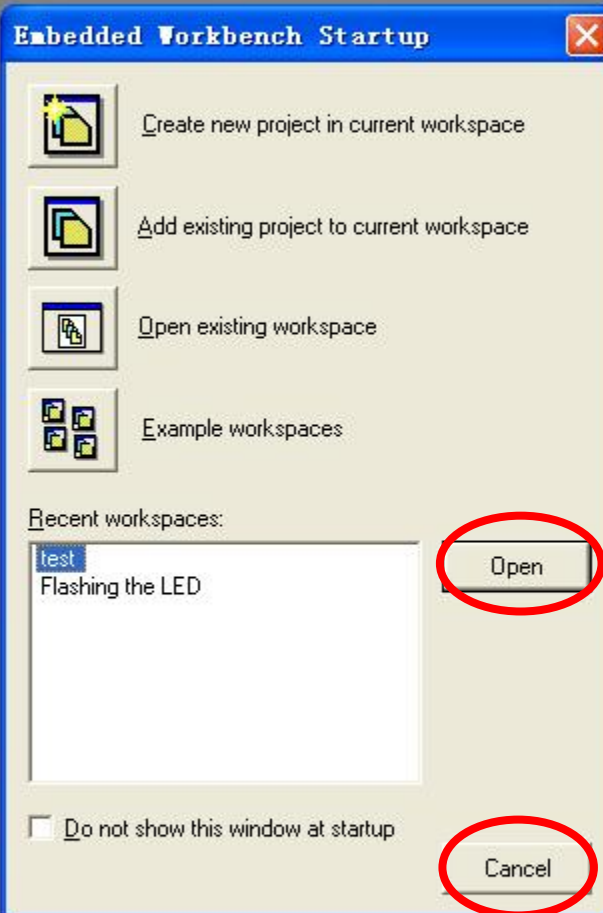




Workspace

Files





Workspace

Files

Add Files...
Add Group...
Import File List...
Edit Configurations...

Remove

Create New Project...

Add Existing Project...

Options... Alt+F7

Source Code Control ▶

Make F7

Compile Ctrl+F7

Rebuild All

Clean

Batch build... F8

Stop Build

Debug Ctrl+D

Make & Restart Debugger



▼ ×



Workspace

Files

Create New Project

Tool chain: MSP430

Project templates:

Empty project

+ asm

+ C++

+ C

Externally built executable

Description:

Creates an empty project.

