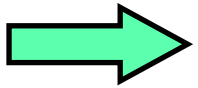
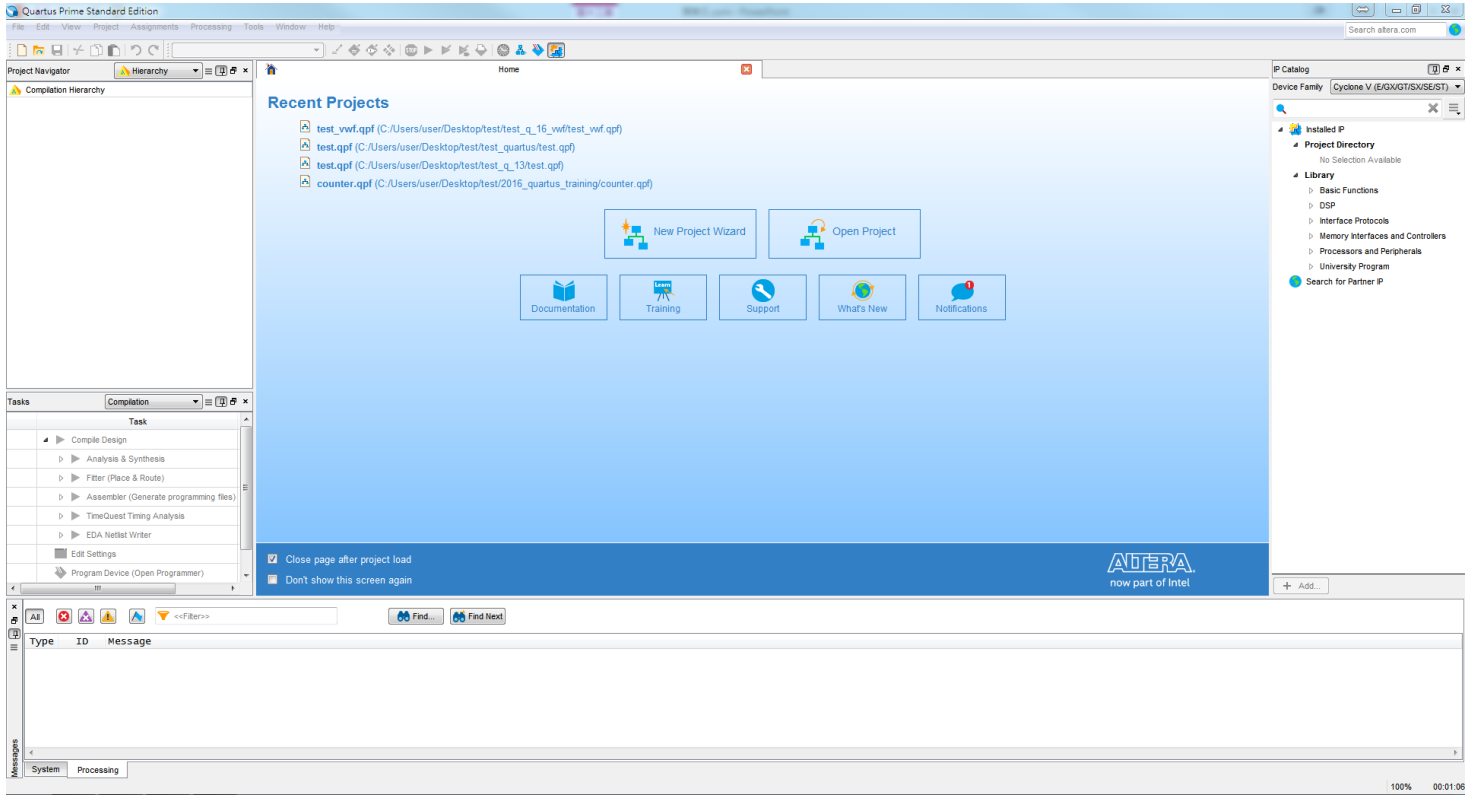
Quartus II Tutorial (1/10)

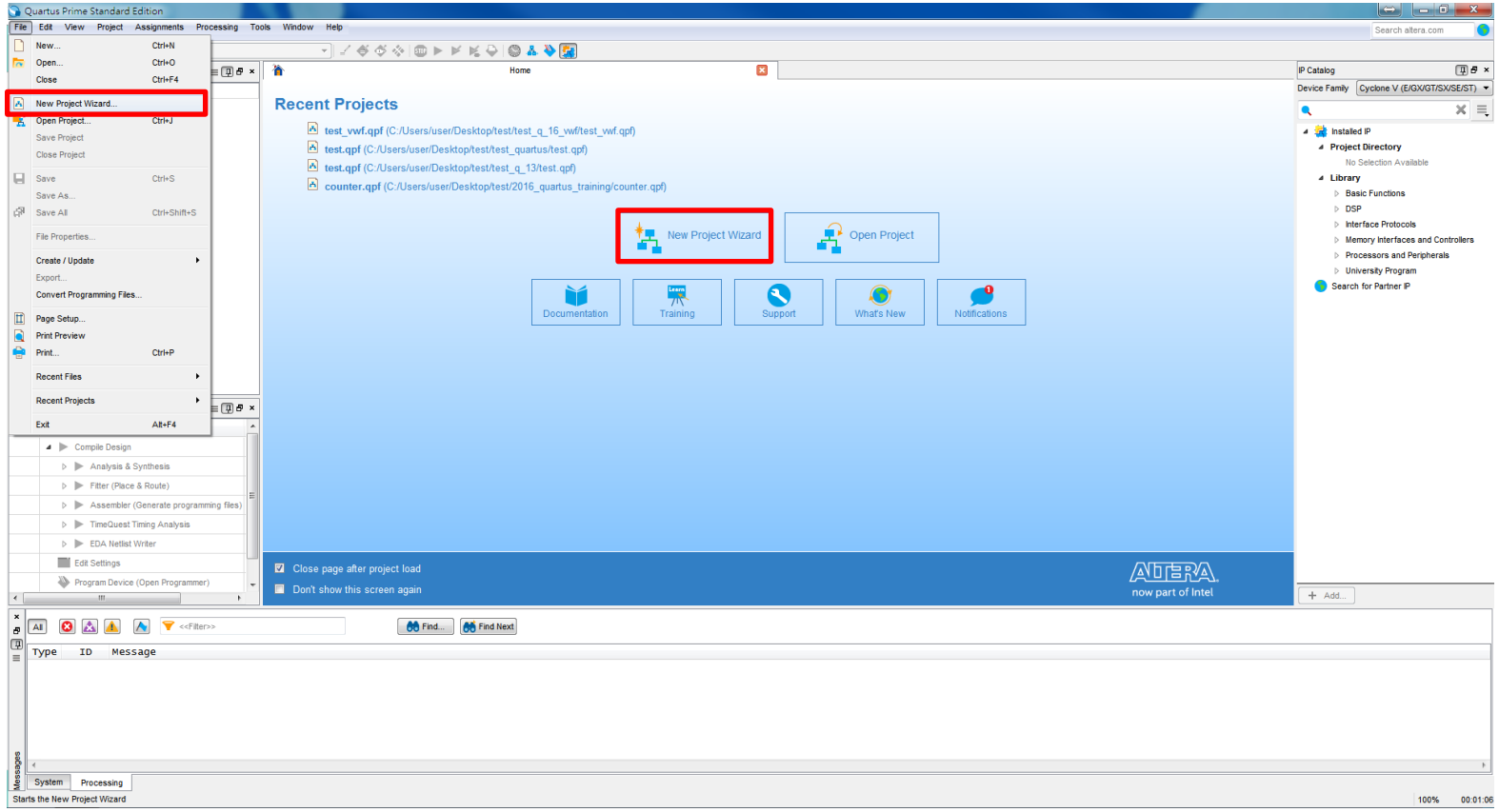
- **Getting Started –**
  - **Start the Quartus II software**





