

How to Debug ADUC with Different Keil Version

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Revision History

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2010-04-11	Rev. V1.0	Neil Zhao

Abbreviation

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How to Debug ADUC with Different Keil Version

Goal

Different ADUC products have different Keil version in the corresponding CD. The Keil uVision3 V3.22 which is integrated in our CD of ADuC702x can be used to debug ADE7169F16, ADuC7019, ADuC7020, ADuC7021, ADuC7022, ADuC7024, ADuC7025, ADuC7026, ADuC7027, ADuC7030, ADuC7032, ADuC812, ADuC814, ADuC816, ADuC824, ADuC831, ADuC832, ADuC834, ADuC836, ADuC841, ADuC842, ADuC843, ADuC845, ADuC847 and ADuC848 under the default configuration. The Keil uVision3 V3.55a which is integrated in our CD of ADuC706x can be used to debug ADuC7019, ADuC7020, ADuC7021, ADuC7022, ADuC7024, ADuC7025, ADuC7026, ADuC7027, ADuC7028, ADuC7030, ADuC7032, ADuC7033, ADuC7060, ADuC7128, ADuC7129 and ADuC7229 under the default configuration. But when you build target with Keil uVision3 V3.55a, you would be informed that the evaluation version has expired. Now, the recommended free version on Keil website is Keil uVision4 V4.03 and it can be used to debug ADuC7019, ADuC7020, ADuC7021, ADuC7022, ADuC7023, ADuC7024, ADuC7025, ADuC7026, ADuC7027, ADuC7028, ADuC7029, ADuC7030, ADuC7032, ADuC7033, ADuC7034, ADuC7036, ADuC7037, ADuC7038, ADuC7039, ADuC7060, ADuC7061, ADuC7062, ADuC7122, ADuC7128, ADuC7129 and ADuC7229. The website is: <http://www.keil.com/demo/eval/arm.htm>. Many customers have puzzles about how to use the new Keil version to debug our products since they even can not build the target with it. This document introduces the steps about how to debug ADUC products with the Keil uVision3 V3.22 (integrated in our CD) and the new one Keil uVision4 V4.03, we can see some difference between them about configuration and interrupt program. Different Keil version information is listed in appendix.

Instrument

Hardware: EVAL-ADuC7026

Software: Keil uVision3 V3.22, Keil uVision4 V4.03

Step

1. Install Keil uVision3 and Keil uVision4. Please note that if you wanted to use same version but different sub-series such as Keil uVision3 V3.22 and Keil uVision3 V3.55a in the same computer, they should be installed in different path or the later one will overwrite the previous one.
2. Set up the project. Run Keil firstly, and choose New Project as figure 1 shows.

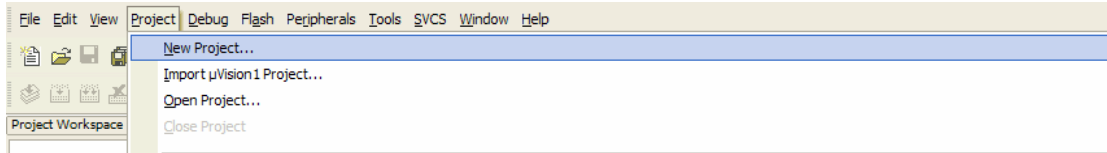


Figure 1

Input the project name and then save it. After that, choose the device as figure 2 shows.

