DEVKIT-MPC5748G
SOFTWARE INTEGRATION GUIDE (SWIG)

Ultra-Reliable MCUs for Industrial and Automotive Applications

www.nxp.com/DEVKIT-MPC5748G

EXTERNAL USE

SECURE CONNECTIONS
FOR A SMARTER WORLD

S32 DESIGN STUDIO IDE FOR POWER ARCHITECTURE

www.nxp.com/S32DS

- To develop an application one need an Integrated Development Environment (IDE)
- S32 Design Studio IDE is the solution to the need
- This document provides step wise tutoring on “How to use S32 Design Studio IDE for Power Architecture” to build an application

SECURE CONNECTIONS FOR A SMARTER WORLD

Contents

- S32 Design Studio IDE for Power Architecture Supported Devices
- Installing S32 Design Studio IDE for Power Architecture
  - Download and Install the new IDE
- Getting started with a New Project
  - Create, build and debug the new project
- Making Projects from built-in Examples

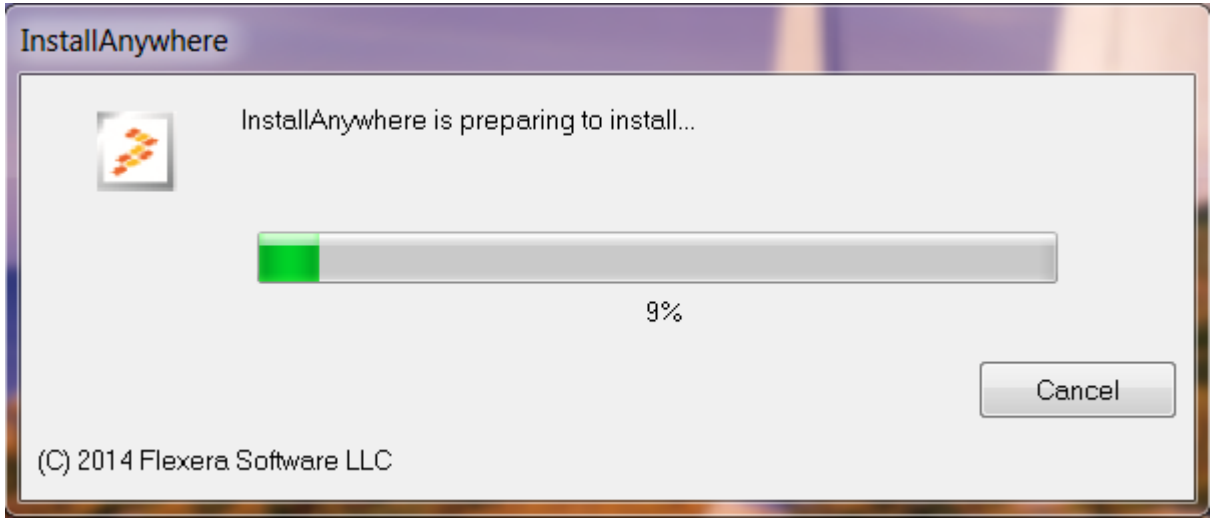
S32 Design Studio IDE for Power Architecture Supported Devices

- MPC560xB/C/D Family
- MPC560xE Family
- MPC560xP Family
- MPC560xS Family
- MPC564xA Family
- MPC564xB Family
- MPC564xC Family
- MPC564xL Family
- MPC567xR Family
- MPC574xB/C Family
- MPC574xG Family
- MPC577xK Family
- MPC574xP Family
- MPC574xR Family
- MPC5777C
- MPC5777M
- S32R274

INSTALLING S32 DESIGN STUDIO IDE FOR POWER ARCHITECTURE

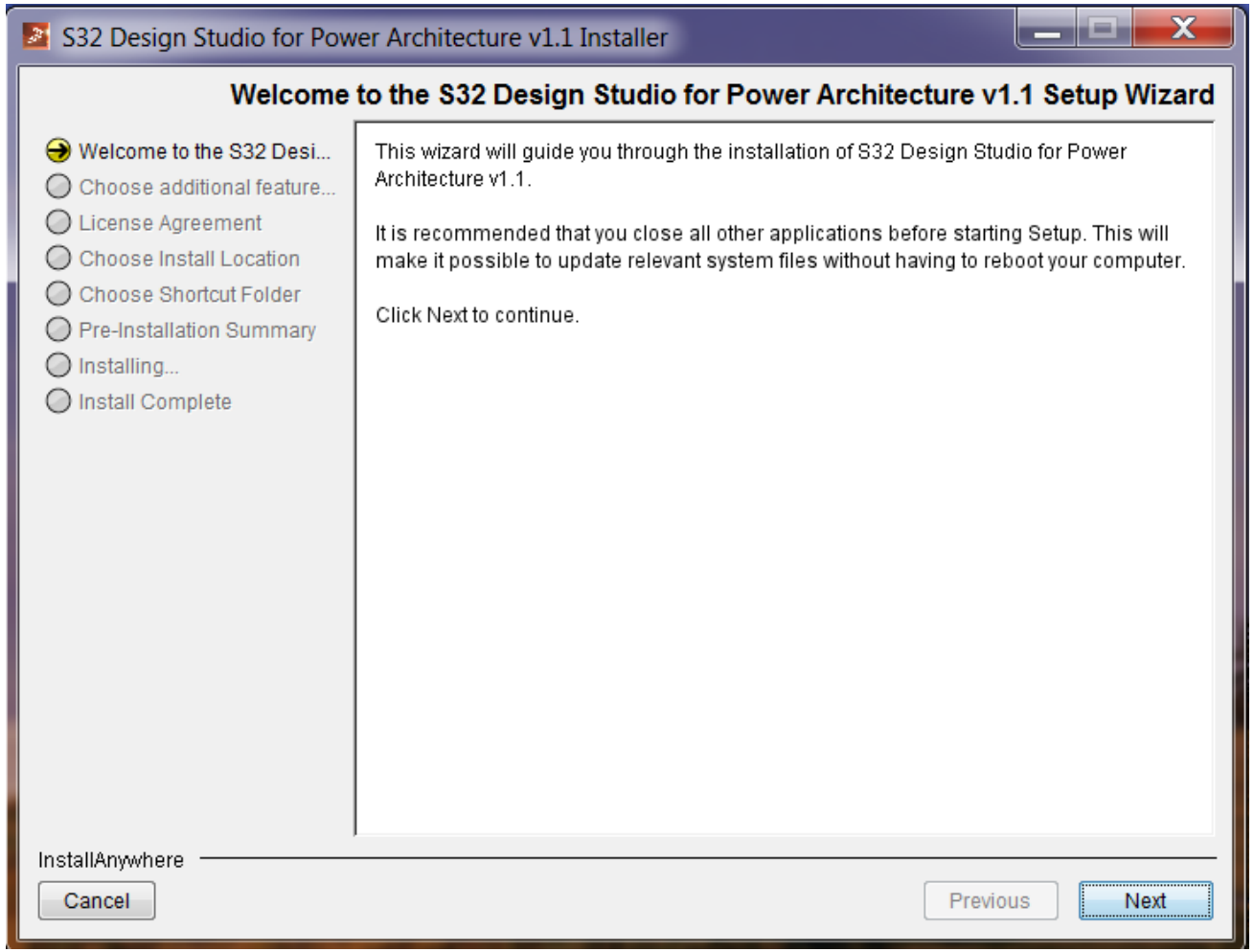
Step-1

- Go to www.nxp.com/S32DS to download latest version
- From Downloads folder, run the installation file
- Click on Run if any administrative privilege issues results from unknown software publisher
- The “preparing to install” dialogue box will appear



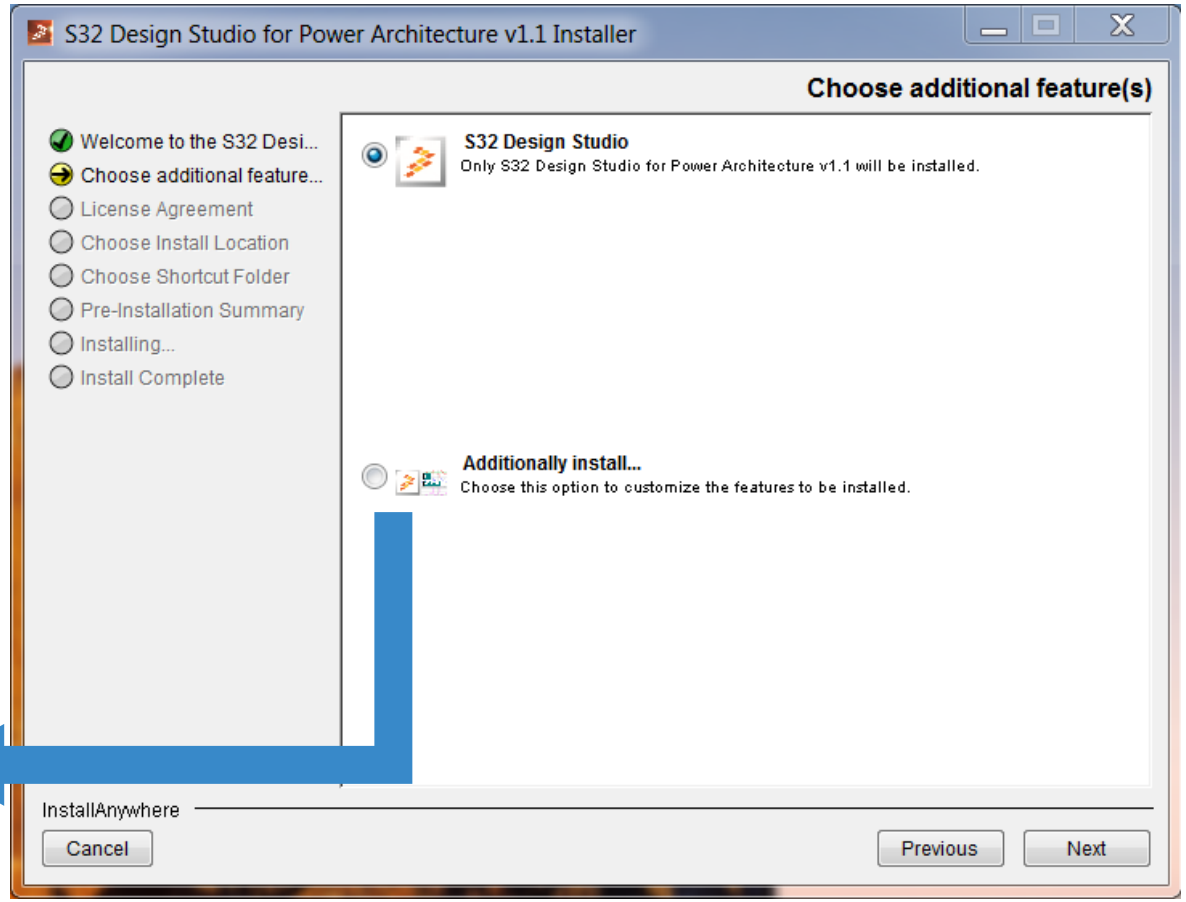
Step-2

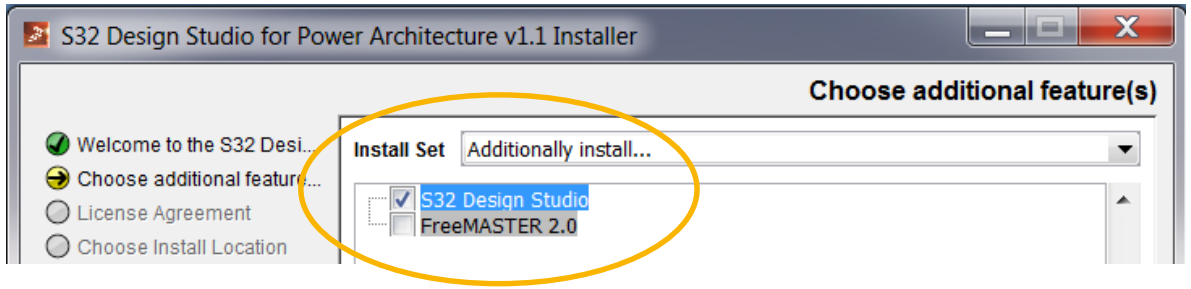
- An Installer welcome window will be displayed, click Next to continue



