Setup External programmer in Atmel Studio

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This guide shows you how to add an external programmer in Atmel Studio 7.0. Once setup the external programmer, you can flash the AVR board without switching to "Universal_GUI.exe", which provides a seamless workflow that making debug and troubleshooting a bit faster.

0. Download avrdude

On the school computer, avrdude is installed at

V:\avrdude\avrdude.exe

For your personal Windows PC, you can download avrdude here:

http://web.engr.oregonstate.edu/~jinyo/ece375/sw/avrdude.zip

Unzip the file and save to your preferred directory, e.g.

C:\Program Files (x86)\avrdude\avrdude.exe

📕 > This PC > Local Disk (C:) > Program Files (x86) > avrdude							
Name	Date modified	Туре	Size				
avrdude.conf	7/24/2017 8:12 AM	CONF File	489 KB				
💷 avrdude.exe	7/24/2017 8:12 AM	Application	735 KB				
🛸 libusb0.dll	7/24/2017 8:12 AM	Application extension	43 KB				

1. Enable "Advanced Mode"

In order to setup an External programmer, Atmel Studio needs to be in 'Advanced' profile. This can be found under the Tools menu.

Go to > Tools > Select Profile.



Select "Advanced" and click "Apply".

Atmel Studio UI Profiles	×
Select a user interface profile.	
Standard 2.	
Advanced ✓	
The profile that was default in Atmel Studio on therevious versions of Atmel Studio 7. Shows most features from Atmel Studio, including advanced debugging, reporting tool menus and window layout.	:
You can go to Tools → Select Profile to change the profile later.	
Reset Close Apply	

2. Add "External Tools"

Go to > Tools > External Tools.



Add new external tool

	External Tools		? ×				
	Menu contents:						
			Add				
			Delete				
			Move Up Move Down				
	Title:	USBASP					
	Command:	The path of avrdude.e	exe				
	Arguments:	-c usbasp -p atmega	128 -B12 -	U flash:w:\$(Bi	nDir)\\$(Targe	etName).he	ex:i
	Initial directory:						
	Use Output window	Prompt for argumer	nts				
	Treat output as Unico	de Close on exit					
		OK Cancel	Apply				
Title:				_			
USBASP (or the	e name of	your choice	€)				
Commands:							
C:\Program Fil	es (x86)	\avrdude\avi	dude.	exe (or	the pa	th of	avrdu
Arguments:							

-c usbasp -p atmega128 -B12 -U flash:w:\$(BinDir)\\$(TargetName).hex:i

Check \square "Use Output window", Uncheck \square "Treat output as Unicode" and \square "Prompt for arguments". Then, click "Apply" to save the setting.

3. Setup keyboard shortcut (Optional)

This section is optional. You can skip it if you feel more clicky using the mice or touchpad.

Go to > Tools > Options



Select "Keyboard", enter "ExternalCommand1" and select "Tools.ExternalCommand1".

Enter your preferred shortcut keys and click "Assign". Click "Ok" to save the setting.

Options			?	×
Search Options (Ctrl+E)	P	Apply the following additional keyboard mapping scheme:		
Search Options (Ctrl+E)		AtmelStudio Show.commands.containing: ExternalCommand1 Enter "ExternalCommand1 Tools.ExternalCommand1 Tools.ExternalCommand11 Tools.ExternalCommand12 Tools.ExternalCommand12 Tools.ExternalCommand13	Reset	~
International Setting Keyboard Notifications Quick Launch Startup		Shortcuts for selecter pommand: Alt+V (Global) V	Remove	
Tabs and Windows Task List Web Browser		Global Assign your shortcut	Assign	
 Projects Source Control 	~	Shortcut currently used by:		\sim
		ОК	Cance	

You can also assign shortcuts for other y frequent used command like "Set as Entry File" or "Build Solution", e.g. my choices of shortcut are:

Set as Entry File:	Alt+X	(Hint:	X as	check mark)				
Build Solution:	Alt+C	(Hint:	C as	compile)				
ExternalCommand1:	Alt+V	(Hint:	well	, it's next	to	Х	and	C)

Options	? × Options	ī	· ×	
Search Options (Ctrl+E) Environment General AutoRecover Custom Settings Documents Entensions and Updates Find and Replace Fonts and Colors Import and Export Settings	Apply the following additional keyboard mapping scheme: Search Options (Ctrl+E) Apply the following a AtmelStudio Environment AtmelStudio Show commands containing: Environment AtmelStudio Build Solution Custom Settings Show commands cordinations and Updates Find and Replace Find and Replace ProjectandSolution	Apply the following additional keyboard mapping scheme: AtmetStudio Reset Show commands containing: SetAsEntryFile ProjectandSolutionContextMenus Item SetAsEntryFile		
Keyboard Notifications Quick Launch Startup Tabs and Windows Tašk List Web Browser b Projects	Shortcuts for selected command: Alt-C (Global) Remove Alt-C (Global) Remove Alt-C (Global) Use new shortcut in: Press shortcut keys: Global Shortcut currently used by: Projects Shortcut currently used by:	d command: Press shortcut keys: A ed by:	move ssign	
▷ Source Control	OK Cancel	ОК	Cancel	

4. Flash hex file with external programmer

First, make sure to build your project. In the Solution Explorer, as long as you are in the correct project, it does not matter which folder or file is highlighted.

Build	Debug	Tools	Window	Help
<u>ж</u> в	Build Solutio	n tion	A	Alt+C ^trl+Alt+F7
(Clean Solutio	on		
* E	Build lab1			
F	Rebuild lab1			
(Clean lab1			
E	Batch Build			
(Configuratio	n <mark>Man</mark> ag	er	

Go to > Tool > USBASP, or use the shortcut of your choice.

Тоо	ls Window Help							
>	Command Prompt							
1	Device Pack Manager							
station and the second	Device Programming	Ctrl+Shift+P						
***	Programming Center							
*	Add target							
2	Data Visualizer							
$({\rm I})$	Select profile							
	Code Snippets Manager Ctrl+K, Ctrl+B							
₽	Extensions and Updates							
	USBASP	Alt+V						
	External Tools							
	Import and Export Settings							
	Customize							
₽	Options							

5. DONE!

If you see the following message, you have the hex file flashed on the AVR board.

You may see a warning in the output window, but it can be ignored.



Acknowledgment:

This is a revised version of previous guide "Adding an External programmer in Atmel Studio".

You can watch the YouTube video: https://www.youtube.com/watch?v=5zHI_Gy9ziw