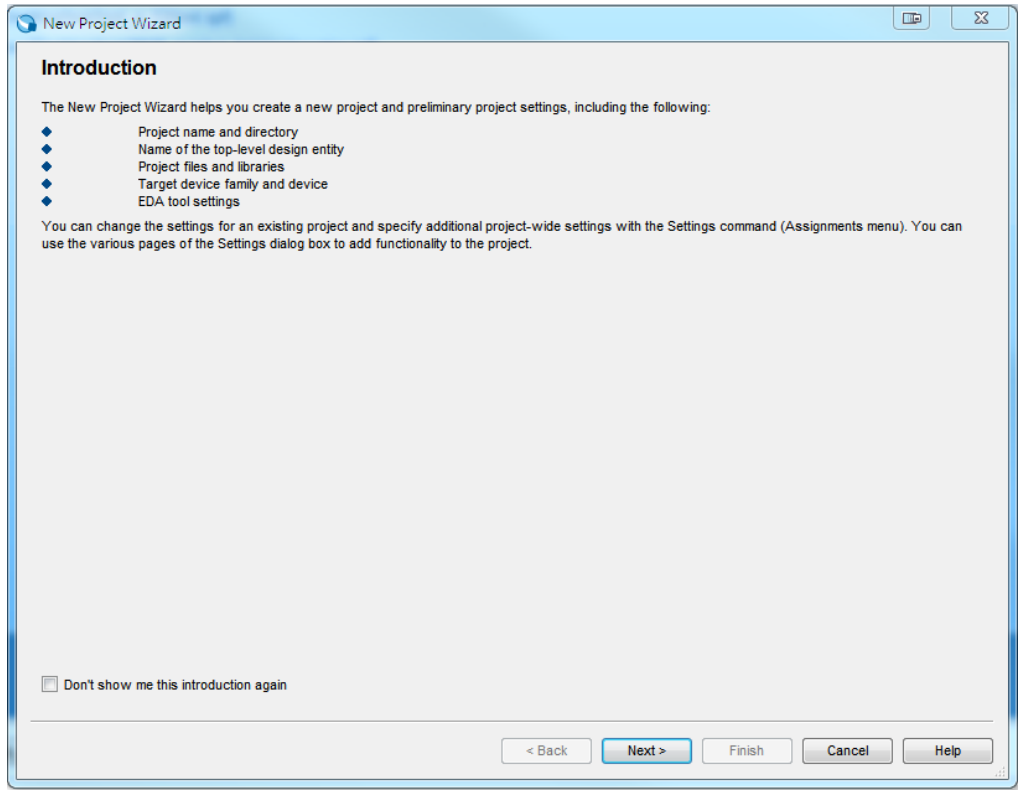
Quartus II Tutorial (2/10)

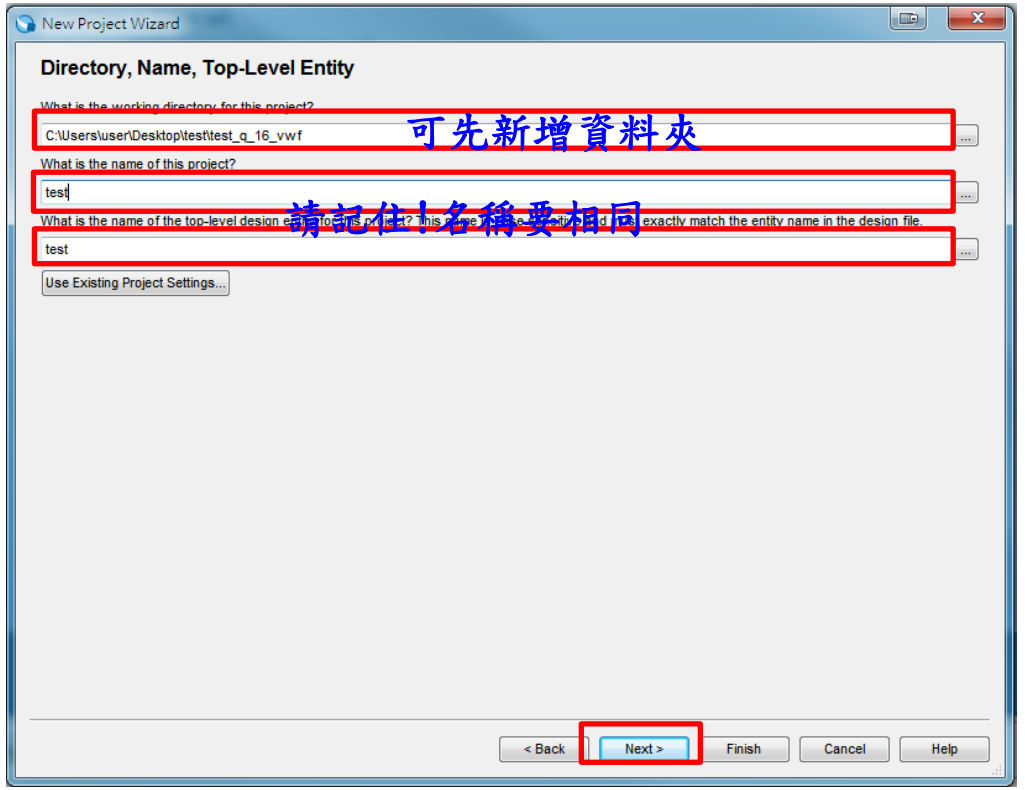
- **Create a New Project –**
  - **Open New Project Wizard (File → New Project Wizard…)**



Quartus II Tutorial (3/10)

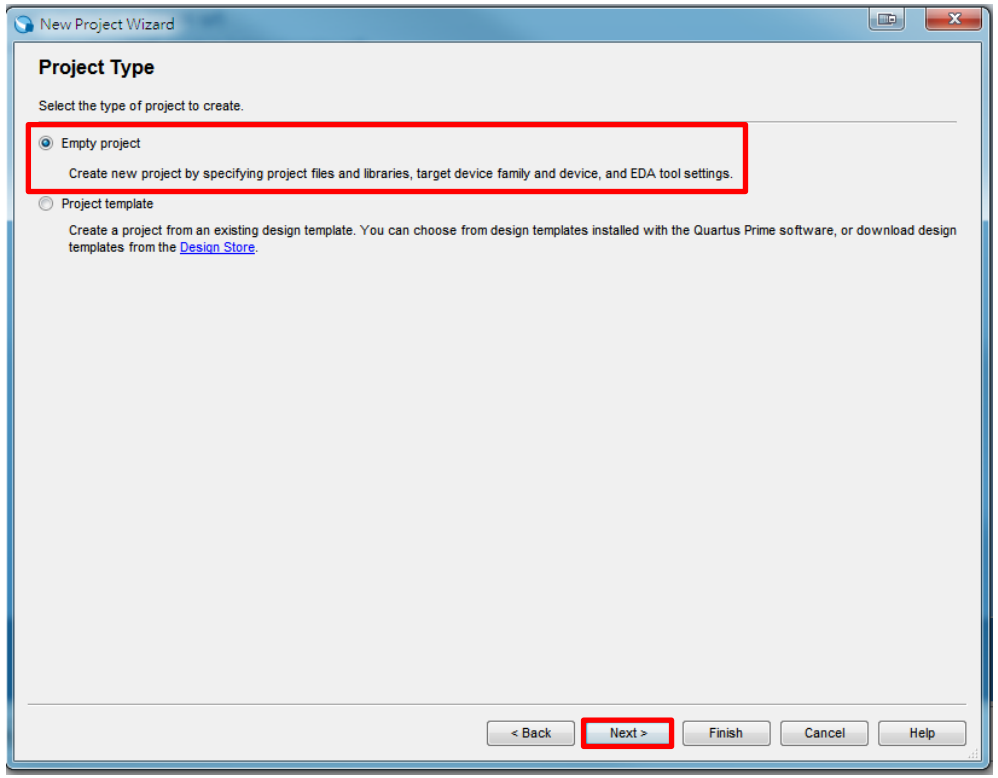
- **Specify the working directory and the name of the project**