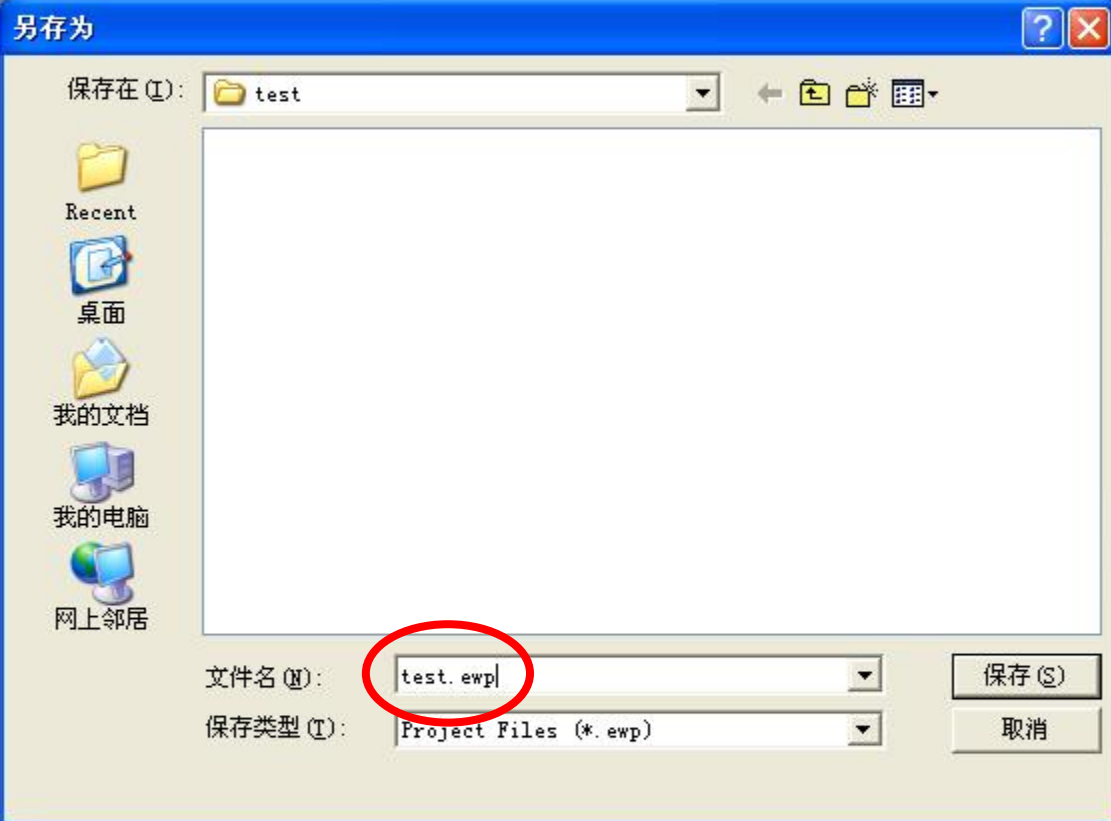
OK

Cancel



Workspace

Files



The screenshot shows the IAR Embedded Workbench IDE interface. The 'Project' menu is open, and the 'Add Files...' option is highlighted with a red circle. The menu items are as follows:

- Add Files...
- Add Group...
- Import File List...
- Edit Configurations...
- Remove
- Create New Project...
- Add Existing Project...
- Options... Alt+F7
- Source Code Control ▶
- Make F7
- Compile Ctrl+F7
- Rebuild All
- Clean
- Batch build... F8
- Stop Build
- Debug Ctrl+D
- Make & Restart Debugger

The workspace on the left shows a project named 'test - Deb' under the 'Files' section. The status bar at the bottom displays the text: 'Add one or more files to the project'.



Workspace

Debug

Files

test - Debu... ✓

Untitled1 *

```
#include <msp430x11x1.h>

void main(void)
{
    WDTCCTL = WDTPW + WDTTHOLD;           // Stop watchdog timer
    P1DIR |= 0x01;                        // Set P1.0 to output direction

    for (;;)
    {
        volatile unsigned int i;

        P1OUT ^= 0x01;                    // Toggle P1.0 using exclusive-OR

        i = 50000;                          // Delay
        do {i--};
        while (i != 0);
    }
}
```

New
Open
Close

Save Workspace
Close Workspace

Save **Ctrl+S**
Save As...
Save All

Page Setup...
Print... **Ctrl+P**

Recent Files
Recent Workspaces

Exit

Untitled1 *

```
#include <msp430x11x1.h>

void main(void)
{
    WDTCCTL = WDTPW + WDTHOLD;           // Stop watchdog timer
    P1DIR |= 0x01;                       // Set P1.0 to output direction

    for (;;)
    {
        volatile unsigned int i;

        P1OUT ^= 0x01;                   // Toggle P1.0 using exclusive-OR

        i = 50000;                        // Delay
        do (i--);
        while (i != 0);
    }
}
```




Workspace

Debug

Files

test - Debu... ✓
test.c
Output

test.c

#include <msp430x11x1.h>

void main(void)

{

Save Workspace As

保存在 (S): test

settings

Recent



桌面



我的文档



我的电脑



网上邻居

文件名 (N): test.eww

保存类型 (T): Workspace Files (*.eww)

保存 (S)

取消

Add Files...

Add Group...

Import File List...

Edit Configurations...

Remove

Create New Project...

Add Existing Project...

Options... Alt+F7

Source Code Control ▶

Make F7

Compile Ctrl+F7

Rebuild All

Clean

Batch build... F8

Stop Build

Debug Ctrl+D

Make & Restart Debugger

30x11x1.h>

W + WDT HOLD;

// Stop watchdog timer

// Set P1.0 to output direction

signed int i;

P1;

// Toggle P1.0 using exclusive-OR

// Delay

0);

File Edit View Project Tools Window Help

Workspace test.c

```
#include <msp430x11x1.h>

void main(void)
{
    WDTCTL = WDTPW + WDTHOLD; // Stop watchdog timer
    P1DIR |= 0x01; // Set P1.0 to output direction

    while(1)
    {
        volatile unsigned int i;
        P1OUT ^= 0x01; // Toggle P1.0 using exclusive-OR
        _delay_cycles(50000); // Delay
        while(i != 0);
    }
}
```

test - Debug

- Options...
- Make
- Compile
- Rebuild All
- Clean
- Stop Build
- Add
- Remove
- Source Code Control
- File Properties...
- Set as Active

