

XC2287M HOT

Solution GPT12

Uses a timer triggered LED's to toggle

Device: XC2287M-104F80

Compiler: Tasking Viper 2.4r1

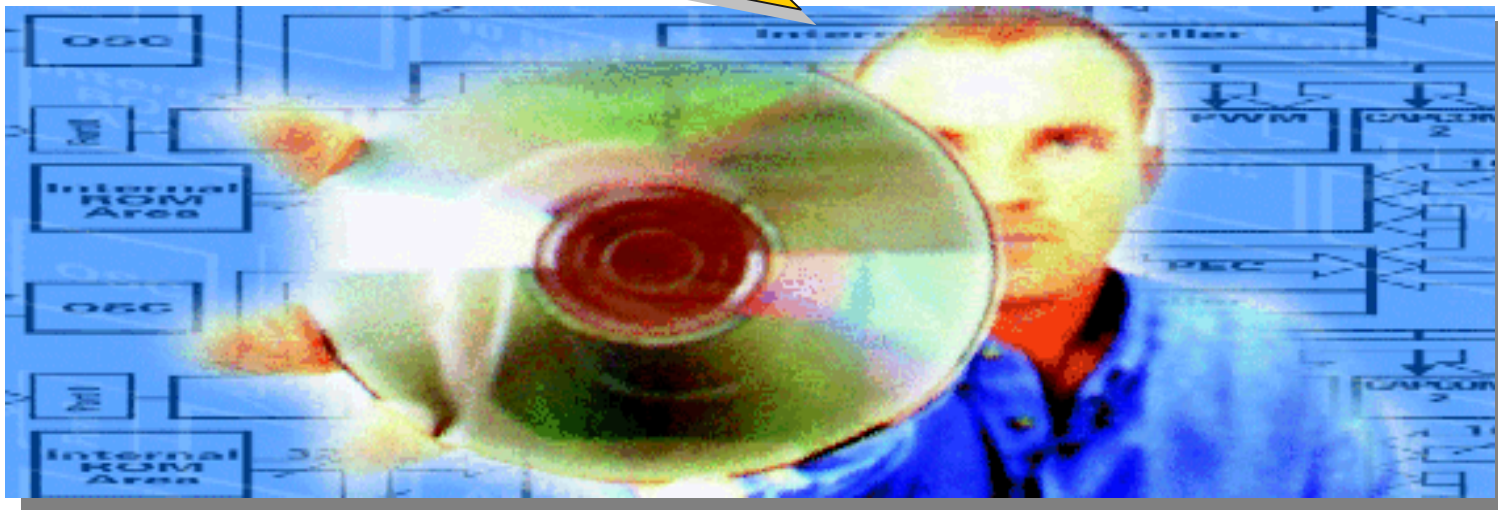
Code Generator: DAvE 2.1



Never stop thinking

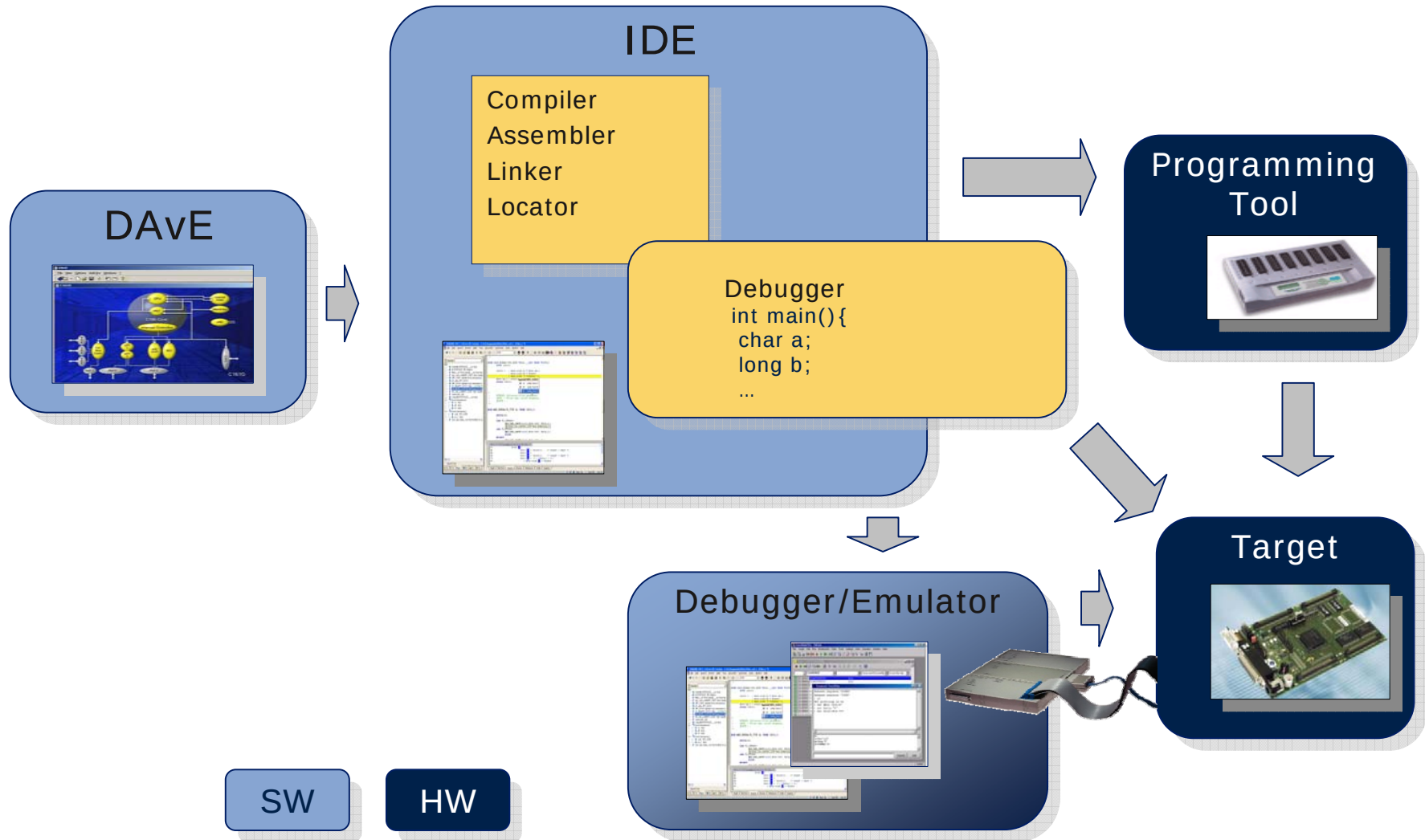
Hardware Triggering of GPT12

Let's get started now!



HOT Exercise GPT12

Interaction of Development Tools



In this exercise you will:

- Configure the XC2287M with DAVe
- Configure the GPT timer T6
- The GPT timer overflow would be used to interface to CAPCOM2 in the later exercise.

HOT Exercise GPT12

Start DAvE

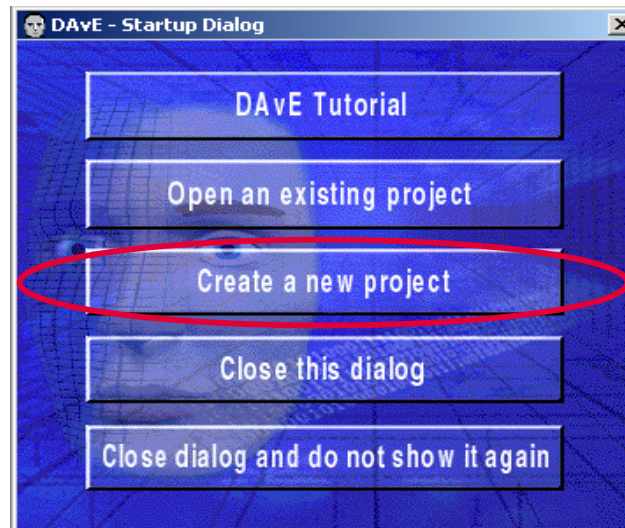
■ Start DAvE

- Click on the



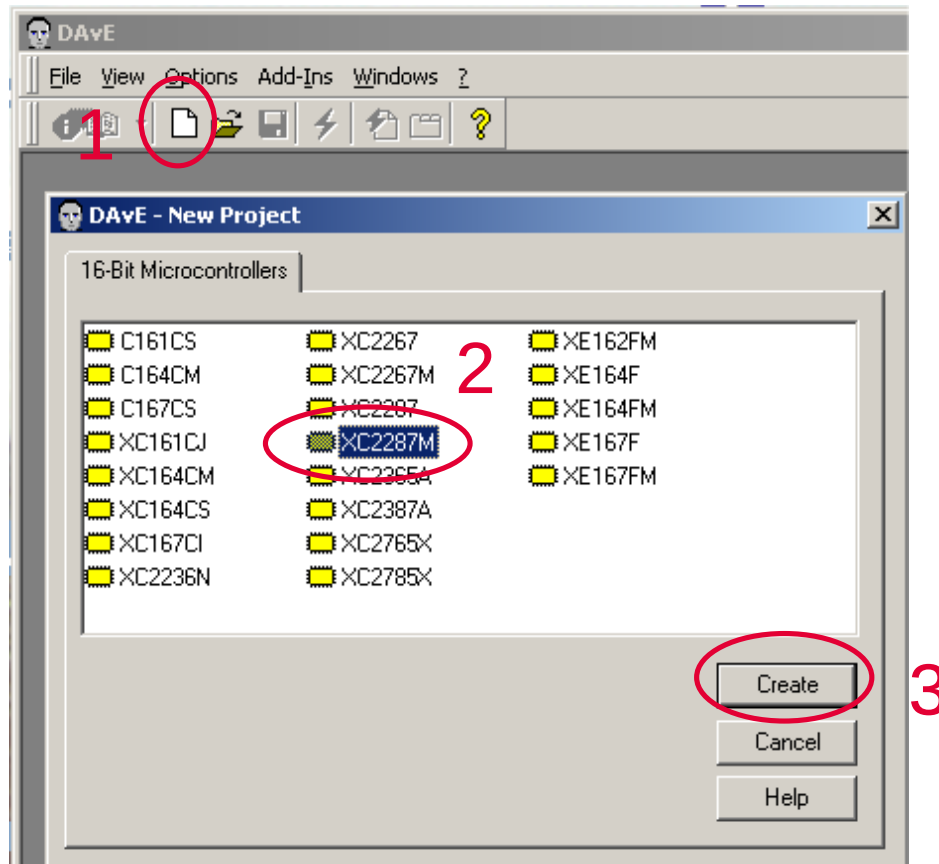
■ Create a new project (Startup Dialog pop up automatically)

- Click on 'Create a new project' or select File -> New
- Select microcontroller: 'XC2287M'



HOT Exercise GPT12

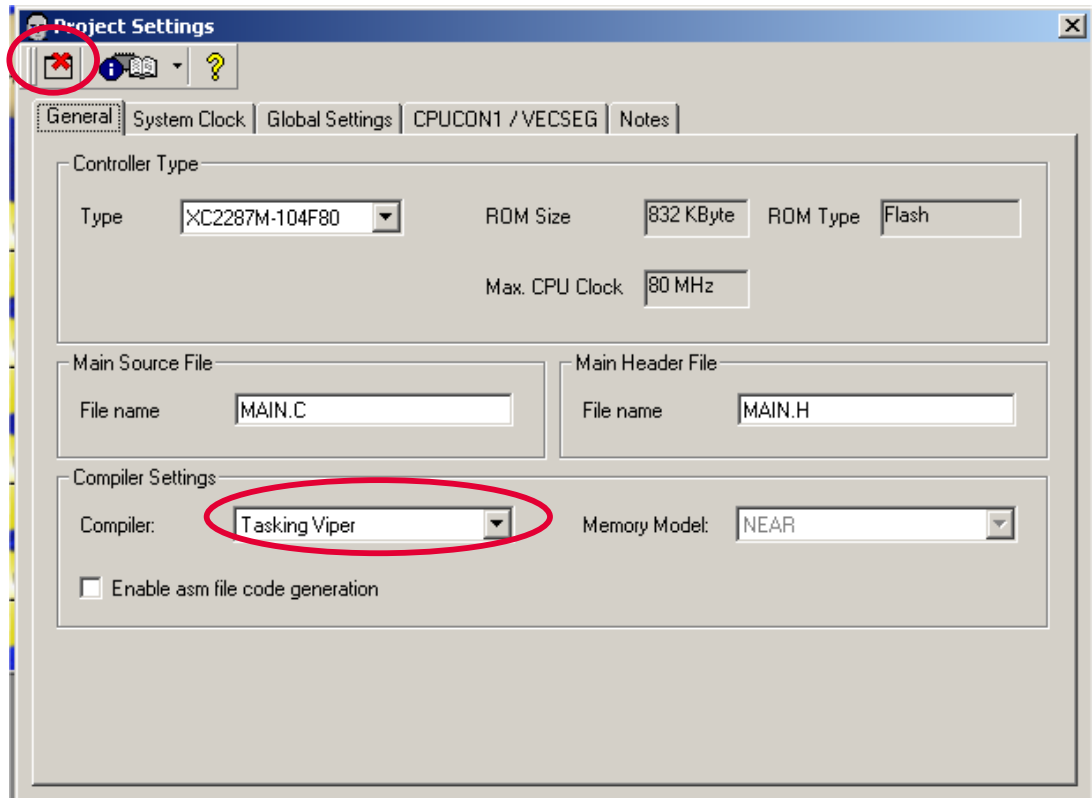
Select Device



HOT Exercise GPT12 - DAVe Configurations

Project Settings

- Project Settings
- Close the window



HOT Exercise GPT12 - DAVe Configurations

Save DAVe Project



- Save your DAVe project



- Path:

