* AVR Studio C Compiler로 Project 만들기

1. AVR Studio를 시작 함니다.

H	Atmel AVR Tools		*	AVR Studio 4
	WinAVB 🕨	•	8	AVR Tools Help
		٦,	Þ	Plug-in Manager

2. New Project를 버튼을 누릅니다.

Recent projects	Modified
E.Vang\cpuplaza\avrstudio\atmega2560VestVest	30-Mar-2007 13:54:3
E:\lang\cpuplaza\avrstudio\atmega2561\test\test	30-Mar-2007 13:47:1
E:Vang\cpuplaza\avrstudio\atmega128\test\test	30-Mar-2007 13:36:2
E:Vang\cpuplaza\avrstudio\atmega64\test\test	30-Mar-2007 12:30:5
E:Vang\cpuplaza\avrstudio\atmega32\test\test	30-Mar-2007 12:20:2
E:Vang\cpuplaza\avrstudio\atmega16\test\test	30-Mar-2007 12:13:4
E:Vang\cpuplaza\avrstudio\atmega8\test\test	30-Mar-2007 12:03:4
E:Vang\ims16c128\w3150\main\main	20-Mar-2007 17:15:3
E:Vang\avrstudio\avr128\Modbus\ethernet\Modbus	26-Feb-2007 12:37:4
E:Vang\avrstudio\avr128\evm128\evm128	23-Feb-2007 16:34:3

3. C Compiler를 선택 하고 TEST.C source와 TEST Project와 디렉토리를 지정함니다.

Welcome to AVR Studio	4 Create new project Project type: ◆ Atmel AVR Accembler ▲ Atmel AVR GCC ✓ Create initial file: Initial file: Itest .c Location: E:\lang\cvavr\
Ver 4.12.498	<< <u>Back</u> <u>Next>></u> Load <u>Cancel</u> Help

* 프로젝트를 만들 위치를 지정 함니다.

Select folder	Statement and a statement of the statement		<u>۲</u> ×
女는 위치(!):	Cvavr	🗢 🖻 💣 🗊-	
최근 파일 바당 화면 내 문서 내 컴퓨터	↓ 排 書口 atmega_water atmega32 atmega8 avr128		
(1도위크 환경	Folder name E-WlangWcvavrW	Select	취소

4. 디버그및 ISP장치를 선택 함니다.(ISP인 경우 ST500 이므로 나중에 재설정)

	Debug platform:	Device:	
Schudlo 4	JTAGICE mkll AVR Dragon ICE40 ICE50 JTAG ICE AVR Simulator ICE200	AT90CAN128 ATmega123 ATmega16 ATmega162 ATmega169 ATmega322 ATmega323 ATmega64 AT86RF401 AT89S51 AT89S52	-
	Port: Auto	Open platform options	
Ver 4.12.498	<< <u>B</u> ack	Next>> Load Cancel	Help

* AVR Studio가 실행 됩니다.



5. Project Option을 설정 함니다.

test Project Options						<u>×</u>
	Active	default			▼ Ec	dit Configurations
General	Use Externa 1. Target nam 2. Clean/rebui 3. Makefile an	al Makefile e must equal p Id support requ d target must e	project name, uires "clean" exist in the sa	¹ target, ame folder		
Include Directories	Output File Nat Output File	me: ∣test,elf default₩	Cp ∉	u 클럭 입력 /		
Libraries	Device: Frequency: Optimization:	atmega128 16000000 ▲ -00	↓ hz	Unsigned (Unsigned E Pack Struc Short Enun	Chars (-fu Bitfields (-f ture Meml ns (-fshor	nsigned-char funsigned-bitfield: bers (-fpack-struct t-enums
Memory Settings	Create Hex	File	☐ Generat	e Map File		Generate List File
				확인	취소	도움말