Messages

56 bytes of CODE memory
80 bytes of DATA memory (+ 4 absolute)
2 bytes of CONST memory

Errors: none
Warnings: none

Total number of errors: 0
Total number of warnings: 0



Workspace

Debug

Files

- test - Deb...
- test.c
- Output

test

```
#include <msp430x11x1.h>

void main(void)
{
    WD...
    P1...

    fo...
    {
        ...
    }
}
```

Options for node "test"

Category:

- General Options
- C/C++ compiler
- Assembler
- Custom Build
- Build Actions
- Linker
- Debugger
- FET Debugger
- Simulator

Target | Output | Library Configuration | Library Options | Settings

Device: **MSP430F449**

Double floating: 32 bits

Position-independent

Hardware multiplier

Assembler-only project

OK

- Generic
- MSP430x1xx Family
- MSP430x2xx Family
- MSP430x3xx Family
- MSP430x4xx Family**
- MSP430C412
- MSP430C413
- MSP430F412
- MSP430F413
- MSP430F415
- MSP430F417
- MSP430F423
- MSP430F425
- MSP430F4250
- MSP430F4260
- MSP430F427
- MSP430F4270
- MSP430F435
- MSP430F436
- MSP430F437
- MSP430F447
- MSP430F448
- MSP430F449**
- MSP430FE423
- MSP430FE425
- MSP430FE427
- MSP430FG437
- MSP430FG438
- MSP430FG439
- MSP430FW423
- MSP430FW425

Messages

56 bytes of CODE memory
80 bytes of DATA memory (+ 4 a...
2 bytes of CONST memory

Errors: none
Warnings: none

Total number of errors: 0
Total number of warnings: 0



Workspace

Debug

Files

- test - Deb...
- test.c
- Output

test

```
test.c  
#include <msp430x11x1.h>  
  
void main(void)  
{  
    WDR;  
    P11;  
  
    for  
{  
    }
```

Options for node "test"

Category:

- General Options
- C/C++ compiler
- Assembler
- Custom Build
- Build Actions
- Linker
- Debugger**
- FET Debugger
- Simulator

Factory Settings

Setup | Cmd Opt | Plugins

Driver

Run to

main

Simulator

FET Debugger

Simulator

Setup macro

Use setup file

Device description file

Override default

\$TOOLKIT_DIR\$\config\MSP430F449.ddf

OK Cancel

Messages

56 bytes of CODE memory
80 bytes of DATA memory (+ 4 a
2 bytes of CONST memory

Errors: none
Warnings: none

Total number of errors: 0
Total number of warnings: 0



Workspace

Debug

Files

- test - Deb...
- test.c
- Output

test

```
test.c  
#include <msp430x11x1.h>  
  
void main(void)  
{  
    WDT  
    P11  
  
    fo  
    {  
    }  
}
```

Options for node "test"

Factory Settings

Category:

- General Options
- C/C++ compiler
- Assembler
- Custom Build
- Build Actions
- Linker
- Debugger
- FET Debugger**
- Simulator

Setup | Breakpoints

Download control

- Verify download
- Suppress download
- Ask when downloading
- Erase main memory
- Erase main and Information me
- Retain unchanged memory
- Allow erase/write access to locked flash memory
- Attach to running ta
- Disable memory cache

Connection

- Lpt LPT1
- J-Link
- TI USB FET

Debug protocol

- Override defau
- Spy-Bi-Wire
- 4-Wire JTAG

Target VCC (in) 3.0

OK Cancel

Messages

56 bytes of CODE memory
80 bytes of DATA memory (+ 4 a
2 bytes of CONST memory

Errors: none
Warnings: none

Total number of errors: 0
Total number of warnings: 0



Workspace

Debug

Files

test - Deb

test.c

Output

Add Files...
Add Group...
Import File List...
Edit Configurations...

Remove

Create New Project...
Add Existing Project...