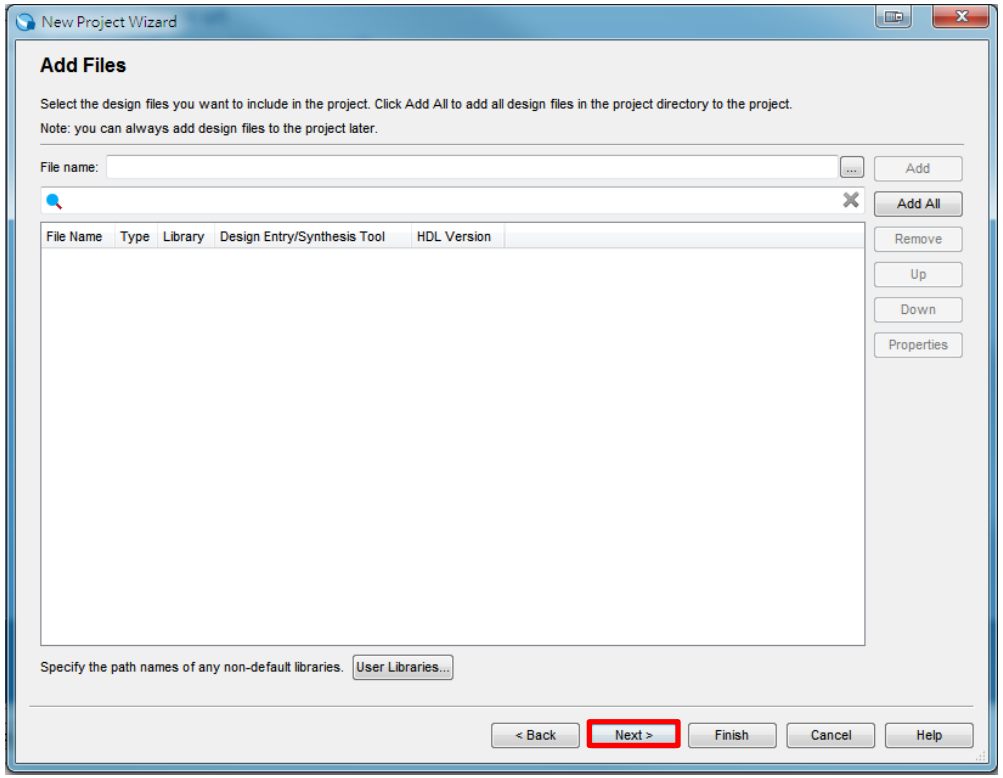




Quartus II Tutorial (4/10)

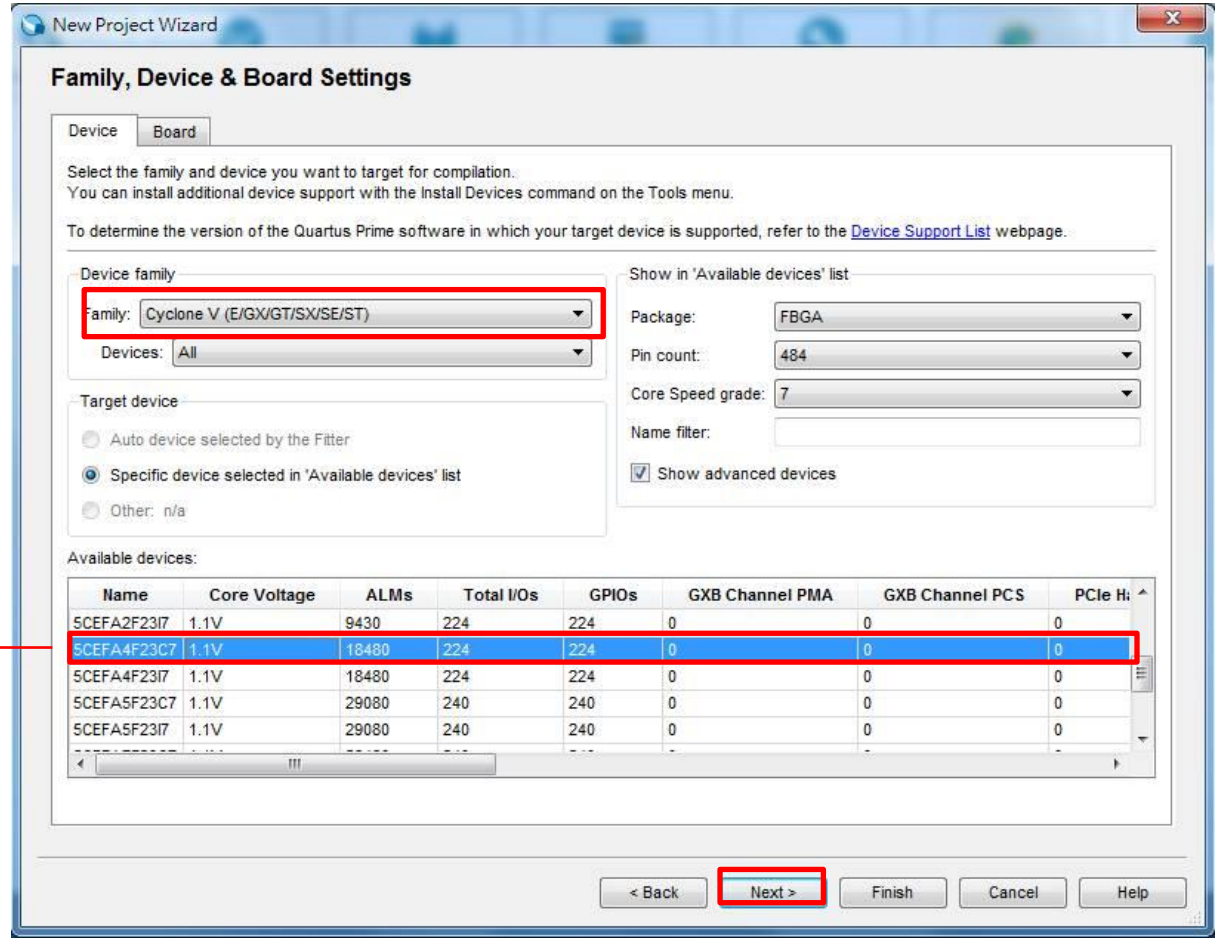
- Select “Empty project”. Then, click “Next”.
- Select design files. Or click “Next” to skip this step.





Quartus II Tutorial (5/10)

