##Table with connection (16 switches & 16 LEDs)

LED	Conn	Switch	Conn
LED0	H17	SW0	J15
LED1	K15	SW1	L16
LED2	J13	SW2	M13
LED3	N14	SW3	R15
LED4	R18	SW4	R17
LED5	V17	SW5	T18
LED6	U17	SW6	U18
LED7	U16	SW7	R13
LED8	V16	SW8	T8
LED9	T15	SW9	U8
LED10	U14	SW10	R16
LED11	T16	SW11	T13
LED12	V15	SW12	H6
LED13	V14	SW13	U12
LED14	V12	SW14	U11
LED15	V11	SW15	V10

Two-bit wide 4-to-1 multiplexer

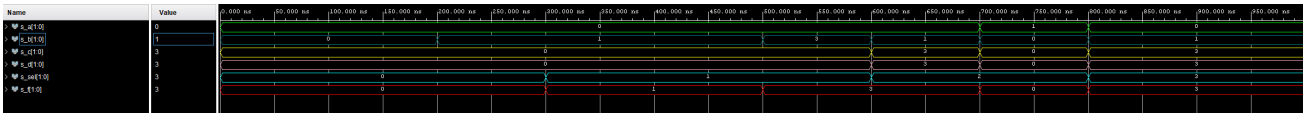
VHDL architecture (`mux_2bit_4to1.vhd`)

```
architecture Behavioral of mux_2bit_4to1 is
begin
    f_o <=  a_i when (sel_i = "00") else
            b_i when (sel_i = "01") else
            c_i when (sel_i = "10") else
            d_i;

end architecture Behavioral;
```

VHDL stimulus process (`tb_mux_2bit_4to1.vhd`)

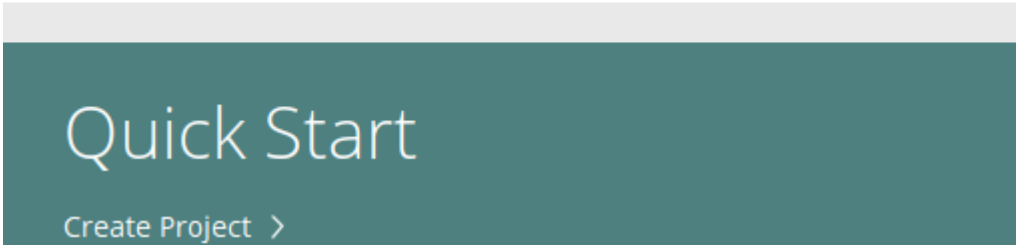
```
p_stimulus : process
    begin
        report "Stimulus process started" severity note;


        s_d <= "00"; s_c <= "00"; s_b <= "00"; s_a <= "00"; s_sel <= "00"; wait
for 100 ns;

        s_a <= "00"; wait for 100 ns;
        s_b <= "01"; wait for 100 ns;

        s_sel <= "01"; wait for 100 ns;
        s_c <= "00"; wait for 100 ns;
        s_b <= "11"; wait for 100 ns;

        s_d <= "11";  s_c <= "11"; s_b <= "01"; s_a <= "00";
        s_sel <= "10"; wait for 100 ns;

        s_d <= "00";  s_c <= "00"; s_b <= "00"; s_a <= "01";
        s_sel <= "10"; wait for 100 ns;

        s_d <= "11";  s_c <= "11"; s_b <= "01"; s_a <= "00";
        s_sel <= "11"; wait for 100 ns;

        report "Stimulus process finished" severity note;
        wait;
    end process p_stimulus;

end architecture testbench;
```

Waveforms screens

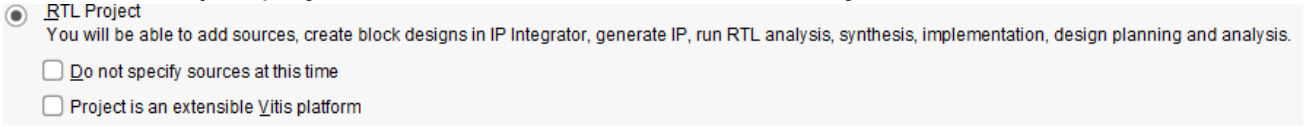


Vivado tutorial

Click on New Project.

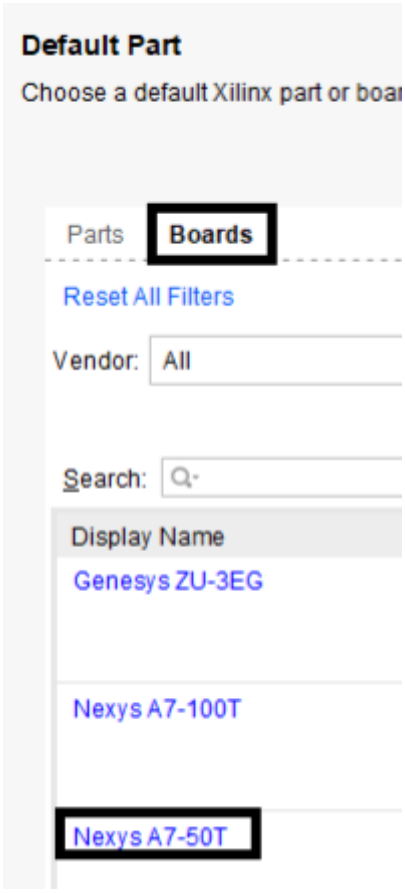


Now click on Next>. Name you project and click on Next>. Select RTL Project and click on Next>.