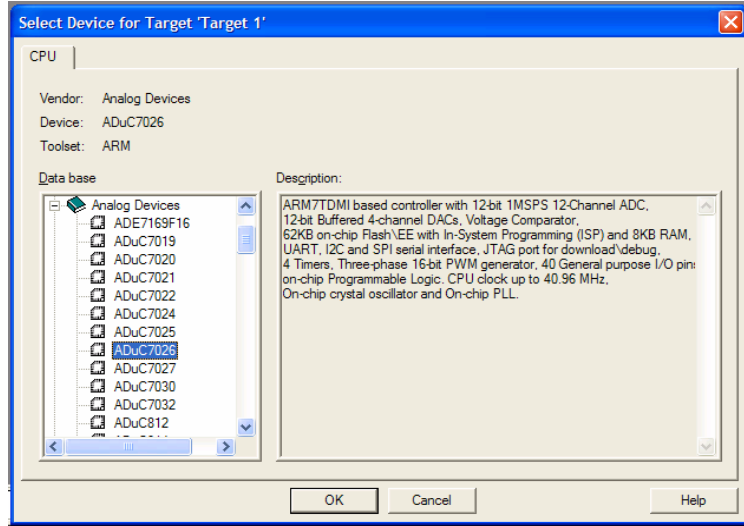


Figure 2

Create a new file as figure 3 shows and save it as .c file.

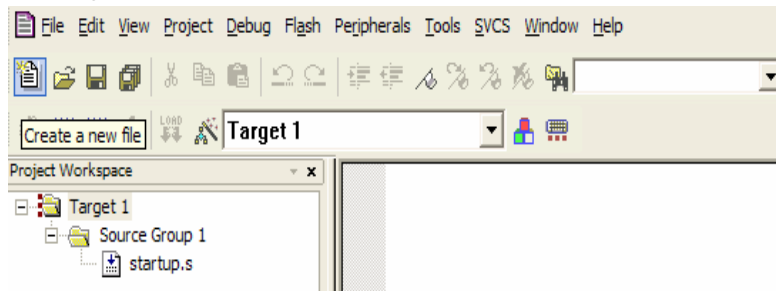


Figure 3

Program it and add the file to “Source Group 1” by clicking right key on “Source Group 1” as figure 4 shows. If we use Keil uVision4 V4.03, then a file named irq_arm.c or irq_keil.c should also be added to “Source Group 1”. Or else, the project can not be compiled. The irq_arm.c or irq_keil.c can be found from the Keil installation path such as following: C:\Keil\ARM\INC\ADI. If we have the same function definition with the one in irq_arm.c(irq_keil.c) in other .c file, we can delete the corresponding one in irq_arm.c(irq_keil.c) or we will get the error of multiply defined.

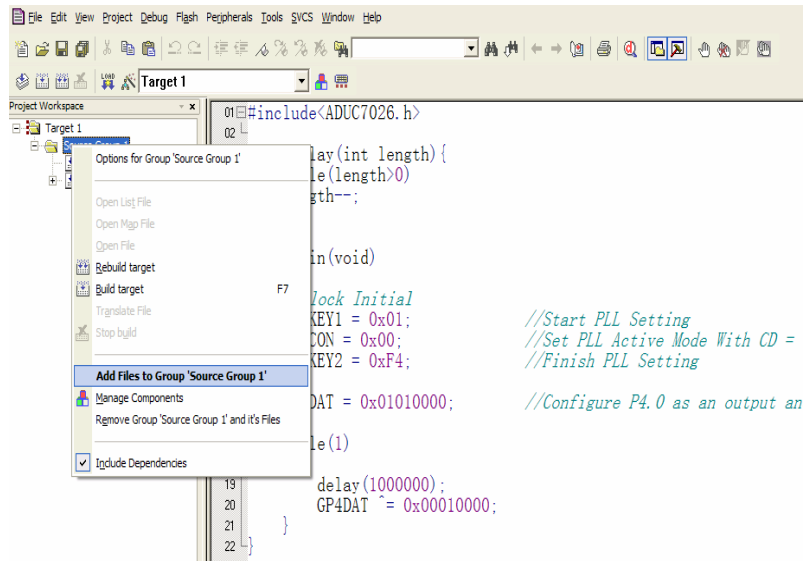


Figure 4

3. Configure Keil.

(1) Choose the “Options of Target” as figure 5 shows.

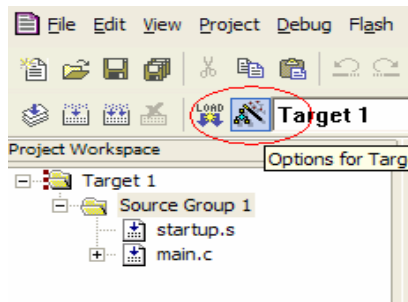


Figure 5

(2) Choose “Create HEX File” under Output tab so that we can get .hex file to download as figure 6 shows.