6. EDIT창에서 C프로그램을 작성 함니다.

AVR Studio - [E-WlangWovavrWlestWlest, o	1	
Ble Project Build Edit View Id	ols Debug Window Help	- 8
Build Build	□ ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	
Trace Disabled Rebuild All		
IR GCC Build and Run Ctr	+F7 // ==================================	7
Test (default) Compile Al	**/ // AF8 OPU : ATmega128-15#	
B Source Fi Clean	Fiz / 문 : Yert 0	
External Dependences	·····································	
Conter Files	// 218 HIG	
	I man AVR Includes man	
	#include <stdio.h></stdio.h>	
	Winclude <stdiib.n> Winclude <stype.h></stype.h></stdiib.n>	
	///include <litoat.h></litoat.h>	
	White toge share to be	
	Winclude avr/ic.h	
	//	
	에 이 프로그램	
	// [BTT] MMI 9로 유규지는 편집의지 못도로 목서있다.	
	int main(void)	
	/ PortB 설정	
	DGRB=Dx11: // 포트8 물랙 설정	
	while(1)(prote=0.00; // = = = = = 0	
	PORTB=0x11: // 포트B 물럭 1	
AVR GCC	E:WlangWcvavrWlestWtest.c	
ild		
Crywn april 2010 Alew Low up 1	DEC.Misuidaceassastaseer	
Program 234 huras (i) 25 Bulls		
(.text + .data + .bootloader)		
Date: 0 bytes (0.0% Full)		
(.data + .bss + .noimit)		
Build succeeded with 0 Warmings		
Build Message 3 Find in Files 1	Breakpoints and Tracepoints	
	ATmana198 ITAS IFE Adm	- 1+16 Cel 1 CAD MINA CO
	Armegalo 2143 JLE Hote	LA 10, COL 1 CAP NUM SCH

*. 소스 코드

```
// 사용 CPU : ATmega128-16M
//날 짜:2006-
// 버 전 : Ver1.0
// 작 성 자 : www.cpuplaza.com
// 컴파일러 : AVR Studio
// 기본 헤더
// === AVR includes ===
#include <stdint.h>
#include <stdio.h>
#include <stdlib.h>
#include <ctype.h>
#include "avr/io.h"
#include "avr/interrupt.h"
// [인수] void
// [참고] PORT B를 출력으로 설정하고 펄스를 출력한다.
int main(void)
{
// PortB 설정
                              // 포트B 출력 1
  PORTB=0xff;
  DDRB=0xff;
                              // 포트B 출력 설정
  while(1){
                              // 포트B 출력 0
     PORTB=0x00;
                              // 포트B 출력 1
     PORTB=0xff;
  }
}
```

7. C Source 프로그램을 컴파일 한후 에러를 확인 함니다.

🏇 AVR Studio - [E:₩lang₩cvavr₩test₩test,c]			
Eile <u>P</u> roject	Build <u>E</u> dit <u>V</u> iev	v <u>T</u> ools	
0 🖻 🖬 🕼 🗸	Build	F7	
Trace Disabled	Rebuild All		
AVB GCC	Build and Run	Ctrl+F7	
E Stest (default)	Compile	Alt+F7	
E Source Fi	Clean	F12	
	Export Makefil	е	
📋 📩 🚔 Extornal 🖪			

🛠 AVR GCC 🖾 I/O View 🚯 Info	E:\lang\cvavr\test\test,c
Build	
Program: 234 bytes (0.2% Full) (.text + .data + .bootloader)	
Data: 0 bytes (0.0% Full) (.data + .bss + .noinit) 에러홀	<u>인</u>
Build succeeded with 0 Warnings	ints and Tracepoints

8. Conect to the Selected AVR Programmer 버튼을 클릭함니다.



- * 장치요구시 아래 내용 설정
 - 1. USB-ISP 경우(STK500)

Connect failed – Select AVR Programmer			×
Platform: S IK500 or AVRISP JTAG ICE JTAGICE mkll AVRISP mkll AVR Dragon	Port: COM1 COM2 COM3 COM4 COM5	•	<u>C</u> onnect Cancel
Tip: To auto-connect to the program Programmer' button on the toolbar, Note that the JTAGICE cannot be us connected in a debugging session, Disconnected Mode,	nmer used last time, pres sed for programming as l In that case, select 'Stop	ss the ong as it is o Debugging'	



