

## Exercise 09: *sSDT* Protocol Checkers

**Objective:** Introduction to the concept of protocol checkers as parallel coroutines to the simulation.

**Task:** Implementation of protocol checkers to ensure that the uVC is behaving according to the protocol specifications.

The checkers should be implemented as Python coroutines, which are running in parallel with the other processes of the simulation. Follow the implementation steps as follows:

1. Locate the file `uvc_ssdt_interface_assertions`, inside the folder  
`<ROOT>/sat_filter/src/tb/uvc/ssdt/src`.
2. Add the protocol checkers inside this file. Refer to section 3 in the PDF: `edu4chip_exercise_general.pdf` for the requirement (PR1-PR3), the protocol has to follow.
3. Open the file `<ROOT>/sat_filter/src/tb/sat_filter_tb_base_test.py`, and:
  - Connect the DUT input signals (`clk`, `rst`, `in_data`, `in_valid`) to the `ssdt_interface_assert_check()` class.
  - Start the checking coroutine in the `run_phase` of the test.
  - Assert the `passed` attribute of the checker instance in the `report_phase` of the test.
4. Repeat the same process for the DUT output signals.