Utilisation de Visual Studio pour un projet qui n'est pas fait à la base pour Visual Studio

But

Le but de ce document est de décrire comment on peut utiliser Visual Studio pour travailler sur du code qui n'est à la base pas compilable sous Visual Studio. L'exemple qui va être traité est celui du programme embarqué dans la carte Navi-Ctrl du quadrirotor de chez Mikrokopter, qui est basée sur un processeur de type ARM. Attention, voici les prérequis principaux de la méthode présentée :

_ On doit disposer d'un fichier Makefile ou d'un script similaire qui lance les commandes/programmes nécessaires à la compilation du programme embarqué.

_ Il faut que les commandes/programmes utilisés soient disponibles sous Windows (ou puissent être installés).

A la fin de ce tutoriel, le projet créé devrait permettre de :

_ Editer le code C embarqué dans Visual Studio comme on le ferait pour un programme C/C++ pour PC habituel. On bénéficiera donc de la coloration syntaxique, l'auto complétion, les info-bulles donnant des informations sur le code sous la souris, la possibilité d'atteindre l'endroit dans le code où est définie une variable ou une fonction (clic droit puis Go to définition)... L'ensemble de ces fonctionnalités de Visual Studio sont souvent regroupée sous le nom Intellisense.

_ Compiler le code en utilisant les Build\Rebuild Solution et les raccourcis associés.

En revanche, voici ce que le projet ne supportera pas (a priori) :

_ L'exécution et débuggage de l'application dans Visual Studio. En effet, dans notre exemple, le programme compilé est fait pour une carte embarquée avec un processeur ARM et ne fonctionnera donc pas sur un PC sous Windows.

_ L'ajout/suppression/renommage de fichiers au projet Visual Studio comme on le fait pour un projet normal n'a pas d'influence sur le programme qu'on cherche à compiler. Il faut a priori modifier le Makefile.

Création du projet

Le type de projet à créer est Makefile project.



Les options proposées dans cette page seront configurées plus tard.



Ajout des fichiers au projet

Nous devons ajouter les fichiers qui nous intéressent au projet Visual Studio. Cependant, il faut garder à l'esprit que cette étape n'a aucune influence sur les fichiers qui seront compilés, seul ce qui est dans le Makefile compte.

Edit View Proj	oject Build Debug Data Tools	VMware Test Anal	yze Window Help
🛄 - 🐸 🖬 🥵	18 0 12 0 · 0 · 10 · 10	▶ Debug •	
n Explorer - V0.18c.	• # X Start Page		
Ution 'V0.18c_Navi V0.18c_Navi Header Fil Resource file Source File	ri-Ctrl' (1 prc Microsoft Build Rebuild Clean	al Studic	o Team System 2008
readme.tx	Project Only		
	Calculate Code Metrics	18c	Votat studie 2010 realised content Mon. 12 Any 2010 14:1000 Z - See our compiled list of some of the best content available for developers to help you get up-to-speed on what you can do with Visual
	Custom Build Rules	ver2	Studio 2010, as well as what we've done to help you be much more productive and have a lot more fun writing code.
	Tool Build Order		Download Visual Studio 2010 today!
		ver2	Mon, 12 Apr 2010 13:55:00 2 - Microsoft Visual Studio 2010 is a cost effective way to maintain existing applications and target the latest Microsoft platforms while creasing development productivity. Download the Visual Studio 2010 right today!
<u> </u>	Add	New Item	arning Snack: Visual Studio 2010 in 15 Minutes
	Add Web Reference	Existing Item.	on, 12 Apr 2010 15:40:00 Z - This Learning Snack describes how Visual Studio 2010 helps you unleash your creativity with powerful prototyping, modeling, and sign tools from within a personalized development environment in just 15 minutes.
a.	🖏 View Class Diagram	Class	pw Do I: What's New for C++ in Visual Studio 2010?
	Set as StartUp Project	Resource	u, 11 Mar 2010 07:00:00 Z - in this video, Jonathan Wood provides a high-level look at the new C features found in Visual Studio 2010.
	Debug •		Wed 10 Feb 2010 Telesse canonace is here
3	K Cut	- ++	Candidate and let us know what you think.
129	Paste	n Visual C++	How Do I: Use the New Restart Manager in Visual Studio 2010?
>	× Remove	ram	Inu, 14 Jan 2010 00:25:00 Z - Explore the the new Restart Manager, which gives your MFC applications the ability to restart and, optionally, to recover unsaved documents after a crash.
	Rename		Windows 7 Training Kit for Developers
	Unload Project		Thu, 22 Oct 2009 20:35:00 Z - Now online, updated with plenty of C content, including new MFC modules for High DPI, Taskbar, Touch, and Ribbon.
15	Conen Folder in Windows Explorer	Canta	Windows 7 Developer Guide
		Lenter	Inu, 22 Oct 20/9 20:3300 2 - The MSUN Library guide to developing for Windows 7.
19(E)	m Properties		Thu, 22 Oct 2009 20:25/02 Z - Get started learning the value of Windows 7 and find the resources you need to dive deeper.
			What's New in Visual C++ 2010
	Visual Studio Headlin	nes	Mon, 19 Oct 2009 22:40:00 Z - The MSDN Library has information on the new and enhanced features available in Visual C 2010.
	Téléchargement - La	version	Visual C++ 2010 Samples
	est disponible pour l	es abonnés	Mon, 19 Oct 2009 22:4000 2 - Learn about the new tools and technologies coming in Visual C 2010. Windows With C ++1 Introducing Direct 2D
	MSDN ! Documentation - To	ut savoir sur	Sat, 17 Oct 2009 20:25:00 2 - Few things excite me more about Windows 7 than the introduction of Direct2D and DirectWinte. Direct2D is a brand new 2D graphics API designed to support the most demanding and visually rich desktop applications with the best possible performance.
	Visual Studio 2010 e Framework 4 en fra	tle.NEI	10-4 Episode 5: Code Focused in Visual Studio 2010
🧟 Class	Prope		
Definition Windo	ow 🔁 Call Browser 📃 Output 🔫 Find	Results 1 📸 Error List	
g project 'V0.18c_N	Navi-Ctrl' project creation successful.		