- **Specify device settings - (DE0-CV Device family are used). Click "Next."**



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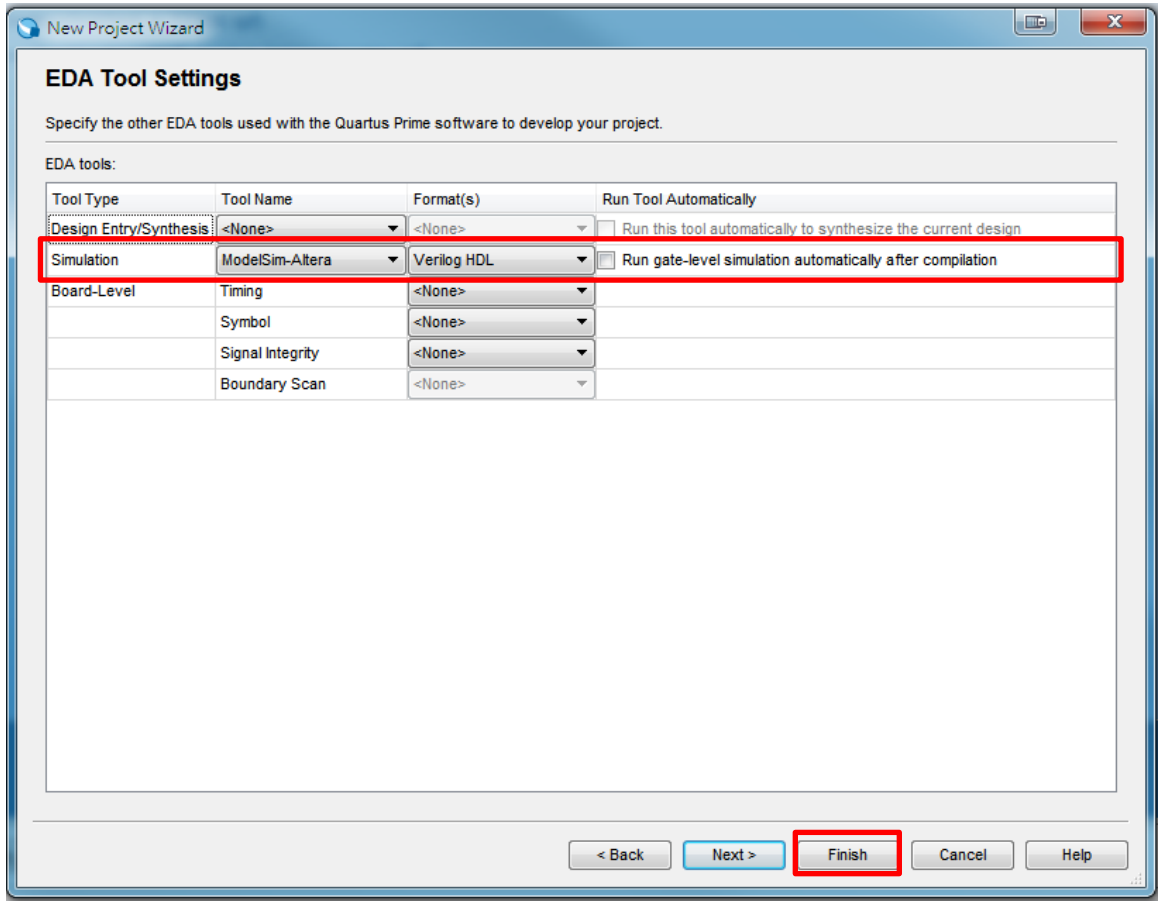
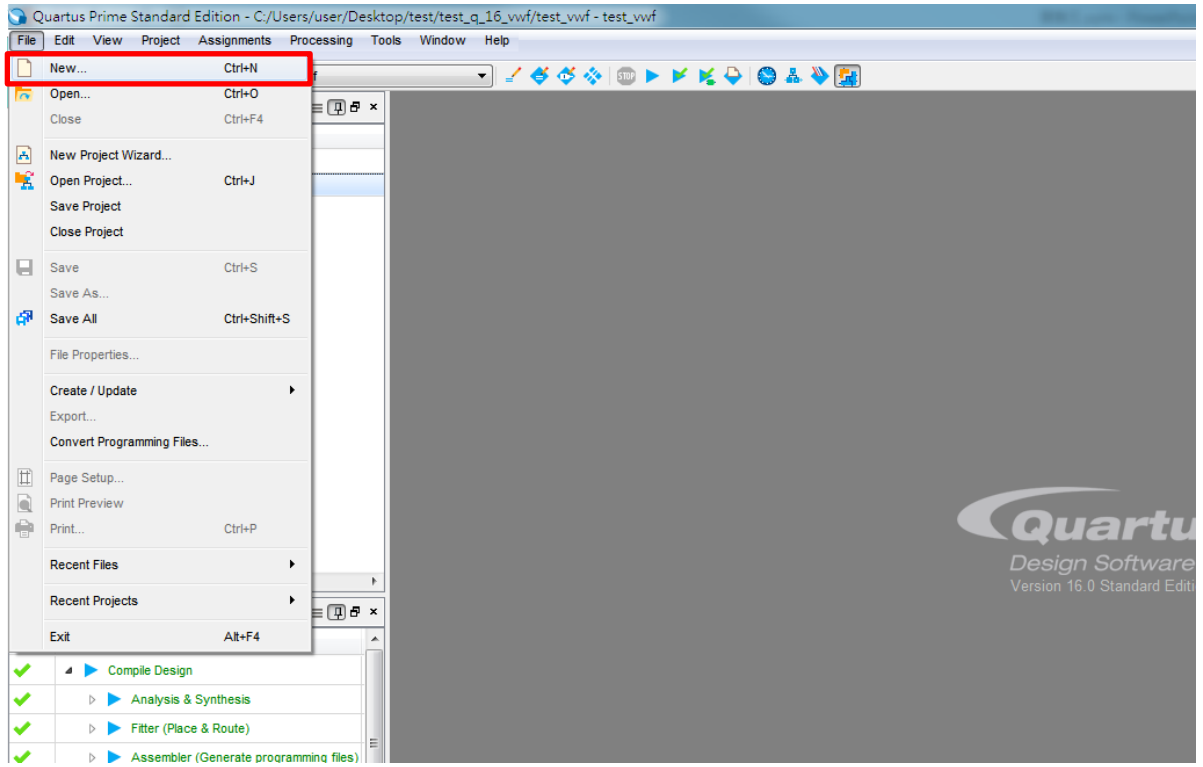
Quartus II Tutorial (6/10)

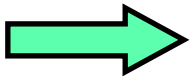
- **Specify EDA Tool – (Modelsim-Altera is selected for simulation). Click "Finish."**

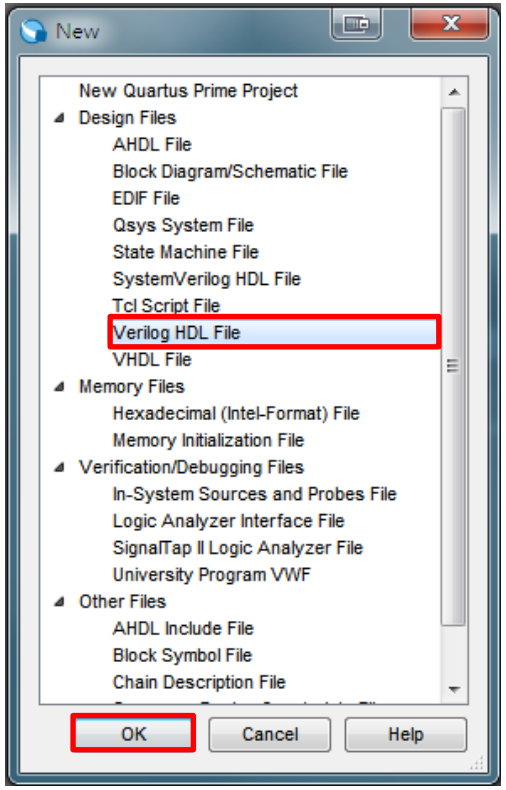


Quartus II Tutorial (7/10)

- **Edit a new file by opening a Verilog HDL file**
  - **(File → New → Verilog HDL File → OK)**







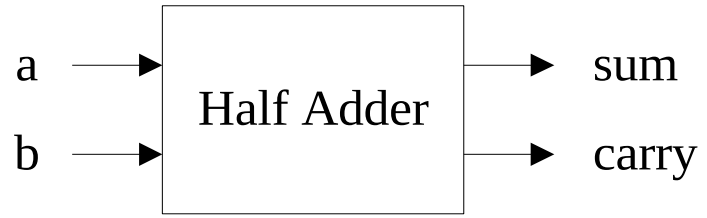
Quartus II Tutorial (8/10)

- **Write Verilog code**

Top module name 一定要跟 Project name 相同 !!

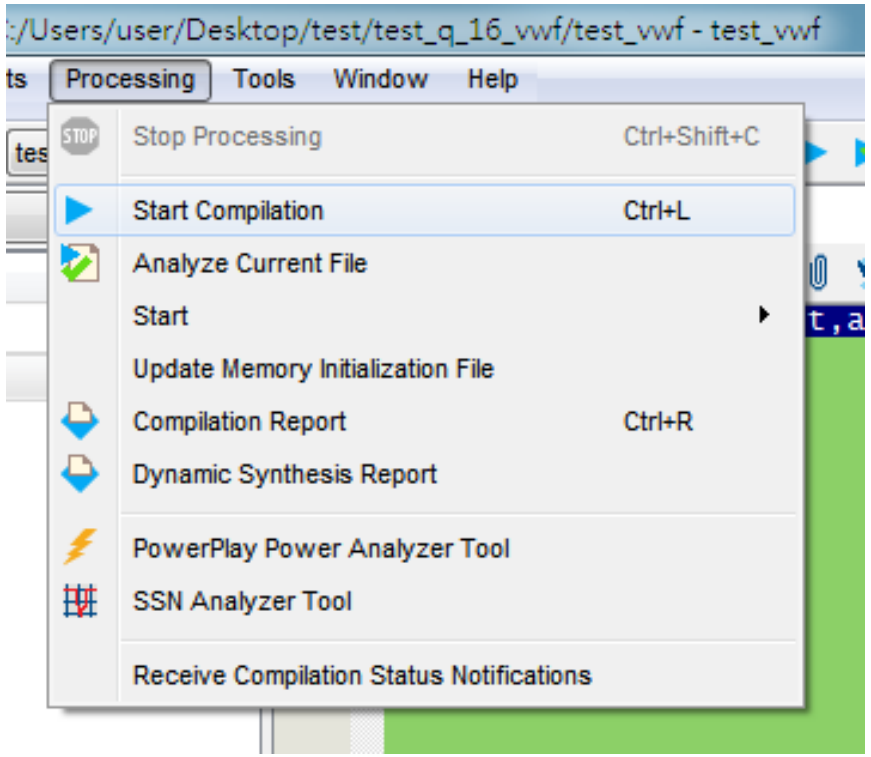
```
1: //File Name：Half_Adder.v
2: module    Half_Adder(a, b, sum, carry);
3: input     a, b;
4: output    sum, carry;
5:
6: assign sum = a ^ b;
7: assign carry = a & b;
8:
9: endmodule
```