C:\IFX_HOT\XC2287M\Examples\GPT12

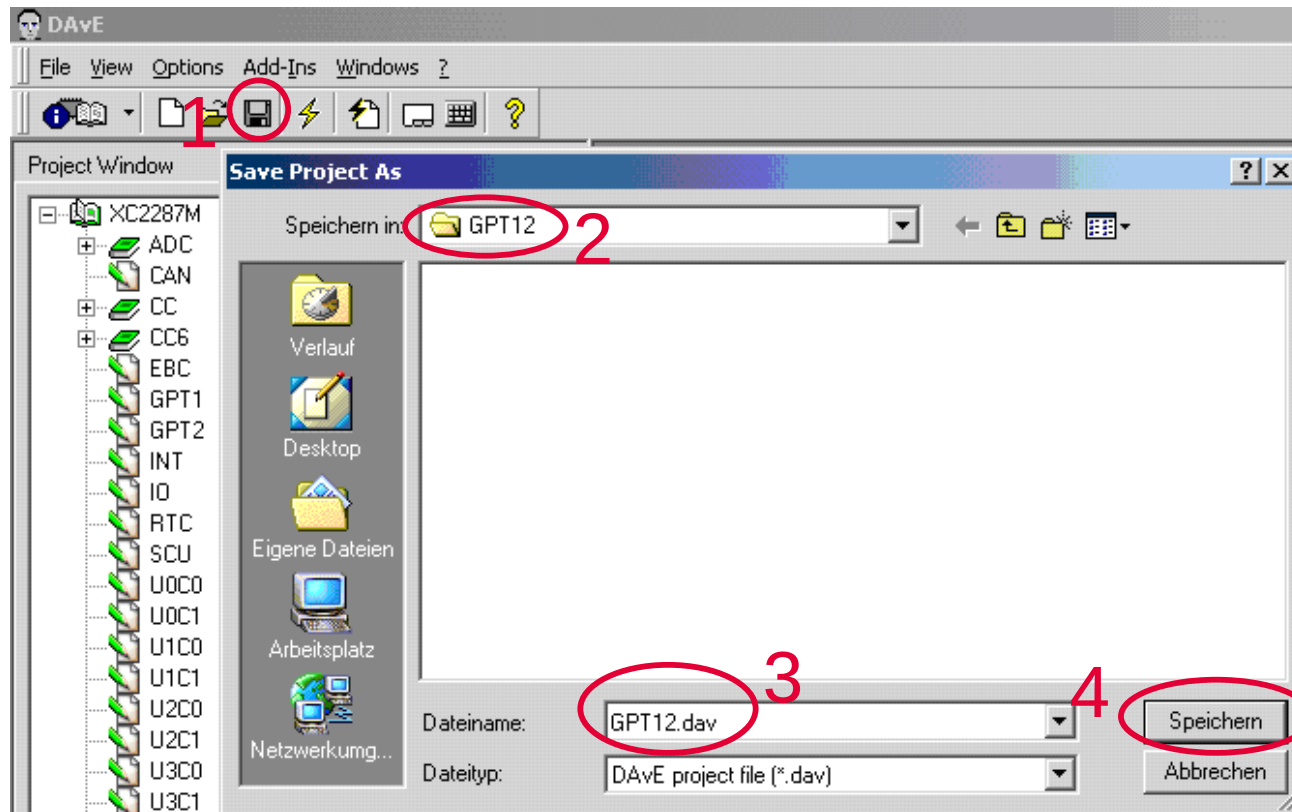
- Project name:

GPT12\GPT12.dav

HOT Exercise GPT12 - DAVe Configurations

Save DAVe Project

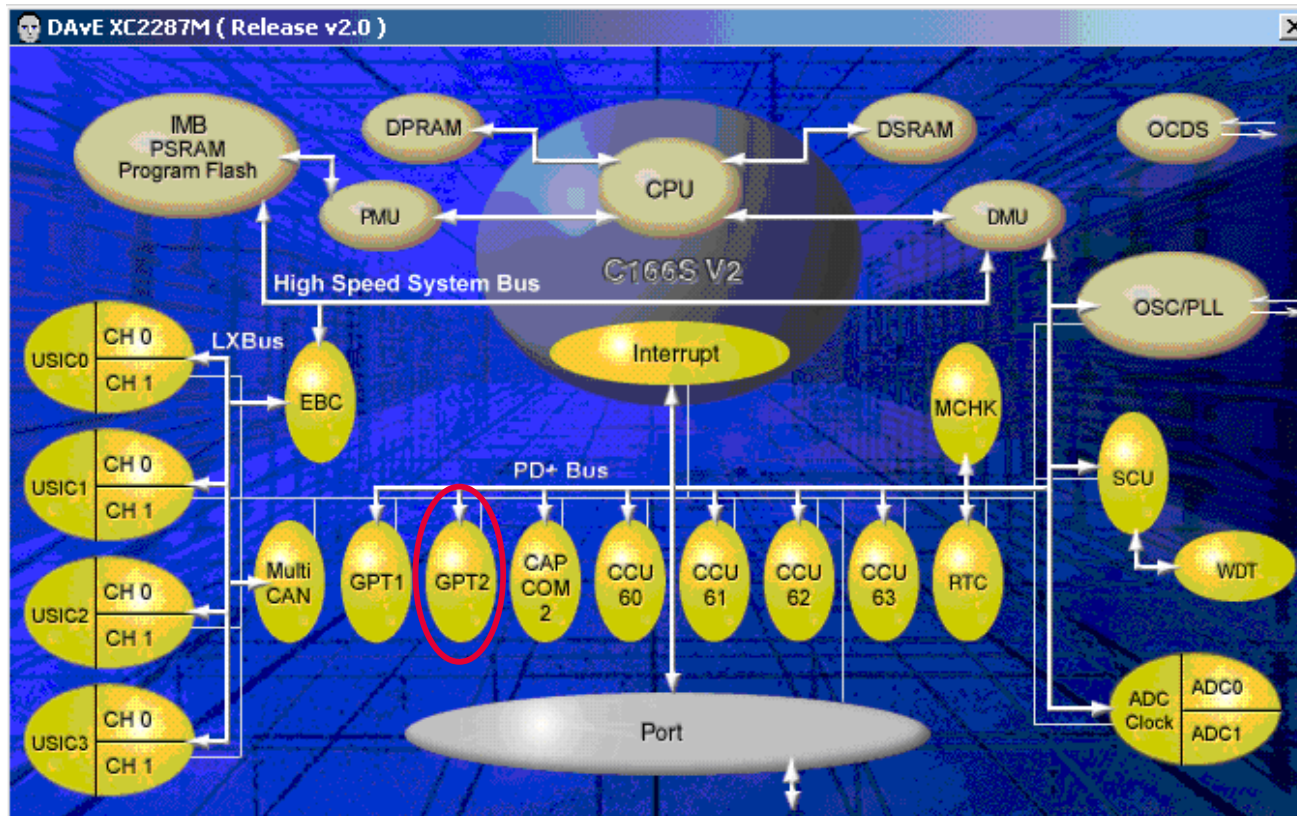
■ Save your DAVe Project File



HOT Exercise GPT12 - DAvE Configurations

GPT Settings

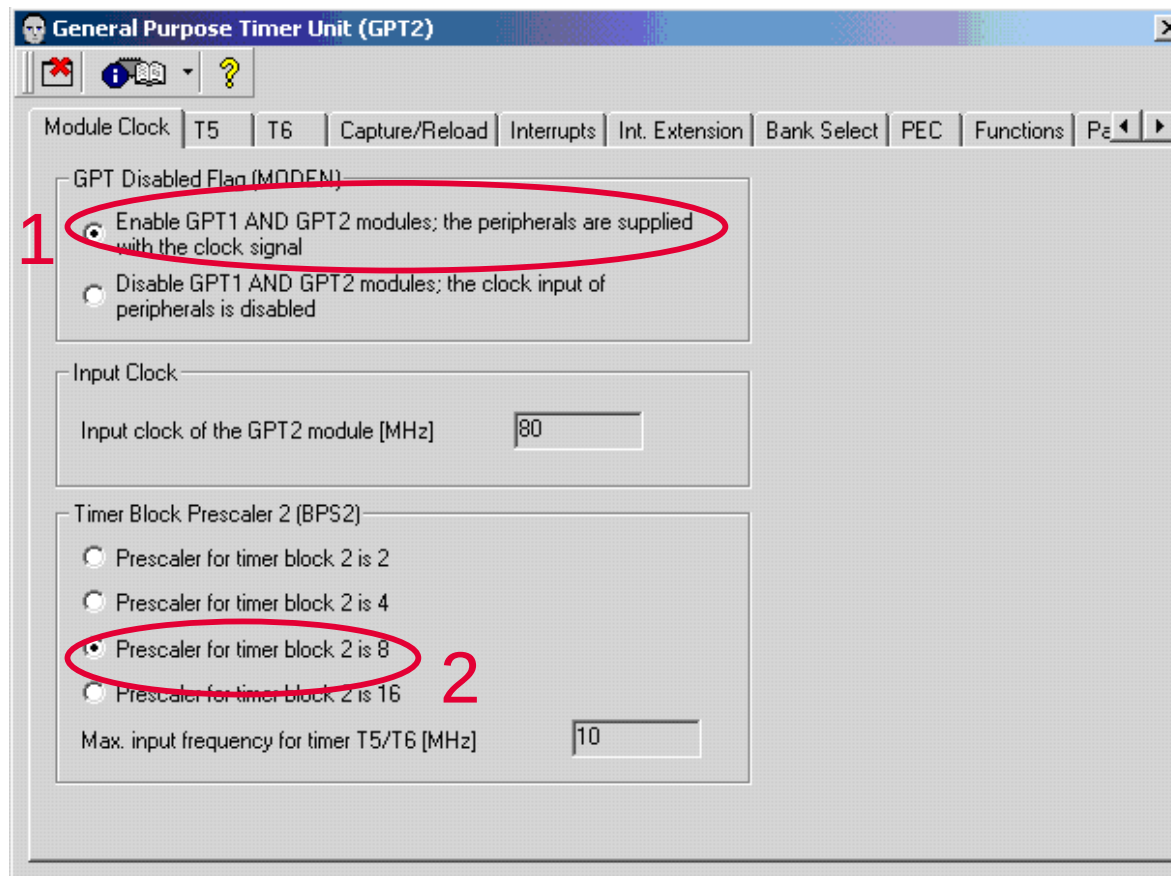
- Click on 'GPT2' module



HOT Exercise GPT12 - DAVE Configurations

GPT Settings (cont.)