() ↓ • V0.18c_				
00	Navi-Ctrl 🕨		h	ρ
🄄 Organize 👻 🏢 View	s 🔻 📑 New Folder			0
Favorite Links	Name	Date modified	Туре	Si *
Deniecte	h ssc.h	16/02/2010 17:58	C/C++ Header	
Desuments	h timer1.h	16/02/2010 17:58	C/C++ Header	
Documents	h timer2.h	16/02/2010 17:58	C/C++ Header	ntent available for developers to help you get up-to-speed on what you can do with Visual Studio 2010, as well as what we's
Desktop	b] uart0.h	16/02/2010 17:58	C/C++ Header	ng code.
More »	b] uart1.h	16/02/2010 17:58	C/C++ Header	
Folders 👻	h uart2.h	16/02/2010 17:58	C/C++ Header	Ve way to maintain existing applications and target the latest Microsoft platforms while increasing development productivit
V0.18c_Navi-Ctrl *	h ubx.h	16/02/2010 17:58	C/C++ Header	
🍶 Hex-Files	in usb.h	16/02/2010 17:58	C/C++ Header	udio 2010 helps you unleast your creativity with new of ul prototyping modeling and design tools from within a personali
📕 libstr91x	waypoints.n	16/02/2010 17:58	C/C++ Header	auto zozo neips you unieasn your creativity with powerful prototyping, modeling, and design tools norm within a personali.
📕 Lst	Widkenie	10/02/2010 20:00	Misses A Visual C	
🍌 Obj	LICENSE TYT	/pe: File	Fort Document	= h-level look at the new C features found in Visual Studio 2010.
USB Software [Navi-Ctrl.Uv2	16/02/2010 17:58	UV2 File	wirk the next generation of developer tools from Microsoft. Be sure to download the Release Candidate and let us know what
USB Software [usblinc Usblibrary File name	Navi-Ctrl.Uv2	16/02/2010 17:58 m generic.s" "analog.c" 👻 🗛	UV2 File	 ark the next generation of developer tools from Microsoft. Be sure to download the Release Candidate and let us know what wes your MFC applications the ability to restart and, optionally, to recover unsaved documents after a crash.
USB Software [usbinc usblibrary File name	Navi-Ctrl.Uv2	16/02/2010 17:58 m generic.s" "analog.c" ▼ A	UV2 File I Files (*.*) Add Cancel	In the next generation of developer tools from Microsoft. Be sure to download the Release Candidate and let us know what Inves your MFC applications the ability to restart and, optionally, to recover unsaved documents after a crash. It including new MFC modules for High DPL Taskbar, Touch, and Ribbon.
is USB Software (inchibitrary rehibitrary File name	Nevi-CutUv2 Thu, 22 Oct 2 Windows De Thu, 22 Oct 2 Windows De Thu, 22 Oct 2 Windows De Windows Me Non, 19 Oct 2 Windows Me Non, 19 Oct 2 Windows Mi	16/02/2010 17:58 "" []	VIZ File VIZ FILe	In the next generation of developer tools from Microsoft: Be sure to download the Release Candidate and let us know what inves your MFC applications the ability to restart and, optionally, to recover unsaved documents after a crash. It including new MFC modules for High DPI, Taskbar, Touch, and Ribbon. In for Windows 7. dows 7 and find the resources you need to dive deeper. In the new and enhanced features available in Visual C 2010. toologies coming in Visual C 2010. dows 7 than the introduction of Direct2D and DirectWirke. Direct2D is a brand new 2D graphics API designed to support the most

Analyse du Makefile

Il est conseillé de parcourir le Makefile pour voir les fichiers qui sont utilisés.



Il faut aussi regarder dans le Makefile les commandes/programmes qui sont utilisés. On voit notamment que des commandes telles que rm et cp sont utilisées. Ces commandes n'étant pas disponibles sous Windows par défaut, il faut installer MinGW et MSYS pour les avoir. MinGW est aussi nécessaire pour avoir la commande make, qui lancera la compilation en lisant le Makefile.



De plus, on voit que le compilateur utilisé est celui de CodeSourcery et que la commande pour appeler le compilateur est arm-none-eabi-gcc. Il nous faudra donc installer ce compilateur aussi.



On voit ici les commandes à utiliser pour la compilation.



Réglage des propriétés du projet

En fonction de ce qu'on a vu dans le Makefile, il va nous falloir régler les propriétés de notre projet Visual Studio.



Dans un 1^{er} temps, il faut régler les commandes qui seront appelées lorsque l'on cliquera sur les menus Build\Build Solution, Build\Rebuild Solution et Build\Clean comme on l'a vu dans le Makefile. Cependant, nous allons compliquer ces valeurs dans la suite.

Le paramètre Output n'est pas forcément indispensable.

Le paramètre Include Search Path est important pour que toutes les fonctions d'Intellisense fonctionnent correctement. Il faut y indiquer les dossiers où se trouvent les fichiers headers (fichiers .h) du projet.