輸入(input)		輸出(output)	
被加數(a)	加數(b)	和(sum)	進位(carry)
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1



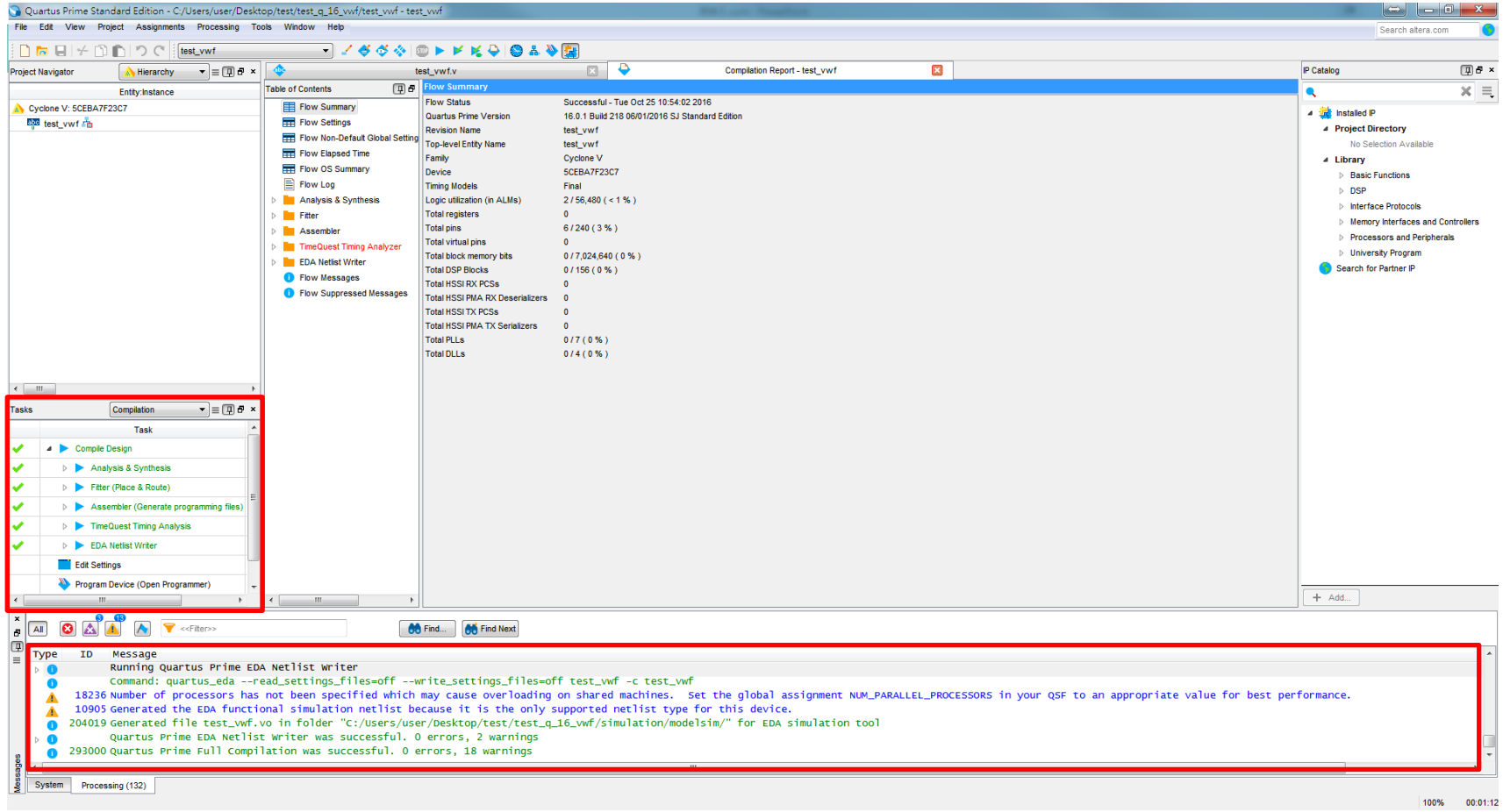
Quartus II Tutorial (9/10)

- **Compiling the Designed Circuit　(synthesis 合成)**
  - **(Processing → Start Compilation)**



Quartus II Tutorial (10/10)

- **Successful compilation**

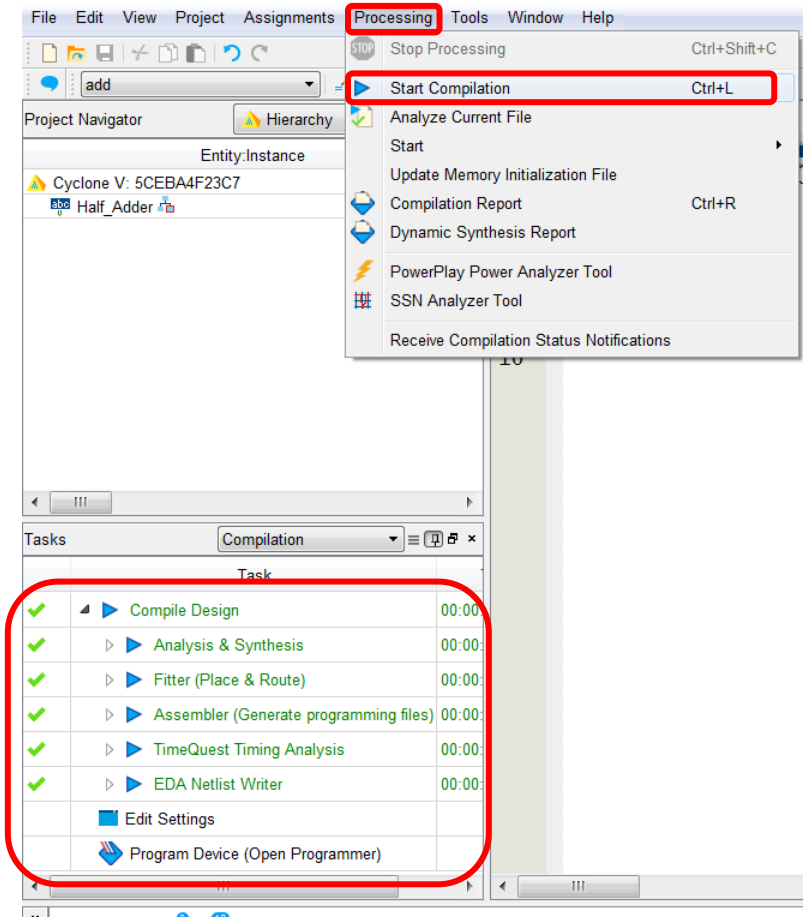


Programming DE0-CV (1/13)

```
 1   module   Half_Adder(a, b, sum, carry);
 2
 3   input a,b;
 4   output   sum, carry;
 5
 6   and(carry,a,b);
 7   xor(sum,a,b);
 8
 9   endmodule
10
```

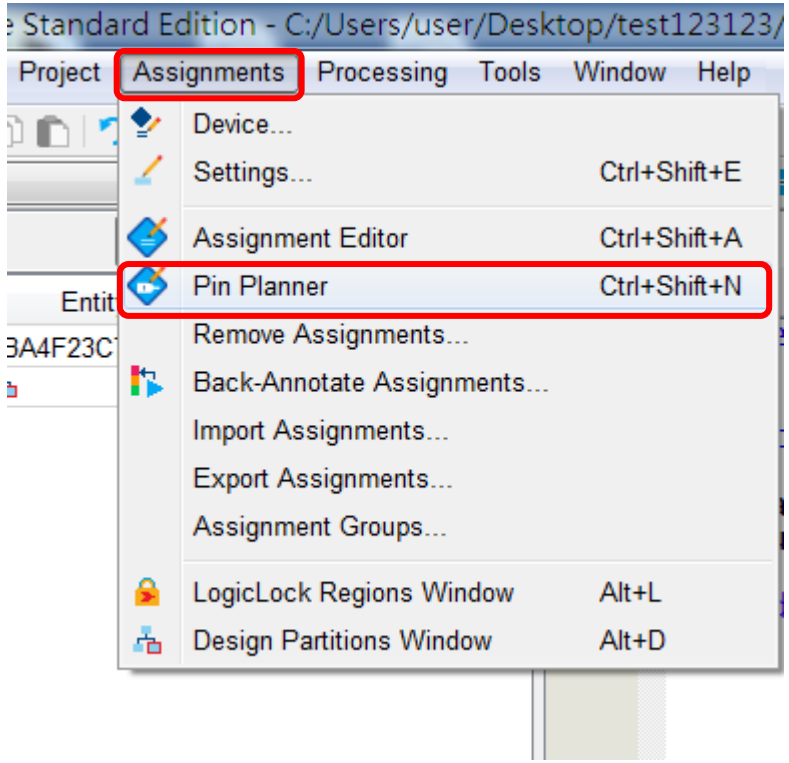
Programming DE0-CV (2/13)