Step-3

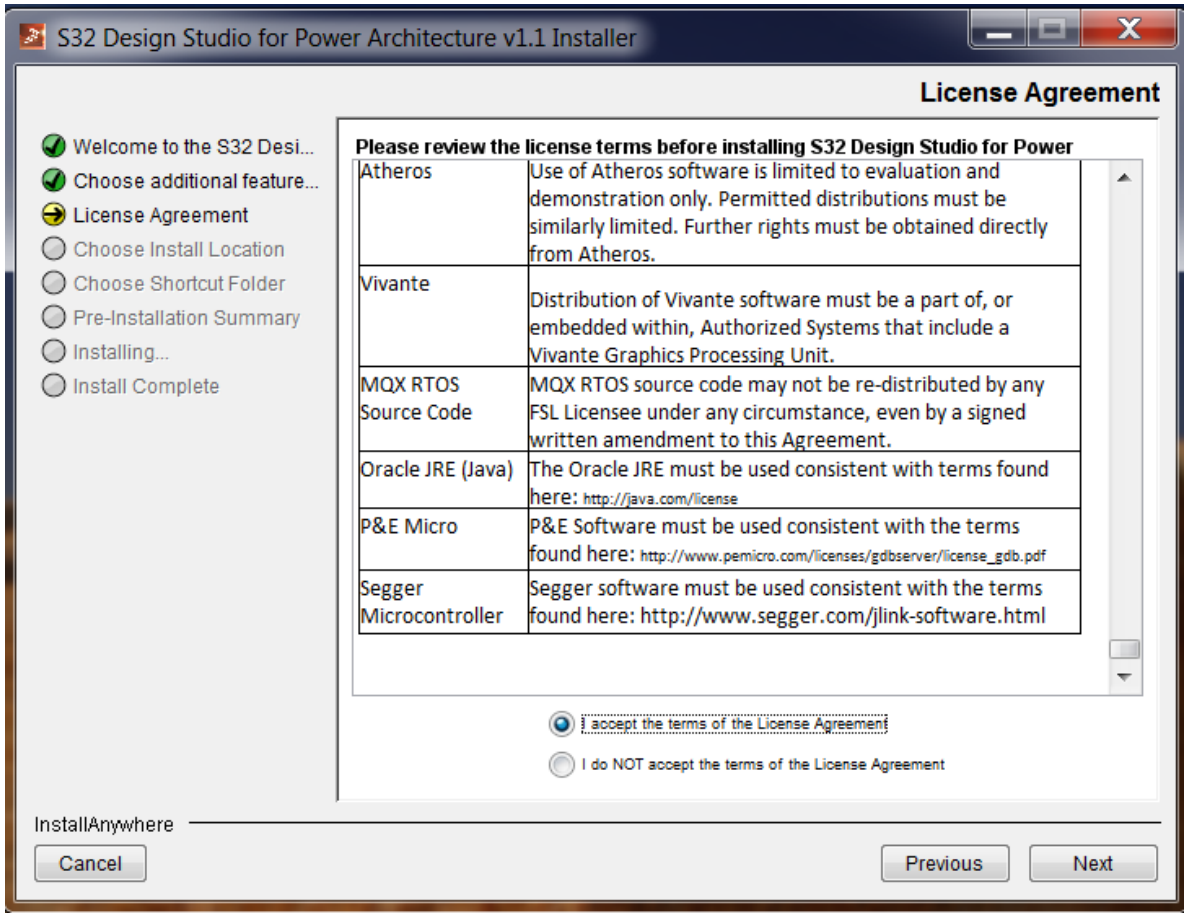
- Choose additional Features
  - Selecting “S32 Design Studio” option will only install S32 Design Studio
  - Selecting “Additionally install…” will allow you to install other software too
- Click on Next





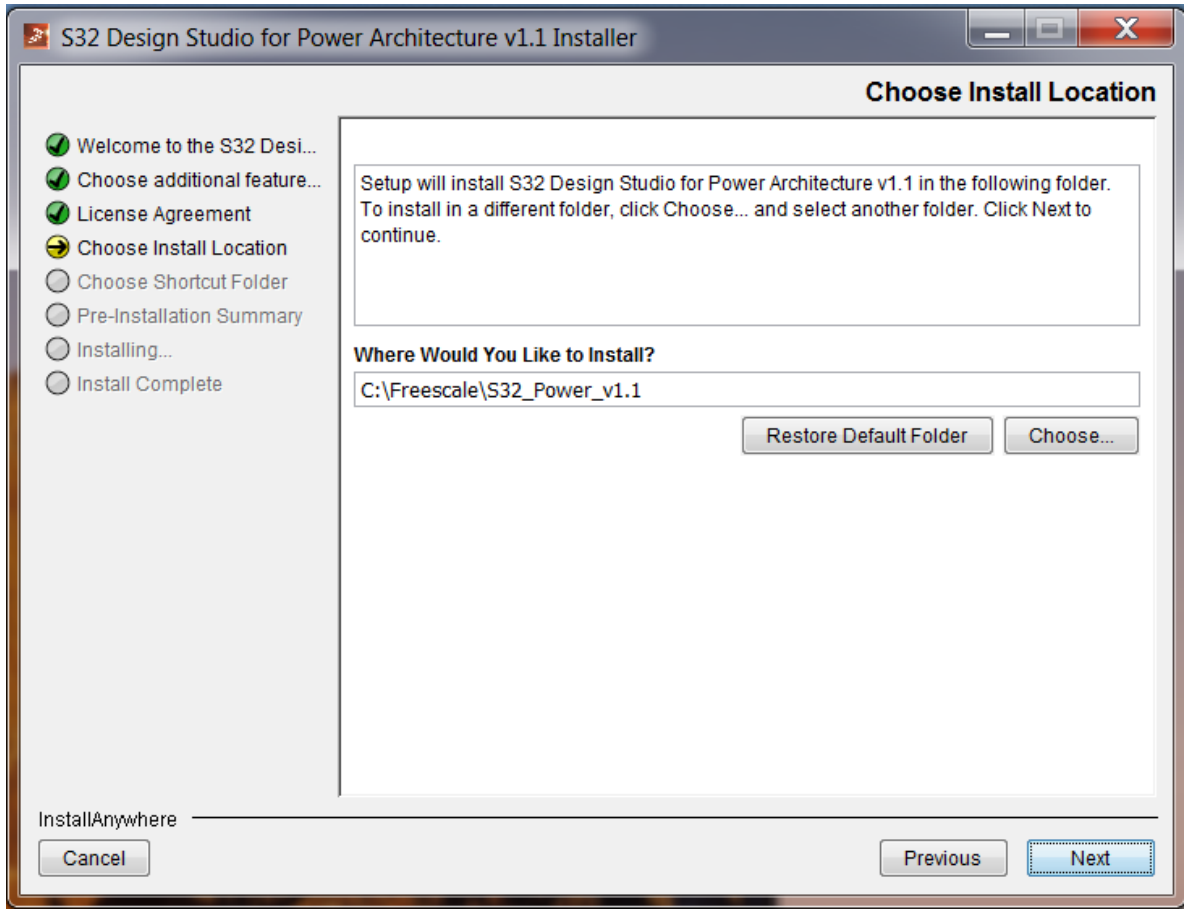
Step-4

- Scroll down the text and read the license agreement.
- Select the radio button acknowledging the license agreement terms and click Next to continue.



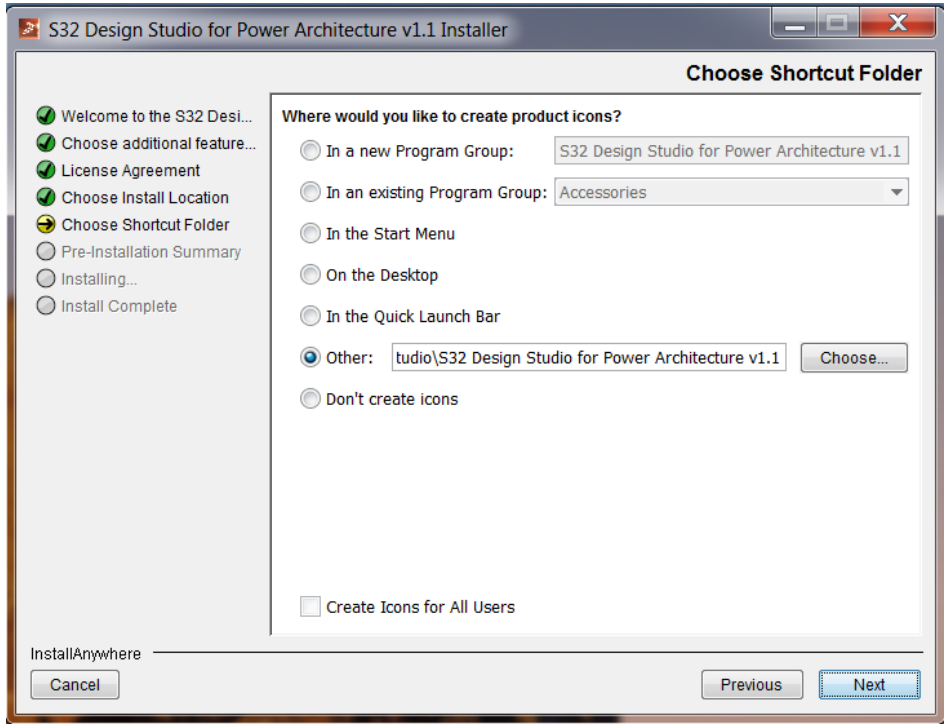
Step-4

- Click **Next** to accept the default installation location (could be changed, but recommended to install into path without spaces).

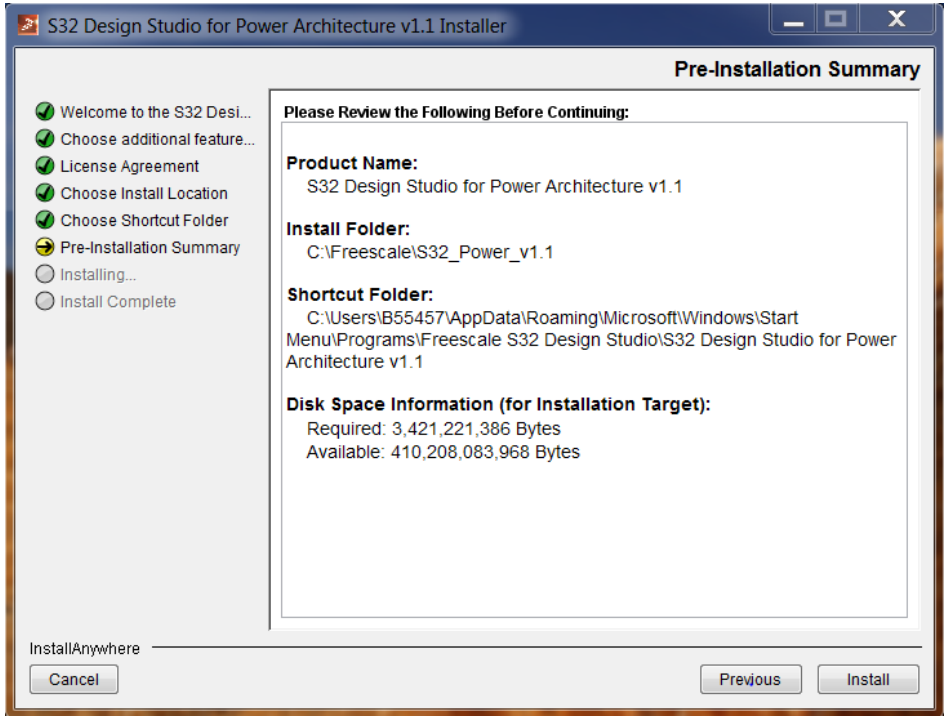


Step-5

- Select folder where you want to generate a Shortcut and click on Next to continue.