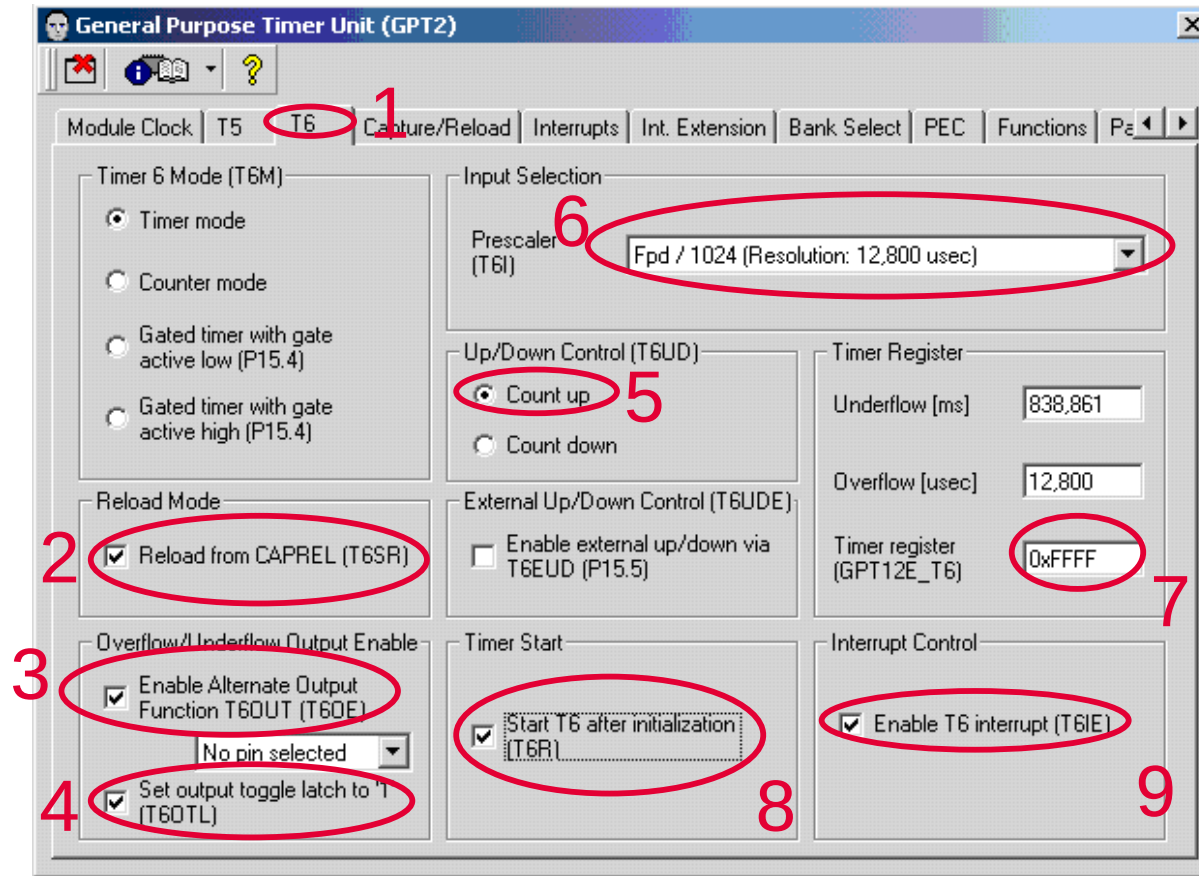
- Configure 'GPT2' module
 - Enable module
 - Set prescaler for the timer block 2 till 8



HOT Exercise GPT12 - DAVe Configurations

GPT Settings (cont.)

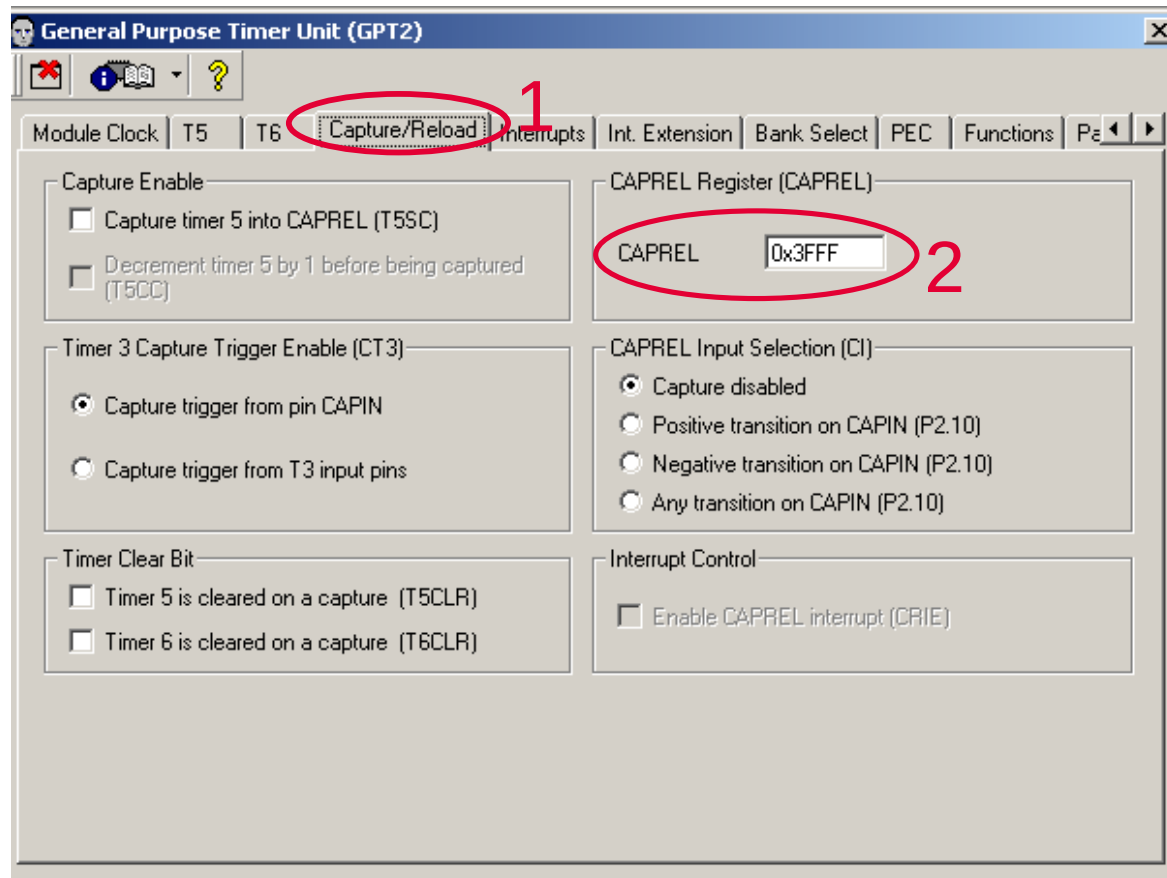
■ T6 Settings



HOT Exercise GPT12 - DAVE Configurations

GPT Settings (cont.)

- Click on Capture/Reload tab
- CAPREL reload value = 0x3FFF

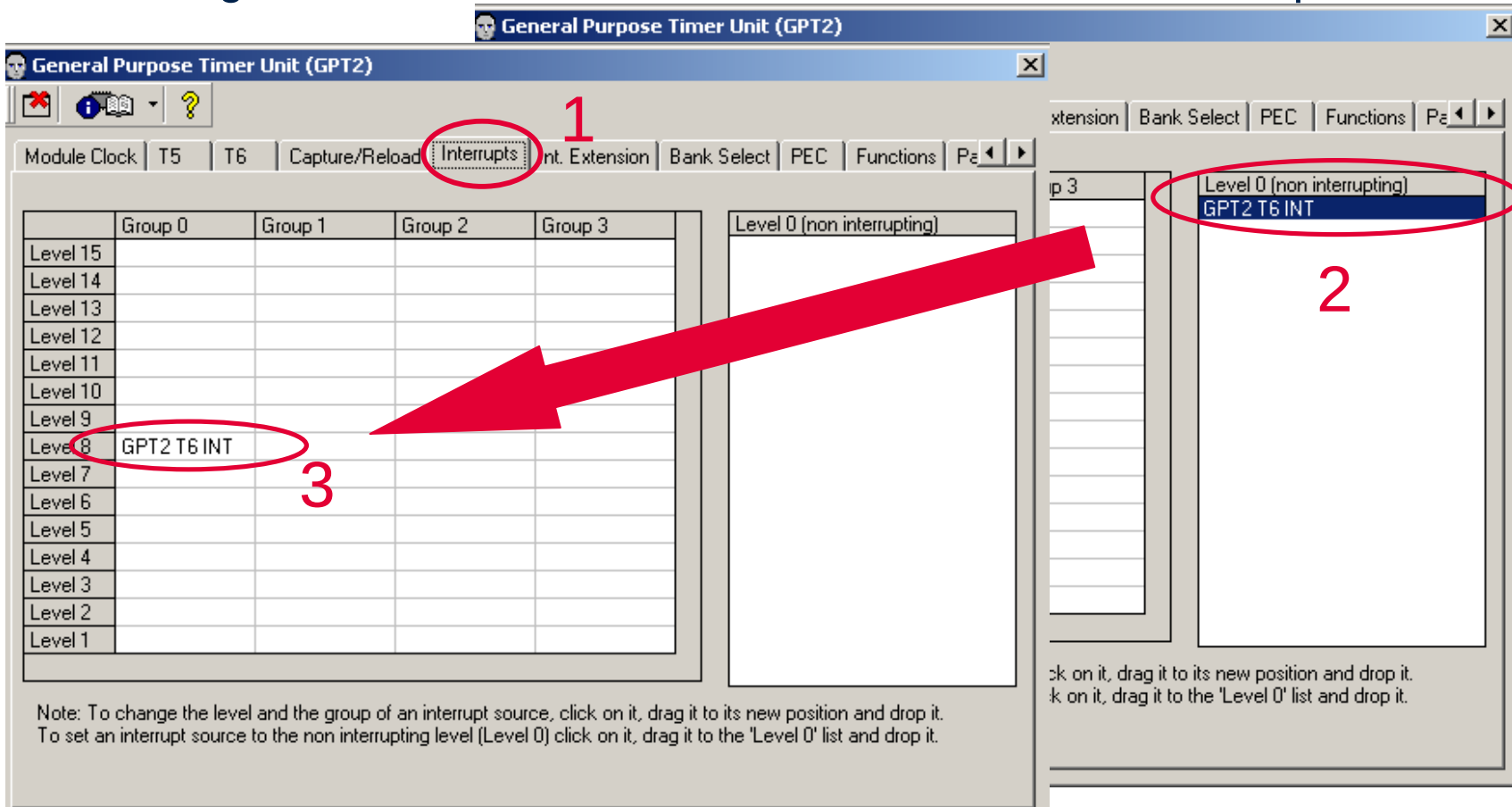


HOT Exercise GPT12 - DAVE Configurations

GPT Settings (cont.)

■ Configure GPT2 – Interrupts

□ Drag 'GPT2 T6 INT' from Level 0 to Level 8, Group 0



The screenshot shows the 'General Purpose Timer Unit (GPT2)' configuration window. The 'Interrupts' tab is selected, indicated by a red circle and the number 1. The window is divided into two main sections. The left section contains a table with columns for Groups 0, 1, 2, and 3, and rows for Levels 1 through 15. A red circle and the number 3 highlight the entry 'GPT2 T6 INT' in the Level 8 row of Group 0. The right section shows a list of interrupt sources under the 'Level 0 (non interrupting)' heading. A red circle and the number 2 highlight the entry 'GPT2 T6 INT' in this list. A large red arrow points from the entry in the Level 8 row of the table to the entry in the Level 0 list, indicating the drag-and-drop action. Below the table, a note states: 'Note: To change the level and the group of an interrupt source, click on it, drag it to its new position and drop it. To set an interrupt source to the non interrupting level (Level 0) click on it, drag it to the 'Level 0' list and drop it.'

	Group 0	Group 1	Group 2	Group 3
Level 15				
Level 14				
Level 13				
Level 12				
Level 11				
Level 10				
Level 9				
Level 8	GPT2 T6 INT			
Level 7				
Level 6				
Level 5				
Level 4				
Level 3				
Level 2				
Level 1				

Level 0 (non interrupting)

- GPT2 T6 INT

Note: To change the level and the group of an interrupt source, click on it, drag it to its new position and drop it. To set an interrupt source to the non interrupting level (Level 0) click on it, drag it to the 'Level 0' list and drop it.

HOT Exercise GPT12 - DAVe Configurations

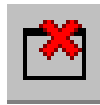
GPT Settings (cont.)

