CPU_Perf_Counters_1 for KIT_AURIX_TC275_LK

CPU performance counters

AURIX™ TC2xx Microcontroller Training
V1.0.0

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Scope of work

Measure code performance via the CPU performance counters.

The CPU performance counters are counting the number of instructions, clock ticks and multi counters ticks. They are used to measure the run-time of a c-function. The result is stored in a global variable.

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Introduction

- The CPU performance counters are part of the TriCore™ CPU core and need to be accessed via the On-Chip Debug Support (OCDS) module, which is used for debugging and performance optimization

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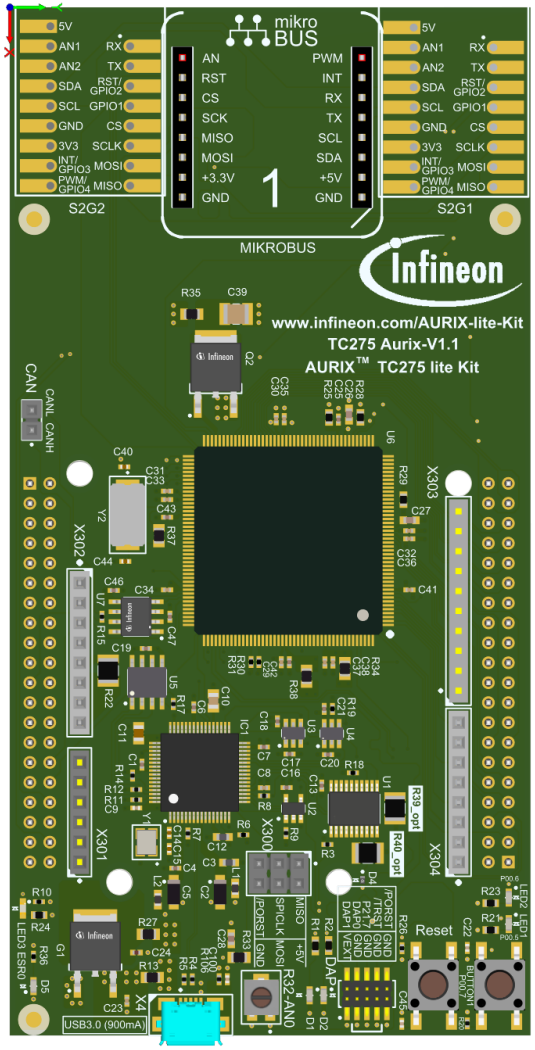
Hardware setup

This code example has been developed for the board KIT_AURIX_TC275_LITE.



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Implementation

Running CPU performance counters

The function ***runCpuPerfCounters()*** measures the run-time of the function ***loop()***, which is placed between the ***IfxCpu_resetAndStartCounters()*** and ***IfxCpu_stopCounters()***:

- ***IfxCpu_resetAndStartCounters()*** to start CPU performance counters. A parameter is specifying the counter mode:
  - **Normal** mode: The counters increment on their respective triggers
  - **Task** mode: Allow an additional gating from the debug unit which can filter data based on specific criteria
- ***IfxCpu_stopCounters()*** to stop and return counters values

Note: For using the performance counters, the On-Chip Debug System has to be enabled. This is ensured by the debugger itself, therefore the example has to be tested within an active debug session.

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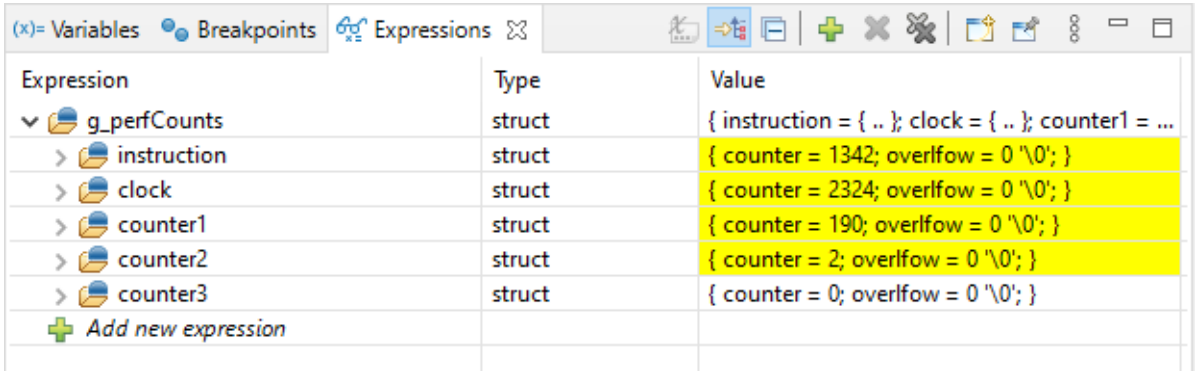
Run and Test

After code compilation and flashing the device, perform the following steps:

- Add the result of the measurement (***g_perfCounts***) to the Watch View of the debugger
- Check the performance of the function ***loop()*** through the values stored in the structure ***g_perfCounts*** displayed in the Watch View:
  - Instruction Counter
  - CPU Clock Cycle Counter
  - Counter 1 (implementation specific)
  - Counter 2 (implementation specific)
  - Counter 3 (implementation specific)



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References

- AURIX™ Development Studio is available online:
- https://www.infineon.com/aurixdevelopmentstudio
- Use the *„Import...“* function to get access to more code examples.

- More code examples can be found on the GIT repository:
- https://github.com/Infineon/AURIX_code_examples

- For additional trainings, visit our webpage:
- https://www.infineon.com/aurix-expert-training

- For questions and support, use the AURIX™ Forum:
- https://www.infineonforums.com/forums/13-Aurix-Forum

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