File Edit View Project Build	Studio (Administrator) Debug Data Tools VMware Ter	t Analyze Window Help				
	No - Ot - El - El Debug	• Win32 • M	🗞 \and	- 🛃 🔫 🐋 🐼 🖬 🗉	1.	
	nggggggg					
Solution Explorer - V0.18c 7 ×	Makefile					- × 🗔
Solution Explorer - V0.18c 3 X Solution V0.18c, Navi-Chrl (1) pro Solution V0.18c, Navi-Chrl (1) pro Solution V0.18c, Navi-Chrl Chr	Materile	Platform: Active(Win32 General Build Command Line Rebuild All Command Line Clean Command Line Clean Command Line Clean Command Line Common Language Runtime Supp Preprocessor Definitions Include Search Path Forced Includes Assembly Search Path Forced Using Assemblies Include Search Path	2)	Configuration Manager Intime support Files)\CodeSourcery\Sourcery Include Search Path S(Program+iles)\CodeSou Ibitsf3X\include usbline usbline usbline	rcery/Sourcey G++ Lite/arm-none-eab/unclude	Server Explorer X Toolbox Properties
۲۰ میں ۲۰۰۰ میں ۲۰۰۰ کا المواد میں ۲۰۰۰ می	endif ifeq (\$(VERSION_PATCH), TARGET = Navi-Ctrl_\$(HE) ifeq (\$(VERSION_PATCH), TARGET = Navi-Ctrl_\$(TA ifeq (\$(VERSION_PATCH), TARGET = Navi-Ctrl_\$(HE) C	5) (IAME) V\$ (VERSION_MAJOR) \$ (6) (IAME) V\$ (VERSION_MAJOR) \$ (7) (NAME) V\$ (VERSION_MAJOR) \$ (morial	(VERSION_MINOR) f (VERSION_MINOR) f (VERSION_MINOR) g (VERSION_MINOR) h III	Inherited values:	voject defaults Macros>> OK Cancel	•
Ready						
🚱 📰 🖉 🌔 👔 SA	🌰 fre 🔩 19 🥻 GE	👔 GE 👔 GE 👔 ifa 🍸	no 🏠 GE 😥 Sci	. 💦 Na 👔 Bu	👔 M 🐴 VO 📗 Bu FR 🛛 197% 🕽 🖙 < 🛄 🖏 4	4:07

En fait, il peut y avoir un problème pour les paramètres Build, Rebuild et Clean lorsque toutes les commandes appelées par le Makefile ou la commande make ne sont pas dans un dossier listé dans la variable système PATH de Windows. Pour en être sûr, nous pouvons modifier les paramètres Build, Rebuild et Clean comme suit :

not state the second state of the second state	dio (Administrator)		_ 0 ×
File Edit View Project Build	ebug Data Tools VMware Test Analyze Window H	Help	
🔂 • 🛅 • 😂 🗶 🥔 🕺 🖻 🖄	🔊 - 🝽 - 🗐 - 🖳 🕨 Debug 🔹 Win32	🔹 🧑 \and 🔹 🔹 🖓 🐨 🖬 🖓 🔹	
□ 型 处 ** 建 律 国 월 (₽ ₽ ₽ ₽ ₽ ₽ ₽ ₽ ₽ ₽		
Solution Explorer - V0.18c + 7 ×	Makefile		• × 👔
B B &	V0.18c_Navi-Ctrl Property Pages	8 22	
Solution 'V0.18c_Navi-Ctrl' (1 prc			(PE
Header Files	Configuration: Active(Debug) • Platform:	Configuration Manager	× pia
🗀 Resource Files	Common Properties 🗉 General		e
B- 🛅 Source Files	Configuration Properties Build Command Line General Robuild All Command	@set PATH=%ProgramFiles%\CodeSourcery\Sourcery G	E X3
	Debugging Clean Command Line	@set PATH=%ProgramFiles%\CodeSourcery\Sourcery G	0
startup912.s	NMake Output	V0.18c_Navi-Ctrl.exe	8
and startup_generic.s	IntelliSense		
	Common Language Ri	untime Support No Common Language Runtime support	Pro
	Build Command Line	Manual Station States in Manual	2
	@set PATH=%ProgramFiles%\CodeSourcery\Sour	rcery G++ Lite\bin;%SYSTEMDRIVE%\msys\1.0\bin;%SYSTEMDRIVE%\MinGW\bin;%PATH	% && make all
	Construction interference of the second states interest		
			-
	· · · · · · · · · · · · · · · · · · ·		N
			Marrazza
	endif ifeg	c	0K Cancel
	TARGET		
	endif		
	<pre>treq (>(vikion_FAICH), 6) TARGET = Navi-Ctrl \$(HEX NAME) V\$(VERSION</pre>	MAJOR) \$ (VERSION MINOR) g	
	endif		
< m >	ifeq (\$(VERSION_PATCH), 7)	THE TOP C ATTRACTOR ATMONY	_
Soluti 🐼 Class 🔜 Prope	IMAGEI - NAVI-CUTI & (HEX NAME) V\$ (VERSION	I MAGOR) + (VERSION MINOR) D	
Code Definition Window	Call Browser 🔜 Find Results 1 🛸 Error List		
Ready	"		
👩 📰 🖉 🚺 SA	🙆 fre 🔩 19 👔 GE 👔 GE	🚺 ifa 👔 no 🧌 GE 😰 Sci 🖓 Na 👔 Bu 🧃 M	🐐 V0 📗 Bu FR 🛛 97%) 🕞 🖌 🛄 🖏 🌵 14:10

Une autre modification peut être faite en plus pour ces paramètres. Cette dernière modification requiert que le programme GNU2VSOutputConverter.exe soit placé dans le dossier du projet et que le compilateur (dans notre cas celui de CodeSourcery) se comporte comme GCC (compilateur habituel sous Linux). En effet, les messages d'erreurs et d'avertissement de ces compilateurs ne sont pas bien interprétés par Visual Studio. GNU2VSOutputConverter.exe sert à convertir les messages du compilateur en des messages compréhensibles par Visual Studio. Notez que cette étape n'est pas critique, elle permet juste de pouvoir double-cliquer sur le message d'erreur ou d'avertissement pour atteindre l'endroit dans le code correspondant.