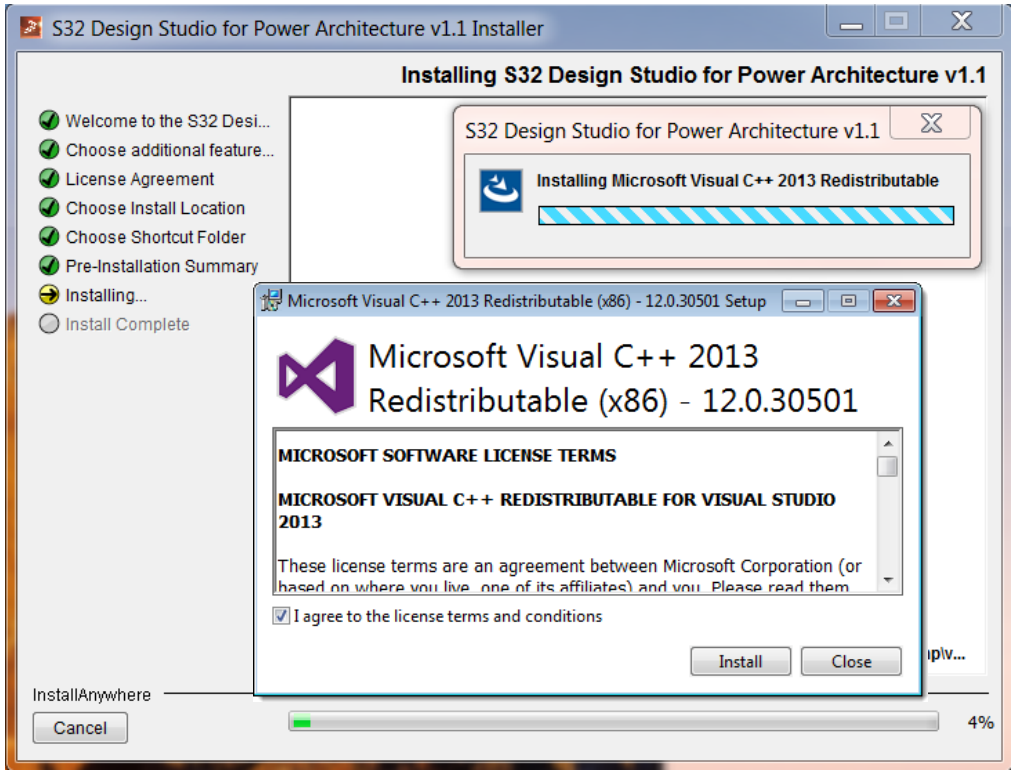


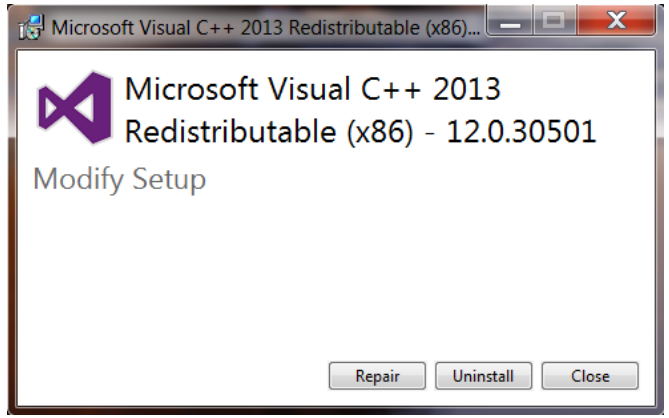
- Verify settings on “Pre-Installation Summery” tab and click Install to start Installation



Step-7

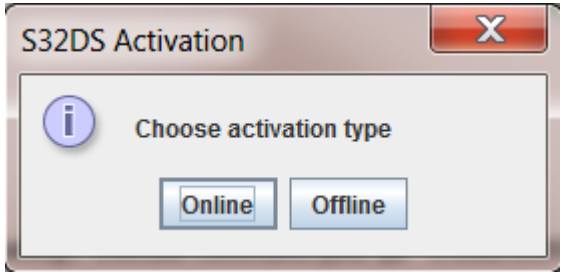
- The installation starts by installing required libraries from the Microsoft Visual C++ 2013 package. Read the license terms and select **I agree…** option and hit the Install
- If the libraries of the Visual C++ 2013 package were already installed on the system then the **Modify Setup** dialog box appears. Now click on Repair to continue

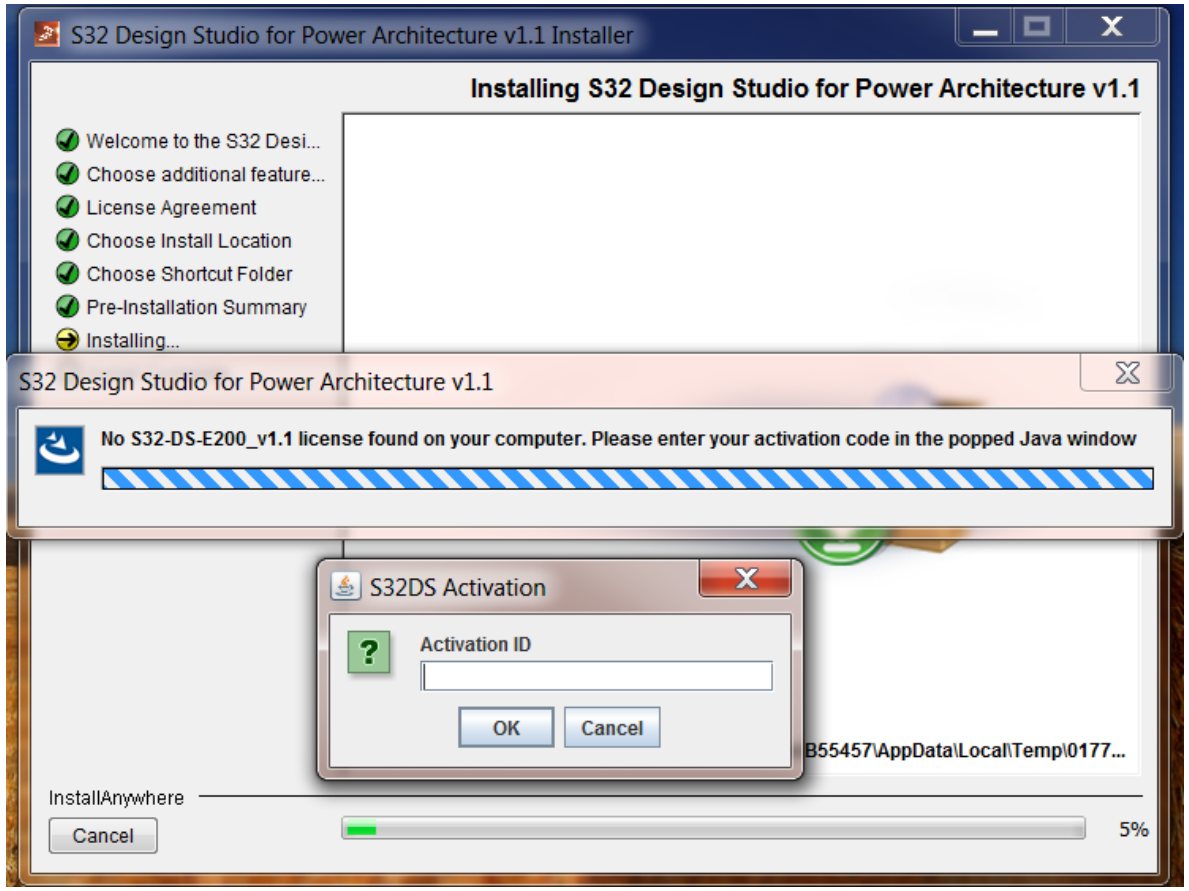




Step-8

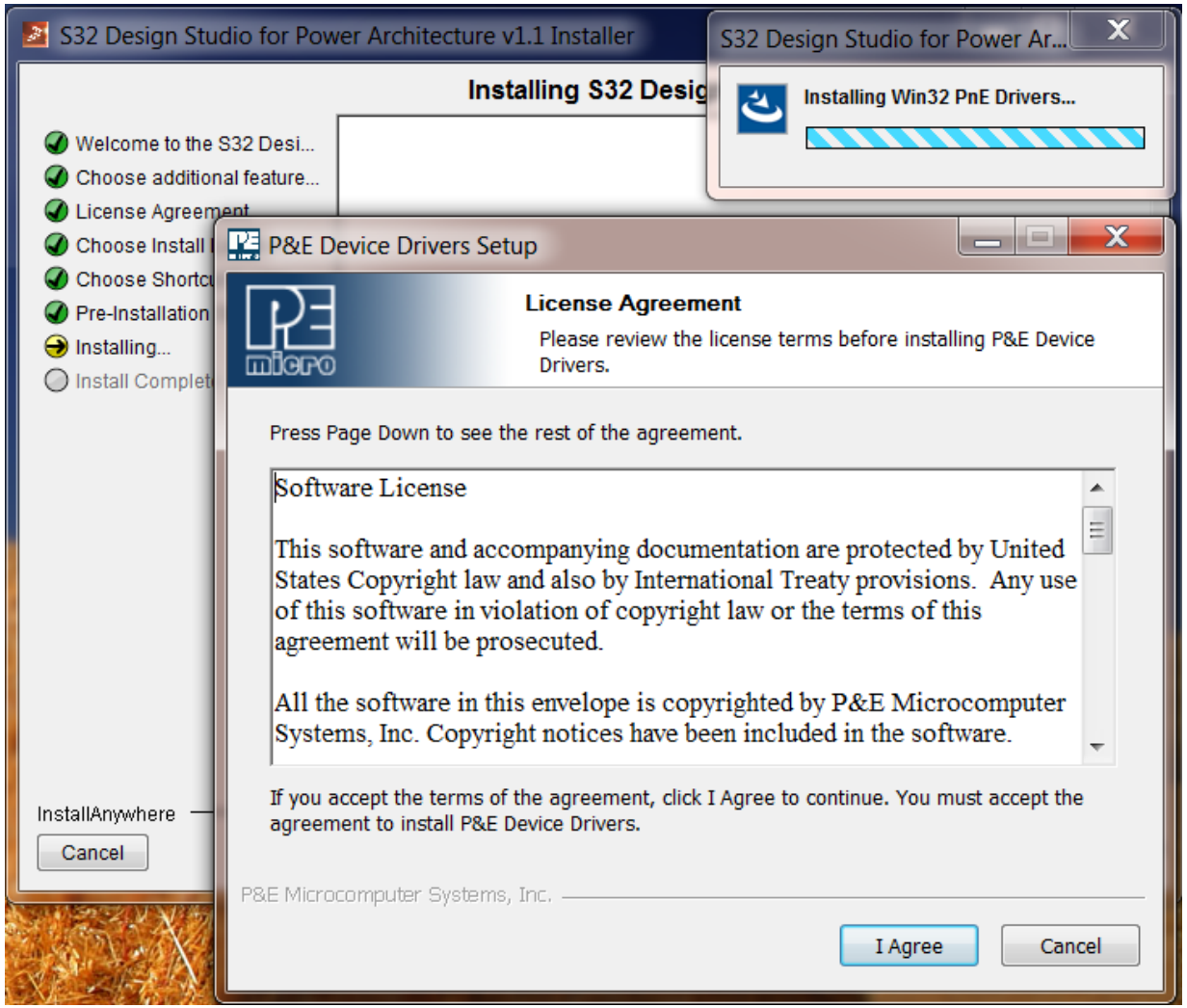
- When asked for Activation ID, copy and pest the key from the Download page
- Then click on OK.
- Next: In activation type window. Click on Online





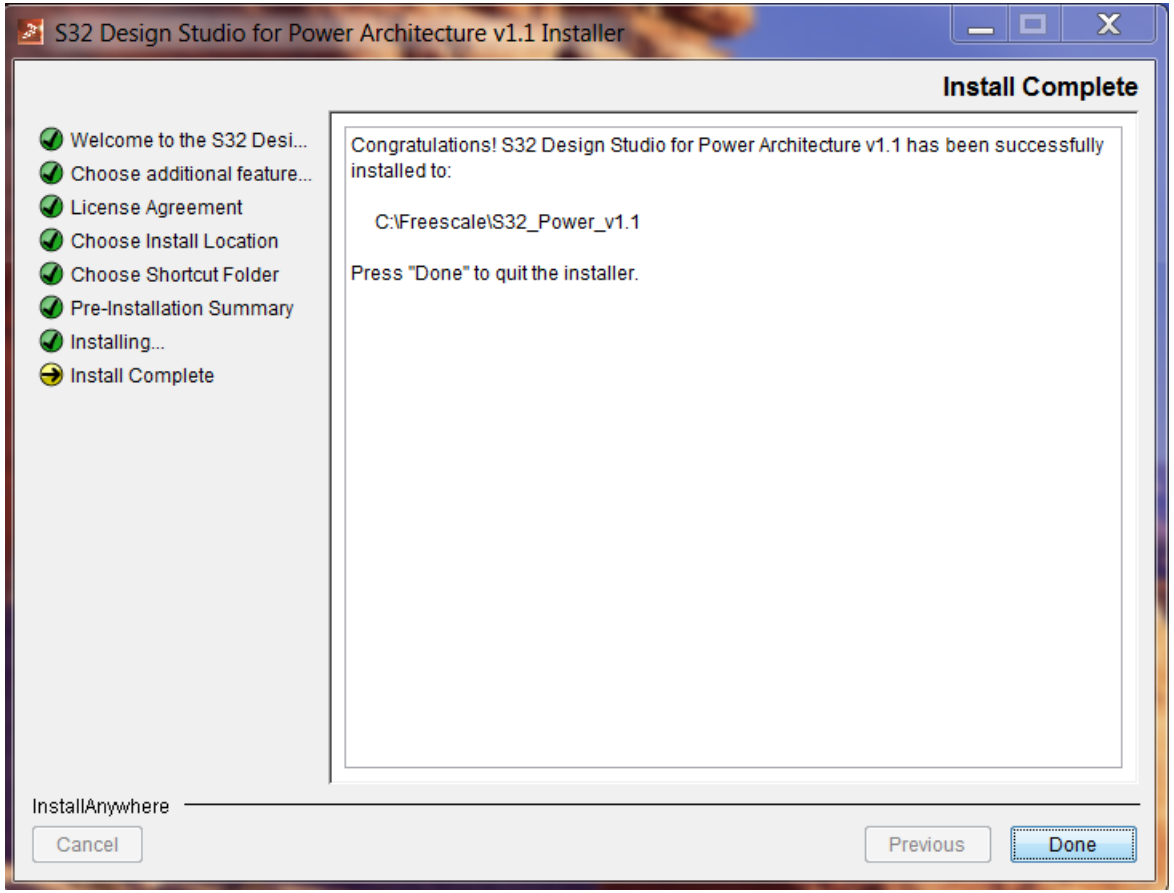
Step-9

- During the Installation it may ask you to install P&E Device Drivers
- Read license agreement and Click on I Agree.
- In next window Select the destination folder and click Install
- Once the installation is done. Click on Close to close the P&E Device Driver Setup window.