Options... Alt+F7

Source Code Control

Make F7

Compile Ctrl+F7

Rebuild All

Clean

Batch build... F8

Stop Build

Debug Ctrl+D

Make & Restart Debugger

30x11x1.h>

W + WIDTH; // Stop watchdog timer

// Set P1.0 to output direction

signed int i;

P1;

// Toggle P1.0 using exclusive-OR

// Delay

0);



Workspace

Debug

Files

test - Deb

test.c

Output

Add Files...
Add Group...
Import File List...
Edit Configurations...
Remove
Create New Project...
Add Existing Project...
Options... Alt+F7
Source Code Control
Make F7
Compile Ctrl+F7
Rebuild All
Clean
Batch build... F8
Stop Build
Debug Ctrl+D
Make & Restart Debugger

30x11x1.h>

W + WIDTH; // Stop watchdog timer

// Set P1.0 to output direction

signed int i;

01;

// Toggle P1.0 using exclusive-OR

// Delay

0);

test

f()



Workspace

Debug

Files

test - Debug

test.c

Output

test.c

```
#include <msp430x11x1.h>

void main(void)
{
    WDTCIL = WDTPW + WDTLHOLD;           // Stop watchdog timer
    P1DIR |= 0x01;                       // Set P1.0 to output direction

    for (;;)
    {
        volatile unsigned int i;

        P1OUT ^= 0x01;                   // Toggle P1.0 using exclusive-OR

        i = 50000;                        // Delay
        do (i--);
        while (i != 0);
    }
}
```

test

Messages

56 bytes of CODE memory
80 bytes of DATA memory (+ 4 absolute)
2 bytes of CONST memory

Errors: none
Warnings: none

Total number of errors: 0
Total number of warnings: 0

File Edit View Project Tools Window Help

Workspace

Debug

Files

- test - Deb
- test.c
- Output

Options... Alt+F7

Source Code Control

Make F7

Compile Ctrl+F7

Rebuild All

Clean

Batch build... F8

Stop Build

Debug Ctrl+D

Make & Restart Debugger

```
30x11x1.h>  
  
W + WDT_HOLD; // Stop watchdog timer  
// Set P1_0 to output direction  
  
signed int i;  
P1_0; // Toggle P1.0 using exclusive-OR  
// Delay  
0);
```

Messages

File	Line
Files\IAR Systems\EW430 V3.40\430\INC\I C:\Program Files\IAR Systems\EW430 V3.40\430\INC\CLIB\	
IAR MSP430 C/C++ Compiler V3.40A\W32 [Kickstart]	
Copyright 1996-2005 IAR Systems. All rights reserved.	
34 bytes of CODE memory	
0 bytes of DATA memory (+ 4 bytes shared)	
Errors: none	
Warnings: none	
Done. 0 error(s), 0 warning(s)	

Build



Workspace

Debug

Files

- test - Debug
 - test.c
 - Output

test

```

test.c
#include <msp430x11x1.h>

void main(void)
{
    WDCTL = WDTW + WDTOLD;           // Stop watchdog timer
    P1DIR |= 0x01;                   // Set P1.0 to output

    for (;;)
    {
        volatile unsigned int i;

        P1OUT ^= 0x01;               // Toggle P1.0 using

        i = 50000;                   // Delay
        do (i--);
        while (i != 0);
    }
}

```

Disassembly

Go to Memory

001102	1104	rra
?C_EXIT:		
_exit:		
001104	3FFF	jmp
?cstart_begin:		
_program_start:		
001106	4031 0A00	mov
?cstart_call_main:		
00110A	12B0 1112	call
00110E	12B0 1134	call
void main(void)		
{		
?cstart_end:		
main:		
001112	8321	dec
WDCTL = WDTW + WDTOLD;		
001114	40B2 5A80 0120	mov
P1DIR = 0x01;		
00111A	D3D2 0022	bis
P1OUT ^= 0x01;		
00111E	E3D2 0021	xor
i = 50000;		
001122	40B1 C350 0000	mov

Log

Tue Feb 28 11:43:09 2006: Interface dll version 2.1.6.0

Tue Feb 28 11:43:09 2006: Device : MSP430F44x

Tue Feb 28 11:43:16 2006: Download successful.