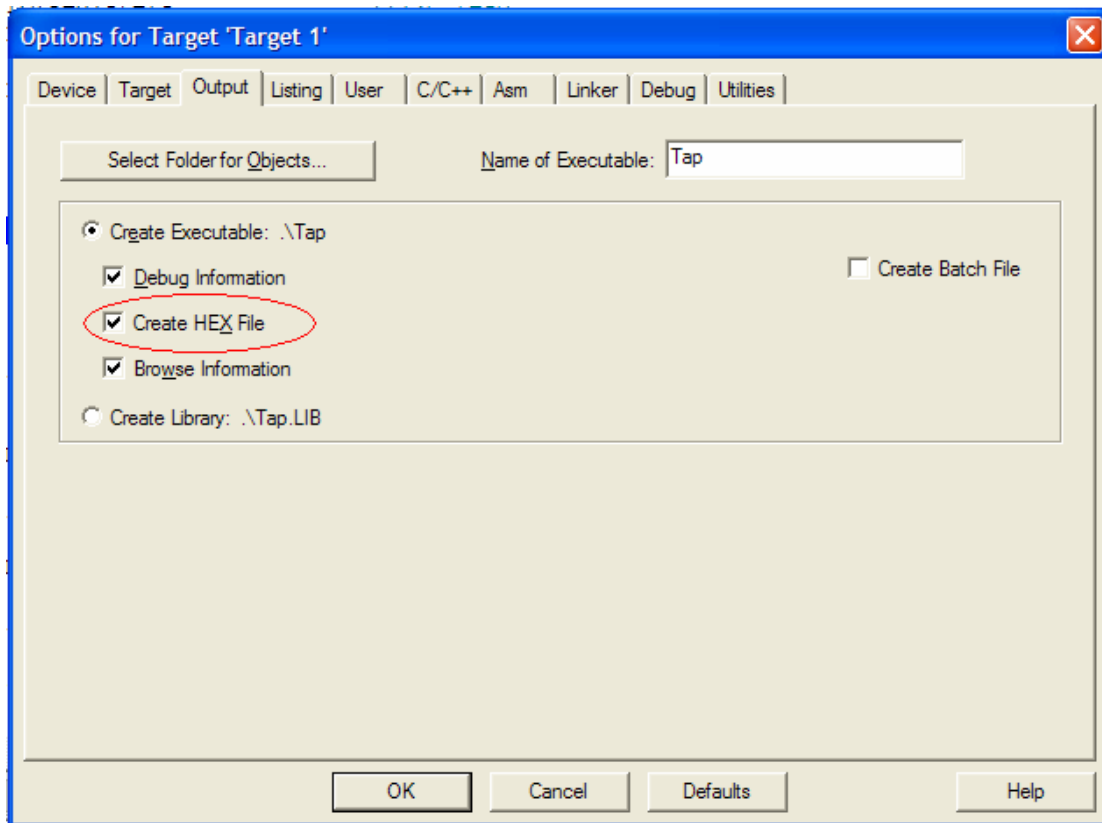


Figure 6

After that, we can program ADUC7026 with ARMWSD for Keil uVision3 V3.22. Refer to Keil uVision4 V4.03, sometimes there is no problem for compiling, but the performance of MCU is not the expected when interrupt function is used. The further configuration as listed below is needed.

(3) Tick the Use Memory Layout from Target Dialog in the Linker window as figure 7 shows.

