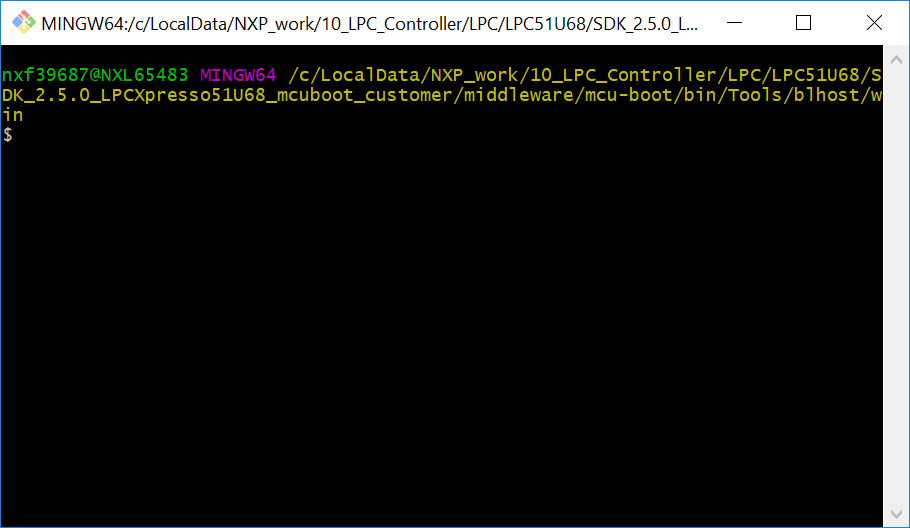


Fig 6. blhost command line interface

1. Press reset button in order to start up flash loader and verify whether blhost running in PC is able to communicate with flash loader running in LPCXpresso51U68 board using get-property command or not. Command get-property 1 can be used to retrieve flash loader version.

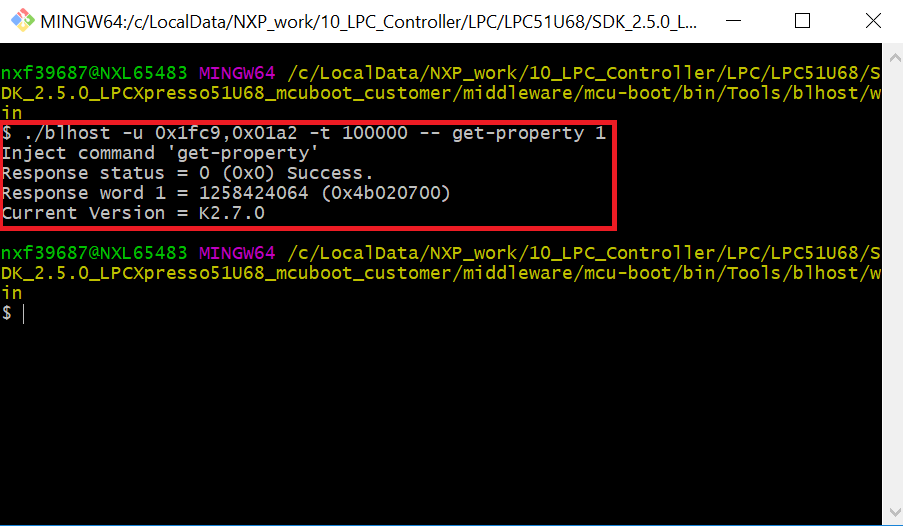


Fig 7. Retrieve flash loader version

1. Update firmware
   1. erase flash occupied by firmware as shown in figure 8 using

./blhost -u 0x1fc9,0x01a2 -t 100000 -- flash-erase-all

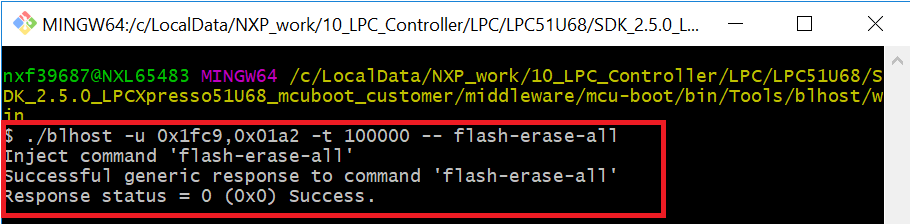


Fig 8.flash erase

* 1. program firmware

9.2.1

place firmware and blhost.exe in the same file directory. Here, demo firmware gpio\_led\_output.bin is placed at the same file directory with blhost.exe as shown in figure 9.