- Start compilation



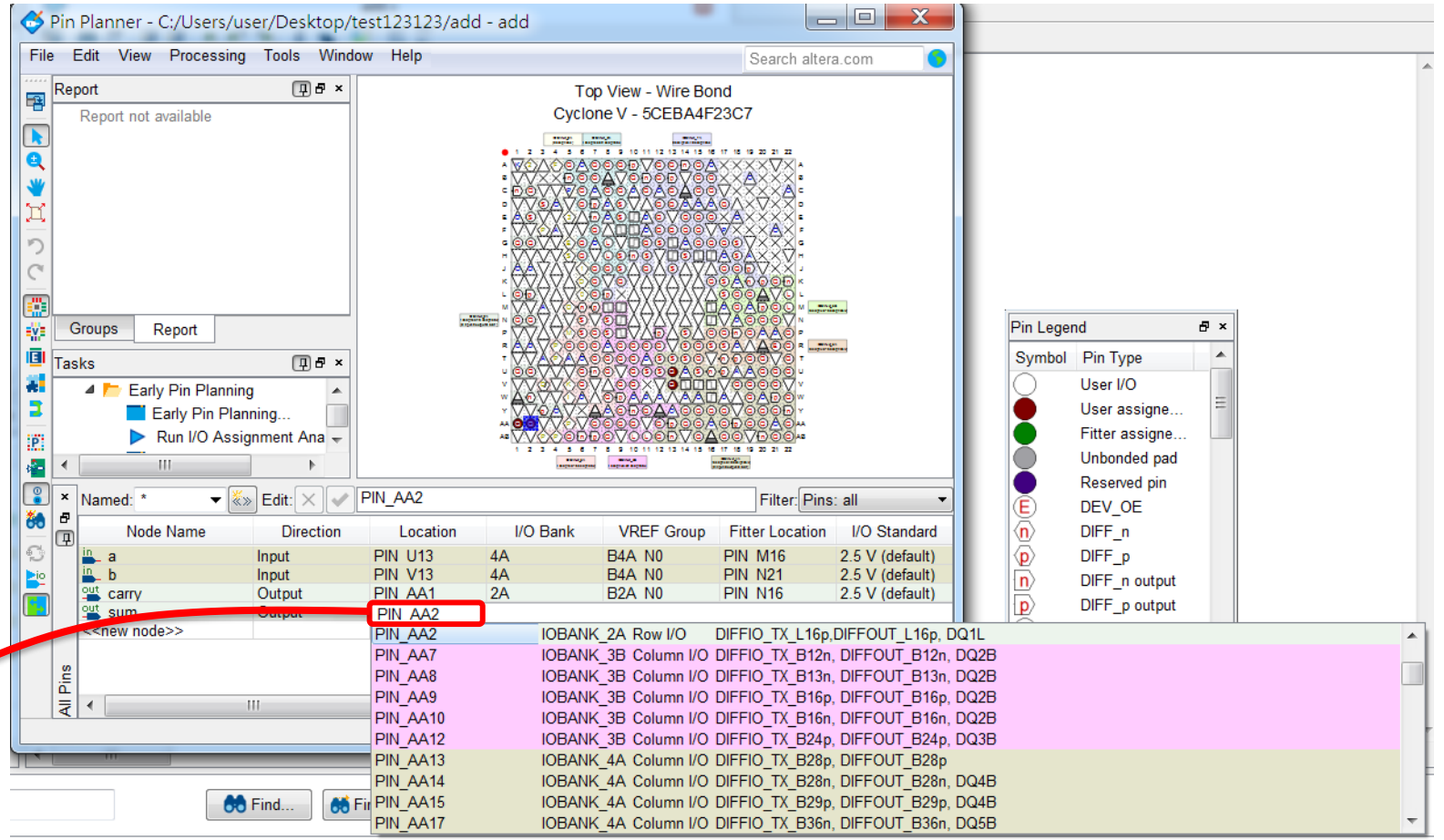
Programming DE0-CV (3/13)

- Open Pin Planner



Programming DE0-CV (4/13)

- Pin assignment



Double click

Programming DE0-CV (5/13)

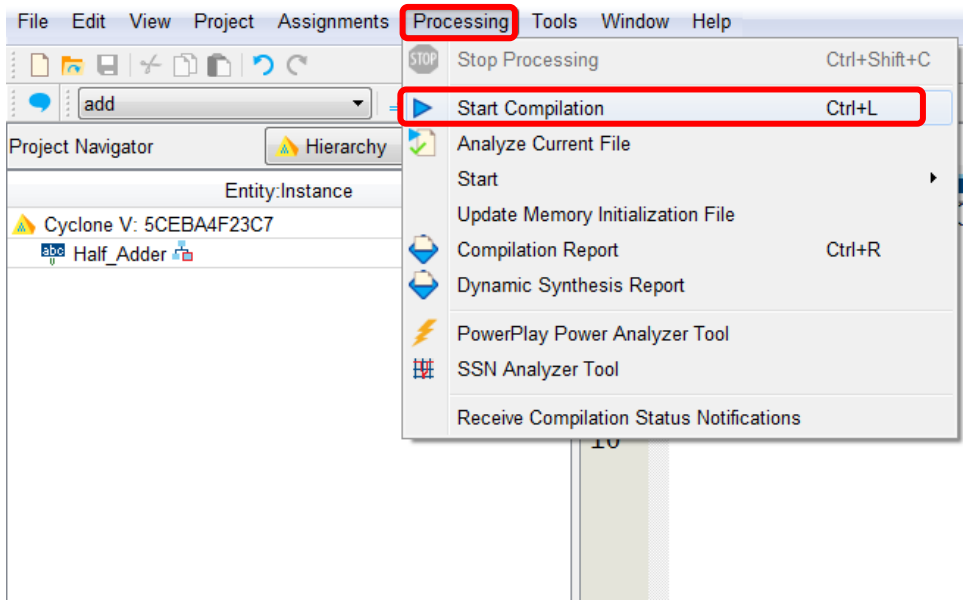
- Assign pin location to all inputs and outputs

Node Name	Direction	Location	I/O Bank	VREF Group	Fitter Location	I/O Standard
in a	Input	PIN U13 SW0	4A	B4A N0	PIN M16	2.5 V (default)
in b	Input	PIN V13 SW1	4A	B4A N0	PIN N21	2.5 V (default)
out carry	Output	PIN AA1 LED1	2A	B2A N0	PIN N16	2.5 V (default)
out sum	Output	PIN AA2 LED0				