Step-10

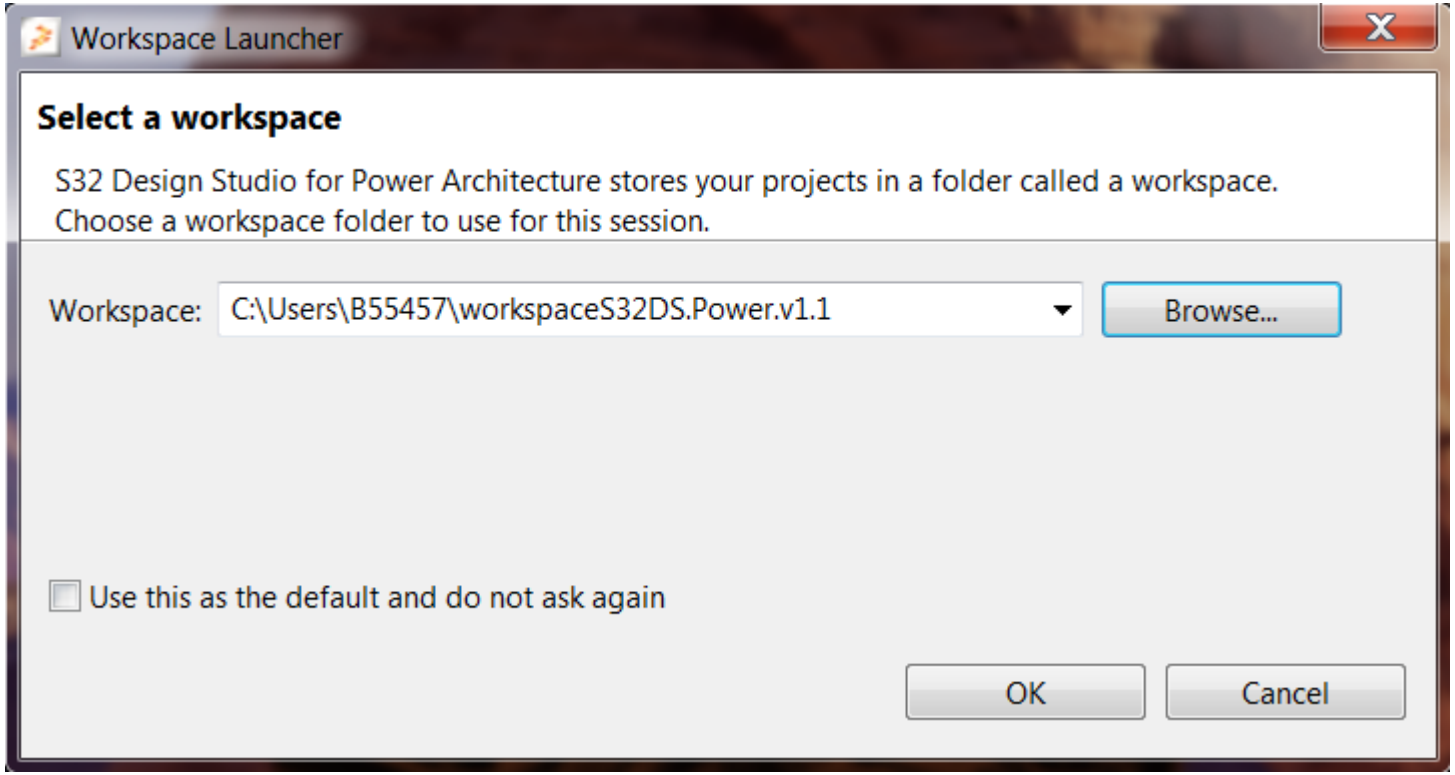
- Once the installation is completed click on Done to exit the installation wizard.



GETTING STARTED WITH A NEW PROJECT

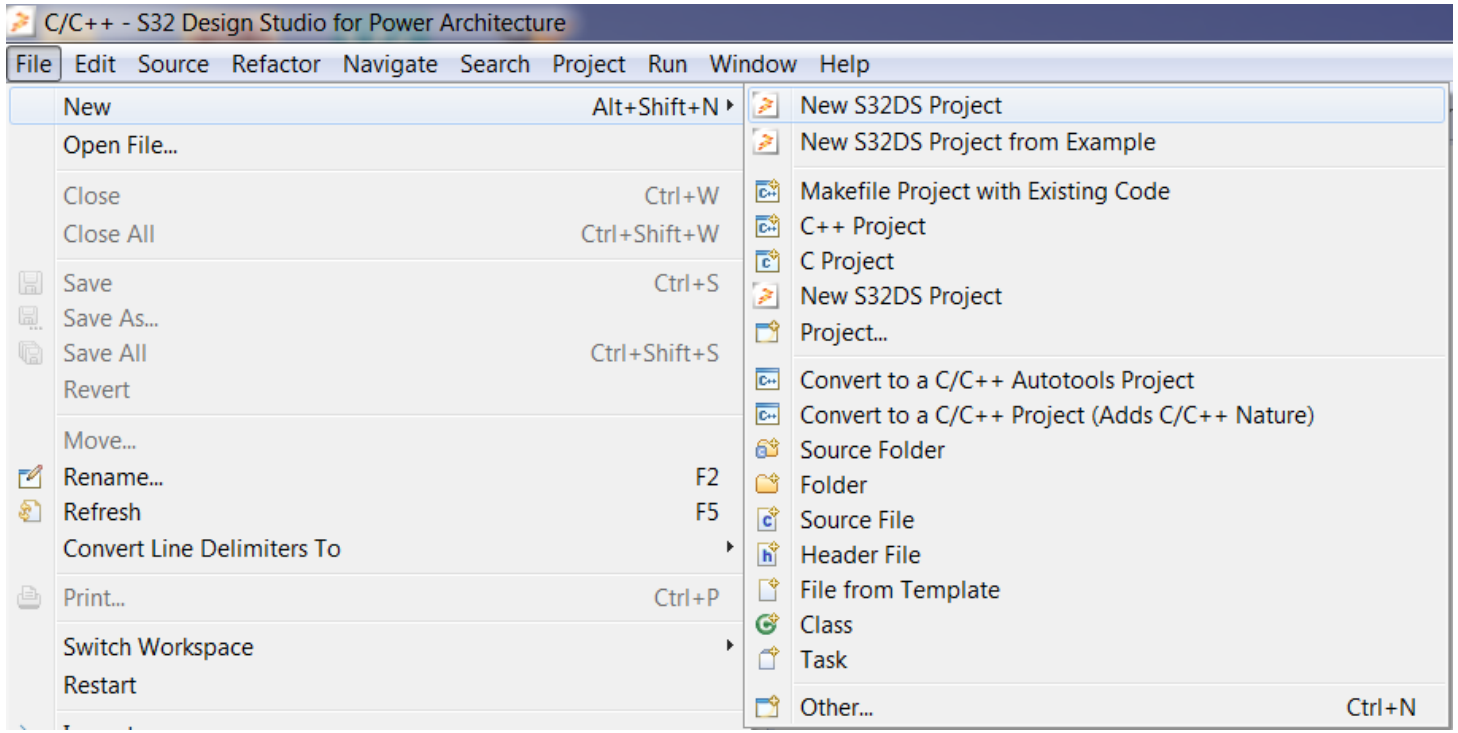
Create a new project

- Start program: Click on “S32 Design Studio for Power Architecture vx.x” icon
- Select workspace:
  - Choose default or specify new one
  - Suggestion: Uncheck the box “Use this as the default and do not ask again”
  - Click OK