■ Configure GPT2 – Functions

□ Click on 'GPT2_vInit'

□ Click on 'GPT2_vStartTmr', '_vSetToggLatch' '_vClrToggLatch'

□ Click on

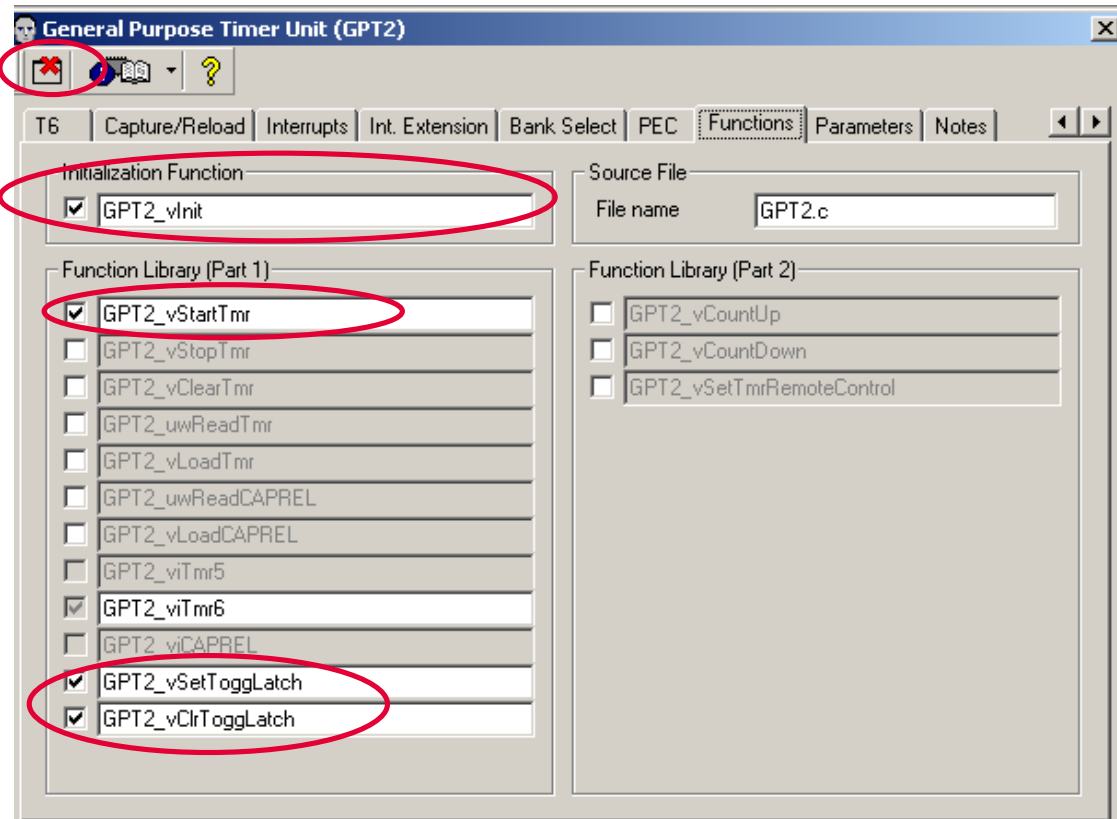


4

1

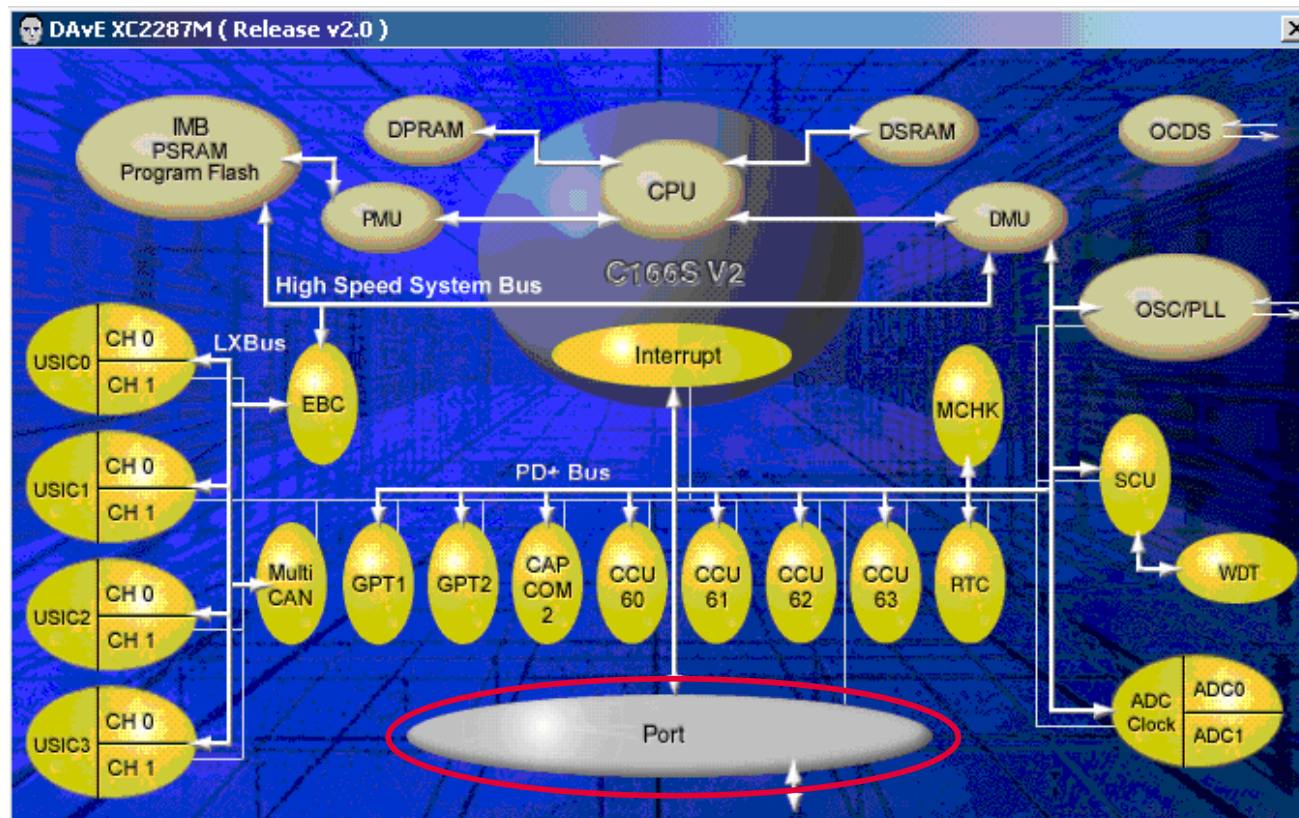
2

3



HOT Exercise GPT12 - DAvE Configurations Port Settings

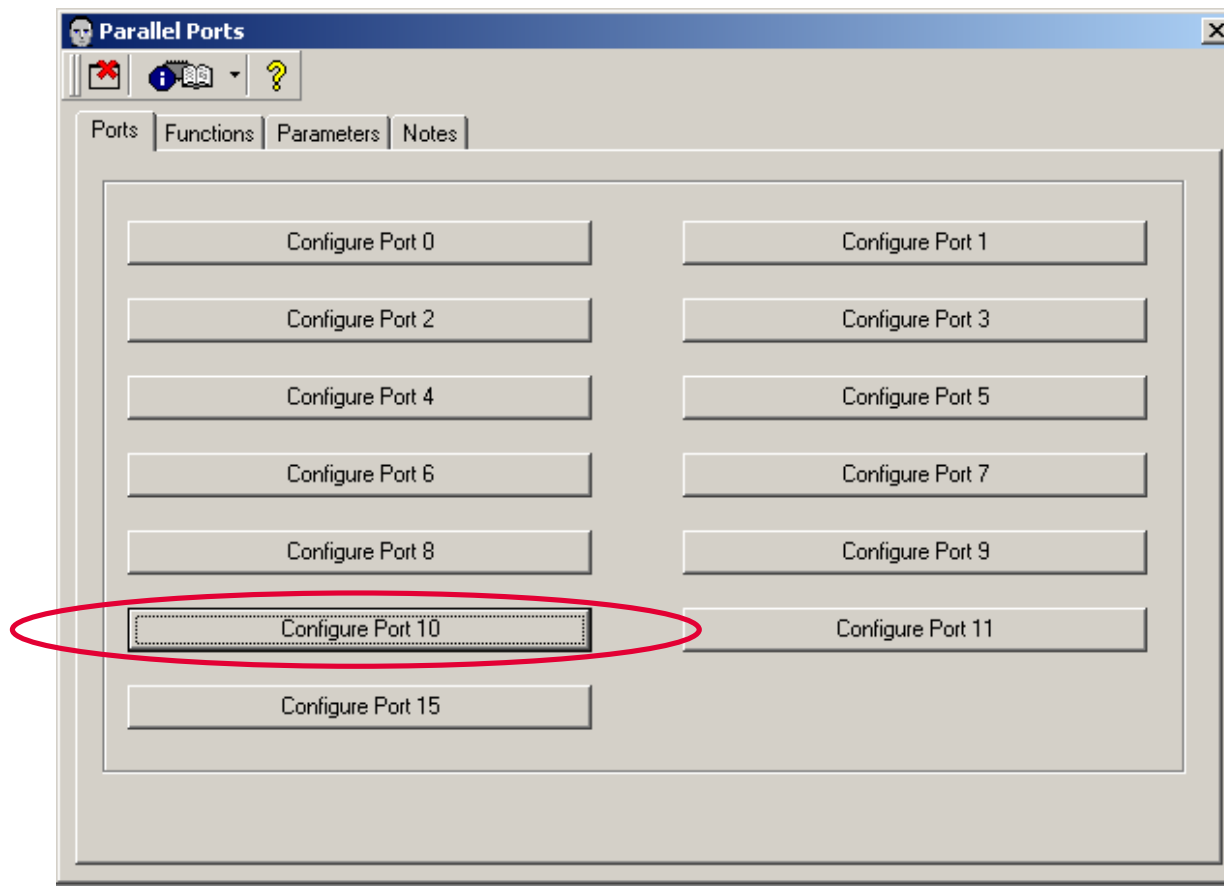
■ Click on 'Port'



HOT Exercise GPT12 - DAVe Configurations Port Settings (cont.)

■ Configure Ports – Ports

□ Click on 'Configure Port 10'



HOT Exercise GPT12 - DAVe Configurations Port Settings (cont.)

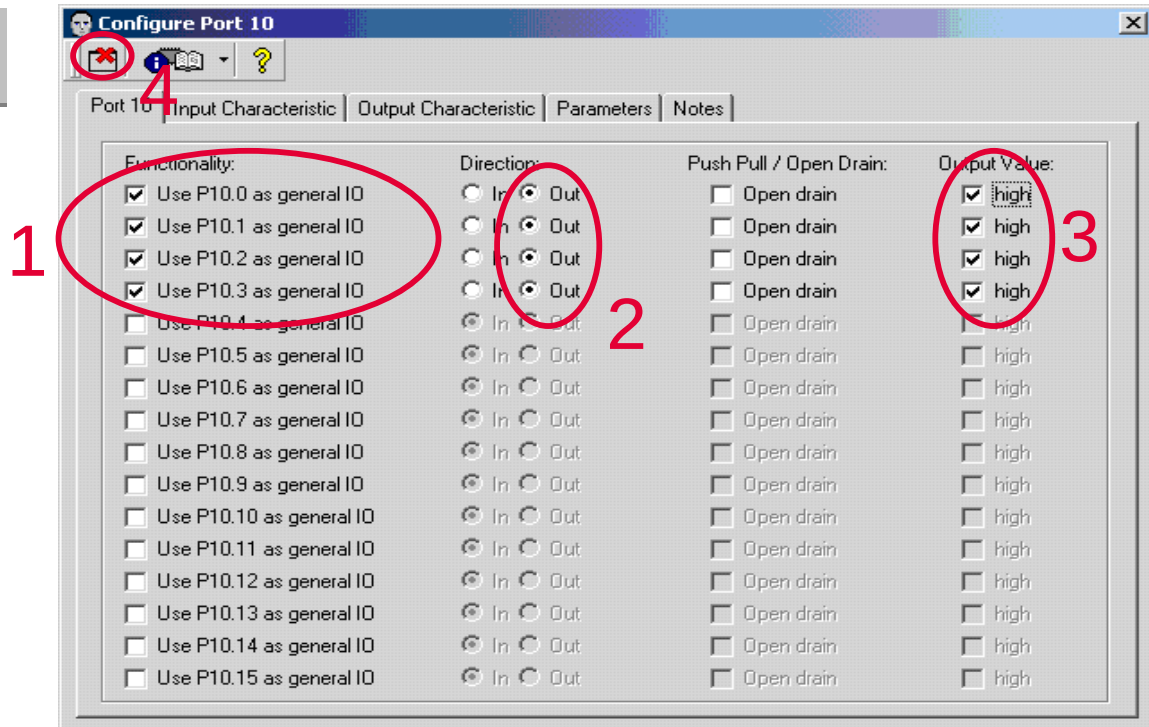
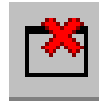
■ Configure Ports – Port 10

□ Functionality - click on 'P10.0(to P10.7) as general IO'

□ Direction – click on 'Out'

□ Output Value – click 'high'