2. USB-JTAG 경우(JTAG ICE)

Connect failed – Select AVR Programmer		
Platform: STK500 or AVRISP JTAGICE JTAGICE mkli AVRISP mkli AVR Dragon	Port: Auto COM1 COM2 COM3 COM4 COM5	<u>Connect,</u> Cancel
Tip: To auto-connect to the program 'Programmer' button on the toolbar, Note that the JTAGICE cannot be us connected in a debugging session, Disconnected Mode	nmer used last time, press the sed for programming as long as it is In that case, select 'Stop Debuggin	g.

9. Fuses Bit를 설정 한후 Program 함니다.

JTAG ICE
Program Fuses LockBits Advanced Board Auto
ATmega103 Compatibility Mode [M103C=0] Watchdog Timer always on; [WDTON=0] On-Chip Debug Enabled; [OCDEN=0] JTAG Interface Enabled; [JTAGEN=0] Preserve EEPROM memory through the Chip Erase cycle; [EESAVE=C Boot Flash section size=512 words Boot start address=\$FE00; [BOOTS Boot Flash section size=1024 words Boot start address=\$FE00; [BOOTS Boot Flash section size=2048 words Boot start address=\$FE00; [BOOTS Boot Flash section size=2048 words Boot start address=\$FE00; [BOOTS Boot Flash section size=4096 words Boot start address=\$FE00; [BOOTS Boot Reset vector Enabled (default address=\$0000); [BOOTRST=0] CKOPT fuse (operation dependent of CKSEL fuses); [CKOPT=0] Brown-out detection level at VCC=4,0 V; [BODLEVEL=1] Brown-out detection level at VCC=2,7 V; [BODLEVEL=1] Preve-out detection sepabled; [BODEN=0]
Auto Verify Program Verify Read Smart Warnings
Setting device parameters for itag programming 0K Fuses 프로그램 Entering programming mode,. 0K Reading fuse bits., 0xFF, 0x896F,., 0K Leaving programming mode,. 0K

JTAG ICE
Program Fuses LockBits Advanced Board Auto
 Ext, Crystal/Resonator Medium Freq.; Start-up time: 1K CK + 0 ms; [C Ext, Crystal/Resonator Medium Freq.; Start-up time: 1K CK + 4 ms; [C Ext, Crystal/Resonator Medium Freq.; Start-up time: 16K CK + 64 ms; [Ext, Crystal/Resonator Medium Freq.; Start-up time: 16K CK + 4 ms; [Ext, Crystal/Resonator Medium Freq.; Start-up time: 16K CK + 4 ms; [Ext, Crystal/Resonator Medium Freq.; Start-up time: 16K CK + 4 ms; [Ext, Crystal/Resonator Medium Freq.; Start-up time: 16K CK + 64 ms; [Ext, Crystal/Resonator Medium Freq.; Start-up time: 258 CK + 4 ms; [CKS] Ext, Crystal/Resonator High Freq.; Start-up time: 258 CK + 64 ms; [CK] Ext, Crystal/Resonator High Freq.; Start-up time: 1K CK + 0 ms; [CKS] Ext, Crystal/Resonator High Freq.; Start-up time: 1K CK + 4 ms; [CKS] Ext, Crystal/Resonator High Freq.; Start-up time: 1K CK + 4 ms; [CKS] Ext, Crystal/Resonator High Freq.; Start-up time: 1K CK + 64 ms; [CKS] Ext, Crystal/Resonator High Freq.; Start-up time: 16K CK + 0 ms; [CKS] Ext, Crystal/Resonator High Freq.; Start-up time: 16K CK + 0 ms; [CKS] Ext, Crystal/Resonator High Freq.; Start-up time: 16K CK + 64 ms; [CK] Ext, Crystal/Resonator High Freq.; Start-up time: 16K CK + 64 ms; [CK] Ext, Crystal/Resonator High Freq.; Start-up time: 16K CK + 64 ms; [CK] Ext, Crystal/Resonator High Freq.; Start-up time: 16K CK + 64 ms; [CK] Ext, Crystal/Resonator High Freq.; Start-up time: 16K CK + 64 ms; [CK] Ext, Crystal/Resonator High Freq.; Start-up time: 16K CK + 64 ms; [CK] Ext, Crystal/Resonator High Freq.; Start-up time: 16K CK + 64 ms; [CK] Ext, Crystal/Resonator High Freq.; Start-up time: 16K CK + 64 ms; [CK]
Setting device parameters for jtag programmingOK Entering programming mode,. OK Reading fuse bits 0xFF, 0x896F OK Leaving programming mode,. OK