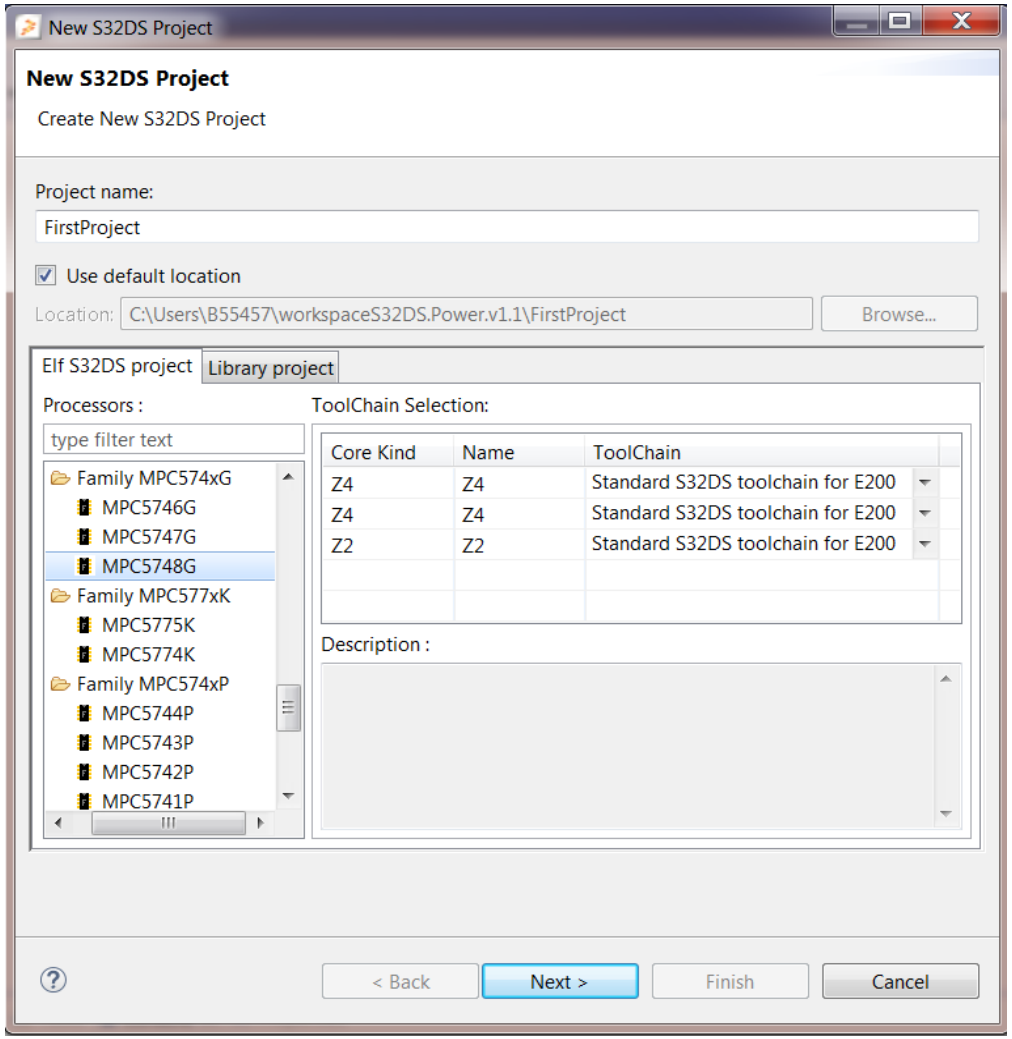
Create a new project

- Go to: File – New – New S32DS Project



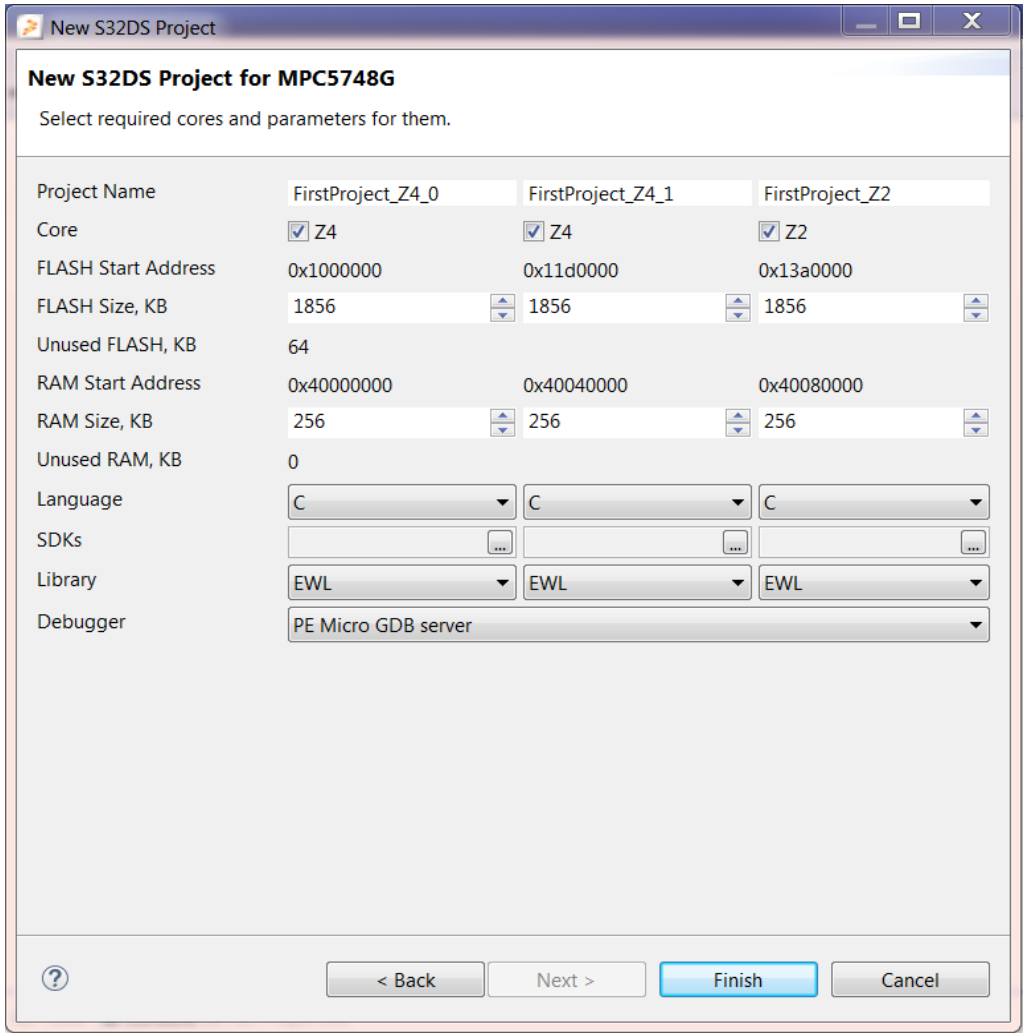
Create a new project

- Project Name:
  - Example: FirstProject
- Project Type:
  - Recommended: use Elf S32DS Project
- Select Controller:
  - Example: MPC5748G

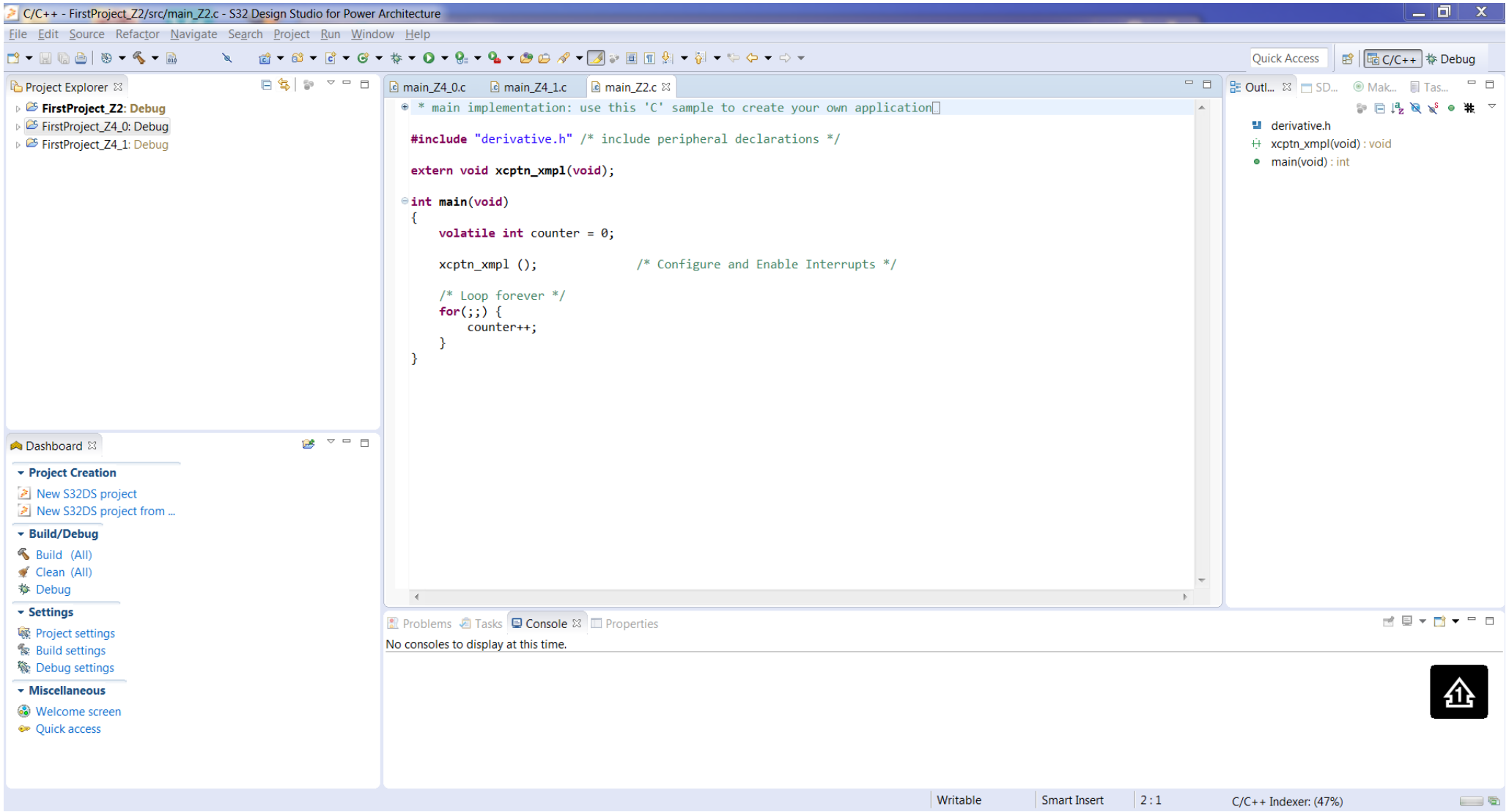


Create a new project

- Select Cores
- Select Flash and RAM size
- Select Programming Language
- Select the Library
- Select the Debugger
- Recommended: use Default settings (for beginners)



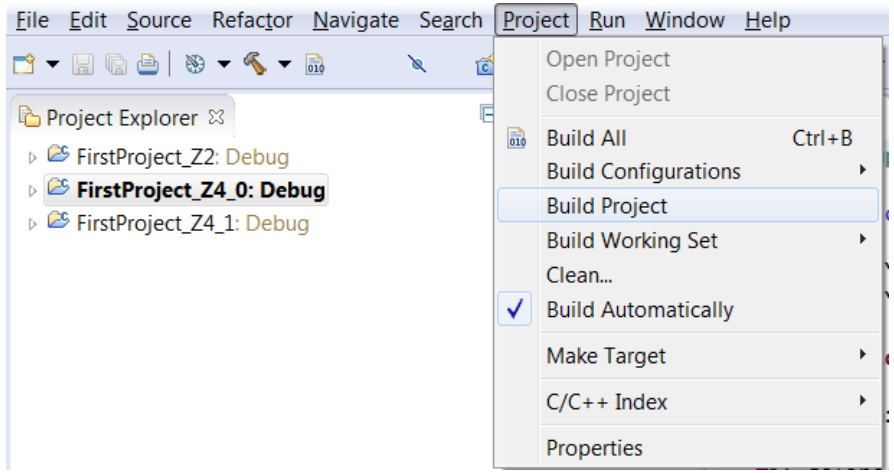
Create a new project



- 3 Projects will be created for 3 different cores of MPC5748G

Build a Project

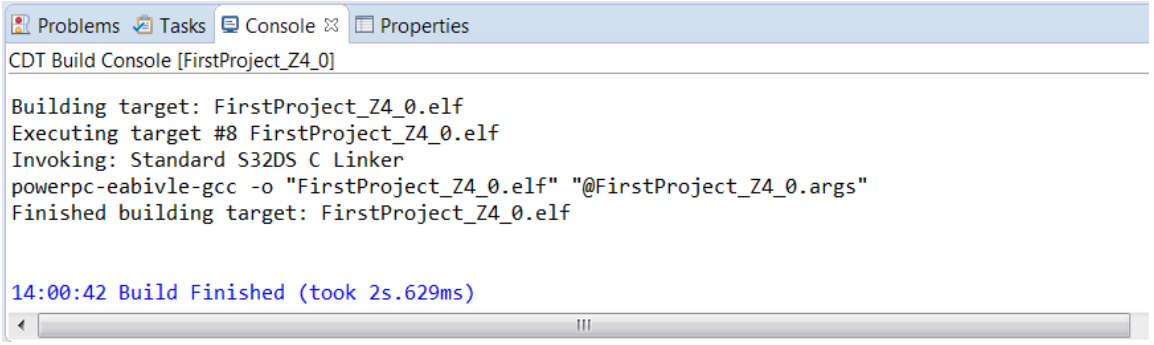
- To build a project follow one of the methods below:
  1. Project – Build Project



  2. Click no hammer symbol to build that project

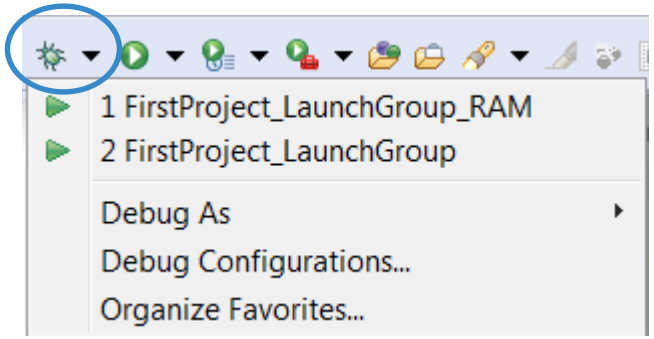
     - Click on page symbol to build all projects

- If project is built successfully, following message will be displayed on the Console