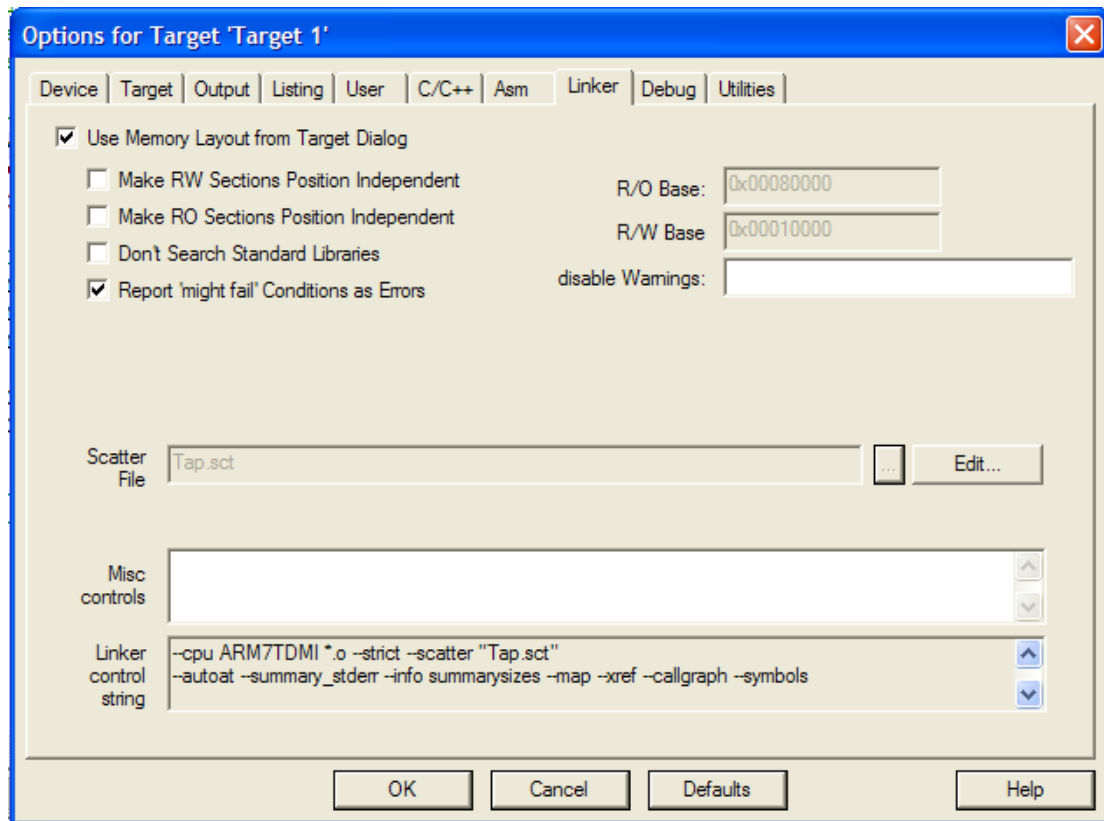


Figure 7

(4) Select the J-LINK case in the debug window as figure 8 shows.