  - Please refer to DE0_pin.xls for pin location assignment

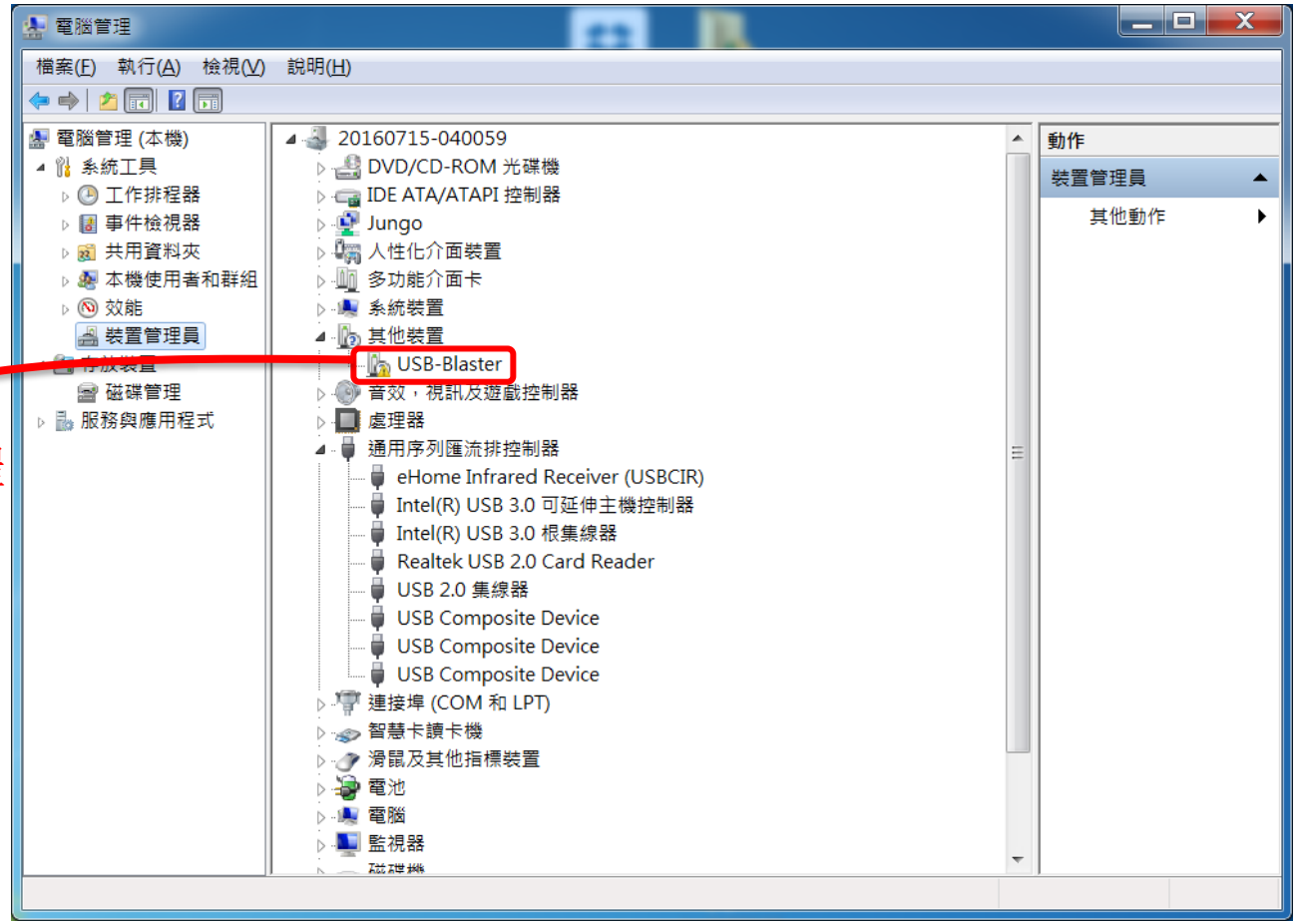
Programming DE0-CV (6/13)

- Start compilation

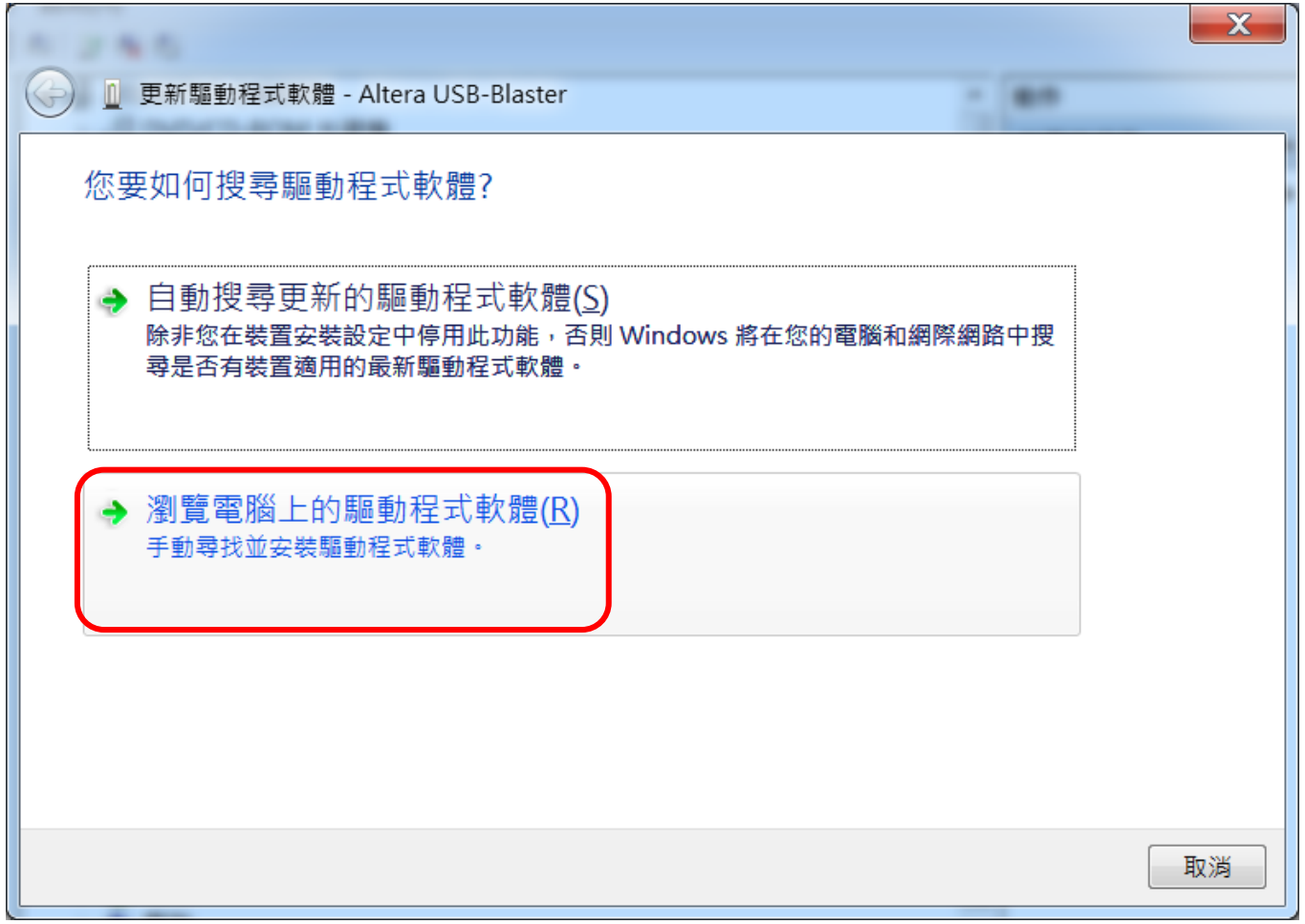


Programming DE0-CV (7/13)