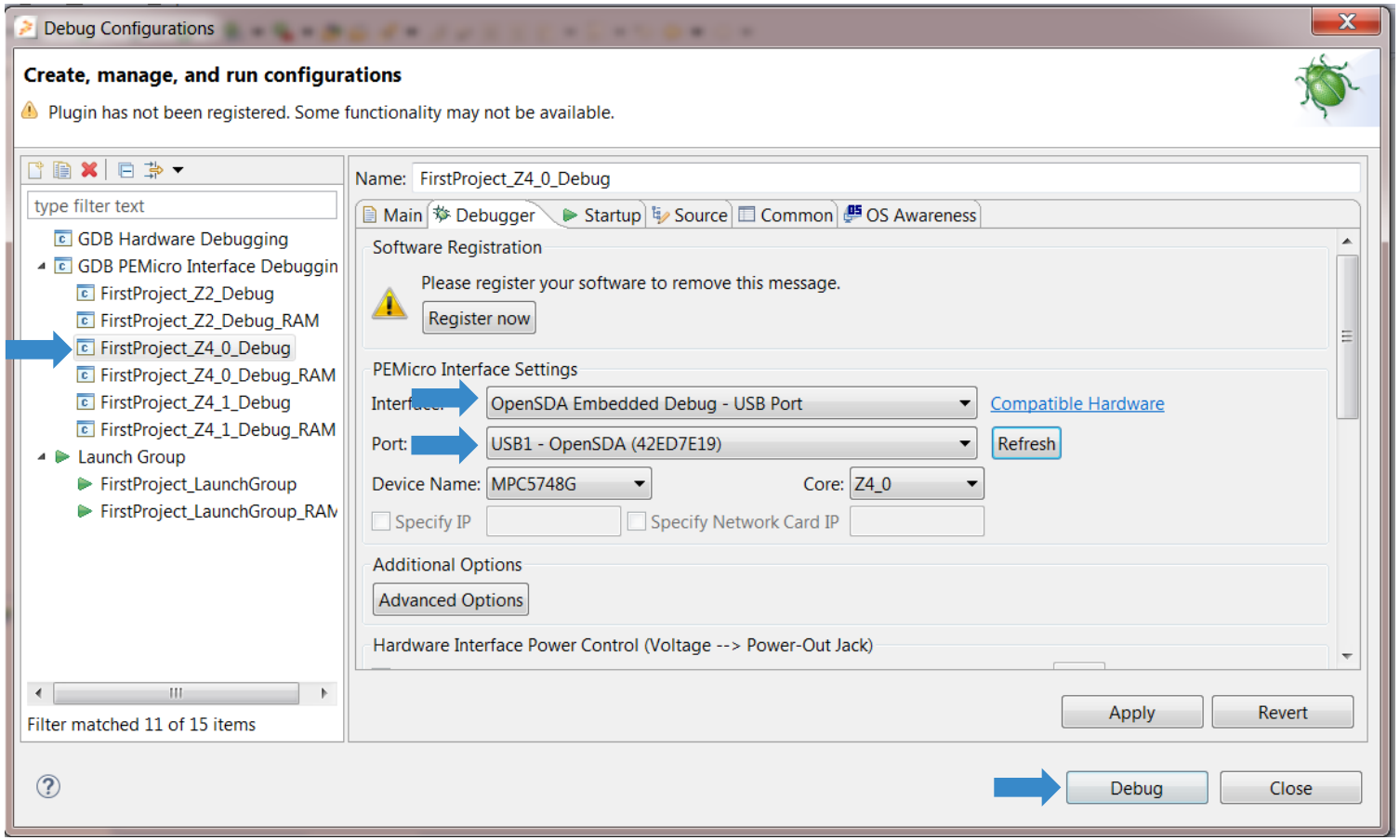
Debug a Project

- Connect a debugger to both, the board and the PC
  - For DEVKIT-MPC5748G, OpenSDA works as a debug adapter, so no standalone debugger is required
- Click on arrow in the icon
- And Open Debug Configurations…



Debug a Project

- Select Project:
  - Example: FirstProject_Z4_0_Debug
- Select Interface:
  - Example: OpenSDA for DEVKIT-MPC5748G
- Port:
  - The comport where device is connected
- Click on Debug to start debugging

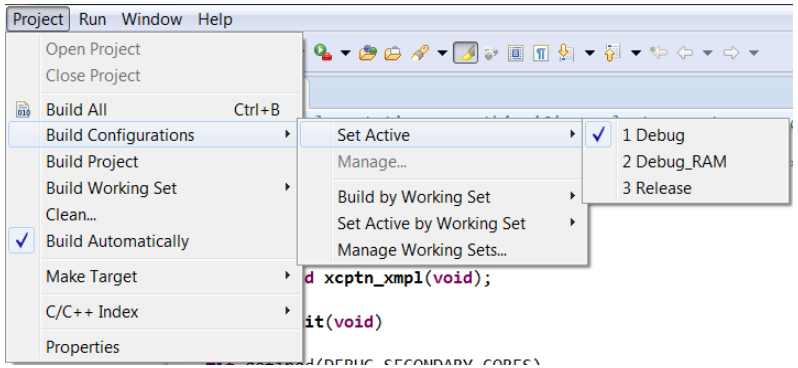


Debug a Project from RAM

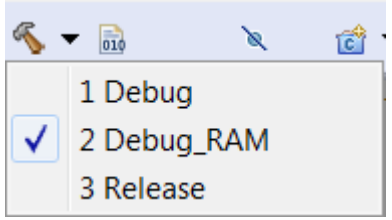
- Firstly, Configure a project to debug from RAM

  Follow one of the Steps:

  1. Project – Build Configurations – Set Active – Debug_RAM

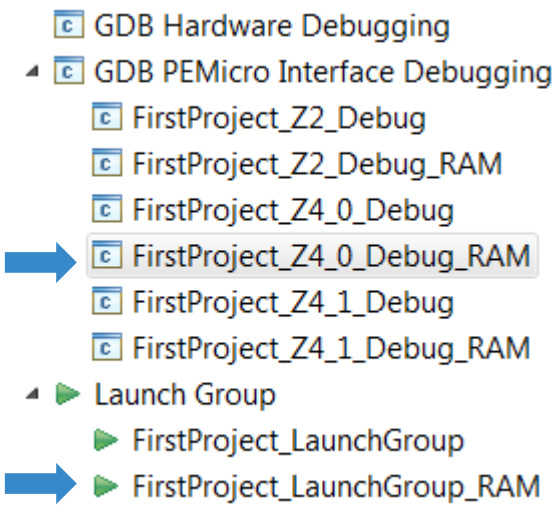


  2. Select Debug_RAM by clicking Down Arrow next to hammer



- Repeat above for all related projects.
- Follow the steps shown on “Build a Project” Page

- Lastly, to debug from RAM select the RAM related session while debugging



- Follow the Steps shown on Debug a Project pages

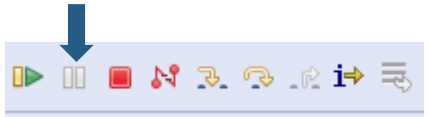
Debug Basics: Step, Run, Suspend, Resume

- Step Into (F5)

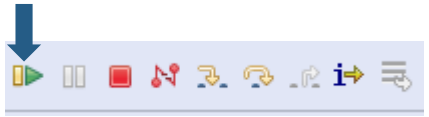
- Step Over (F6)

- Run

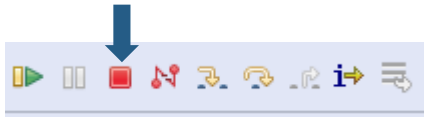
- Suspend



- Resume (F8)

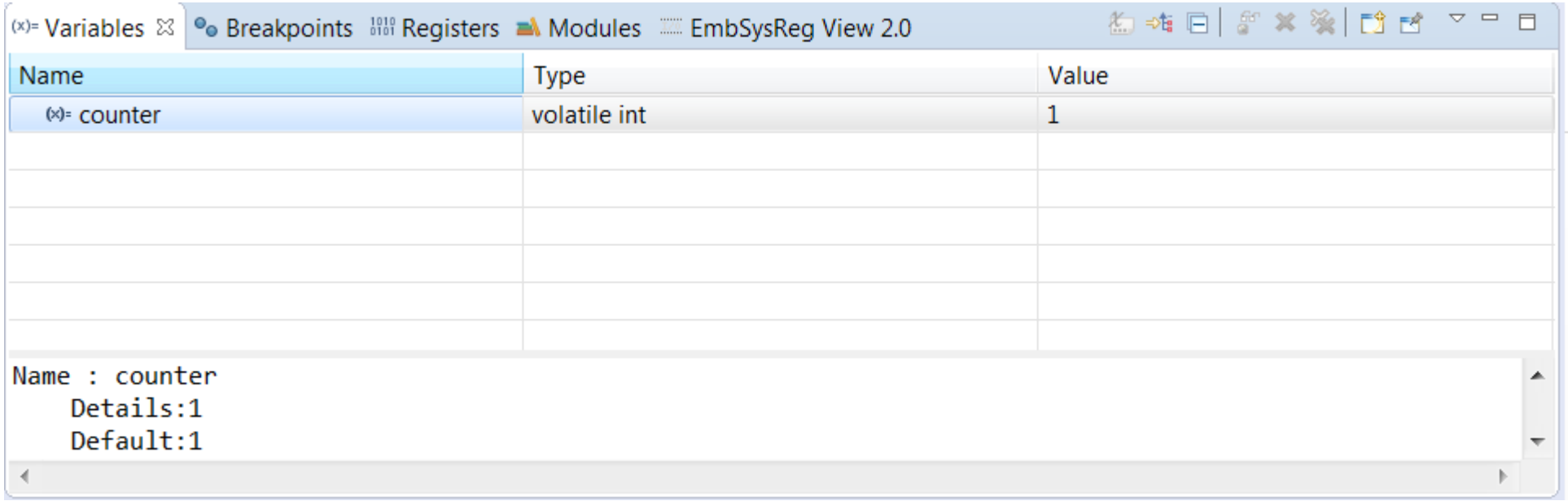


- Terminate (Ctrl+F2)



Debug Basics: View & Alter Variables

- View variables in “Variables” tab.
- Click on a value to allow typing in a different value.



Debug Basics: View & Alter Registers

- View CPU registers in the “Registers” tab
- Click on a value to allow typing in a different value

Variables | Breakpoints | Registers | Modules | EmbSysReg View 2.0

Name	Value	Description
General Registers		General Purpose and FPU Register Group
r0	16788676	
r1	1073745824	
r2	1073774592	
r3	16781312	
r4	0	

- View peripheral registers in the EmbSysReg tab

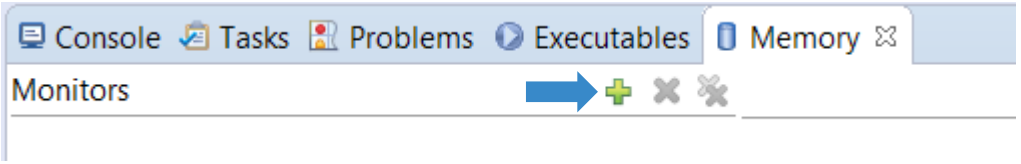
Variables | Breakpoints | Registers | Modules | EmbSysReg View 2.0

Project: [FirstProject_Z4_0] =>Arch: e200 Vendor: Freescale Chip: MPC5748G (Double click on register to read values)

Register	Hex	Bin	Reset	Acc...	Address	Description
JDC						JDC
SEMA						SEMA42
AIPS						AIPS-Lite Bridge
eMIOS						eMIOS200
I2S						Inter-IC Sound / Synchronous Audio Interfa...
ADC						12-bit SAR ADC
ADC_1						12-bit SAR ADC
MCR	0x000000...	00000000000000000000000...	0x000001...	RW	0xFBE000...	Main Configuration Register
PWDN (bit 0)	0x0	0				Power-down enable.
REFSEL (bits 2-1)	0x0	00				00: Select Vrefh as reference voltage
ACKO (bit 5)	0x0	0				Auto clock off enable.
ABORT (bit 6)	0x0	0				Abort Conversion.
ABORT_CHAIN (bit 7)	0x0	0				Abort Chain.