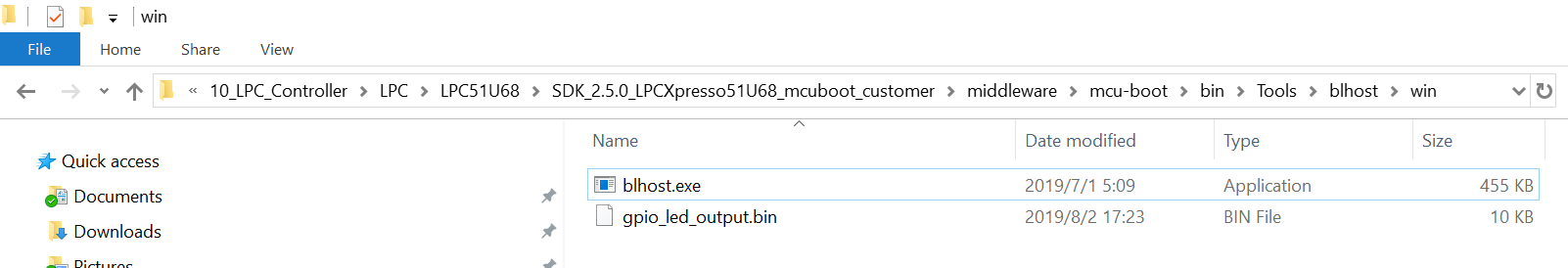


Fig 9. specify firmware file path

9.2.2

Run command below to program firmware – gpio\_led\_output.bin at starting

address 0x8000 in LPC51U68 flash. The command is shown below:

./blhost -u 0x1fc9,0x01a2 -t 100000 -- write-memory 0x8000 gpio\_led\_output.bin

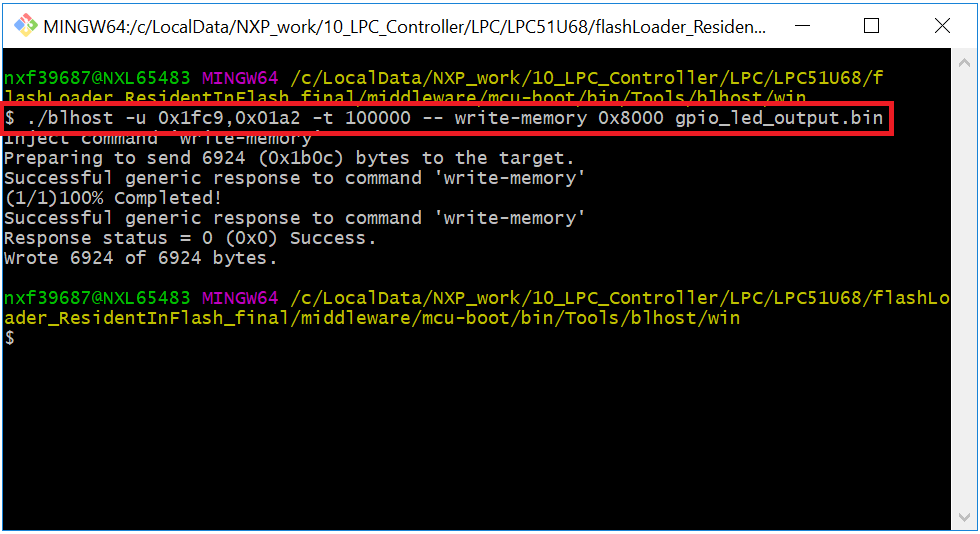


Fig 10. Program firmware

* 1. run firmware

9.3.1

Obtain user application entry address and stack pointer address. User application

binary file can provide them mentioned above and they are saved in user

application binary file in Little-Endian mode.