🗌 V0.18c_Navi-Ctrl - Microsoft Visual	Studio (Administrator)	۲.
File Edit View Project Build	Debug Data Tools VMware Test Analyze Window Help	
🔯 • 🛅 • 🗃 🖬 🖉 🔏 🖻 🛙	🗄 🔊 - 🖓 - 📮 - 📮 🕨 Debug 🔹 Win32 🔹 🎯 Nand 🔹 🖓 🗟 🏹 🛃 🖸	
回動性体 連续 回登		
Solution Explorer - V0.18c + 7 ×	Makefile ×	1
	V0.18c, Navi-Ctrl Property Pages	NaS
Solution 'V0.18c_Navi-Ctrl' (1 pro		er E
Header Files	Configuration: Active(Debug) V Platform: Active(WinS2) V Configuration Manager	cplor
📴 Resource Files	Common Properties B General	en Xe
Makefile	Configuration Properties Build Command Line @set PA1H=%Program/lise%CodeSourcery\ General Behuild All Command Line @set PA1H=%Program/lise%CodeSourceryCourceryC	TO
📋 readme.txt	Build Command Line	olbox
and startup generic s		
		Properties
	OK Cancel	
	endif	
	ifeq (\$(VERSION_PATCH), 5)	
	ands1 = Nav1-C521_s(HEX_NAME)_vs(VERSION_MADOR)_s(VERSION_MINOR) r endif	
	ifeq (\$(VERSION_PATCH), 6)	
	endit = way-curi_s (nea_mane)_vs(VEKSIUR_RAUOK)_s(VEKSIUR_RINOK)g	
< III	ifeg (§ (VERSION PATCH), 7)	
Soluti 😨 Class 🔜 Prope	ARUSE - NEVI-ULT & (REA RADE) V\$ (VENSIUR RAUUK) \$ (VENSIUR RAUUK) ()	
Output Gode Definition Windo	wi≥a Call Browser → Find Results 1 🔅 Error List	ЯГ
warning: nested extern declaration of	'end'	
🚱 📰 🕼 🤌 👔 SA	🖉 frez. 🔩 19 👔 Ge 👔 Ge 🁔 Ge 👔 fr 👔 no 🐴 Ge 😫 Sci 🧌 No 🧯 M 🈭 M 🧌 No 👔 Sci	20

Compilation

Pour lancer la compilation du projet, on peut cliquer sur le menu Build\Rebuild Solution.



On peut voir dans la fenêtre Output de Visual Studio les commandes exécutées par le Makefile.



Voici un exemple d'avertissement au cours de la compilation.