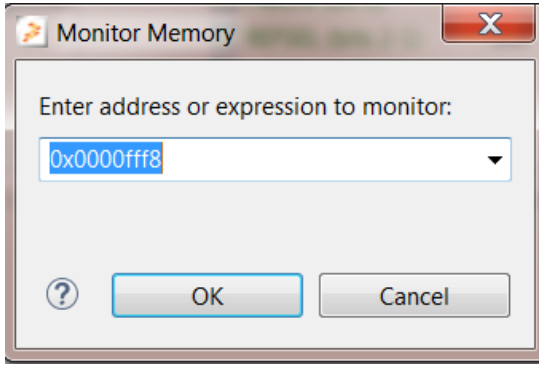
Debug Basics: View Memory

- Add Memory Monitor
  - Click on icon

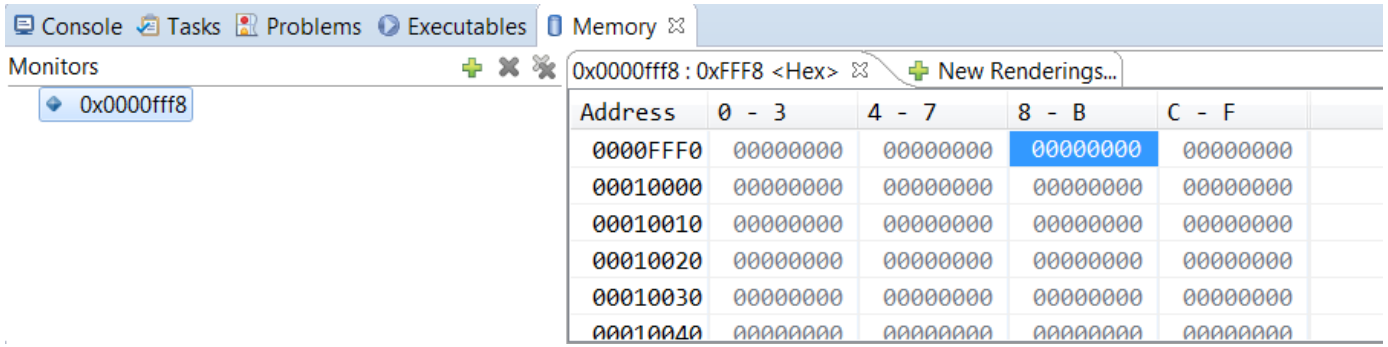


- Select Base Address

  Example : 0x0000fff8

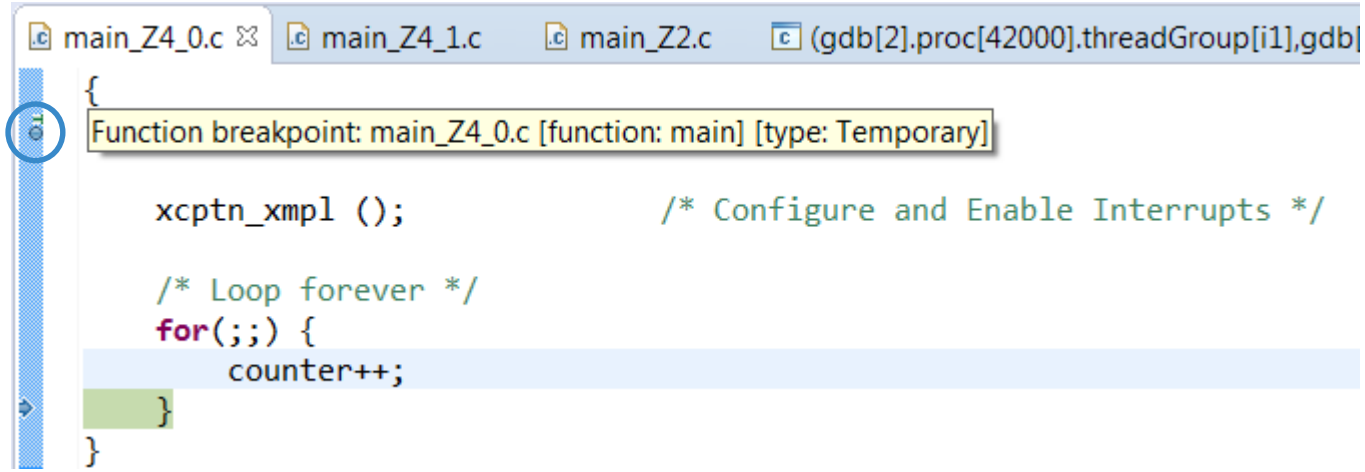


- View Memory



Debug Basics: Breakpoints

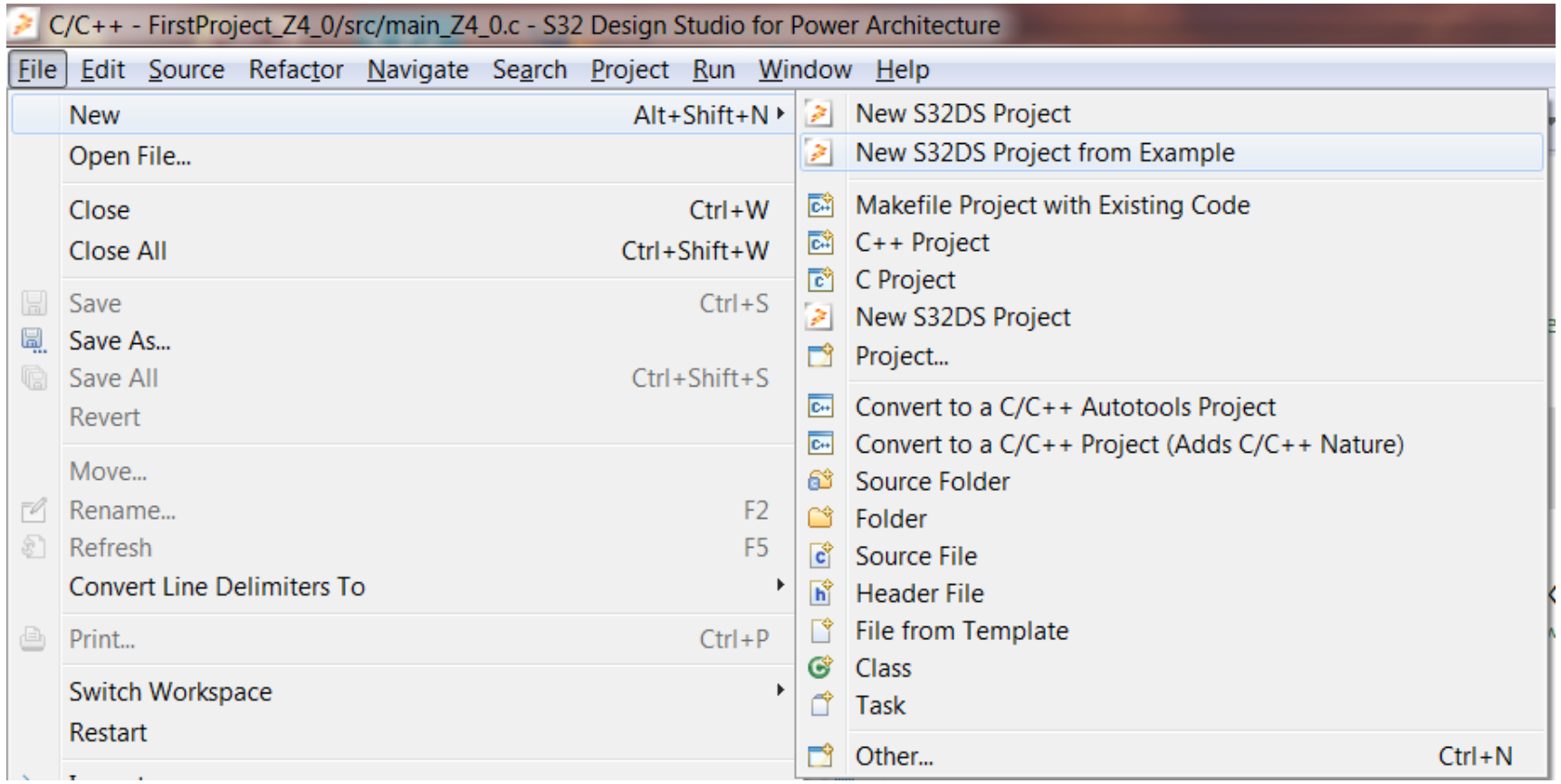
- Add Breakpoint: Point mouse pointer at circled area and Double Click there
  - Light blue dot will pop up that represents debugger breakpoint



MAKING PROJECTS FROM BUILT-IN EXAMPLES

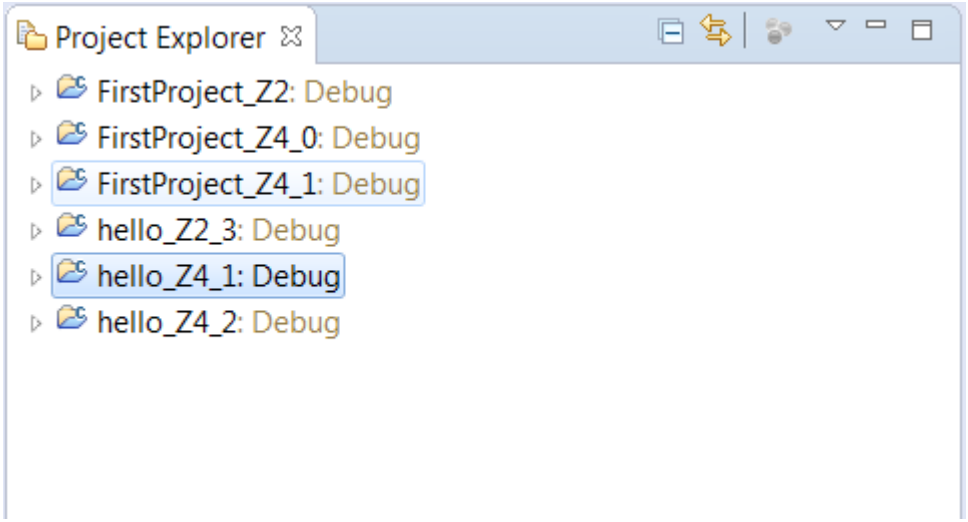
Step-1

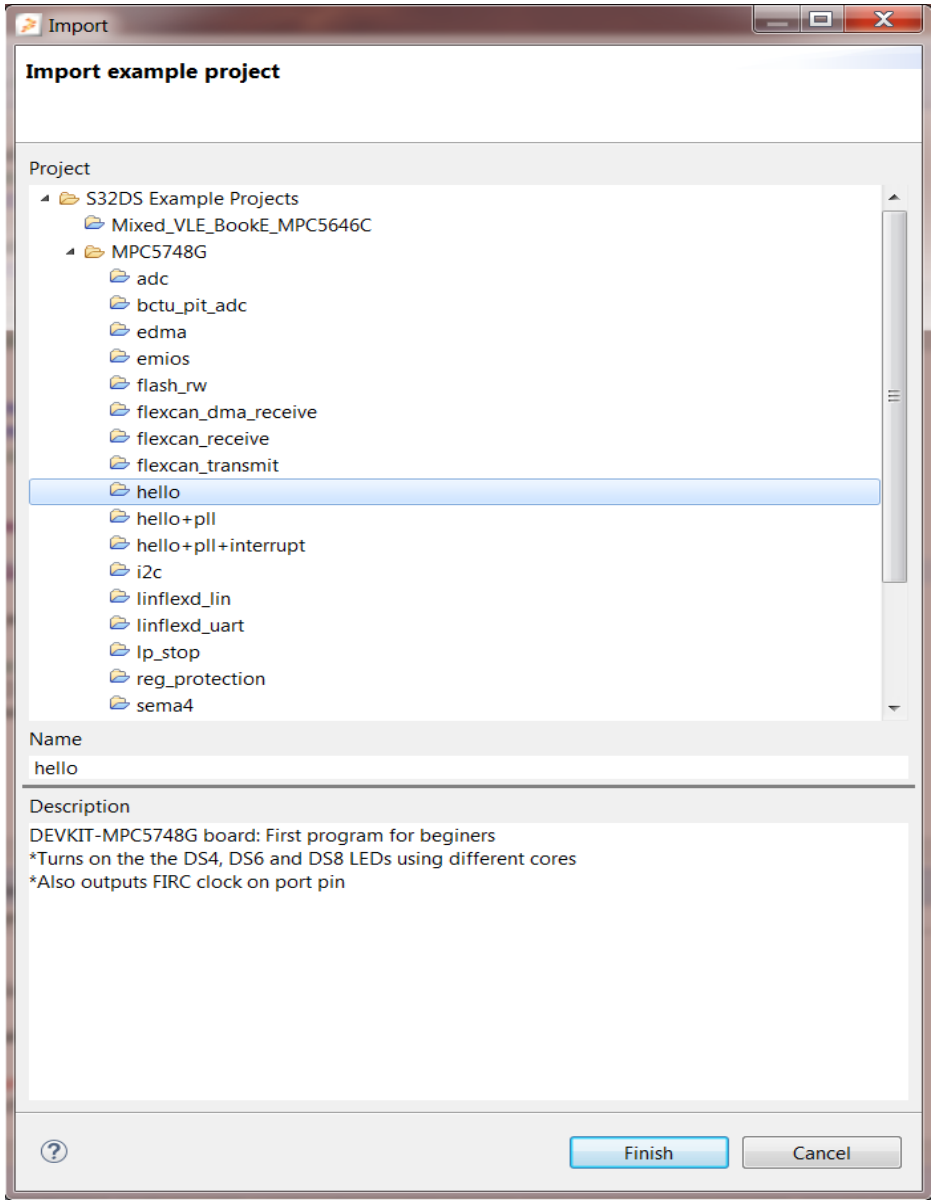
- Go to: File – New – New S32DS Project from Example



Step-2

- Select the built-in project of your choice
- Click on Finish
- Project will be copied to the active workspace as shown below

