Exercise 08: *PyVSC* Coverage for *sSDT uVC*

Objective: *Introduction to the coverage collection in a UVM testbench using the PyVSC library.*

Task: *Implementation of the coverage collector class in the sSDT's uVC.*

Locate the coverage collector file, `uvc_ssdt_coverage.py`, inside `<ROOT>/sat_filter/src/tb/uvc/ssdt/src`. The file contains a partial implementation of the class `uvc_ssdt_coverage`. The implementation must be completed respecting the following specifications:

Create the `covergroup` class, named `covergroup_ssdt`, with the following requirements:

- Must define a `coverpoint` for the `data` field of the *sSDT* sequence item.
- The `coverpoint` must cover the following bins:
  - `data` when is 0;
  - `data` when is the maximum value;
  - `data` in the range between 0 and the maximum value.

HINT: The maximum value is given by the width of the item which is configured in the configuration object. Consider fetching the object from the ConfigDB.

The `covergroup` should be integrated in the `uvc_ssdt_coverage` class, as follows:

- Correct instantiation in the `build_phase`;
- Implementation of a `write` method inside the `uvc_ssdt_coverage` class, as follows:
  - Must take an item (`uvc_ssdt_seq_item`) as input parameter;
  - Must call the `sample` method of the `covergroup` by passing the item, e.g., `self.cg_ssdt.sample(item.data)`.

The coverage collector should be integrated in the agent, located in `<ROOT>/sat_filter/src/tb/uvc/ssdt/src/uvc_ssdt_agent.py`, as follows:

- Integrate the handle for the `uvc_ssdt_coverage` in constructor of `uvc_ssdt_agent` class;
- Create an instance for the `uvc_ssdt_coverage` in the `build_phase`;
- Share the handler in the `ConfigDB`;
- Connect the monitor's analysis port to the coverage's analysis export in the `connect_phase`.

Run a simulation by running the make command:

```
(.venv) [<username>@<servername> tb]$ make
```

Analyze the coverage report files (*.xml) generated inside `<ROOT>/sat_filter/src/tb/sim_build` by running the command:

```
(.venv) [<username>@<servername> tb]$ pyucis-viewer \
sim_build/test_sat_filter_default_seq.xml
```