File Edit Vew Project Build Debug Data Tools WAware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools WAware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools WAware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools WAware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools WAware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools WAware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools WAware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools WAware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools WAware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools WAware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools WAware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools WAware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools Waware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools Waware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools Waware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools Waware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools Waware Tet Analyze Window Help File Edit Vew Project Build Debug Data Tools Waware Tet Analyze Window Help File Edit Vew Project Debug
<pre>Note of the set o</pre>
Solution Typics - VOISC, Nav-Chri (Line Solution Typics - VOISC, Nav-Chri (Line Soluti
Solution Explorer -V018c = 3 × Makefile +
<pre># CTARIN = arm-clf TCHAIN = arm-cone-eabl # TCHAIN = arm-cone-eabl TCHAIN = arm-cone-e</pre>
Totalin = arm-none-eabi Wills (Nor-CUT (Lpr) Wills (Nor-CUT (Lpr)) Will
Wolke, Nawi-Chri #USE_THUMB_MODE = YES Wolke/Files #USE_THUMB_MODE = YES Wolke/Files USE_THUMB_MODE = NO Wolke/Files #
<pre></pre>
Accource Hes Accounce Hes A
<pre>image: Source rises image: Source rises i</pre>
VCRSION MAJOR = 0 VCRSION MAJO
Output VERSION_MINOR = 18 VERSION_MINOR = 10 VERSION_MINOR = 10 VERSION_VERSION_VERSION_VERSION VERSION_VERSION_VERSION VERSION_VERSION_VERSION VERSION_VERSION_VERSION_VERSION VERSION_VERSION_VERSION_VERSION VERSION_VE
VERSION_PATCH = 2 Output Show output from: Build Show out
Output • • • • • • • • • • • • • • • • • • •
Show output from: Build
<pre>INCompling C (AMM-only): mbprotocol.e INarm-nome-sating-co =monymarm8 = .1g -OS -Wa, -adhIns=mkprotocol.lst -TIIbstF31x/include =Tusbinc =Tusbibrary/inc -MD -MF -MT .dep/marma.o.d -Wnested-externs -std=gnu59 mkprotocol.c = a INCompling C (AMM-only): parma.c INarm-nome-sating-co = computant8 = .1g -OS -Wa, -adhIns=marma.lst -TIIbstF31x/include =Tusbinc =Tusbibrary/inc -MD -MF -MT .dep/marma.o.d -Wnested-externs -std=gnu59 parma.c -op parma.o.d INCompling C (AMM-only): print[P.c] INarm-nome-sating-co = computant8 = .1g -OS -Wa, -adhIns=marma.lst -TIIbstF31x/include =Tusbinc =Tusbibrary/inc -MD -MF .dep/marma.o.d -Wnested-externs -std=gnu59 parma.c -op parma.o.d INCompling C (AMM-only): remfunce INCompling C (AMM-only): remfunce. INCompling C (AMM-only): remfunce. INCompling C (AMM-only): remfunce. INCompling C (AMM-only): settings.c INArm-nome-sating-co = computant8 = .1g -OS -Wa, -adhIns=mafunc.lst -TIIbstF31x/include -Tusbibrary/inc -MD -MF -MT .dep/astings.c.d -Wnested-externs -std=gnu59 settings.c -o sett INCompling C (AMM-only): settings.c INArm-nome-sating-co = computant8 = .1g -OS -Wa, -adhIns=settings.lst -TIIbstF31x/include -Tusbibcary/inc -MD -MF .dep/settings.c.d -Wnested-externs -std=gnu59 settings.c -o sett INCompling C (AMM-only): settings.c INArm-nome-sating-co = computant8 = .1g -OS -Wa, -adhIns=settings.lst -TIIbstF31x/include -Tusbibcary/inc -MD -MF .dep/settings.c.d -Wnested-externs -std=gnu59 settings.c -o sett INCompliang C (AMM-only): settings.c -Ig -OS -Wa, -adhIns=settings.lst -TIIbstF31x/include -Tusbibcary/inc -MD -MF .dep/settings.c.d -Wmested-externs -std=gnu59 settings.c -o sett INCompliang C (AMM-only): settings.c -Ig -OS -Wa, -adhIns=settings.lst -TIIbstF31x/include -Tusbibcary/inc -MD -MF .dep/settings.c.d -Wmested-externs -std=gnu59 settings.c -o sett INCompliang C (AMM-only): settings.c -Ig -OS -Wa, -adhIns=settings.lst -IIIbstF31x/include -Tusbibcary/inc -MD -MF .dep/settings.c.d -Wnested-externs -std=gnu59 settings.c -o sett INCompliang C (AMM-on</pre>
<pre>lbarmone=eabi-goc c meguwamBe -Ig -Os -Wa, =adhins=sting_iolude -I Libert 51x/include -I Lublic Tublic Tublicary/inc -WD -WF -MF .dep/sprintcp.o.d -Waested-externs -std=gnu59 skprotocol.c - Laboration - La</pre>