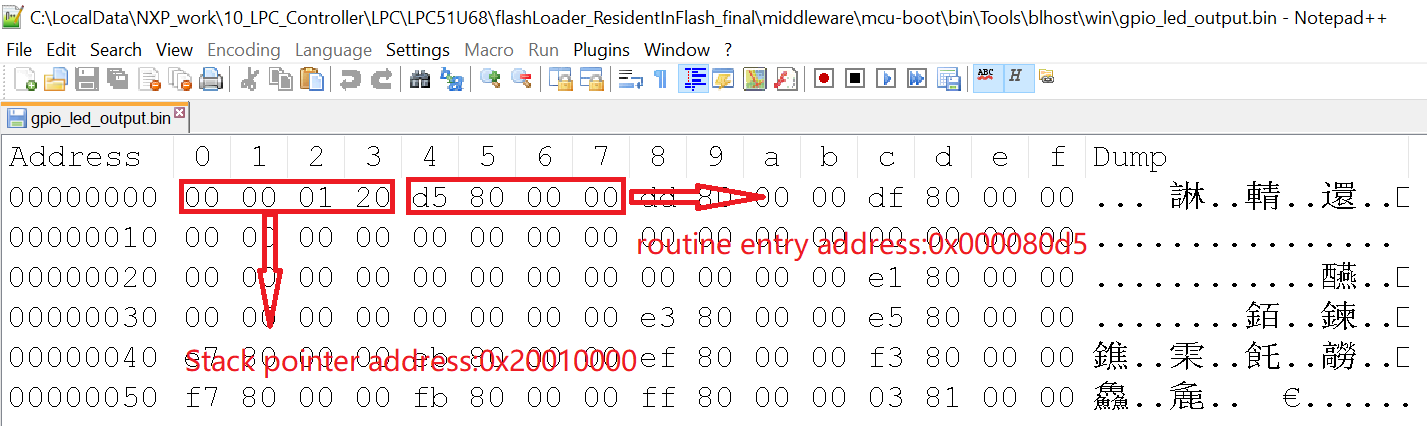


Fig 11. User application entry address and stack pointer address

9.3.2

Execute execute command in order to run user application.

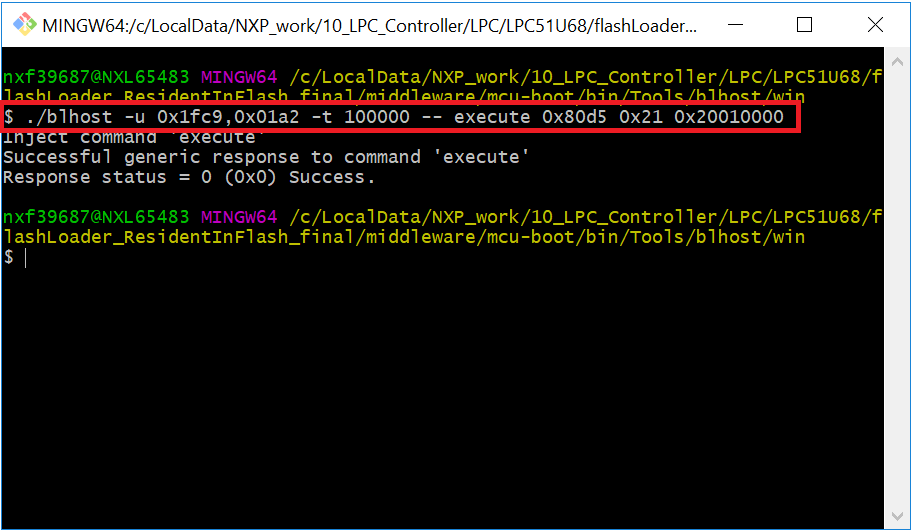


Fig 12. Run user application

1. log-capture

The command – log-capture is a new command for blhost running on PC end. User should allocate storage space in on-chip flash of LPC51U68 for led device information and user application should preprogram led device information to on-chip flash of LPC51U68 before running log-capture command.

A structure named led\_device\_info is defined in blhost to describe status of led

device. As an example, only one member - led\_status is included in led\_device\_info structure.

struct led\_device\_info

{

uint32\_t led\_status;

};

Run log-capture command and a log file is generated in the same file directory as

blhost.exe. The usage of log-capture command is described like this:  
./blhost -u 0x1fc9,0x01a2 -- log-capture start\_addr size [file\_name]

log-capture: command word

start\_addr : start address of led device information located at

size: size of led device information

file\_name: log file path, it is optional