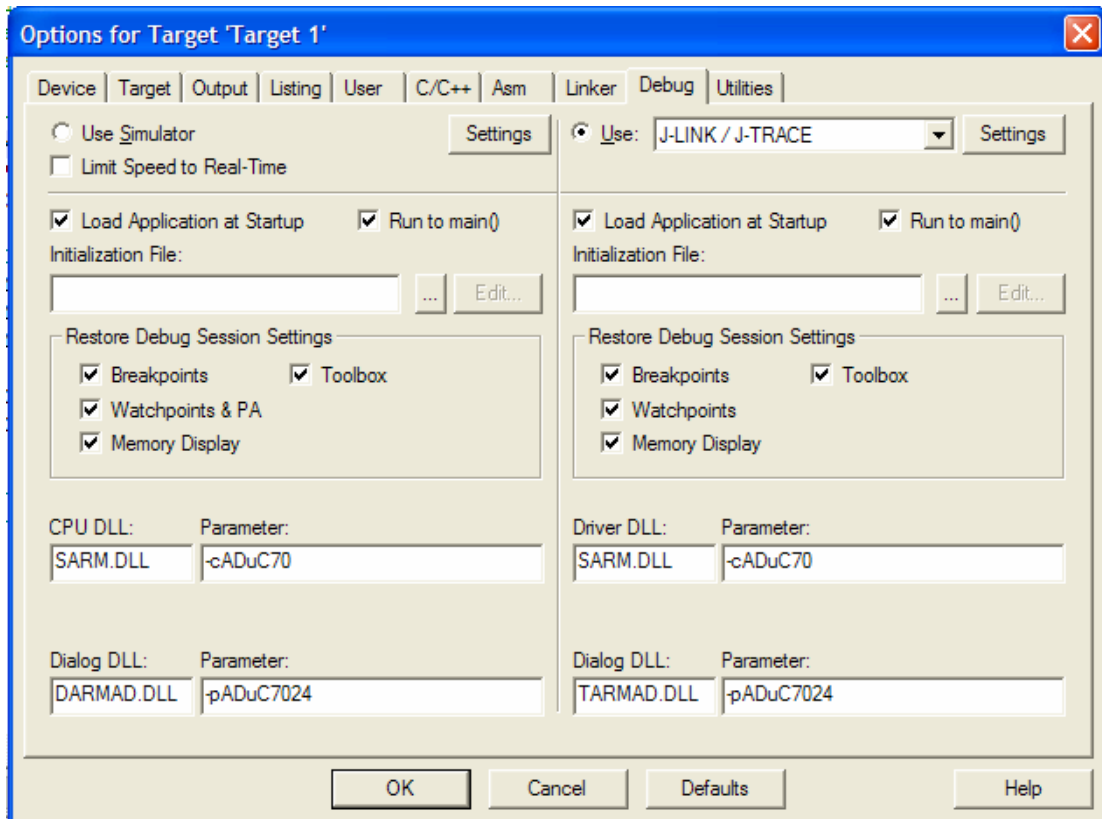


Figure 8

(5) Put the bellowing settings in the J-LINK interface driver setup as figure 9 shows.

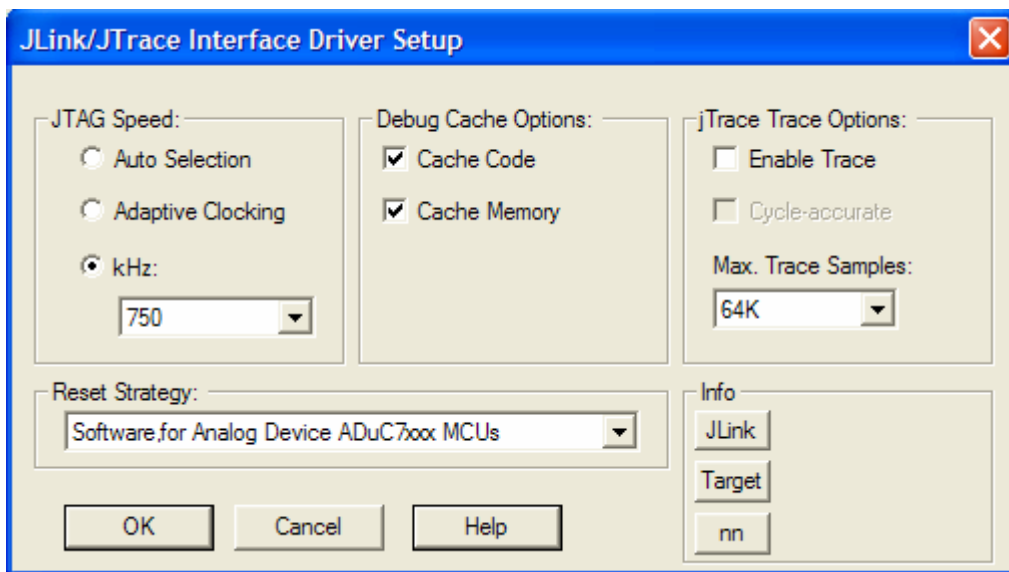


Figure 9

(6) Verify the settings in the utilities window as figure 10 shows.