<pre>DCompling C (ANP-only): params.c Disar=none=abi;qcc c=neguram@ = 1g -0s -Wa,=adhlns=params.lst -Tlibstf91x/include -Tusbitc -Tusblibrary/inc -MD -MP -MT .dep/params.c.d -Wnested-externs =std=gnu99 params.c -o params.c Disar=none=abi;qcc c=neguram@ = 1g -0s -Wa,=adhlns=printf_D.c -o print Disar=none=abi;qcc c=neguram@ = 1g -0s -Wa,=adhlns=printf_D.t -Tlibstf91x/include -Tusbitc -Tusblibrary/inc -MD -MP -MT .dep/printf_D.o.d -Wnested-externs =std=gnu99 printf_D.c -o print Disar=none=abi;qcc c=neguram@ = 1g -0s -Wa,=adhlns=ramfunc.lst -Tlibstf91x/include -Tusbitc -Tusblibrary/inc -MD -MP -MT .dep/ramfunc.o.d -Wnested-externs =std=gnu99 printf_D.c -o ramfunc Disar=none=abi;qcc c=neguram@ = 1g -0s -Wa,=adhlns=stafic.lst -Tlibstf91x/include -Tusbitc -Tusblibrary/inc -MD -MP -MT .dep/sdc.o.d -Wnested-externs =std=gnu99 sdc.c -o sdc.o Discompling C (AMM-only): settings.c Disar=none=abi;qcc c=neguram@ = 1g -0s -Wa,=adhlns=settings.lst -Tlibstf91x/include -Tusbitc -Tusblibrary/inc -MD -MP -MT .dep/settings.o.d -Wnested-externs =std=gnu99 settings.c - o sett Disar=none=abi;qcc c=neguram@ = 1g -0s -Wa,=adhlns=settings.lst -Tlibstf91x/include -Tusbitc -Tusblibrary/inc -MD -MP -MT .dep/settings.o.d -Wnested-externs =std=gnu99 settings.c - o sett Disar=none=abi;qcc c=neguram@ = 1g -0s -Wa,=adhlns=settings.lst -Tlibstf91x/include -Tusbitc -Tusblibrary/inc -MD -MP -MT .dep/settings.o.d -Wnested-externs =std=gnu99 settings.c - o sett Disar=none=abi;qcc c=neguram@ = 1g -0s -Wa,=adhlns=settings.lst -Tlibstf91x/include -Tusbitc -Tusblibrary/inc -MD -MP -MT .dep/settings.o.d -Wnested-externs =std=gnu99 settings.c - o sett Disar=none=abi;qcc c=neguram@ = 1g -0s -Wa,=adhlns=settings.lst -Tlibstf91x/include -Tusbitc -Tusblibrary/inc -MD -MP -MF .dep/settings.o.d -Wnested-externs =std=gnu99 settings.c - o sett Disar=none=abi;qcc c=neguram@ = 1g -0s -Wa,=adhlns=set_sets/settings.lst -11ibstf91x/include -Tusbitc -Tusblibrary/inc -MD -MP -MF .dep/settings.o.d -Wnested-externs =std=gnu99 set_set Disar=n</pre>
<pre>ISCompling C (ABM-only): print[p.c] ISTarmone-setSing or -negrournes[.1g] -Os -Wa, =adhIns=print[P.lst -Ilibstr91x/include -Iusbinc -Iusbilibrary/inc -MD -MF -MF .dep/print[P.o.d -Mmested-externs -std=gnu99 print[P.c - o prin ISCompling C (ABM-only): setSing or -Negrournes[.1g] -Os -Wa, =adhIns=refuture.lst -Ilibstr91x/include -Iusbinc -Iusbilibrary/inc -MD -MF .dep/sdc.odMmested-externs -std=gnu99 print[P.c - o prin ISCompling C (ABM-only): sdc. ISCompling C (ABM-only): sdc. ISCompling C (ABM-only): setSing.c. ISCompling C (ABM-only): spielave.c ISCompling C (ABM-only): spielave.c ISCompliant C (ABM-only): spielave.c ISCOMPLICATION: spielave.</pre>
<pre>lbarm-none-abligec c mepuramBe -Ig -Os -Wa,-adhlns=printf_P.lst -Tlibstf91x/include -Iusbinc -Iusblibrary/inc -MD -MF -MF .dep/sprintf_P.o.d -Wnested-externs -std=gnu99 printf_P.c - o prin lbarm-none-abligec c -mepuramBe -Ig -Os -Wa,-adhlns=printf_P.lst -Tlibstf91x/include -Iusbinc -Iusblibrary/inc -MD -MF -MF .dep/sdc.o.d -Wnested-externs -std=gnu99 printf_P.c - o ranfunc lbarm-none-abligec c -mepuramBe -Ig -Os -Wa,-adhlns=std.st -Tlibstf91x/include -Iusbinc -Iusblibrary/inc -MD -MF -MF .dep/sdc.o.d -Wnested-externs -std=gnu99 sdc.c - o sdc.o lbarm-none-abligec c -mepuramBe -Ig -Os -Wa,-adhlns=setings.lst -Tlibstf91x/include -Iusbinc -Iusblibrary/inc -MD -MF -MF .dep/sdc.o.d -Wnested-externs -std=gnu99 setings.c - o sett lbarm-none-abligec c -mepuramBe -Ig -Os -Wa,-adhlns=settings.lst -Tlibstf91x/include -Iusbinc -Iusblibrary/inc -MD -MF -MF .dep/settings.o.d -Wnested-externs -std=gnu99 settings.c - o sett lbarm-none-abligec c -mepuramBe -Ig -Os -Wa,-adhlns=settings.lst -Tlibstf91x/include -Iusbinc -Iusblibrary/inc -MD -MF -MF .dep/settings.o.d -Wnested-externs -std=gnu99 settings.c - o sett lbarm-none-abligec c -mepuramBe -Ig -Os -Wa,-adhlns=settings.lst -Ilibstf91x/include -Iusbinc -Iusblibrary/inc -MD -MF -MF .dep/settings.o.d -Wnested-externs -std=gnu99 settings.c - o sett lbarm-none-abligec c -mepuramBe -Ig -Os -Wa,-adhlns=set_sistIlibstf91x/include -Iusbinc -Iusblibrary/inc -MD -MF -MF .dep/settings.o.d -Wnested-externs -std=gnu99 settings.c - o sett lbarm-none-abligec c -mepuramBe -Ig -Os -Wa,-adhlns=set_sistIlibstf91x/include -Iusbinc -Iusblibrary/inc -MD -MF -MF .dep/settings.o.d -Wnested-externs -std=gnu99 settings.c - o sett lbarm-none-abligec c -mepuramBe -Ig -Os -Wa,-adhlns=spi_slave.e.t -Ilibstf91x/include -Iusbinc -Iusblibrary/inc -MD -MF -MF .dep/spi_slave.o.d -Wnested-externs -std=gnu99 settings.c - o sett lbarm-none-abligec c -mepuramBe -Ig -Os -Wa,-adhlns=spi_slave.c -o sett</pre>