10. 프로그램할 파일(test.hex)를 지정함니다.

JTAG ICE	
Program Fuses LockBits Advanced Board Auto	
ATmega128	
Programming mode	
Erase Device Before Programming Verify Device After Programming	
Flash	
C Use Current Simulator/Emulator FLASH Memory	
Input HEX File E:WlangWavrstudioWavr126WModbusWether]	
Program Verify <u>R</u> ead	
EEPROM	
Input HEX File E:WlangWims16c128Ww3150WmainWdefault	
Pr <u>o</u> gram Ver <u>i</u> fy Re <u>a</u> d	
Entering programming mode., OK Writing fuse bits, 0xFF, 0x896F, OK	
Reading fuse bits, 0xFF, 0x896F, 0K Fuse bits verification, 0K	
Leaving programming mode,. OK	•

* Test.hex 파일은 작업 디렉토리 폴더의 default 방안에 있습니다.

열기					<u>?</u> ×
찾는 위치(!):	😋 default	•	🗢 🖻	* 🖩 •	
🗅 dep					
a lest					
Management					
파일 이름(<u>N</u>):	test			열기((2)
파일 형식(<u>T</u>):	Intel Hex Files (*,hex;*,a90)		-	취소	

11. Program 버튼을 클릭하여 test.hex를 프로그램 함니다.

JTAG ICE	
Program Fuses LockBits Advanced	Board Auto
Device ATmega128	✓ <u>E</u> rase Device
Programming mode	 Erase Device Before Programming Verify Device After Programming
 Flash C Use Current Simulator/Emulator Input HEX File E:₩lang₩cvavr 	FLASH Memory #testWdefaultWtest, hex
Program Ve	rify <u>R</u> ead
C Use Current Simulator/Emulator C Input HEX File Et tang₩ims16	EEPROM Memory c128\w3150\main\default
Pr <u>o</u> gram Ve	rjfy Re <u>a</u> d
Erasing device., OK Programming FLASH OK Reading FLASH OK FLASH contents is equal to file., OK Leaving programming mode., OK	프로그램

12. TOOL사용시 속도가 느려지면 이렇게 해보세요.(Boartd창 선택)

AVRISP with top module '0xFF']
Program Fuses LockBits Advanced Board Auto	
- Voltages	
VTarget: 6,0 ARef: 6,0	
Band Vallance	ISP Freq가
	230.4Khz인지 확인
-] - 0,0 -] - 0,0 <u>Write Voltages</u>	
Oscillator and ISP Clock	
STK500 Osc: 3,686 MHz 🔽 Attainable: 3,686 MHz 🚺 Head	230.4Khz 선택후 Write 버튼을 누를
ISP Freq: 230, 4 kHz 🗲 Attainable: 230, 4 kHz Write 🧲	
Note: The ISP frequency must be less than 1/4 of the target	
Revision	
Hw: UxUf, Sw, major: UxU2, Sw, minor: UxU7 Upgrade	
Getting revisions., HW: 0x0f, SW Major: 0x02, SW Minor: 0x07, OK	
Getting oscillator parameters,, P=0x01, N=0x00, SD=0x01,, OK	