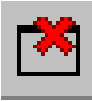
□ Click on

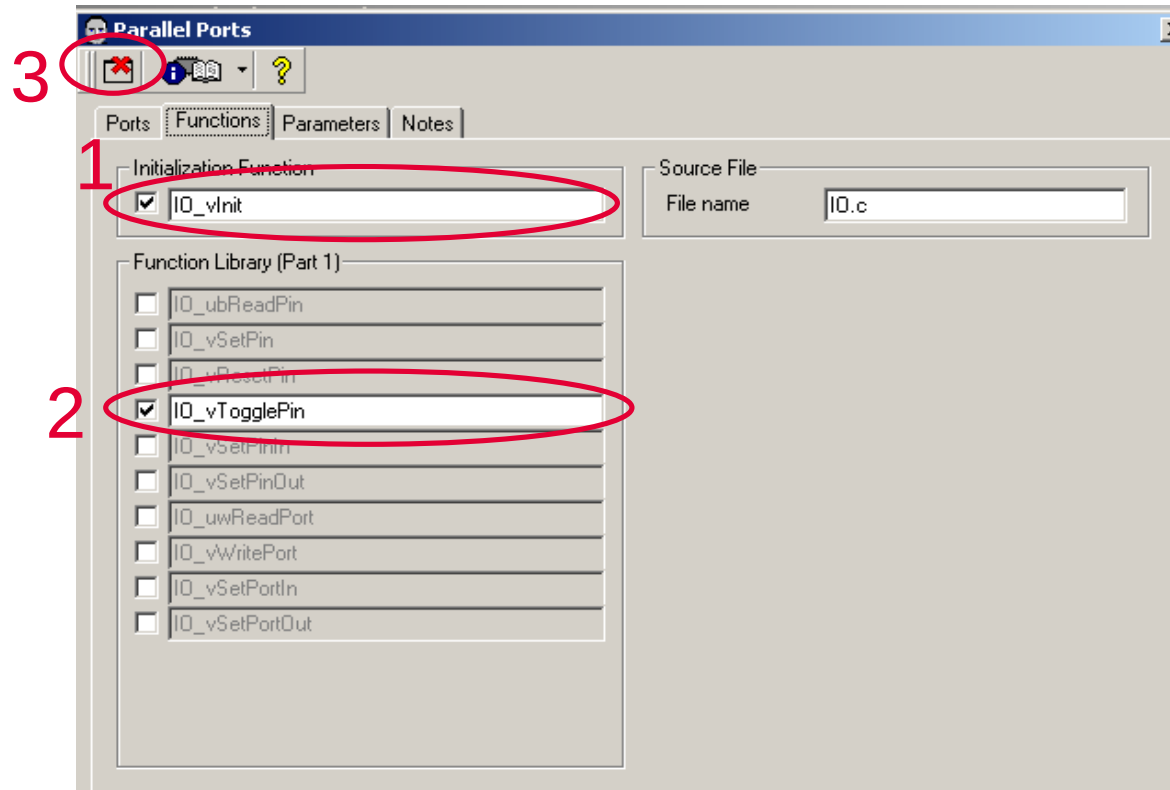


HOT Exercise GPT12 - DAVE Configurations Port Settings (cont.)

■ Configure Ports – Functions

□ Initialization Function - click on 'IO_vInit', 'IO_vTogglepin'

□ Click on 



HOT Exercise GPT12 - DAvE Configurations

Save DAvE Project

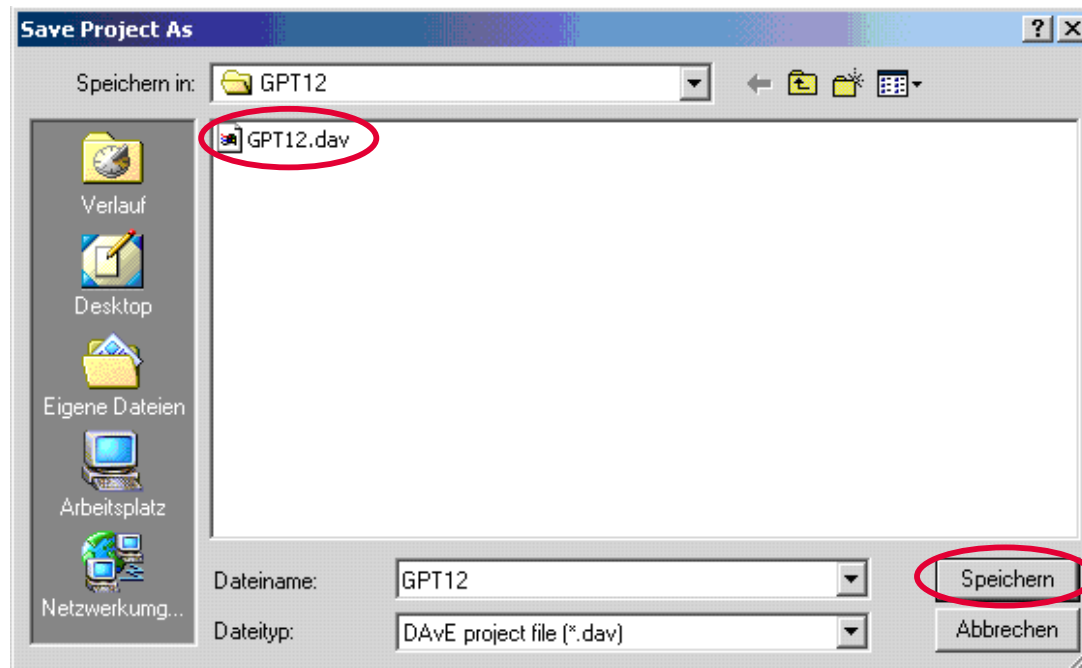
- Save your DAvE Project File

- Go to **File** → **Save (or Save As)** or click on



- Filename entered previously:

“c:\IFX_HOT\XC2287M\Examples\GPT12\GPT12.dav”



HOT Exercise GPT12 - DAVe Configurations Code Generation



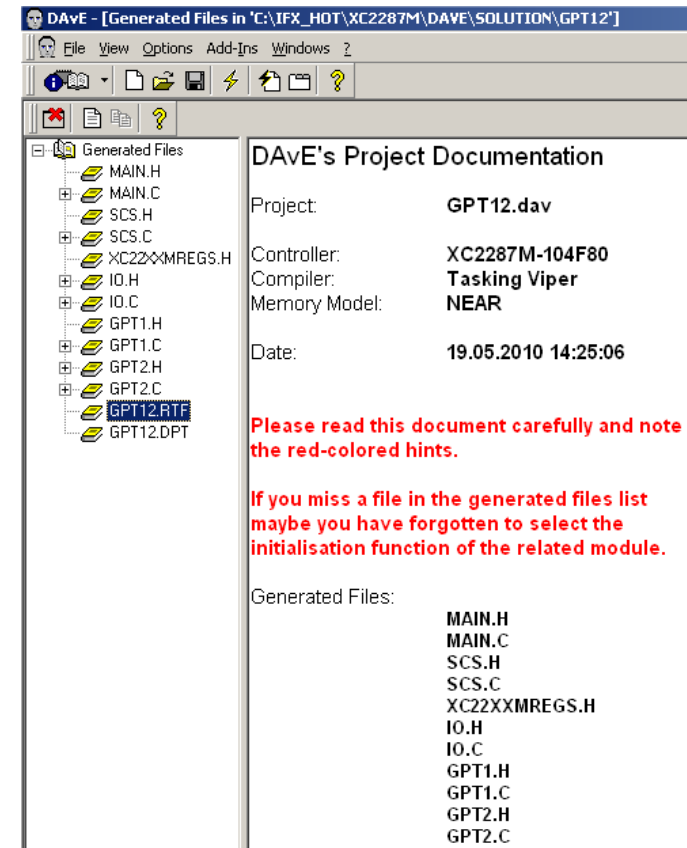
■ Let DAVe Generate Code for You

□ Go to **File** → **generate Code** or click on



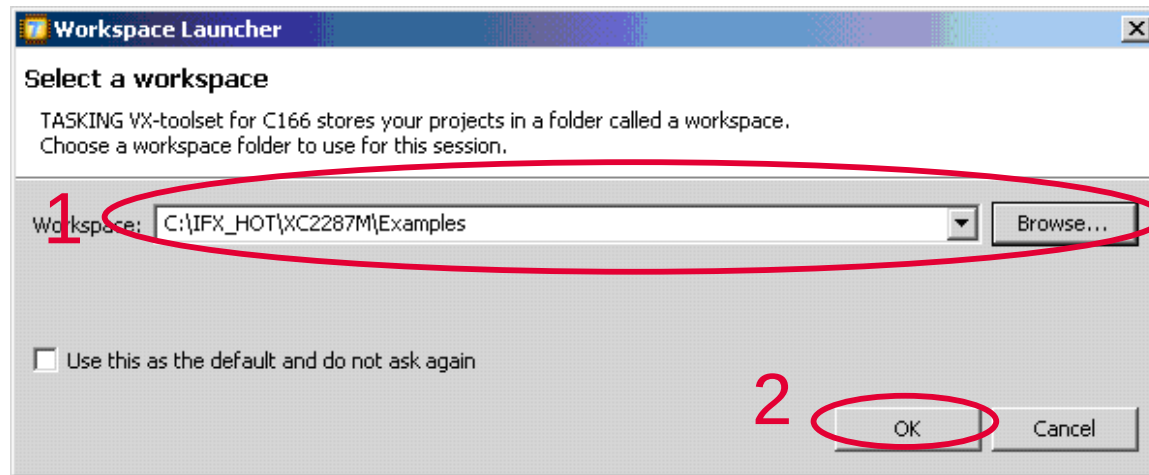
□ DAVe generated code files are

- └ MAIN.C, MAIN.H
- └ GPT2.C, GPT2.H
- └ IO.C, IO.H
- └ SCS.C, SCS.H
- └ XC22XXREGS.H

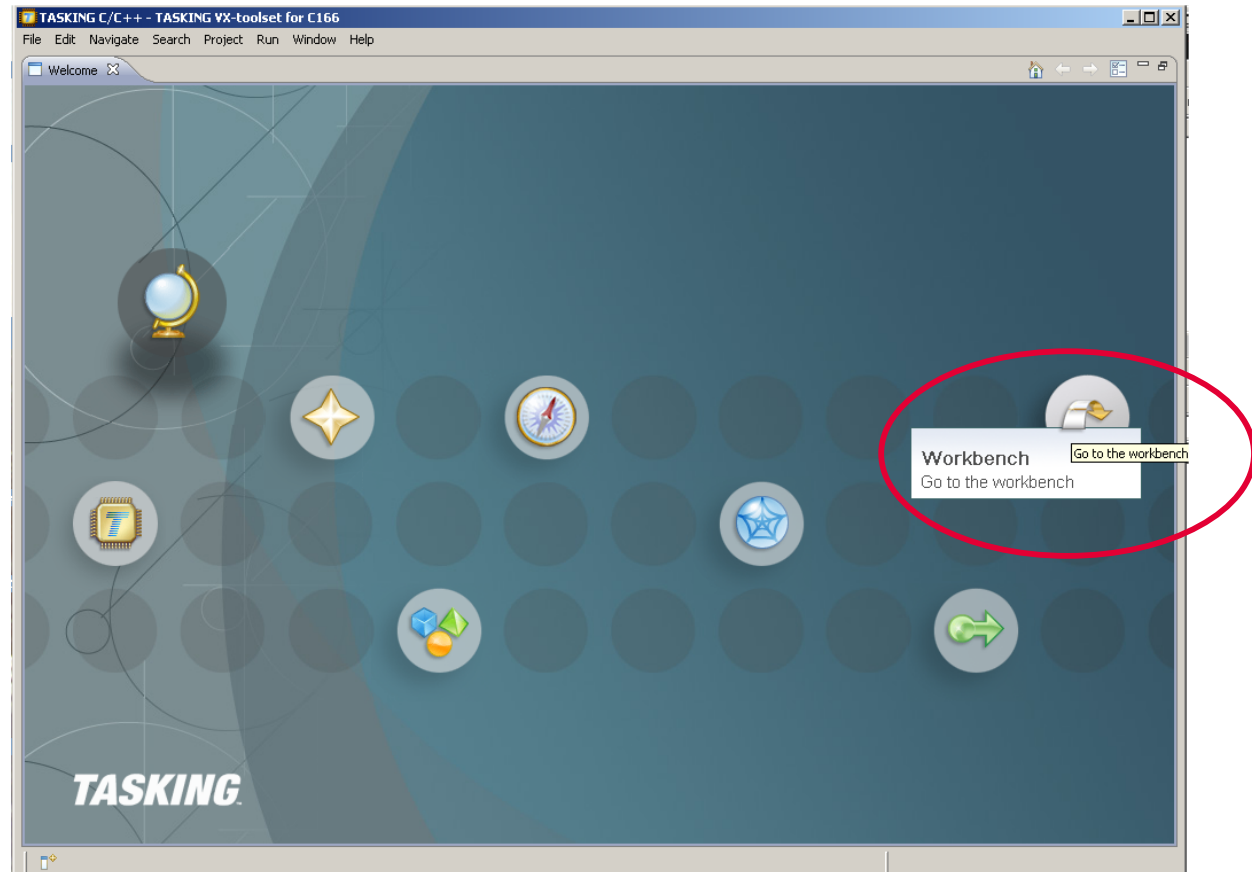


■ Open Project Work Space

- Click on 
- Filename: browse to “c:\IFX_HOT\XC2287M\Examples”
- Click ‘OK’



- Create New Project
- Click on Workbench (if not already there...)

