Creating, Configuring, and Running (Debug mode) a New Project in ARM DS

1. Click on File > New > Project



2. To Select Wizard for New Project expand C/C++

🔡 New Project					×
Select a wizard					Ŷ
Wizards:					
type filter text					
 > General > C/C++ > Java > PyDev 					
?	< Back	Next >	Finish	Cano	cel



3. Choose C Project and click on Next

🔡 C Project	_		×
C Project Create C project of selected type			Ź
Project name: HelloWorld			
✓ Use default location			
Location: C:\Users\Tanha\Development Studio V	/orkspace\HelloWorld	Browse.	
Choose file system: default \vee			
Project type:	Toolchains:		
 Executable Empty Project CMSIS C/C++ Project Hello World ANSI C Project Shared Library Static Library Makefile project 	Arm Compiler 5 Arm Compiler 6 Cygwin GCC GCC 10.2.1 [aarch64-none-li GCC 10.2.1 [arm-none-eabi] GCC 8.3.0 [aarch64-elf] MinGW GCC	inux-gnu]	
Show project types and toolchains only if they	are supported on the platform		
Contraction of the sector o	ext > Finish	Cancel	

- 4. Type **Project Name** and keep **Use default location** checked.
- 5. For Project type, expand Executable and choose Hello World ANSI C Project
- 6. For Toolchains, choose Arm Compiler 6
- 7. Click **Finish** to create the new project.

🔝 Development Studio Workspace - HelloWorld/src/HelloWorld.c - Arm Development Studio IDE

File Edit Source Refactor Navigate Search Project Run Window Help



8. In the Project Explorer view, right-click the HelloWorld project and select Properties.



🛛 🔡 Properties for HelloWo	rld				×
	Resource			$\langle \neg \bullet \circ \rangle$	▼ 00
 Resource Builders C/C++ Build C/C++ General Project Natures Project References Run/Debug Settings 	Path: Type: Location: Last modified Text file enco Inherited Other: Store the New text file Inherited Other:	/HelloWorld Project C:\Users\Tanha\Development Studio Workspace\HelloWorld March 5, 2022 at 3:53:13 p.m. ding from container (Cp1252) Ep1252 encoding of derived resources separately line delimiter from container (Windows) /indows	aulte	Apple	
?		Apply and Clc	se	Cancel	

9. Expand C/C++ Build, and select Build Variables.

🔠 Properties for HelloWc	orld					_	
type filter text	Build Variable	s					← → ⇒ 8
 Resource Builders C/C++ Build Build Variables 	Configuration:	Debug [Ac	tive]			✓ Manage 0	Configurations
Environment Logging Settings Tool Chain Editor C/C++ General Project Natures Project References Run/Debug Settings	Name	Туре	Value				Add Edit Delete
	Show syster Build Variables configuration, s may use them o	m variables are IDE only such as enviro directly.	variables, which ca onment variable va	n be used for strir alue or command l	ng substitution wh ine parameter in f Re	een defining exter form of \${VAR}, in store Defaults	rnal builder ternal builder Apply
?					Арр	ly and Close	Cancel

10. Set Configuration to Debug [Active].

11. Select **Settings** under **C/C++ Build** to set target CPU and linker base RAM address.

🚼 Properties for HelloWo	orld	— D ×
type filter text	Settings	← → ⇒
type filter text Resource Builders C/C++ Build Build Variables Environment Logging Settings Tool Chain Editor C/C++ General Project Natures Project References Run/Debug Settings	Settings Configuration: Debug [Active] Tool Settings Puild Steps Puild Artifact Binar Target Debugging Debugging Debugging Debugging Debugging Debugging Debugging Debugging Warnings and Errors Miscellaneous Target Preprocessor Miscellaneous Source Language Debugging Warnings and Errors Miscellaneous Source Language Debugging Warnings and Errors Miscellaneous Target Preprocessor Miscellaneous Source Language Debugging Warnings and Errors Miscellaneous Debugging Warnings and Errors Miscellaneous Target Miscellaneous Miscellaneous Miscellaneous Miscellaneous Miscellaneous	
	 Milliprates Optimizations Additional Information Warnings and Errors Miscellaneous 	
?		Apply and Close Cancel

