

Module: SV for Verification

Section: Modules & Classes Task: Inheritance

Task 1

Inheritance Example

➤ Local Keyword Code:

```
class parent;
    local int x = 10;
endclass
class child extends parent;
    int y = 20;
endclass

module tb;
    child c;
    initial begin
        c = new();
        $display("Value of x is %d", c.x);
    end
endmodule
```

○ Findings:

The local keyword restricts access to the variable x to the class where it is declared. It cannot be accessed by any other class, including derived (child) classes. Attempting to access x from the child class results in a compile-time error.

```
[2024-08-30 07:10:27 UTC] vlib work && vlog '-timescale' '1ns/1ns' design.sv testbench.sv && vsim -c -do "vsim"
VSIMS: Configuration file changed: `/home/runner/library.cfg'
ALIB: Library "work" attached.
work = /home/runner/work/work.lib
ERROR VCP5248 "Cannot access local/protected member ""c.x"" from this scope." "testbench.sv" 23 37
FAILURE "Compile failure 1 Errors 0 Warnings Analysis time: 0[s]."
Exit code expected: 0, received: 255
Done
```

➤ Protected Keyword Code:

```
class parent;
    protected int x = 10;
endclass
class child extends parent;
    int y = 20;
endclass

module tb;
    child c;
```

```
initial begin
    c = new();
    $display("Value of x is %d", c.x);
end
endmodule
```

- **Findings:**

The protected keyword allows access to the member within the class where it is declared and also within any classes that inherit from it. However, it still cannot be accessed from outside these classes (e.g., through an instance in a testbench).

```
[2024-08-30 07:38:05 UTC] vlib work && vlog '-timescale' '1ns/1ns' design.sv testbench.sv && vsim -c -do "vsim
VSIMS: Configuration file changed: '/home/runner/library.cfg'
ALIB: Library "work" attached.
work = /home/runner/work/work.lib
ERROR VCP5248 "Cannot access local/protected member ""c.x"" from this scope." "testbench.sv" 12 37
FAILURE "Compile failure 1 Errors 0 Warnings Analysis time: 0[s]."
Exit code expected: 0, received: 255
Done
```