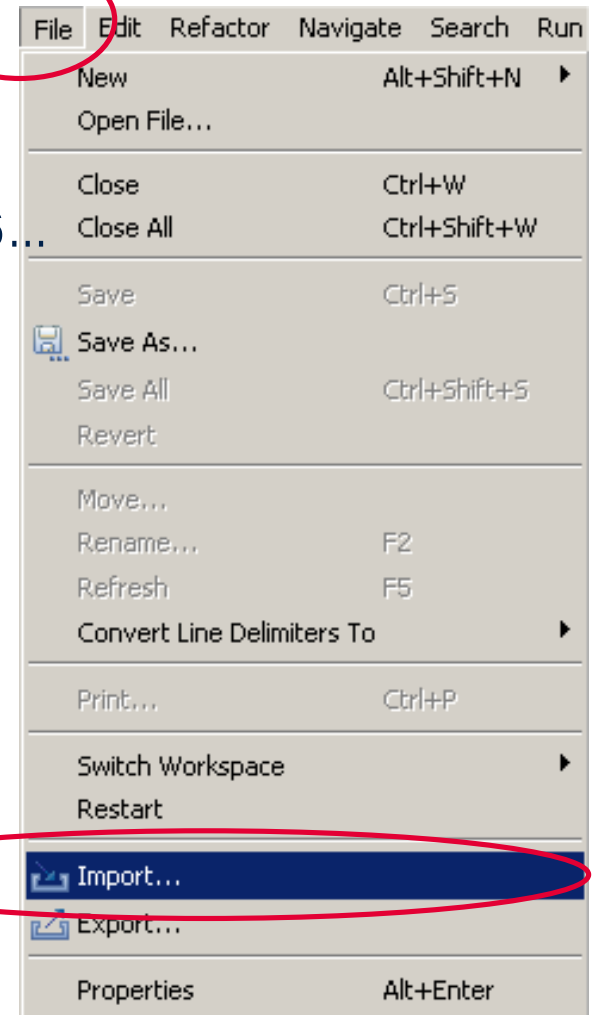


■ Import DAVE Project

- ☐ Click on File -> Import
- ☐ Select Tasking VX-toolset for C166...
- ☐ Click 'OK'

1

2

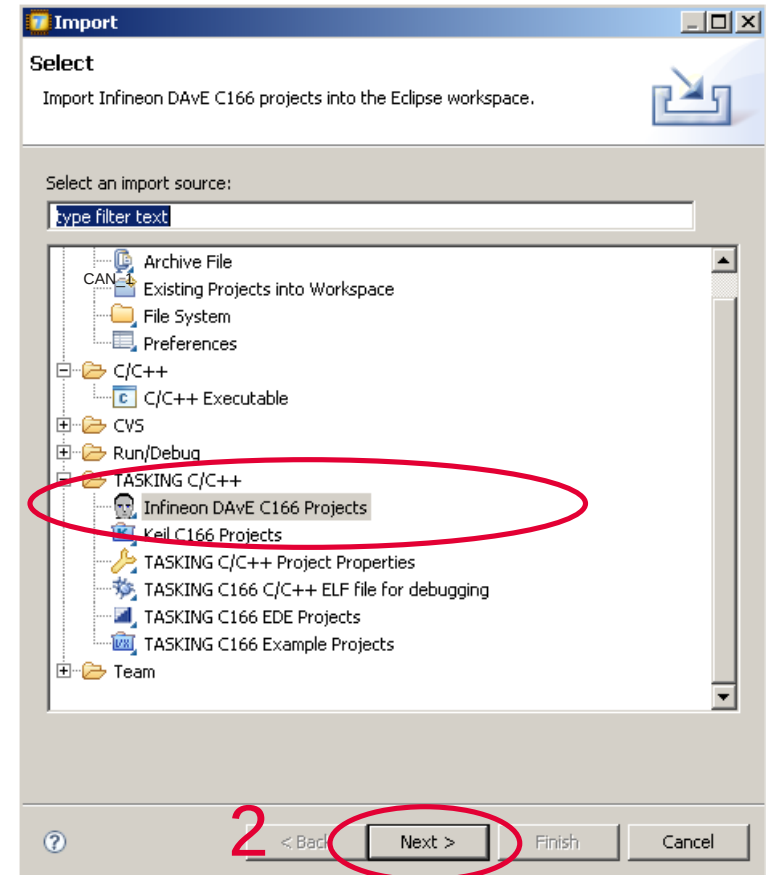


■ Import DAVE Project

□ Click `Infineon DAvE C166 Project`

□ Click 'Next'

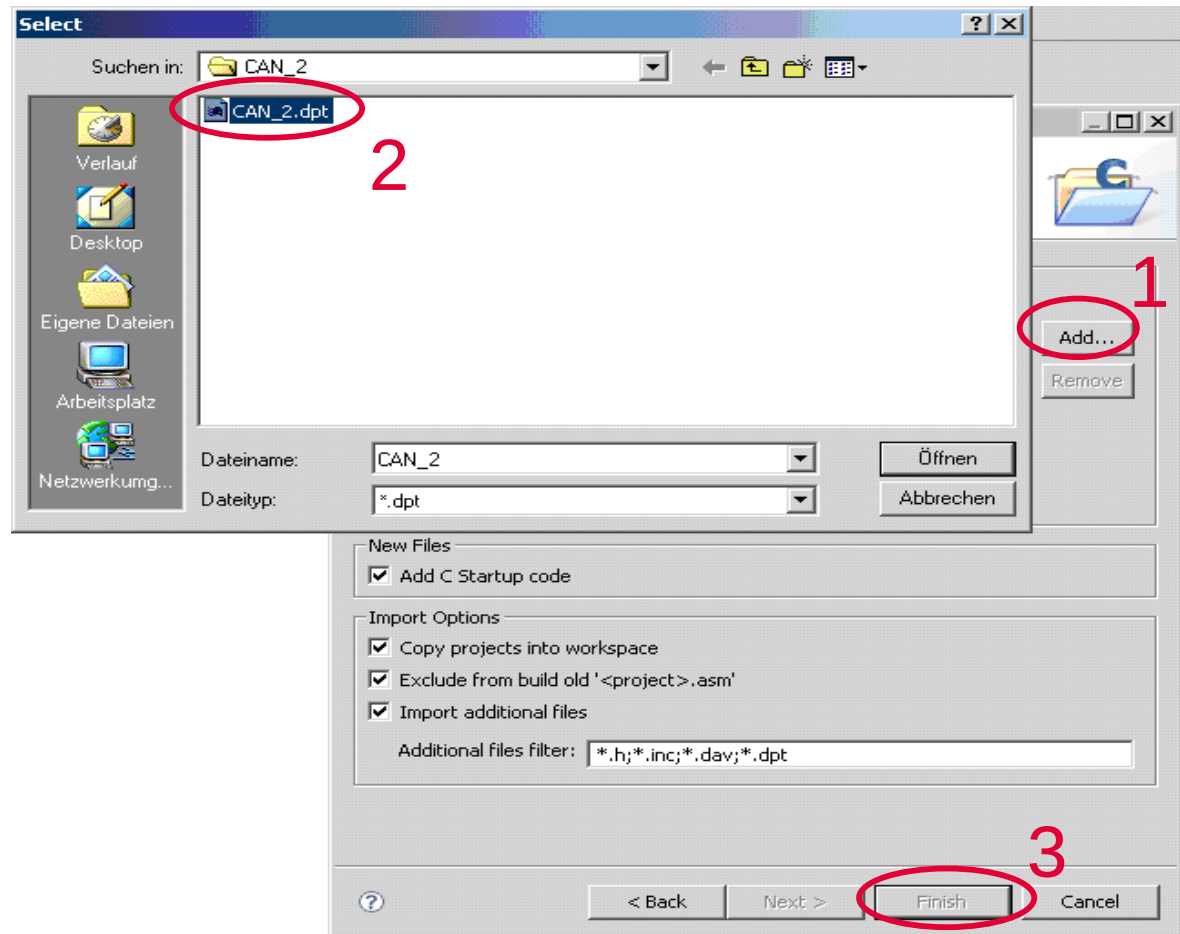
1



■ Import DAVe Project

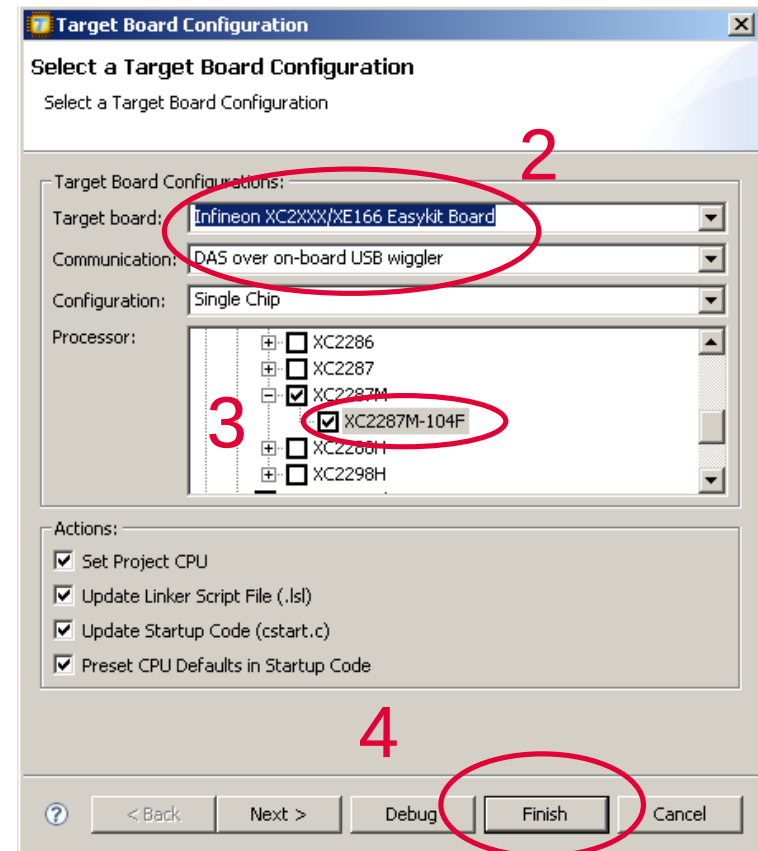
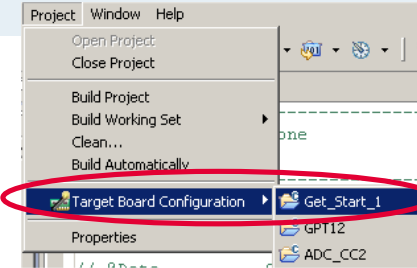
□ Add Dave Project 'GPT12'

□ Click 'Finish'



HOT Exercise GPT12 – Tasking VX Toolset

- Configure Target Board  1
- Select the project in the navigator
- Select 'Project/Target Board Configuration'
- Select 'Infineon XC2000/XE166 Easykit Board'
- Choose 'XC2287M-104F'
- Click 'Finish'



■ Software Hint

- DAVe doesn't change code that is inserted in the 'USER CODE' sections if you let DAVe regenerate the code.