12. In the Tool Settings tab, select All Tools Settings > Target

13. From the Target CPU dropdown, select Cortex-A53 AArch64.

B Development Studio Workspace -	🔠 Properties for HelloWe	orld			-		×		-	o ×
	type filter text	Settings				⇔ • ⇔	• 8		Q	112 2 1 1 1 1
Project Explorer + CallFunction CallFunction FibonacciC FibonacciC	 Resource Builders C/C++ Build Build Variables Environment 	Configuration: Debug [Active]	 Build Astifact 	Direct Deres	 Manage Co Encode Sector 	nfigurations.	Î	n is not available.		= - 0
FirstARMOPFiget SFirstARMSProject FirstARMSProject FirstARMScRonDinuxGnu FirstARMScRonDinuxGnu FirstARMScRonDinuxGnu FirstARMSCRONDING FirstARMSProject Firs	Logging Settings Tool Chain Editor > C/C++ General Project Natures Run/Debug Settings	 Tool Settings Build Steps All Tools Settings Target Debugging Libraries Optimizations Source Language Optimizations Source Libraries Optimizations Additional Information Warnings and Errors Miscellaneous 	Build Artifact Target CPU Target CPU Target FPU C Float ABI Style order Secure Code C C C C C C C C C C C C C C C C C C C	Binary Parsers interic AArch64 ortex-A35 AArch64 ortex-A35 AArch32 ortex-A53 AArch32 ortex-A55 AArch32 ortex-A57 AArch32 ortex-A57 AArch32 ortex-A57 AArch32 ortex-A73 AArch32 ortex-A73 AArch32 ortex-A73 AArch32 ortex-A73 AArch32 ortex-A73 AArch32 ortex-A75 AArch32 ortex-A76 AArch32 ortex-A76 AArch32 ortex-A76 AArch32	Error Parsers		v			
15 HelloWorld	?				Apply and Close	Cancel				
Pellovvoria										
📕 🔎 O 🖽	2 🖬 🧿 🛙	2 🚺 🖪 🗖 🕅	vi 🔤 🛃	- 🔝 🚳	🜔 11°C 🔿	Ô 🍋	-	다) 🖬 ENG	4:10 Pl	M. 🖏

14. From the Target FPU dropdown, select Armv8 (Neon).



15. Select Arm Linker 6 > Image Layout.

esource uilders /C++ Build Build Variables Environment Logging Settings Tool Chain Editor /C++ General roject Natures roject References um/Debug Settings Um/Debug Settings ** 8 All Tools Settings ** 8 Arm C Compiler 6 ** 8 Arm Assembler 6 ** 8 Ar	e filter text	Settings				< →	4
 Includes Debugging Warnings and Errors Miscellaneous S Arm Linker 6 Target Image Layout Libraries Optimizations Additional Information Additional Information 	e filter text tesource tuilders C/C++ Build Build Variables Environment Logging Settings Tool Chain Editor C/C++ General troject Natures troject References tun/Debug Settings	Settings Configuration: Debug [Active] Tool Settings Pauld Steps Salar Settings Salar Sett	Build Artifact Binary P. Image entry point (entry) RO base address (ro_base) RW base address (rw_base) ZI base address (zi_base) Scatter file (scatter) Predefine (pd)	arsers S Error Pa	Manage (় ► ► Configuratio Browse হা কা হা হা	⊂ on ₽
		 Preprocessor Includes Debugging Warnings and Errors Miscellaneous Target Target Image Layout Ubraries Optimizations Additional Information Warnings and Errors 					

- 16. In the RO base address field, enter 0x80000000.
- 17. Click Apply and Close.
- 18. If you are prompted to rebuild the index, click Yes.

🚼 Development Studio Workspace - HelloWorld/src/HelloWorld.c - A	Arm Development Studio IDE		- 0	×
File Edit Source Refactor Navigate Search Project Run Window He	alb		0 12	* *
			III Registers 🛛 🗮	
CallFunction A 2	telloworld.c	^	Register information is not available.	
> portionaccic 4 Author : > portionaccic 4 Author : > portionaccic 5 Version : > portionaccic 6 Copyright : 1 > portionaccic 6 Copyright : 1	(our copyright notice			
> SFirstMing Go Into				
Image: Second	hz J.hz			
> Softendiver Copy > Softendiver Paste > Softendiver Paste > Softendiver Paste > Softendiver Paste > Softendiver Paste > Softendiver Paste > Softendiver Paste	<pre>lo World!!!"); /* prints !!!Hello World!!! */ SUCCESS;</pre>	-		
> set SimpleFu Rename				
 Structure: Structure: Structure				
Debug Cont Build Project				
V V V III Clean Project				
K				
There are no d Close Unrelated Projects				
add a debug c Build Targets >				
Create a de Index Build Configurations				
Show in Remote Systems view				
Run As >				
☆ Debug As >>		\sim		
Profile As	1	•		
PvDev >	nds 🕬 Variables 🗏 Memory 👫 Disassembly 🔳 Target Console 🕂			
≫ Run C/C++ Code Analysis	0 6 🔁 🖬 🖉 = 🖬 🛃 =	- 1		
Team	prld]	^		
Compare With		~		
FileNord Properties Alt+Enter			• • • • • • • • • • • • • • • • • • •	
🔳 🔎 O 🖽 💽 🚍 💿 😰	💵 💀 🧔 🔣 💷 🥅 😕 😁 9°C	^	- ြ (回 (二) (口) (日 ENG 2022-03-05	3