Tue Feb 28 11:43:16 2006: Loaded debuggee: C:\Documents and Settings\Administrator\桌面\test\Debug\Exe\test.d43

Tue Feb 28 11:43:16 2006: Target reset

File Edit **View** Project Debug Emulator Tools Window Help

Messages
Workspace
Source Browser
Breakpoints
Disassembly
Memory
Register
Watch
Locals
Auto
Live Watch
Quick Watch
Call Stack
Terminal I/O
Code Coverage
Profiling
Stack
LCD Display
Toolbars
Status Bar

```
test.c  
#include <msp430x11x1.h>  
  
void main(void)  
{  
    WDCTL = WDTFW + WDTOLD;           // Stop watchdog  
    P1DIR |= 0x01;                    // Set P1.0 to o  
  
    for (;;)                             
    {  
        volatile unsigned int i;  
  
        P1OUT ^= 0x01;                 // Toggle P1.0 u  
  
        i = 50000;                     // Delay  
        do {i--};  
        while (i != 0);  
    }  
}
```

Register
CPU Registers

PC	=	0x1112
SP	=	0x09FE
SR	=	0x0000
R4	=	0x4CFF
R5	=	0xDFF5
R6	=	0x70DB
R7	=	0xBF4D
R8	=	0x0000
R9	=	0x0000
R10	=	0x026E
R11	=	0xB3DF
R12	=	0x0200
R13	=	0xFFFF
R14	=	0x121C
R15	=	0x0121
CYCLECOUNTER	=	0
CCTIMER1	=	0
CCTIMER2	=	0

Log

Tue Feb 28 11:43:09 2006: Interface dll version 2.1.6.0
Tue Feb 28 11:43:09 2006: Device : MSP430F44x
Tue Feb 28 11:43:16 2006: Download successful.
Tue Feb 28 11:43:16 2006: Loaded debuggee: C:\Documents and Settings\Administrator\桌面\test\Debug\Exe\test.d43
Tue Feb 28 11:43:16 2006: Target reset



Workspace

Debug

Files

- test - Debug
 - test.c
 - Output

```
#include <msp430x11x1.h>

void main(void)
{
    WDCTL = WDTFW + WDTOLD;           // Stop watchdog
    P1DIR |= 0x01;                    // Set P1.0 to ou

    for (;;)
    {
        volatile unsigned int i;

        P1OUT ^= 0x01;                // Toggle P1.0 us

        i = 50000;
        do {i--};
        while (i != 0);
    }
}
```

- Cut
- Copy
- Paste
- Complete
- Match Brackets
- Insert Template
- Open Header/Source File
- Go to definition
- Toggle Breakpoint (Code)**
- Toggle Breakpoint (Conditional)
- Toggle Breakpoint (Advanced Trigger)
- Toggle Breakpoint (Log)
- Enable/disable Breakpoint
- Set Next Statement
- Quick Watch
- Add to Watch
- Move to PC
- Run to Cursor

Disassembly

Go to Memory

001128	53B1 0000	add w
while (i != 0):		
00112C	9381 0000	tst w
001130	23FB	jne
001132	3FF5	jmp
exit:		
001134	4030 1100	br
001138	FFFF FFFF	and.b
00113C	FFFF FFFF	and.b
001140	FFFF FFFF	and.b
001144	FFFF FFFF	and.b
001148	FFFF FFFF	and.b
00114C	FFFF FFFF	and.b
001150	FFFF FFFF	and.b
001154	FFFF FFFF	and.b
001158	FFFF FFFF	and.b
00115C	FFFF FFFF	and.b
001160	FFFF FFFF	and.b
001164	FFFF FFFF	and.b
001168	FFFF FFFF	and.b
00116C	FFFF FFFF	and.b
001170	FFFF FFFF	and.b
001174	FFFF FFFF	and.b
001178	FFFF FFFF	and.b
00117C	FFFF FFFF	and.b
001180	FFFF FFFF	and.b
001184	FFFF FFFF	and.b
001188	FFFF FFFF	and.b
00118C	FFFF FFFF	and.b
001190	FFFF FFFF	and.b
001194	FFFF FFFF	and.b
001198	FFFF FFFF	and.b
00119C	FFFF FFFF	and.b
0011A0	FFFF FFFF	and.b
0011A4	FFFF FFFF	and.b
0011A8	FFFF FFFF	and.b
0011AC	FFFF FFFF	and.b
0011B0	FFFF FFFF	and.b
0011B4	FFFF FFFF	and.b
0011B8	FFFF FFFF	and.b
0011BC	FFFF FFFF	and.b