Therefore, **whenever adding code to the generated code, write it into a 'USER CODE' section.**

The code you really have to add looks like this:

```
while(1)
{
    // USER CODE BEGIN (Main,4)
```

```
    BlinkLED();
```

```
    // USER CODE END
}
```

HOT Exercise GPT12 – Tasking VX Toolset

Add User Code – GPT2.C (ISR)



```
// USER CODE BEGIN (Tmr6,1)
```

```
// USER CODE END
```

```
_interrupt(T6INT) void GPT2_viTmr6(void)
{
```

```
    // USER CODE BEGIN (Tmr6,2)
```

```
    IO_vTogglePin(IO_P10_0);
    IO_vTogglePin(IO_P10_1);
    IO_vTogglePin(IO_P10_2);
    IO_vTogglePin(IO_P10_3);
```

```
    // USER CODE END
```

```
} // End of function GPT2_viTmr6
```

```
// USER CODE BEGIN (GPT2_General,10)
```

```
// USER CODE END
```

HOT Exercise GPT12 – Tasking VX Toolset Build Project

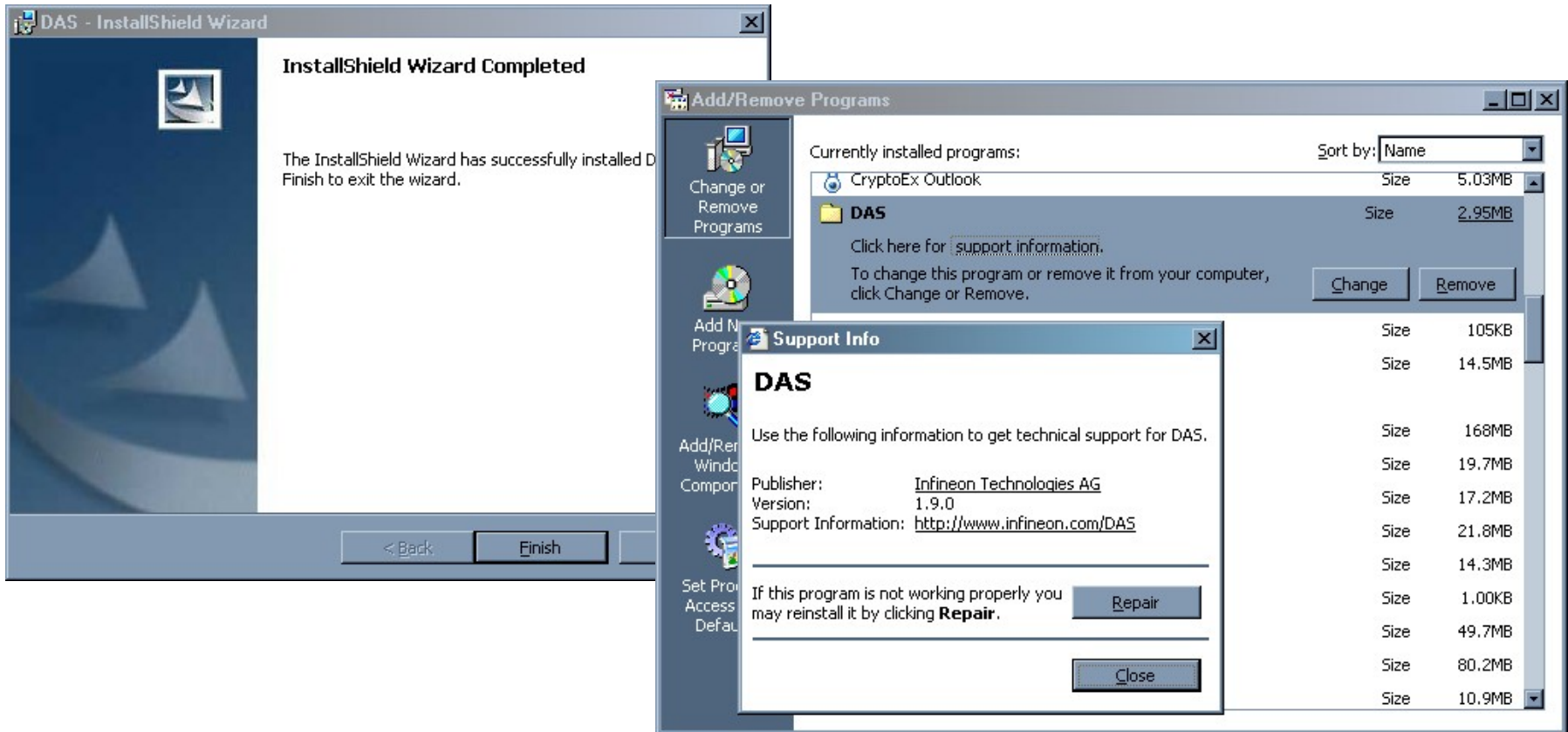
- Click on 'Build Project GPT12'



```
Problems Console X Properties
C-Build [GPT12]
Compiling gpt2.c
Compiling io.c
Compiling main.c
c166 W557: ["../main.c" 314/10] possible infinite loop
0 errors, 1 warnings
Compiling scs.c
Linking to GPT12.elf
```

HOT Exercise GPT12 - Device Access Server

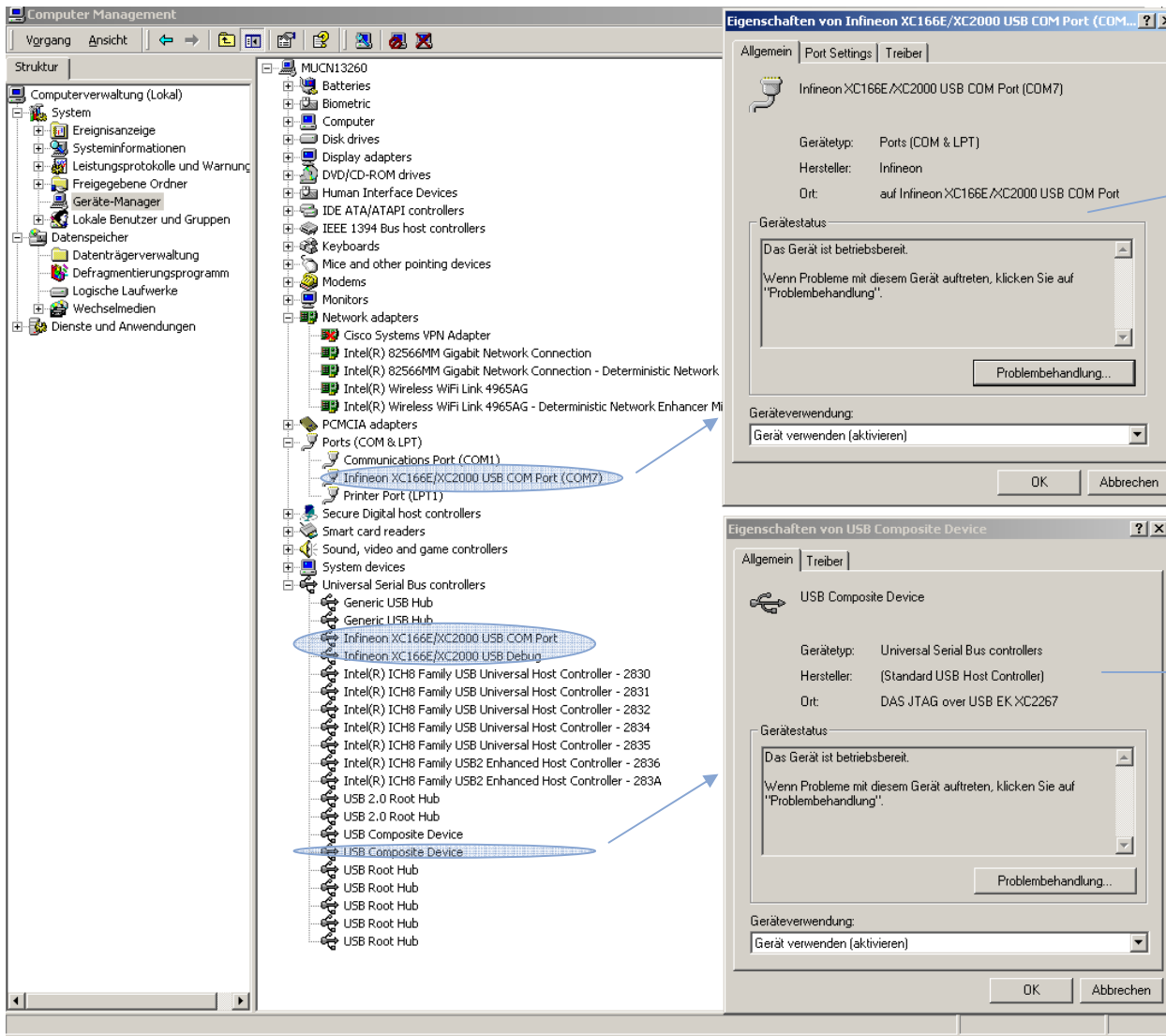
Check for the latest DAS version



Note: It is recommended to use the latest DAS version.
Download the latest version at www.infineon.com/DAS

HOT Exercise GPT12 - Device Access Server

1.) Checking USB connections



This gets identified only when COM port is used

- Via the USB interface on the Easykit with FTDI chip

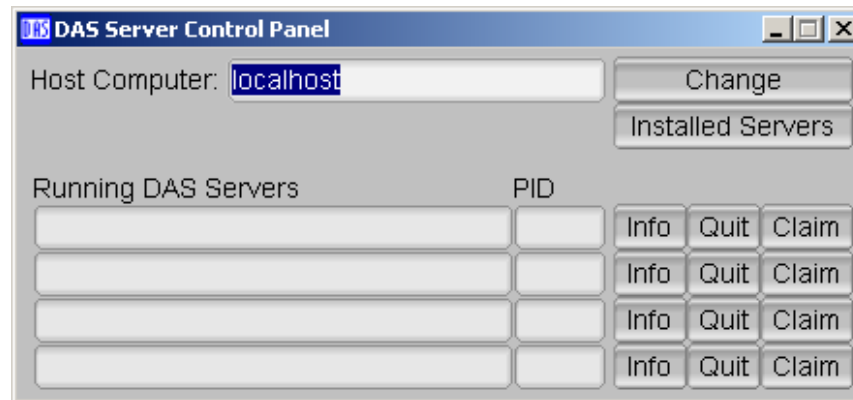
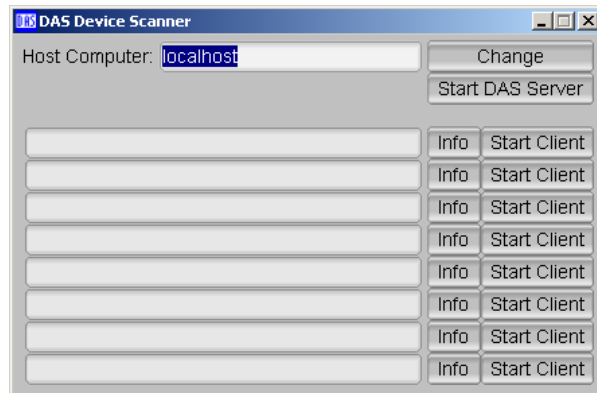
The DAS JTAG composite device gets identified

- When miniWiggler is connected
- When USB Wiggler Box is connected
- Via the USB interface on the Easykits with FTDI chip

HOT Exercise GPT12 - Device Access Server

2.) Check DAS status

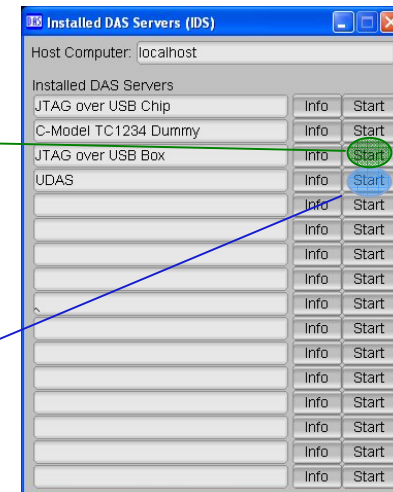
1. Start DAS device scanner
2. Start DAS Server Control panel



3. If DAS device scanner does not show any device, start the appropriate DAS server

Incase you are connected via the USB Wiggler box,
then start „JTAG over USB Box“

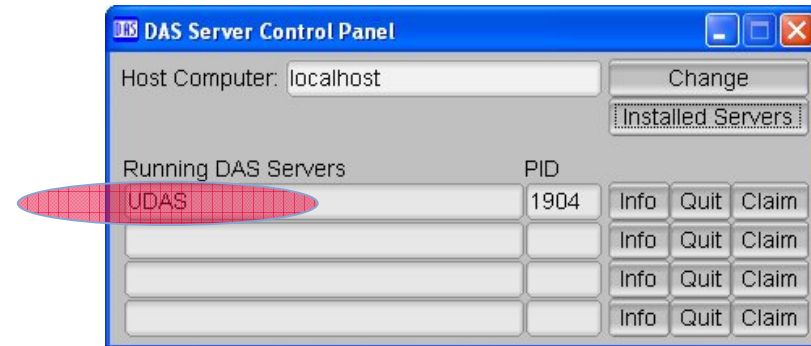
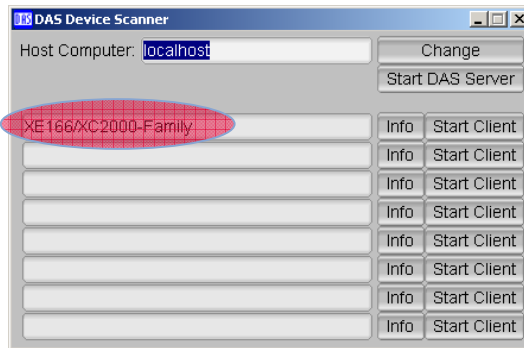
Incase you are connected via the FTDI chip or mini wiggler,
then start „UDAS“



