```vhdl
-- Configuration declarations for TB_ExecUnit and EN_ExecUnit.
-- Provides independent configs for:
--   - Functional verification with different adder & shifter architectures
--   - Timing verification using Quartus-generated netlist (architecture 'structure')

library ieee;
use ieee.std_logic_1164.all;

-------------------------------------------------------------------------
-- 1. CONFIGURATIONS OF EN_ExecUnit (internal binding of Add & Shift)
-------------------------------------------------------------------------

-- EN_ExecUnit with RCA adder + IEEE_fn shifter
configuration CFG_EN_RCA_IEEE of EN_ExecUnit is
    for RTL
        -- Adder: ripple-carry (RCA)
        for Add : EN_Adder
            use entity work.EN_Adder(RCA);
        end for;

        -- Shifter: IEEE function-based architecture
        for Shift : EN_Shift
            use entity work.EN_Shift(IEEE_fn);
        end for;
    end for;
end configuration CFG_EN_RCA_IEEE;


-- EN_ExecUnit with RCA adder + barrel shifter
configuration CFG_EN_RCA_Barrel of EN_ExecUnit is
    for RTL
        for Add : EN_Adder
            use entity work.EN_Adder(RCA);
        end for;

        for Shift : EN_Shift
            use entity work.EN_Shift(barrel);
        end for;
    end for;
end configuration CFG_EN_RCA_Barrel;


-- EN_ExecUnit with CBA adder + IEEE_fn shifter
configuration CFG_EN_CBA_IEEE of EN_ExecUnit is
    for RTL
        for Add : EN_Adder
            use entity work.EN_Adder(CBA);
        end for;

        for Shift : EN_Shift
            use entity work.EN_Shift(IEEE_fn);
        end for;
    end for;
end configuration CFG_EN_CBA_IEEE;


-- EN_ExecUnit with CBA adder + barrel shifter
configuration CFG_EN_CBA_Barrel of EN_ExecUnit is
    for RTL
        for Add : EN_Adder
            use entity work.EN_Adder(CBA);
        end for;

        for Shift : EN_Shift
            use entity work.EN_Shift(barrel);
        end for;
    end for;
end configuration CFG_EN_CBA_Barrel;

-------------------------------------------------------------------------
-- 2. CONFIGURATIONS OF TB_ExecUnit (select which EN_ExecUnit config)
-------------------------------------------------------------------------

```

```
74  -- Functional config: RCA adder + IEEE_fn shifter
75  configuration CFG_FUNC_RCA_IEEE of TB_ExecUnit is
76      for behavior
77          for DUT : TestUnit
78              -- Bind DUT to EN_ExecUnit using the RCA+IEEE configuration
79              use configuration work.CFG_EN_RCA_IEEE;
80          end for;
81      end for;
82  end configuration CFG_FUNC_RCA_IEEE;
83
84
85  -- Functional config: RCA adder + barrel shifter
86  configuration CFG_FUNC_RCA_Barrel of TB_ExecUnit is
87      for behavior
88          for DUT : TestUnit
89              use configuration work.CFG_EN_RCA_Barrel;
90          end for;
91      end for;
92  end configuration CFG_FUNC_RCA_Barrel;
93
94
95  -- Functional config: CBA adder + IEEE_fn shifter
96  configuration CFG_FUNC_CBA_IEEE of TB_ExecUnit is
97      for behavior
98          for DUT : TestUnit
99              use configuration work.CFG_EN_CBA_IEEE;
100         end for;
101     end for;
102 end configuration CFG_FUNC_CBA_IEEE;
103
104
105 -- Functional config: CBA adder + barrel shifter
106 configuration CFG_FUNC_CBA_Barrel of TB_ExecUnit is
107     for behavior
108         for DUT : TestUnit
109             use configuration work.CFG_EN_CBA_Barrel;
110         end for;
111     end for;
112 end configuration CFG_FUNC_CBA_Barrel;
113
```