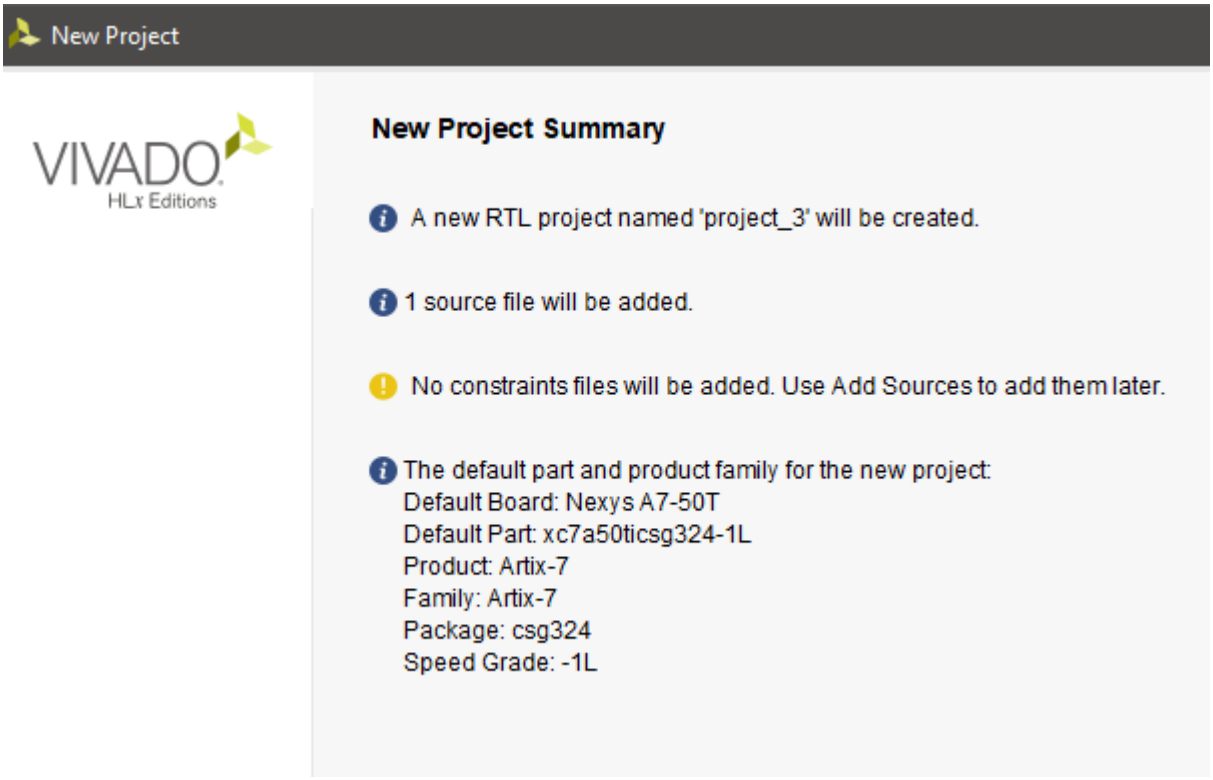


Add sources by clicking on Create File and then click on Next>. (type VHDL, location =)

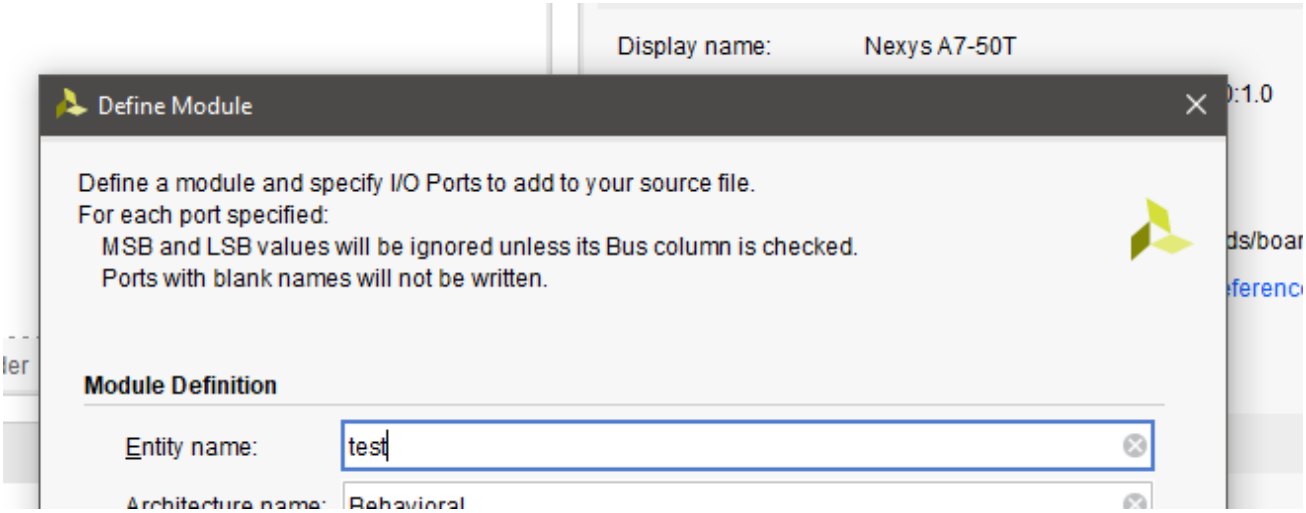
In Boards choose Nexys A7-50T and than click on Next>.



Finish the project summary.



Now define module.



Add source => Add or create simulation sources and then click on Next>. Create a source

file and then click on Finish. Everything should be ready.