19. In the Project Explorer view first right click on your project and then click on Build Project.



20. Select File >New >Other

🚼 New			_		×
Select a wizard Create a new Arm Deb		Ď			
Wizards:					
 > General Arm Debugger Arm Debugger Arm	er Script nection ion Connection ction				
> CMSIS User Code	- Template < Back	Next >	Finish	Са	incel

21. Select Arm Debugger > Arm Debugger Script and click Next.

🔡 New Sc	ript						
New Arm Ready to	Debugger create the ne	Script w Arm Debugger S	Script.				
Location File Name	\${workspac	e_loc:HelloWorld} semihosting			File System	Workspace	
?		< Back	Next >	Fini	sh	Cancel	

22. In the **File Name** field, name this script **use_model_semihosting** and click **Finish**. The empty script opens in the **Editor window.**

le HelloWorld.c	🖹 *use_model_semihosting.ds 🛛	
1set semih	osting enabled off	^
		\checkmark
<		>

23. Add the following code set semihosting enabled off to the script and press Ctrl + S to save.



24. From the main menu, select File > New > Model Connection.

🔡 Model Connection		×
Debug Connection	5	2
Enter a connection name and optionally associate with an existing project		Y t
Debug connection name: HelloWorld_FVP		
Associate debug connection with an existing project		
₽ AssemblyProject	 	
i € Assignment5		
€ CallFunction		
📂 FibonacciC		
FirstARM5Project		
📂 FirstARM6Project		
😂 FirstARMGccNonLinuxGnu		
😤 FirstMinGWGccProject		
🔁 FunctionParamters		
😴 HelloWorld		
⊯ HelloWorldC		
😴 HelloWorldS		
📂 Iteration		
10 Pointer		
F RecursiveFunction		
Selection		
SimpleFunction		
F StructureC		
StructureS		
calendar_Armv8-A_AC6		
calendar_Armv&-A_GCC		
Sack Next > Finish	Cance	el

- 25. Enter a name for the debug connection, for example HelloWorld_FVP.
- 26. Select **Associate debug connection with an existing project**, and select the project that you created and built and click **Next**.

🔡 Model Connection	_		\times
Target Selection O No target selected.			- Á
type filter text Recently Used Arm FVP Arm FVP (Installed with Arm DS) Arm SubSystem FVP Intel			
Add a new model			
Device:			
Core(s):			
Location:			
No description available			
? < Back Next > Finis	h	Can	icel

27. In the Target Selection dialog box, specify the details of the target: a. Select Arm FVP (Installed with Arm DS)

Todel Connection			\times
larget Selection			X
Select a target to debug			- Z
type filter text			
✓ ♀ Arm FVP (Installed with Arm DS)			^
Base_A32x1			
Base_A35x1			
Base_A53x1			
Base_A55x1			
Base_A55x4_A75x2			
Base_A55x4_A76x2			
Base_A57x1			
Base_A57x2_A53x4			
Base_A/2x1			
Base_A72x2_A53x4			
Base $A73x^2$ $A53x^4$			
Base A75x1			
			>
Add a new model			
Device: Base_A53x1			
Core(s): Cortex-A53			
Location: Configuration Database - configdb			
No description available			
C ABack Next >	Finish	Car	ncel

