SCU_Reset_Detection_1
Detection of reset type
Scope of work

This example shows how to detect the source of the last reset (power-on reset, watchdog reset, etc.)

The AURIX™ TC2xx devices can be reset by various reset sources. The application software is able to determine the source of the last reset based on a routine that evaluates the related reset special function register.
Resets can be configured and determined in the Reset Control Unit (RCU), belonging to the System Control Unit (SCU).

There are various reset triggers such as SupplyMonitor, EVRs, PORST, ESRx, JTAG.

Consequently, different reset types can be derived, such as Cold-/Warm-Power-On Reset, System Reset, Application Reset, Debug Reset, Module Reset.
Hardware setup

This code example has been developed for the board KIT_AURIX_TC297_TFT_BC-Step.
Implementation

startScuResetDetection()

› This function executes the `evaluateReset()` function, which provides information about the last occurred reset. The returned value is a data structure comprising elements such as `resetType` and `resetTrigger`.

› The `resetType` specifies the type of the last reset (e.g. a Cold Power-On Reset, System Reset, Application Reset or Warm Power-On Reset).

› The `resetTrigger` specifies the source of the last reset. For instance, the source can be a Power-On Reset (pressing PORST-Button), a SW triggered reset or a reset triggered by debugger or any voltage supervision monitor.

› Furthermore, the function `evaluateReset()` clears the Cold Power-On sticky bits using the function `clearColdPowerOnResetBits()`. Those bits are not cleared automatically and must be explicitly cleared by the application.

› The local variable `swReset` can be used to specify the type of SW-Reset initiated by the function `triggerSWReset()`.
Implementation

**evaluateReset()**

- The function `evaluateReset()` evaluates both the `SCU.RCU.RSTSTAT` and `SCU.RCU.RSTCON` registers.

- The `SCU.RCU.RSTSTAT` register is evaluated with regard to which reset bits are set, respectively, cleared. Firstly, the warm reset status bits comprising `ESRx`, `SMU`, `SW`, `STMx` and `CBx` are evaluated. Secondly, the cold reset status bits comprising `EVR13`, `EVR33`, `SWD` and `STBYR` are evaluated if none of the warm reset status bits are set. Finally, the `PORST` bit is evaluated.

- The `SCU.RCU.RSTCON` is evaluated to determine the type of reset, specified for the warm reset status bits, except debugger related reset sources.

**triggerSWReset()**

- This function was developed only for testing purposes. Based on the local variable `swReset`, it triggers either a SW Application Reset or a SW System Reset.
Run and Test

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

1. Run the code
2. Suspend the code execution
3. Watch the local structure variable `lastReset` (the elements `lastReset.resetType` and `lastReset.resetTrigger`)
4. Check whether the `lastReset.resetType` is set to 'application' reset and whether the `lastReset.resetTrigger` is set to 'cb3'.
5. Press button 'PORST'

6. Perform steps 1. through 3.
7. Check whether the `lastReset.resetType` is set to 'warmpoweron' reset and whether the `lastReset.resetTrigger` is set to 'porst'.

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Run and Test

8. Set the local variable `swReset` to '1'
9. Perform steps 1. through 3.
10. Check whether the `lastReset.resetType` is set to 'application' reset and whether the `lastReset.resetTrigger` is set to 'sw'.
11. Set the local variable `swReset` to '2'
12. Perform steps 1. through 3.
13. Check whether the `lastReset.resetType` is set to 'system' reset and whether the `lastReset.resetTrigger` is set to 'sw'.
References

› AURIX™ Development Studio is available online:
  - [https://www.infineon.com/aurixdevelopmentstudio](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](https://github.com/Infineon/AURIX_code_examples)

› For additional trainings, visit our webpage:
  - [https://www.infineon.com/aurix-expert-training](https://www.infineon.com/aurix-expert-training)

› For questions and support, use the AURIX™ Forum:
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