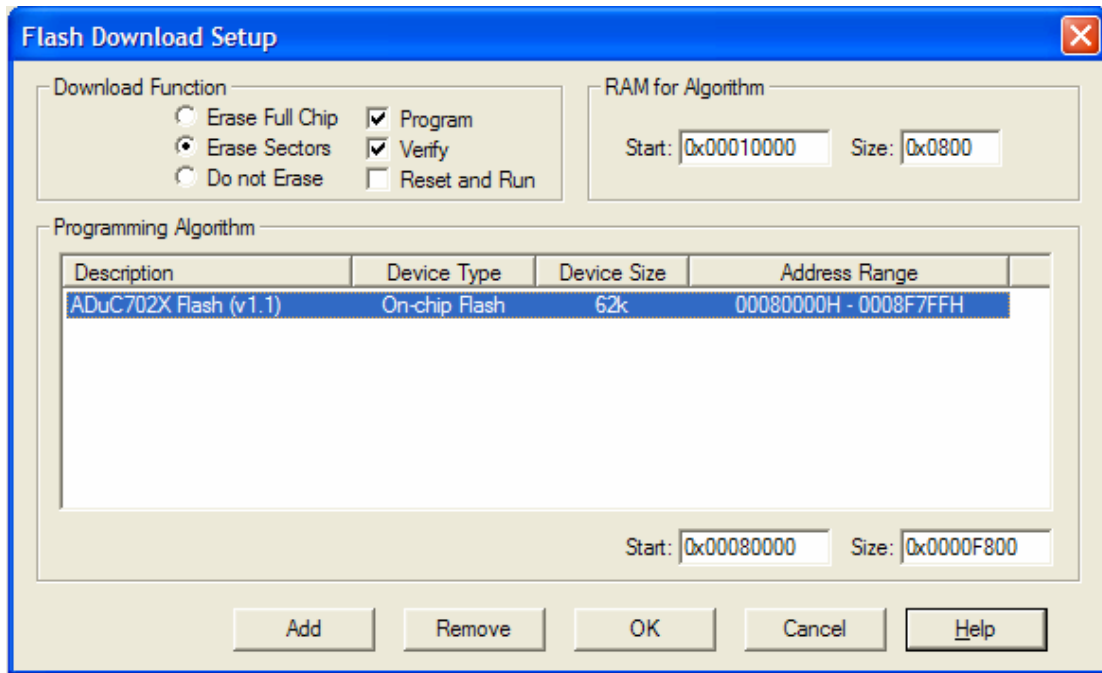


Figure 10

4. Interrupt Programming.

In Keil uVision3 V3.22, the fast interrupt request (FIQ) can be processed by void FIQ_Handler() __fiq. But Keil uVision4 V4.03(RealView compiler) does not support the “__fiq” token, we can use _irq instead. The example below shows how to use IRQ and FIQ at the same time with Keil uVision4 V4.03.