28. Select Base_A53x1 and click Finish.

lit configuration	and launch.					Ŕ
ame: HelloWorld_f	FVP					
Connection	Files 🏶 Debugger 🌤 OS Awarenes	s 🕺 Arguments 🖾 Enviro	nment 🖾 Export			
Select target						
This debug config Currently selected	uration is associated with Arm FVP (II : Bare Metal Debug / Cortex-A53	nstalled with Arm DS) / Bas	e_A53x1. Select which	debug operation to use.		
✓ Arm FVP (Inst	talled with Arm DS)					
✓ Base_A53X ✓ Bare M	etal Debug					
Cort	tex-A53					
> Linux K	Cernel Debug					
Arm Debugger wil	ll connect to an FVP to debug a bare	metal application.				
Arm Debugger wil	ll connect to an FVP to debug a bare	metal application.				
Arm Debugger wil Connections	I connect to an FVP to debug a bare	metal application. Model parameters	-C bp.secure memo	prv=false		
Arm Debugger wil Connections Bare Metal Debug	Il connect to an FVP to debug a bare	metal application. Model parameters model Connection address	-C bp.secure_memo	ory=false		
Arm Debugger wil Connections Bare Metal Debug DTSL Options	I connect to an FVP to debug a bare • Launch a new model • Connect to an already running n Edit Configure trace or other t	metal application. Model parameters model Connection address target options. Using "defa	-C bp.secure_memo	ory=false		
Arm Debugger wil Connections Bare Metal Debug DTSL Options	I connect to an FVP to debug a bare Launch a new model Connect to an already running n Edit	metal application. Model parameters model Connection address target options. Using "defa	-C bp.secure_memo	ory=false		
Arm Debugger wil Connections Bare Metal Debug DTSL Options	Il connect to an FVP to debug a bare Launch a new model Connect to an already running n Edit Configure trace or other t	metal application. Model parameters model Connection address target options. Using "defa	-C bp.secure_memo	ory=false		
Arm Debugger wil Connections Bare Metal Debug DTSL Options	Il connect to an FVP to debug a bare Launch a new model Connect to an already running n Edit	metal application. Model parameters nodel Connection address target options. Using "defa	-C bp.secure_memo	ory=false	Revert	Apply
Arm Debugger wil Connections Bare Metal Debug DTSL Options	Il connect to an FVP to debug a bare Launch a new model Connect to an already running n Edit	metal application. Model parameters nodel Connection address target options. Using "defa	-C bp.secure_memo ; ult" configuration opti	ny=false	Revert	Apply

- 29. In the Edit Configuration dialog box under the Connection tab, ensure that Arm FVP (Installed with Arm DS) > Base_A53x1 > Bare Metal Debug > Cortex-A53 is selected.
- 30. Under Bare Metal Debug, in the Model parameters field, add -C bp.secure_memory=false

Edit Configuration	—	×
dit configuration and launch.		the
Create, edit or choose a configuration to launch an Arm Debugger session.		200
ame: HelloWorld_FVP		
🗠 Connection 🔛 Files 🛛 🏘 Debugger 🧐 OS Awareness 🚧 Arguments 🗷 Environment 🖬 Export		
Target Configuration		
Application on host to download:		
File System Workspace C Load symbols		
Files		
Load symbols from file V		
File System Workspace		
+		
	Revert	Apply
3)	Debug	Close
	Debug	ciose

31. In the Files tab, select Target Configuration > Application on host to download > Workspace.

Edit Configuration	1		— 🗆 ×
Edit configuration Create, edit or choo	Select a file:		*
Name: HelloWorld	 HelloWorld .cproject .project .settings Debug HelloWorld.axf objects.mk objects.mk sources.mk erc HelloWorld_FVP.launch ers src KemoteSystemsTempFiles 		
	? ОК Са	ancel	Apply

32. Click and expand the **HelloWorld** project and from the **Debug folder**, select **HelloWorld.axf** and click **OK**.

Edit Configuration		×
dit configuration and launch. A file has been specified to be downloaded to the target, which will require the core to be stopped, but "Connect Only" has also been specified on the Debugger tab.	T	Ş.
ame: HelloWorld_FVP		
🦇 Connection 🚯 Files 🔪 🏘 Debugger 🚳 OS Awareness 🕬 Arguments 🖾 Environment 🖾 Export		
Target Configuration Application on host to download: \${workspace_loc:/HelloWorld/Debug/HelloWorld.axf} File System Workspace 🗹 Load symbols Files Load symbols from file		
File System Workspace +		
Revert	Apply	
⑦ Debug	Close	

Edit Configuration	—	
Edit configuration and launch. Create, edit or choose a configuration to launch an Arm Debugger session	on.	T.
Name: HelloWorld_FVP		
Connection 📾 Files 🌴 Debugger 🛛 🧐 OS Awareness 📴 Argument	s Kanala Environmer	nt 🖾 Export
Run control		
○ Connect only ○ Debug from entry point Debug from symbol	main	
Run target initialization debugger script (.ds / .py)		
{workspace_loc:/HelloWorld/use_model_semihosting.ds}	File System	Workspace
Run debug initialization debugger script (.ds / .py)		
	File System	Workspace
Execute debugger commands		
		^ ~
<		>
	Revert	Apply
?	Debug	Close

- 33. In the **Debugger** tab, select **Debug from symbol**.
- 34. Enable Run target initialization debugger script (.ds/.py) and click Workspace.
- 35. Select the use_model_semihosting.ds script and click OK.
- *36.* Click **Debug** to load the application on the target, and load the debug information into the debugger.