<pre>l'ocapiling C (AMA-only): remfunce. l'arm-nome-sehigre c = megunizamé - Ig -Os -Wa,-adhlns=ramfunc.lst -IlibstfSlx/include -Iusbinc -Iusbilbrary/inc -MD -MP -MF .dep/ramfunc.o.d -Mnested-externs -std=gnu59 ramfunc.e -o ramfunc l'arm-nome-sehigre c = megunizamé - Ig -Os -Wa,-adhlns=ramfunc.lst -IlibstfSlx/include -Iusbinc -Iusbilbrary/inc -MD -MP -MF .dep/sdc.o.d -Wnested-externs -std=gnu59 sdc.c -o sdc.o l'arm-nome-sehigre c = megunizamé - Ig -Os -Wa,-adhlns=setings.lst -IlibstfSlx/include -Iusbinc -Iusbilbrary/inc -MD -MP -MF .dep/settings.o.d -Wnested-externs -std=gnu59 settings.c - o sett l'arm-nome-sehigre c = megunizamé - Ig -Os -Wa,-adhlns=settings.lst -IlibstfSlx/include -Iusbinc -Iusbilbrary/inc -MD -MP -MF .dep/settings.o.d -Wnested-externs -std=gnu59 settings.c - o sett l'arm-nome-sehigre c = megunizamé - Ig -Os -Wa,-adhlns=set_igs.ist -IlibstfSlx/include -Iusbinc -Iusbilbrary/inc -MD -MP - MF .dep/settings.o.d -Wnested-externs -std=gnu59 settings.c - o sett l'arm-nome-sehigre c = megunizamé - Ig -Os -Wa,-adhlns=spi_slave.lst -IlibstfSlx/include -Iusbinc -Iusbilbrary/inc -MD -MP - MF .dep/spi_slave.o.d -Wnested-externs -std=gnu59 settings.c - o sett l'arm-nome-sehigre c = megunizamé - Ig -Os -Wa,-adhlns=spi_slave.lst -IlibstfSlx/include -Iusbinc -Iusbilbrary/inc -MD -MP - MF .dep/spi_slave.o.d -Wnested-externs -std=gnu59 settings.c - o sett l'arm-nome-sehigre c = megunizamé - Ig -Os -Wa,-adhlns=spi_slave.lst -IlibstfSlx/include -Iusbinc -Iusbilbrary/inc -MD -MP - MF .dep/spi_slave.o.d -Wnested-externs -std=gnu59 settings.c - o sett l'arm-nome-sehigre c = megunizamé - Ig -Os -Wa,-adhlns=spi_slave.lst -IlibstfSlx/include -Iusbinc -Iusbilbrary/inc -MD -MP - MF .dep/spi_slave.o.d -Wnested-externs -std=gnu59 settings.c - o sett l'arm-nome-sehigre c = megunizamé - Ig -Os -Wa,-adhlns=spi_slave.lst -IlibstfSlx/include -Iusbinc -Iusbilbrary/inc -MD - MP - MF .dep/spi_slave.o.d -Wnested-externs -std=gnu59 settings.c - o settigno - os -Wa,-adhlns=spi_slave.c - o settingslave.c</pre>
<pre>bit Complete Com</pre>
<pre>lbarm-nome=abi-gcc c=neguwarm8e -Ig -Os -Wa,=adhlns=sdc.lst -TlibstrSix/include -Lusbinc -Lusblibrary/inc -MD -MF -MF .dep/sdc.o.d -Wnested-externs -std=gnu39 sdc.c -o sdc.o l>Compling C (AMM-only): spi_slave.c lbarm-nome=abi-gcc -c=neguwarm8e -Ig -Os -Wa,=adhlns=settings.lst -TlibstrSix/include -Lusbinc -Lusblibrary/inc -MD -MF -MF .dep/settings.o.d -Wnested-externs -std=gnu39 settings.c -o sett l>Compliing C (AMM-only): spi_slave.c lbarm-nome=abi-gcc -c=neguwarm8e -Ig -Os -Wa,=adhlns=spi_slave.lst -TlibstrSix/include -Lusbinc -Lusblibrary/inc -MD -MF -MF .dep/spi_slave.o.d -Wnested-externs -std=gnu39 spi_slave.c -o s</pre>
<pre>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>></pre>
<pre>Information and the information of the second second</pre>
1>arm-none-eabi-gcc -c -mcpurarm9e -Ig -Os -Wa,-adhIns=spi_slave.lst -Ilibstr91x/include -Iusblibrary/inc -MD -MP -MF .dep/spi_slave.o.d -Wnested-externs -std=gnu99 spi_slave.c -o s
1>Compiling C (ABH-only): ssc.e
<pre>12atm=none=eaol-gcc =c =mcpu=atmse =1g =-Us =wa,=aanins=ssc.ist =libstrsix/include =lusbibcrary/inc =uu =wu =wu =wu =wu =wu =wu =wu =wu =wu</pre>
Jarm-non-esbirger c = mcpu=arm9e -Ig -Os -Wa,=adhlns=syscalls.lst -Ilibstr91x/include -Iusbirc -Iusbirary/inc -MD -MP -MT .dep/syscalls.o.d -Wnested-externs -std=gnu99 syscalls.c -o sysc
1>syscalls.c: In function '_sbrk_r':
Payscalls.c:109: warning: nested extended attain of 'end'
17 compiling ((akm'only): timeri.c 1 barm-none-eabi-coc - ncoustarmede -Ig -Os -Waadhins=timeri.ist -Ilibstr91x/include -Iusbinc -Iusblibrarv/inc -MD -MP -MF .dep/timeri.c.d -Wnested-externs -std=gnu99 timeri.c -o timeri.c
1>Compiling C (ARM-only): timer2.c
1>arm-none-eabi-gcc -c -mcpu=arm9e -Ig -Os -Wa,-adhIns=timer2.lst -Ilibstr91x/include -Iusblibrary/inc -MD -MP -MF .dep/timer2.od -Wnested-externs -std=gnu99 timer2.c -o timer2.o
10 compling C (ARM-only): usetto.
Compling C (ARM-only): uatle
1>arm-none-eabi-goc -c -mcpu=arm9e -Ig -Os -Wa,-adhlns=uart1.lst -Ilibst91x/include -Iusbinc -Iusbihzary/inc -MD -MP -MF .dep/uart1.o.d -Wnested-externs -std=gnu99 uart1.c -o uart1.o
12Compiling C (ASM-only): uart2.c
Aream now wearyou to magureshee t. Tu Twe Ma, BaningWatt2.1st tlibstrik/include fusbing fusbin
Control Control Definition Window 20 Cill Research 1 2 East English 1 2 East English