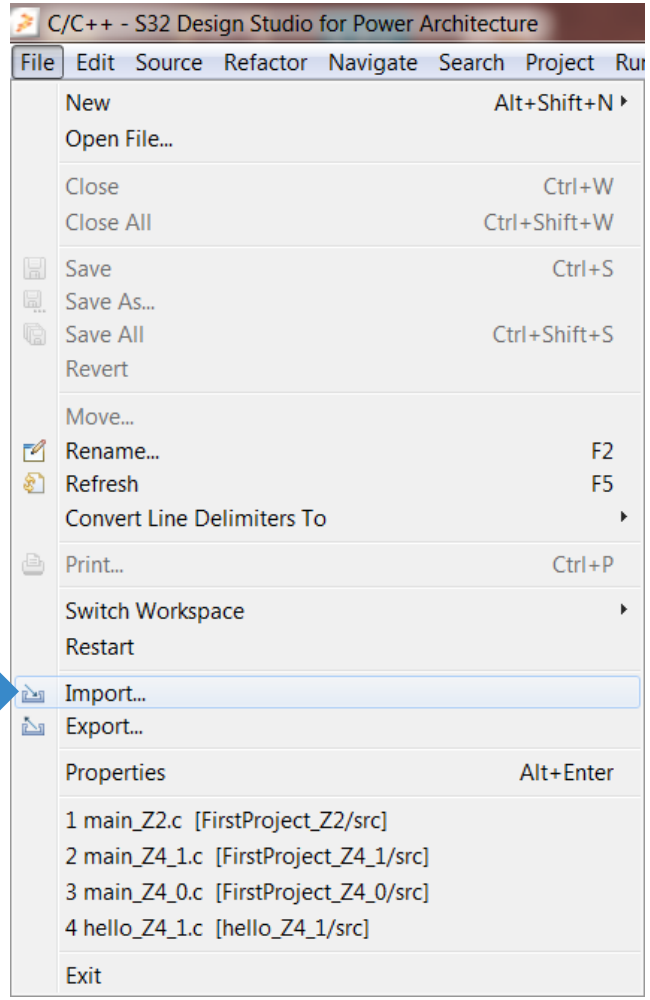


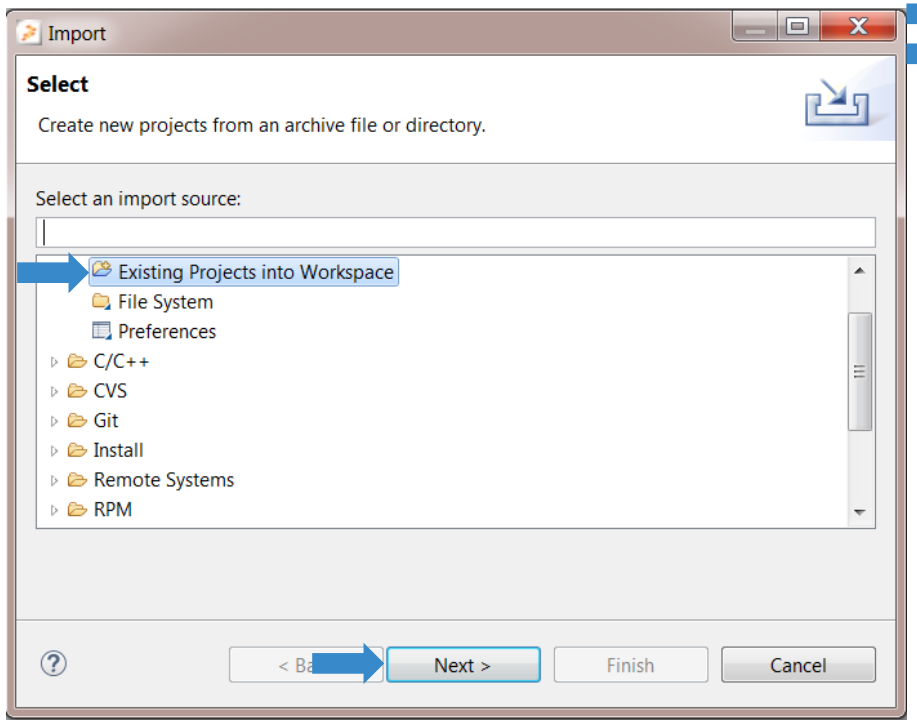


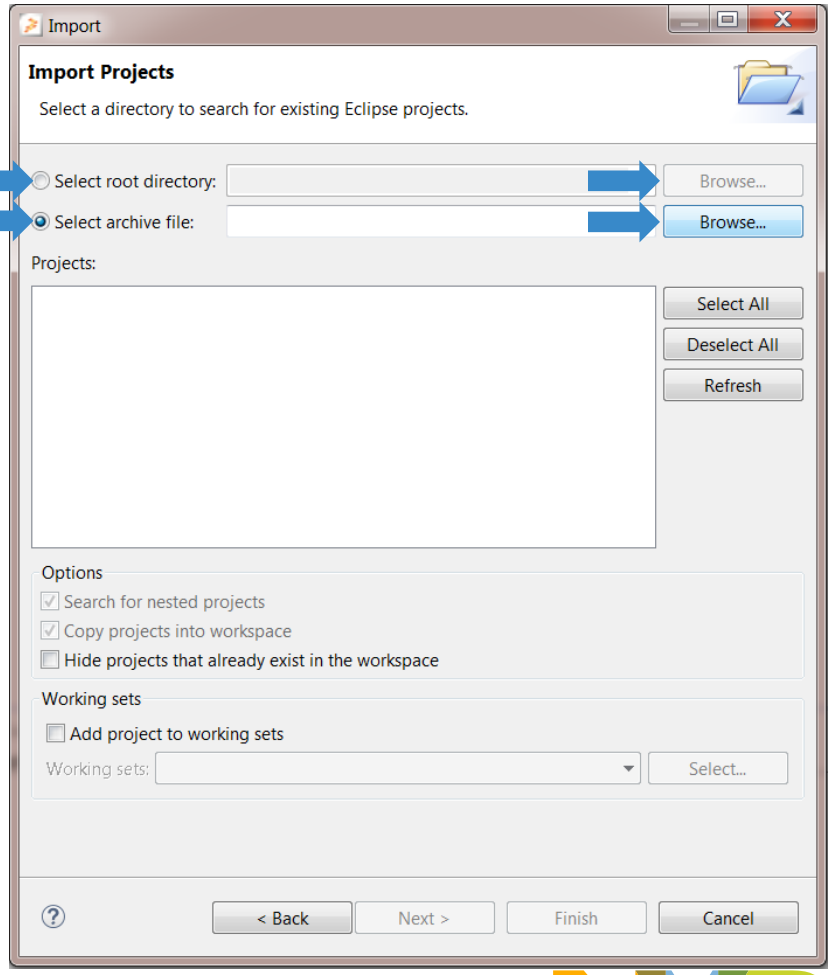
IMPORTING PROJECTS

Step-1

- Go to: File – Import
- Click on: “Existing Projects into Workspace” – Hit Next
- Click on: Browse & Select Example Folder

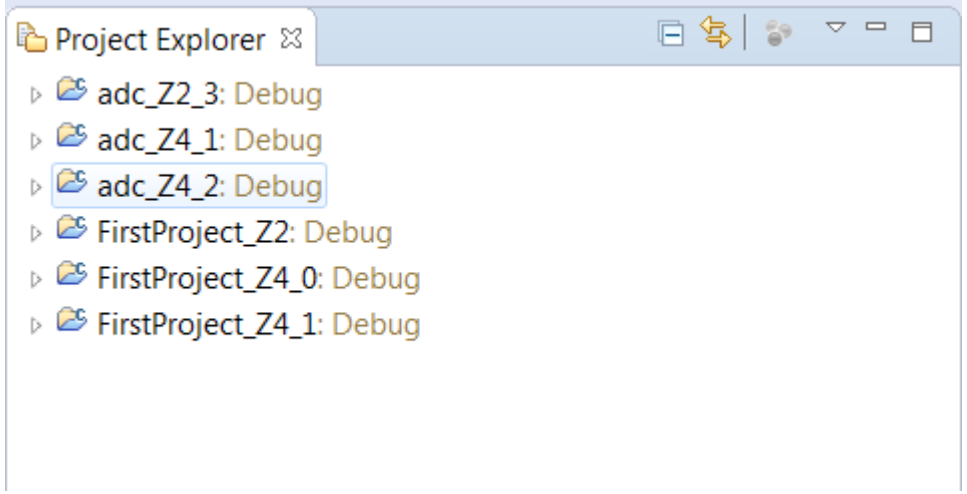


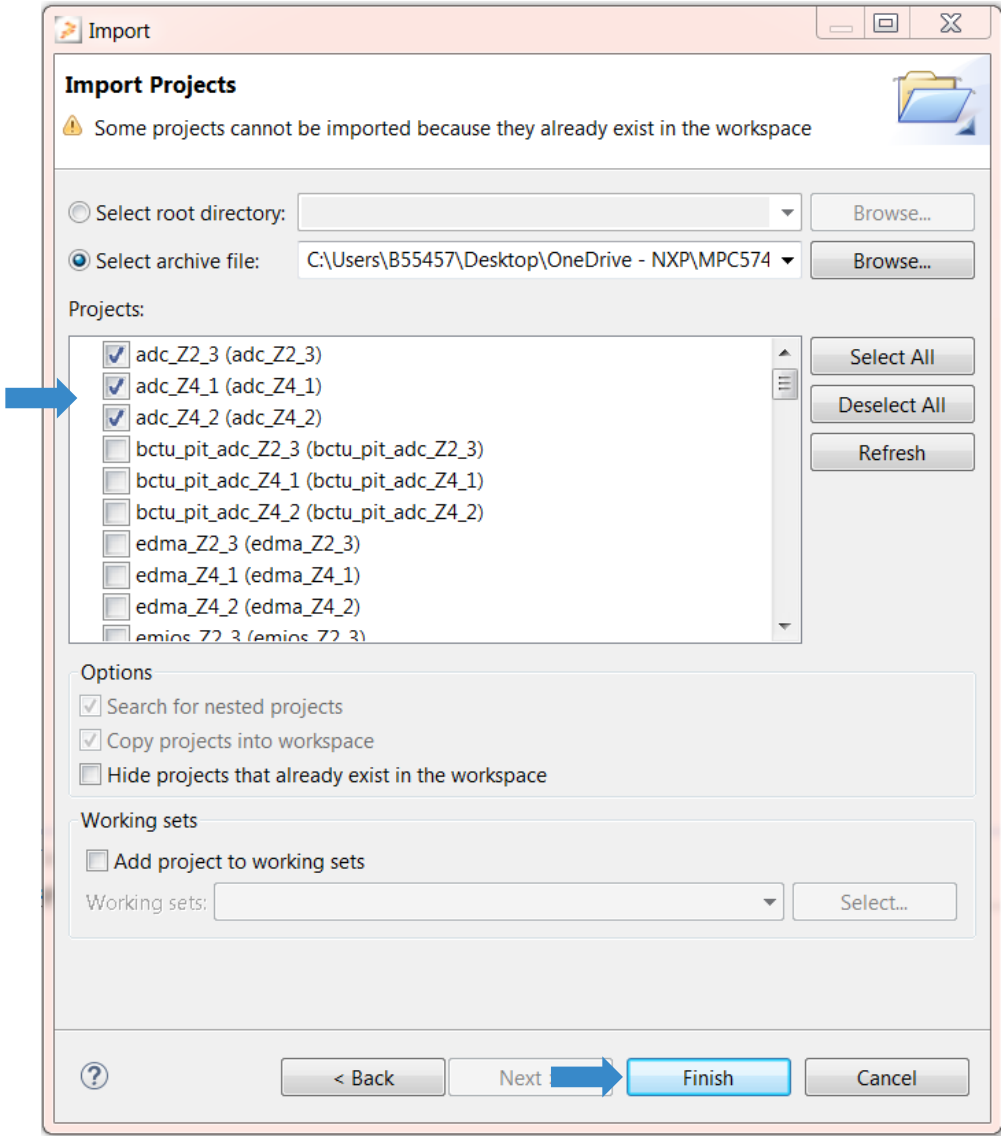




Step-2

- Select the Project
- Click on Finish to Import a Project into Workspace





MORE INFORMATION……

- For more information about S32 Design Studio IDE for Power Architecture go to

  Start – All Programs – Freescale S32 Design Studio – S32 Design Studio for power Architecture vx.x – Quick Start/Documentation

- Also Visit NXP S32DS Community to post questions about S32 Design Studio

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