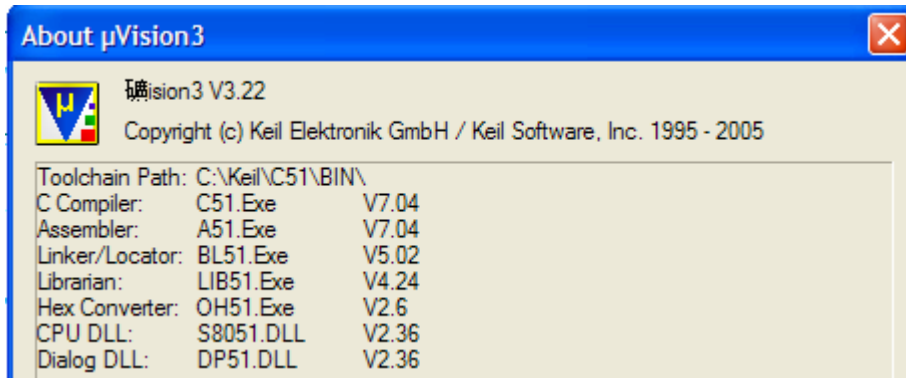
```
//I2C Initial
I2C1CFG = 0x00000082;      // Master Enable & Enable Generation of Master Clock
I2C1DIV = 0x3232;         // 0x3232 = 400kHz    0xCFCF = 100kHz
FIQEN = SM_MASTER1_BIT;  //I2C1 Master Interrupt
//UART Initial    Baud Rate = 9600
COMCON0 = 0x080;
COMDIV0 = 0x088;
COMDIV1 = 0x000;
COMCON0 = 0x007;
COMIEN0 = 0x01;          //Enable Receive Buffer Full Interrupt
IRQEN = UART_BIT;        //Enable UART Interrupt

void IRQ_Handler() __irq
{;}

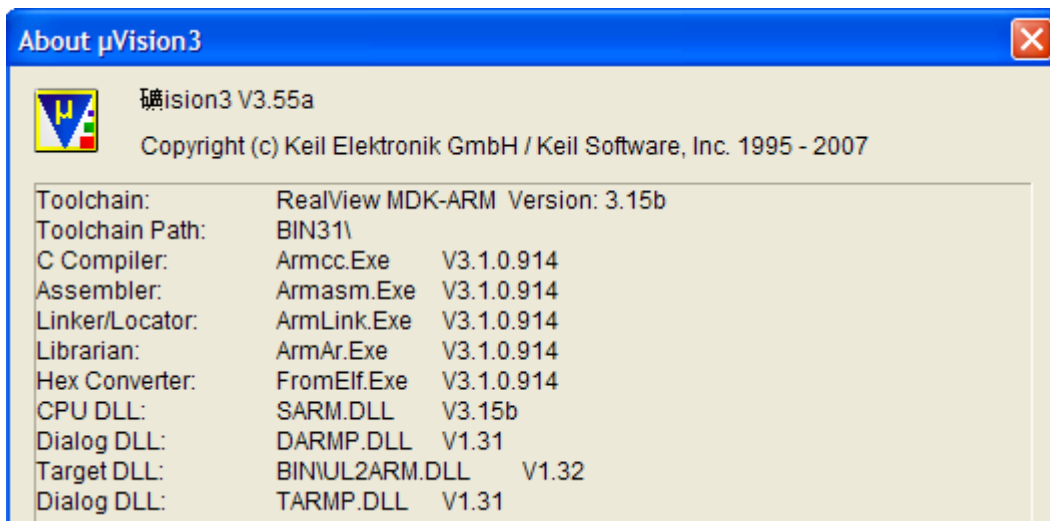
void FIQ_Handler() __irq
{;}

```

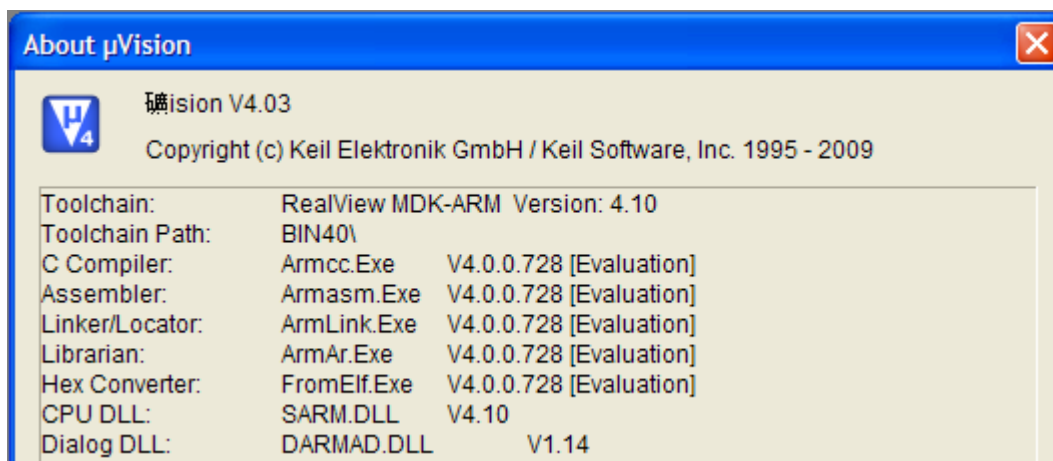
Appendix



Keil uVision3 V3.22



Keil uVision3 V3.55a



Keil uVision4 V4.03