On voit ici qu'il est bien listé dans la fenêtre Error List.

🐕 V0.18c_Navi-Ctrl - Microsoft Visua	Studio (Administrator)					
File Edit View Project Build	Debug Data Tools	VMware Test Analyze Window	Help			
🔚 🗸 🛅 🖌 🛃 Solution Explorer	Ctrl+Alt+L	▶ Debug → Win32	- Mand	- 🔍 🐨 🖄 🏷 💽 🗆 -	1	
Bookmark Winde	ow Ctrl+K, Ctrl+W	a 0 1				
Solution Expl	Ctrl+Shift+C					• × 🗔
Code Definition	Window Ctrl+Shift+V	elf				
Solution () Object Browser	Ctrl+Alt+J	hone-eabi				*
G V0.1 Output	Alt+2	-				EX
Property Manage	-r	DE = YES = NO				Diore
Resource View	Ctrl+Shift+F					EX
Toolbox	Ctrl+Alt+X					10
Find Results		= 18				olbo
		Via Call Resources				
Output Toolbarr						X 4
Show output	Shift_Alt_Enter	Command window Ctri+Alt				top
1>Compili	- Sinter Bit Child	Document Outline Ctri+Alt4				4
1>arm-non		S Error List Ctri+*, Ctri-	tr91x/include -Iusbinc -Iu	sblibrary/inc -MD -MP -MF .dep/mk	protocol.o.d -Wnested-externs -s	atd=gnu99 mkprotocol.c -
1>Compili Las Navigate Forward	d CER+Shift++	Ubject Test Bench	x/include -Iusbinc -Iusbli	brary/inc -MD -MP -MF .dep/params	.o.d -Wnested-externs -std=gnu3	9 params.c -o params.o
1>Compili		Properties Window Alt+Em	er		and a more second to be	
1>arm-non Previous Task		Server Explorer Ctrl+Alt-	* aix/include -lusping -lust	iibrary/inc -mp -mp -ms .dep/prin	tr_P.o.d -whested-externs -std=0	Inusa brinti v.c -o brin
1>arm-non Property Pages	1	- Jask List Ctn+*, Ctn+	1x/include -Iusbinc -Iusbl	ibrary/inc -MD -MP -MF .dep/ramfu	nc.o.d -Wnested-externs -std=gnu	199 ramfunc.c -o ramfunc
1>arm-none-eabi-gcc -c -mcpu	u=arm9e -Ig -Os	a 🖉 Macro Explorer	nclude -Iusbinc -Iusblibra	ry/inc -MD -MP -MF .dep/sdc.o.d -	Wnested-externs -std=gnu99 sdc./	s -o sdc.o
1>Compiling C (ARM-only): se	ettings.c	E Start Page	91u/issluds -Tuskins -Tusk	liberen/ine -MD -MD -MP des/sees	ince a d -Warnend supremy - ander	
1>Compiling C (ARM-only): sp	pi_slave.c	Web Browser Ctrl+Alt-	R SIX/Include -Idsbind -Ids	iibiaiy/inc -nb -ne -ni .dep/secc.	ings.o.u -wnested-externs -stu-	Judy secondare -0 seco
1>arm-none-eabi-gcc -c -mcpu	u=arm9e -Ig -Os	Performance Explorer	r91x/include -Iusbinc -Ius	blibrary/inc -MD -MP -MF .dep/spi	_slave.o.d -Wnested-externs -sto	i=gnu99 spi_slave.c -o s
1>arm-none-eabi-gcc -c -mcpu	u=arm9e -Ig -Os	g Code Metrics Results	nclude -Iusbinc -Iusblibra	ry/inc -MD -MP -MF .dep/ssc.o.d -	Wnested-externs -std=gnu99 ssc.	2 -0 88C.0
1>Compiling C (ARM-only): sy 1>arm-none-eabi-gcc -c -mcn	yscalls.c u=arm9e -T -g -Os	s -Wa -adhlns=syscalls lstII	ibstr91x/include -Tusbing -Tust	library/inc -MD -MP -MF dep/avac	alls o d -Wnested-externs -std=	mu99 syscalls c -o sysc
1>syscalls.c: In function '	_sbrk_r':	5 we, canno 575carro. 150 11	in the second	interior in a support	antistota ancista caterini star	E
1>syscalls.c:109: warning: 1 1>Compiling C (ARM-only): t:	nested extern declars	ation of 'end'				
1>arm-none-eabi-gcc -c -mcp	u=arm9e -Ig -Os	s -Wa,-adhlns=timer1.lst -Ilib	str91x/include -Iusbinc -Iusbli	brary/inc -MD -MP -MF .dep/timer1	.o.d -Wnested-externs -std=gnu99	9 timer1.c -o timer1.o
<pre>1>Compiling C (ARM-only): t: 1>arm-none-eabi-gcc -c -mcp)</pre>	imer2.c u=arm9e -Ig -Os	s -Waadhlns=timer2.lst -Ilib	str91x/include -Iusbinc -Iusbli	brarv/inc -MD -MP -MF .dep/timer2	.o.d -Wnested-externs -std=gnu9	9 timer2.c -o timer2.o
1>Compiling C (ARM-only): u	art0.c		AL AND THE ALL AND A			
<pre>l>arm-none-eabi-gcc -c -mcpu l>Compiling C (ARM-only): us</pre>	u=arm9e -Ig -Os art1.c	s -Wa,-adhins=uart0.1st -Ilib:	tr91x/include -Iusbinc -Iusblik	rary/inc -MD -MP -MF .dep/uart0.o	.d -Wnested-externs -std=gnu99 u	lart0.c -o uart0.o
1>arm-none-eabi-gcc -c -mcpu	u=arm9e -Ig -Os	s -Wa,-adhlns=uart1.lst -Ilib:	tr91x/include -Iusbinc -Iusblik	rary/inc -MD -MP -MF .dep/uart1.o	.d -Wnested-externs -std=gnu99 u	Jart1.c -o Uart1.o
<pre>1>compliing C (ARM-only): u 1>arm-none-eabi-gcc -c -mcpu</pre>	artz.c u=arm9e -Ig -Os	s -Wa,-adhlns=uart2.lst -Ilibs	tr91x/include -Iusbinc -Iusblik	rary/inc -MD -MP -MF .dep/uart2.o	.d -Wnested-externs -std=gnu99 1	Jart2.c -o Uart2.o
<		as terre senarer salatsatalet delete			the transmission contractor (1991) (1993) - Contractor	
🔳 Output 📑 Code Definition Windo	ow 🔚 Call Browser 🔜 Fin	nd Results 1 📸 Error List				
Rebuild All succeeded					Ln 128 Col 37	Ch 37 INS
🧑 🔳 🖻 🖉 🚺 SA	. 🔥 fre 😼 19	🚺 🚺 GE 👔 GE	👔 ifa 🐔 no 🆓 GE	🛂 Sci 🦓 Na 🚺 M 🗌 Vi	0 📕 Bu 🕕 V0 FR 🛐	756 < 📃 🔞 👫 🕂 14:19

Si on double-clique sur le message, le code provoquant le message est affiché dans la fenêtre principale.

Mag At 3만 5만 프	第1回 한 년 한 년 월 양 성 후		
Explorer - V0.18c + 7	× syscalls.c Makefile		
1 di	(Unknown Scope)		
tion VUJAS, Nav-Cri Header Files Resource Files Source Files readme.bt astrup92.2.3 startup92.3	<pre>{ for term 0; } /* Register name faking - works in collusion with the linker. */ register char * stack_ptr asm ("sp"); caddr_t _sbrk_r (struct _reent *r, int inor) extern char end asm ("end"); /* Defined by the linker. */ stactic char * heap_end; char * prev_heap_end; if (heap_end == NULL) heap_end = i end; prev_heap_end = heap_end; if (heap_end + inor > stack_ptr) { /* Some of the libstdo++-v3 tests rely upon detecting + out of nemory errors, so do not abort here. */ estern void abort (void); _write (1, "_sbrk: Heap and stack collision\n", 32); </pre>		
			+
ers 1 Warning (i)	0 Messages		
scription	*	File	Line
ming: nested extern decl	laration of 'end'	syscalls.c	109