Lab 04: Understanding Dynamic Construction using UVM Factory and Component Overriding

Objective: To learn how to dynamically construct components using the UVM factory and override components at runtime

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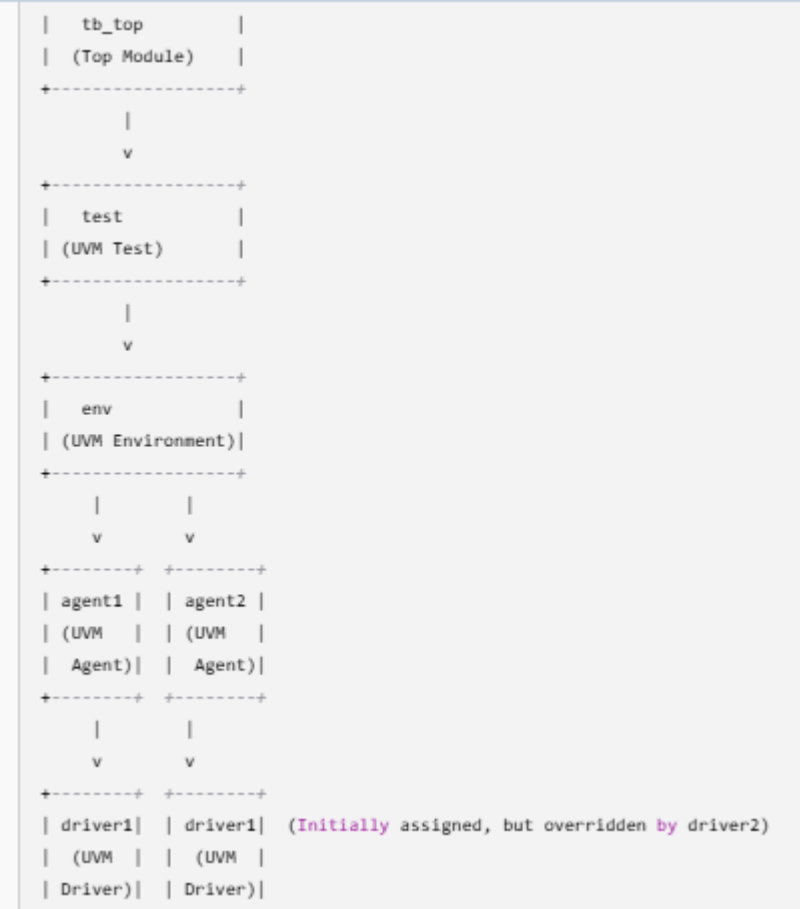

Step 1: Create Driver1 and Extend Driver2

- Create a file named driver1.sv.
- Extend from uvm_driver and print a message inside build_phase().
- Create another file named driver2.sv.
- Extend driver2 class from driver1 class and override build_phase() to print a different message.

Step 2: Build Two Agents

- Create two files: **agent1.sv** and **agent2.sv**.

- Extend both classes from uvm_agent.
- Inside each agent, instantiate and create driver1 using build phase.

Step 3: Build the Environment

- Create a file named **env.sv**.
- Extend from uvm_env.
- Instantiate and create two agent classes (agent1 and agent2) using the build phase.

Step 4: Create a Basic UVM Test Without Sequences

- Create a file named test.sv.
- Extend from uvm_test.
- Register with UVM factory
- Inside build_phase(), create environment using type_id::create, use set_type_override_by_type() to replace driver1 with driver2.
- Print the test topology using

```
function void end_of_elaboration_phase(uvm_phase phase);

        super.end_of_elaboration_phase(phase);

        `uvm_info("TEST", "Printing UVM Topology:", UVM_NONE)

        uvm_top.print_topology();

endfunction
```

Step 5: Create the Top-Level Module

- Create a file named **tb_top.sv**.
- Use run_test("test") to execute the testbench.
- Draw the block diagram of developed code.

- Expected output

```
Name                    Type
------------------------------------------------
uvm_test_top            test
  e                     env
    a1                  agent1
      d                 driver2
        rsp_port        uvm_analysis_port
        seq_item_port   uvm_seq_item_pull_port
    a2                  agent2
      d                 driver2
        rsp_port        uvm_analysis_port
        seq_item_port   uvm_seq_item_pull_port
------------------------------------------------
```

- Comment the override line to observe the difference.
- Use set_inst_override_by_type() to override only one instance of driver1 inside a specific agent. Observe the result.