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----------------------------------------------------------------------------------
-- Company:
-- Engineer:
--
-- Create Date: 21.03.2023 07:27:34
-- Design Name:
-- Module Name: rubicTB - structural
-- Project Name:
-- Target Devices:
-- Tool Versions:
-- Description:
--
-- Dependencies:
--
-- Revision:
-- Revision 0.01 - File Created
-- Additional Comments:
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----------------------------------------------------------------------------------


library IEEE;
use IEEE.STD_LOGIC_1164.ALL;
use ieee.NUMERIC_STD.ALL;
use ieee.std_logic_unsigned.all;
use std.env.finish;

entity rubicTB is
--  Port ( );
end rubicTB;
```

```
architecture structural of rubicTB is
constant dw: integer:=2;
constant ds: integer:=2;
constant dcs: integer:=3;
constant dms:integer:=1;

signal A,B,C,D,E,F:std_logic_vector(dw downto 0);
signal
ss111,ss112,ss113,ss121,ss122,ss123,ss131,ss132,ss13
3:std_logic_vector(dcs downto 0);
signal
ss211,ss212,ss213,ss221,ss222,ss223,ss231,ss232,ss23
3:std_logic_vector(dcs downto 0);
signal
ss311,ss312,ss313,ss321,ss322,ss323,ss331,ss332,ss33
3:std_logic_vector(dcs downto 0);
signal
ss411,ss412,ss413,ss421,ss422,ss423,ss431,ss432,ss43
3:std_logic_vector(dcs downto 0);
signal
ss511,ss512,ss513,ss521,ss522,ss523,ss531,ss532,ss53
3:std_logic_vector(dcs downto 0);
signal
ss611,ss612,ss613,ss621,ss622,ss623,ss631,ss632,ss63
3:std_logic_vector(dcs downto 0);
signal
SM121,SM122,SM123,SM131,SM132,SM133:std_logic_vector
(dms downto 0);
signal
SM221,SM222,SM223,SM231,SM232,SM233:std_logic_vector
(dms downto 0);
signal
SM321,SM322,SM323,SM331,SM332,SM333:std_logic_vector
```

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(dms downto 0);
signal
SM421,SM422,SM423,SM431,SM432,SM433:std_logic_vector
(dms downto 0);
signal
SM521,SM522,SM523,SM531,SM532,SM533:std_logic_vector
(dms downto 0);
signal
SM621,SM622,SM623,SM631,SM632,SM633:std_logic_vector
(dms downto 0);
signal CU_631,CU_632,CU_633:std_logic_vector(dS
downto 0);
begin

RTB: entity work.Rubic
generic map(dw=>dw,ds=>ds,dcs=>dcs,dms=>dms)
 port map(
       A=>A,B=>B,C=>C,D=>D,E=>E,F=>F,

ss111=>SS111,ss112=>SS112,ss113=>SS113,ss121=>SS121,
ss122=>SS122,ss123=>SS123,ss131=>SS131,ss132=>SS132,
ss133=>SS133,

ss211=>SS211,ss212=>SS212,ss213=>SS213,ss221=>SS221,
ss222=>SS222,ss223=>SS223,ss231=>SS231,ss232=>SS232,
ss233=>SS233,

ss311=>SS311,ss312=>SS312,ss313=>SS313,ss321=>SS321,
ss322=>SS322,ss323=>SS323,ss331=>SS331,ss332=>SS332,
ss333=>SS333,

ss411=>SS411,ss412=>SS412,ss413=>SS413,ss421=>SS421,
ss422=>SS422,ss423=>SS423,ss431=>SS431,ss432=>SS432,
```

```
ss433=>SS433,

ss511=>SS511,ss512=>SS512,ss513=>SS513,ss521=>SS521,
ss522=>SS522,ss523=>SS523,ss531=>SS531,ss532=>SS532,
ss533=>SS533,

ss611=>SS611,ss612=>SS612,ss613=>SS613,ss621=>SS621,
ss622=>SS622,ss623=>SS623,ss631=>SS631,ss632=>SS632,
ss633=>SS633,

SM121=>SM121,SM122=>SM122,SM123=>SM123,SM131=>SM131,
SM132=>SM132,SM133=>SM133,

SM221=>SM221,SM222=>SM222,SM223=>SM223,SM231=>SM231,
SM232=>SM232,SM233=>SM233,

SM321=>SM321,SM322=>SM322,SM323=>SM323,SM331=>SM331,
SM332=>SM332,SM333=>SM333,

SM421=>SM421,SM422=>SM422,SM423=>SM423,SM431=>SM431,
SM432=>SM432,SM433=>SM433,

SM521=>SM521,SM522=>SM522,SM523=>SM523,SM531=>SM531,
SM532=>SM532,SM533=>SM533,

SM621=>SM621,SM622=>SM622,SM623=>SM623,SM631=>SM631,
SM632=>SM632,SM633=>SM633,
       CU_631=>CU_631,CU_632=>CU_632,CU_633=>CU_633);

stim: process

BEGIN
```

```
A<="110";B<="111";C<="110";D<="111";E<="110";F<="111"
ss111<="0010";ss112<="0000";ss113<="0111";ss121<="00
01";ss122<="1001";ss123<="1010";ss131<="1100";ss132<
="1011";ss133<="1100";
ss211<="0010";ss212<="0000";ss213<="0111";ss221<="11
00";ss222<="1001";ss223<="0101";ss231<="0110";ss232<
="0100";ss233<="0011";
ss311<="0010";ss312<="0000";ss313<="0111";ss321<="11
01";ss322<="1010";ss323<="1001";ss331<="1111";ss332<
="1110";ss333<="1011";
ss411<="0010";ss412<="0000";ss413<="0111";ss421<="00
11";ss422<="1001";ss423<="0101";ss431<="0110";ss432<
="0111";ss433<="1000";
ss511<="0010";ss512<="0000";ss513<="0111";ss521<="10
10";ss522<="1100";ss523<="0000";ss531<="1010";ss532<
="1101";ss533<="1001";
ss611<="0010";ss612<="0000";ss613<="0111";ss621<="11
00";ss622<="1010";ss623<="1001";ss631<="1100";ss632<
="1000";ss633<="0011";
SM121<="00";SM122<="00";SM123<="00";SM131<="00";SM13
2<="00";SM133<="00";
SM221<="00";SM222<="00";SM223<="00";SM231<="00";SM23
2<="00";SM233<="00";
SM321<="00";SM322<="00";SM323<="00";SM331<="00";SM33
2<="00";SM333<="00";
SM421<="00";SM422<="00";SM423<="00";SM431<="00";SM43
2<="00";SM433<="00";
SM521<="00";SM522<="00";SM523<="00";SM531<="00";SM53
2<="00";SM533<="00";
SM621<="11";SM622<="01";SM623<="01";SM631<="00";SM63
2<="00";SM633<="00";
      WAIT for 100ns;
```

```
        FINISH;
END PROCESS stim;
end structural;
```