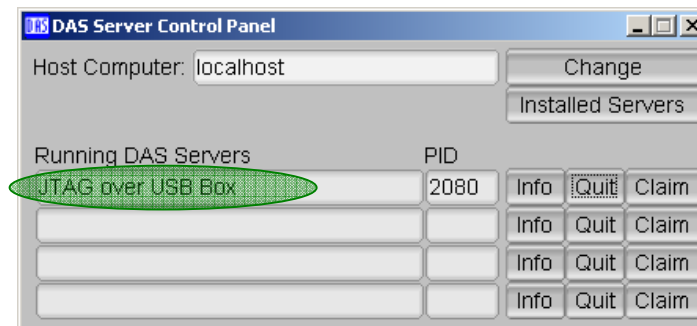
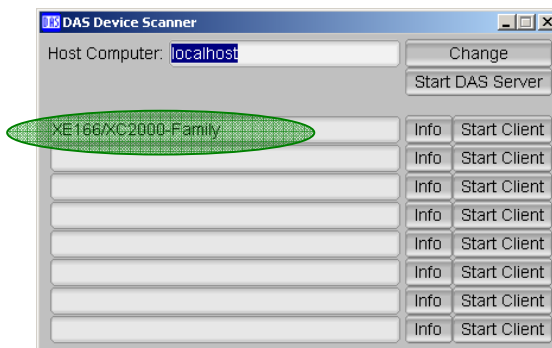
HOT Exercise GPT12 - Device Access Server

3.) Starting the servers manually

4. In case „UDAS“ server is started and XC2000 easykit is connected via on-chip FTDI or via separate miniWiggler, following status changes could be noted

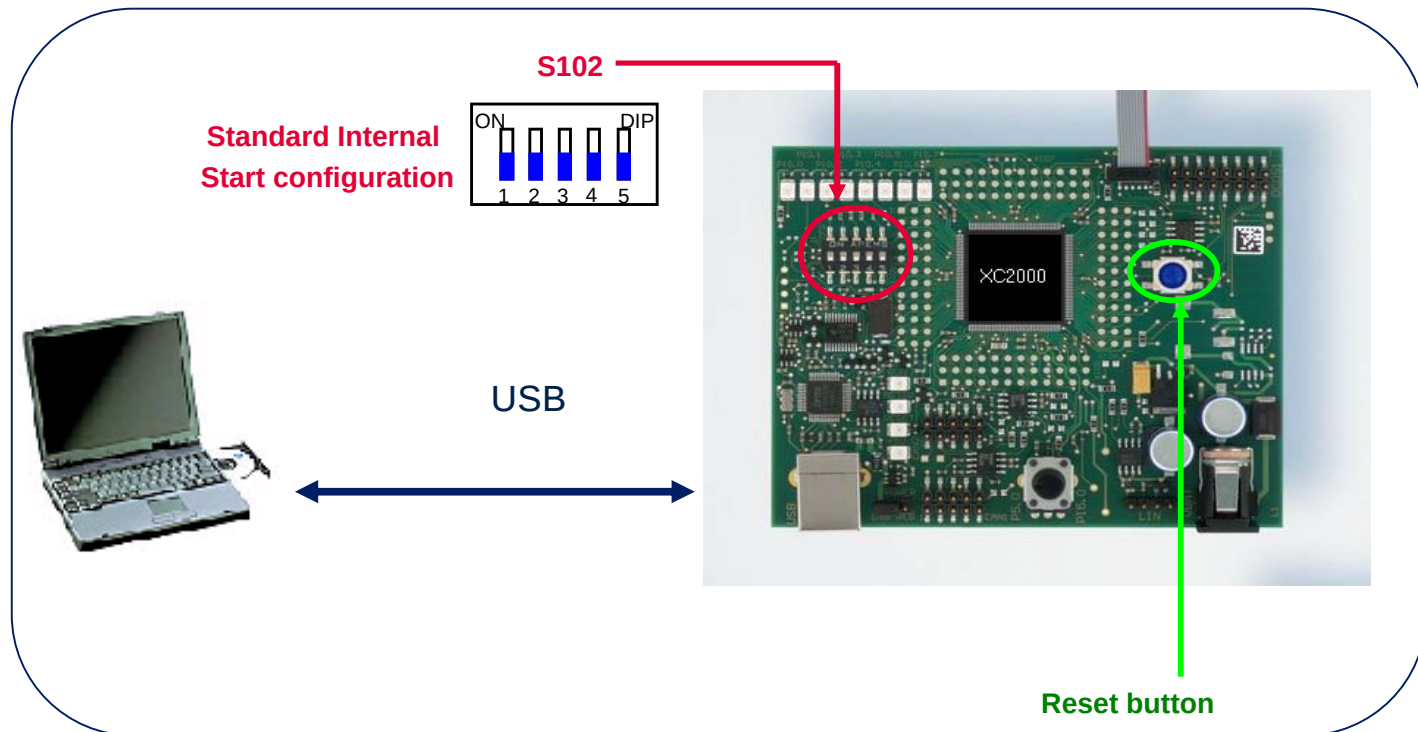


5. In case „JTAG over USB Box“ server is started and XC2000 starter kit is connected via Wiggler box, following status changes could be noted



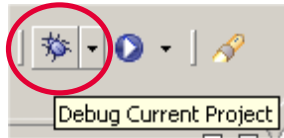
HOT Exercise GPT12 – Tasking EDE Connect XC2287M Easy Kit

- Connect XC2287M Board to PC
- Check the DIP Switch Settings on S102:
 - ⇒ **OFF-OFF-OFF-OFF-OFF** (Start from Internal Flash)
- Reset The Board (Press The Reset Button)

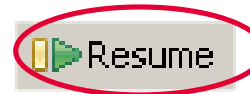


HOT Exercise GPT12 – Tasking VX Toolset Run Debugger

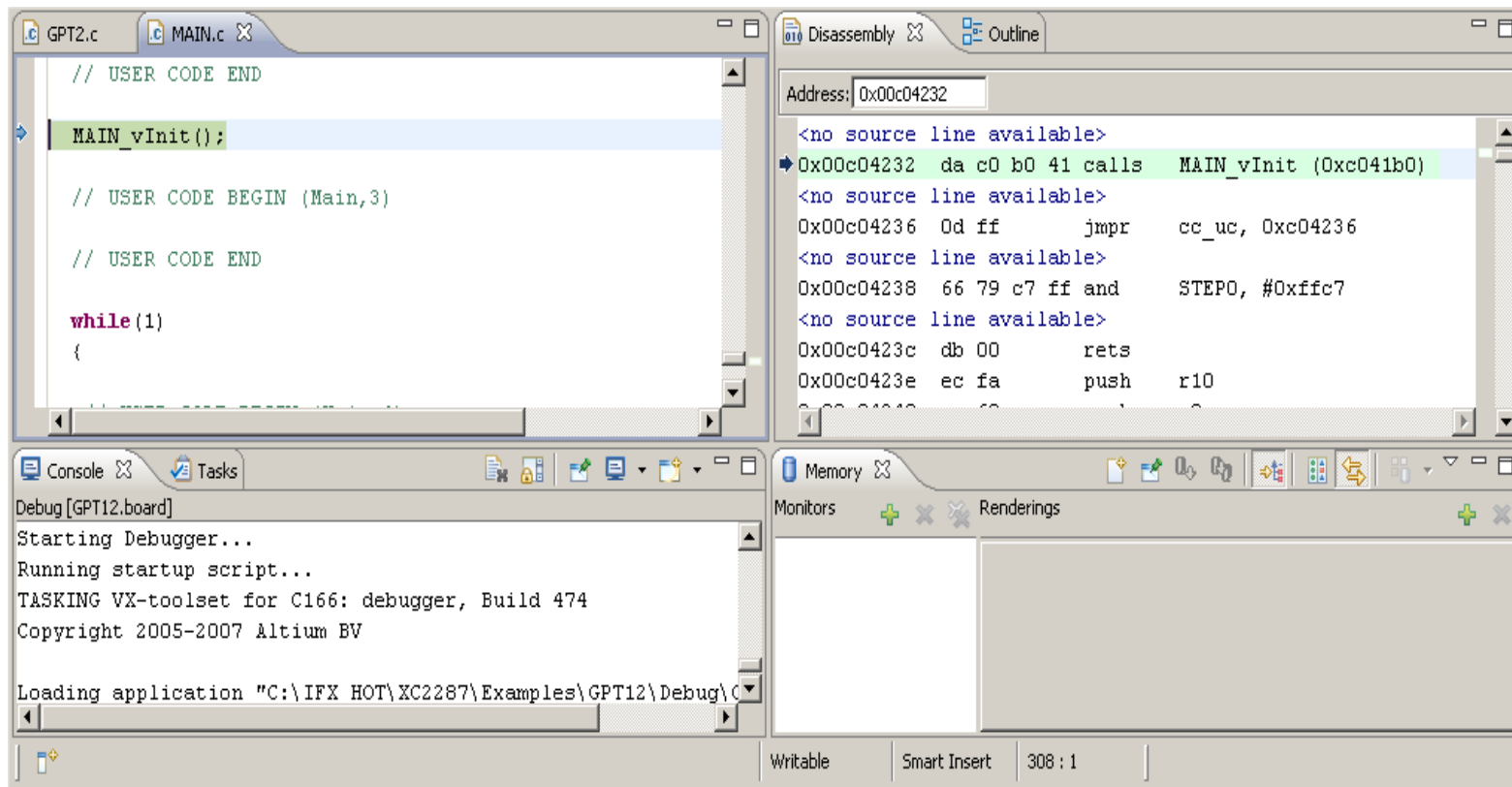
- 1 Click on



- 2 Click on 'Resume' and start program



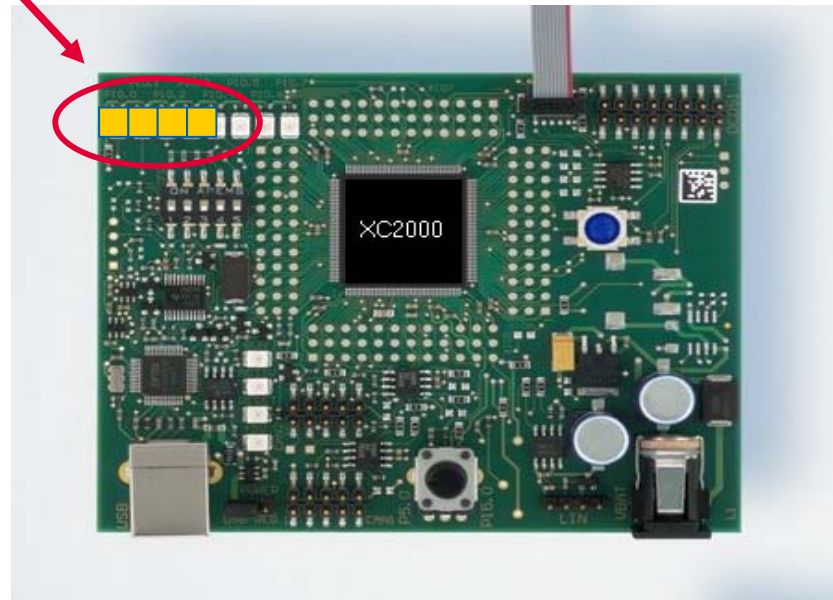
	Resume	F8
	Suspend	
	Terminate	Ctrl+F2
	Step Into	F5
	Step Over	F6
	Step Return	F7



HOT Exercise GPT12 – Tasking VX Toolset Run Debugger

- See Results

- LED's toggle when the GPT2 interrupt takes place.



HOT Exercise GPT12 – Tasking VX Toolset Run Debugger

■ Verifications

☐ Click on 'Suspend'



☐ Click on 'Restart'



☐ LEDs change ON/OFF States

☐ Click on 'Resume'



A person in a white lab coat and mask is working in a laboratory setting, holding a device. The background is slightly blurred, showing laboratory equipment.

We commit.
We innovate.
We partner.
We create value.



Never stop thinking