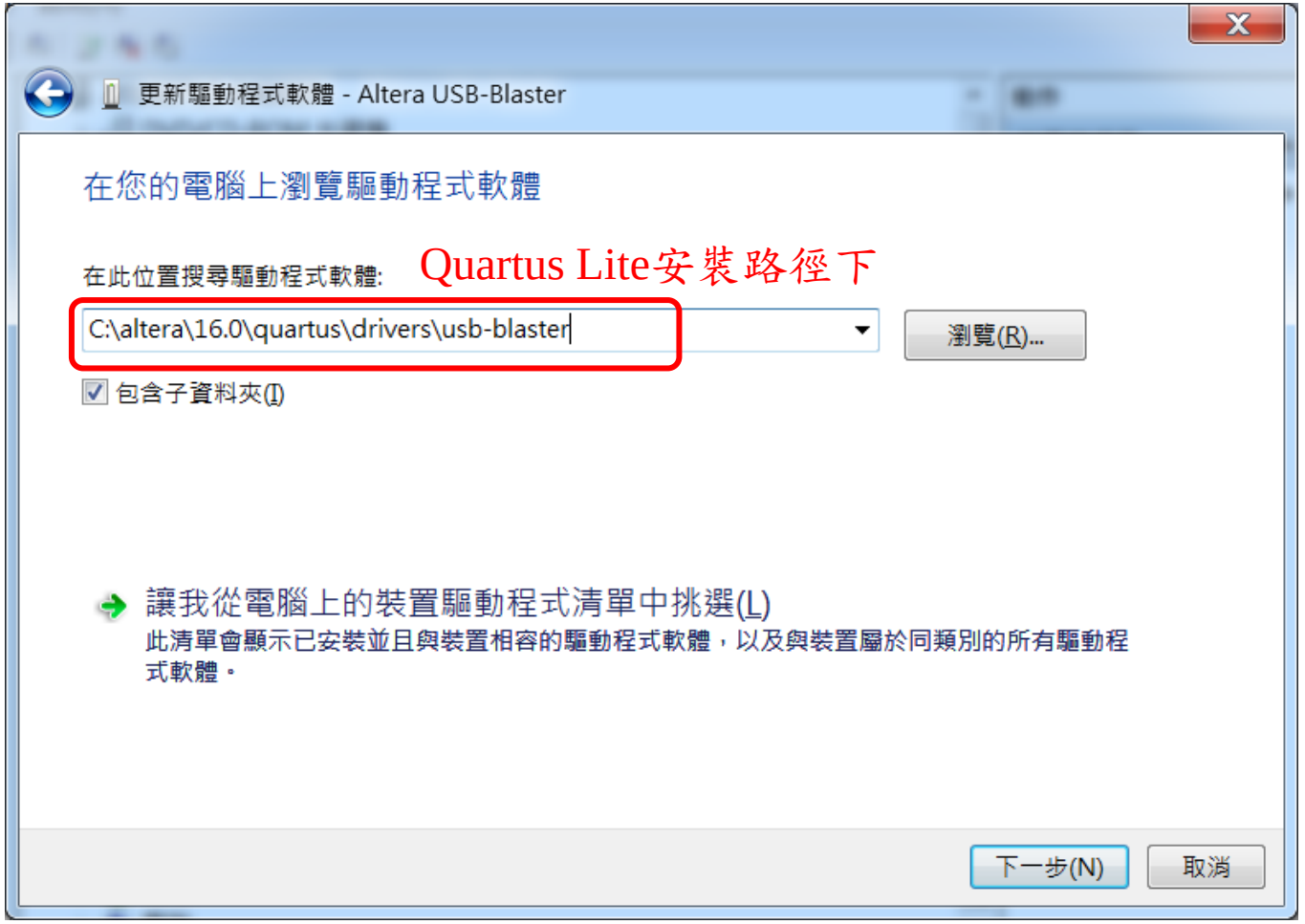
右鍵選更新驅動程式軟體



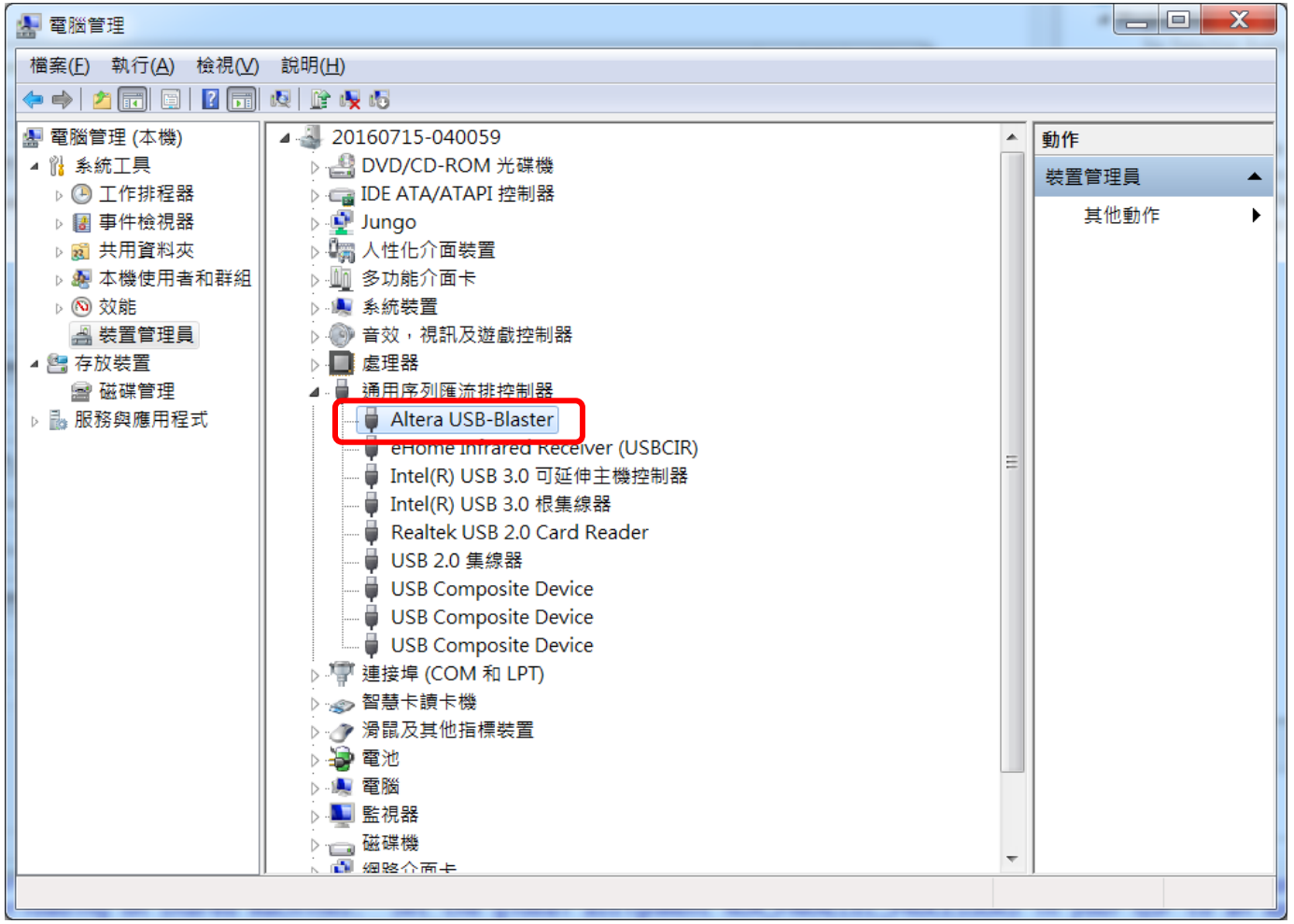
Programming DE0-CV (8/13)



Programming DE0-CV (9/13)

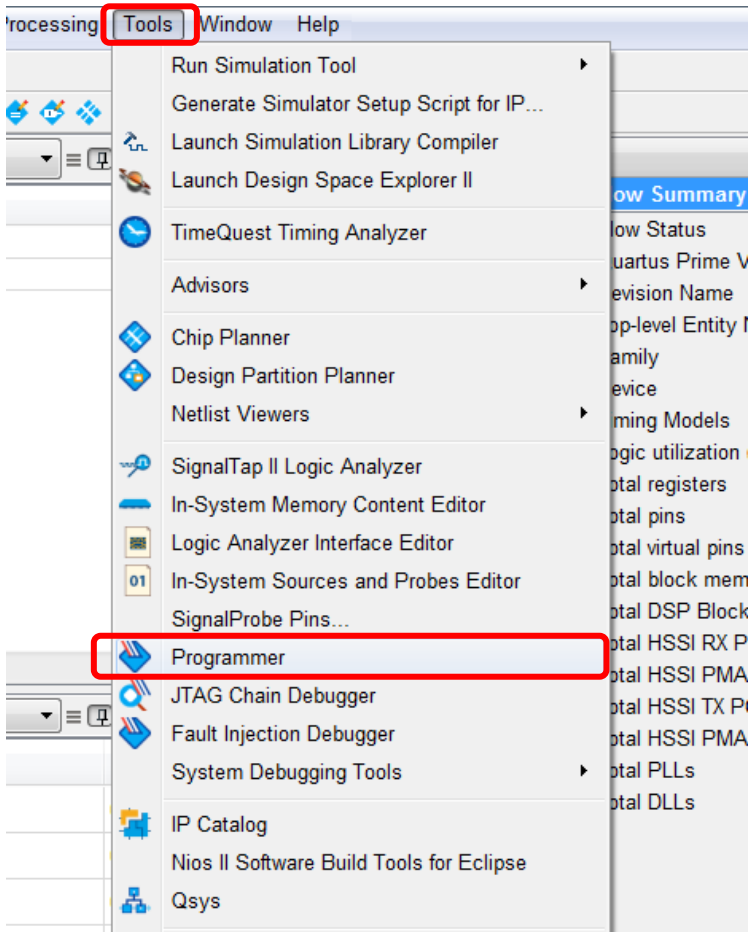


Programming DE0-CV (10/13)



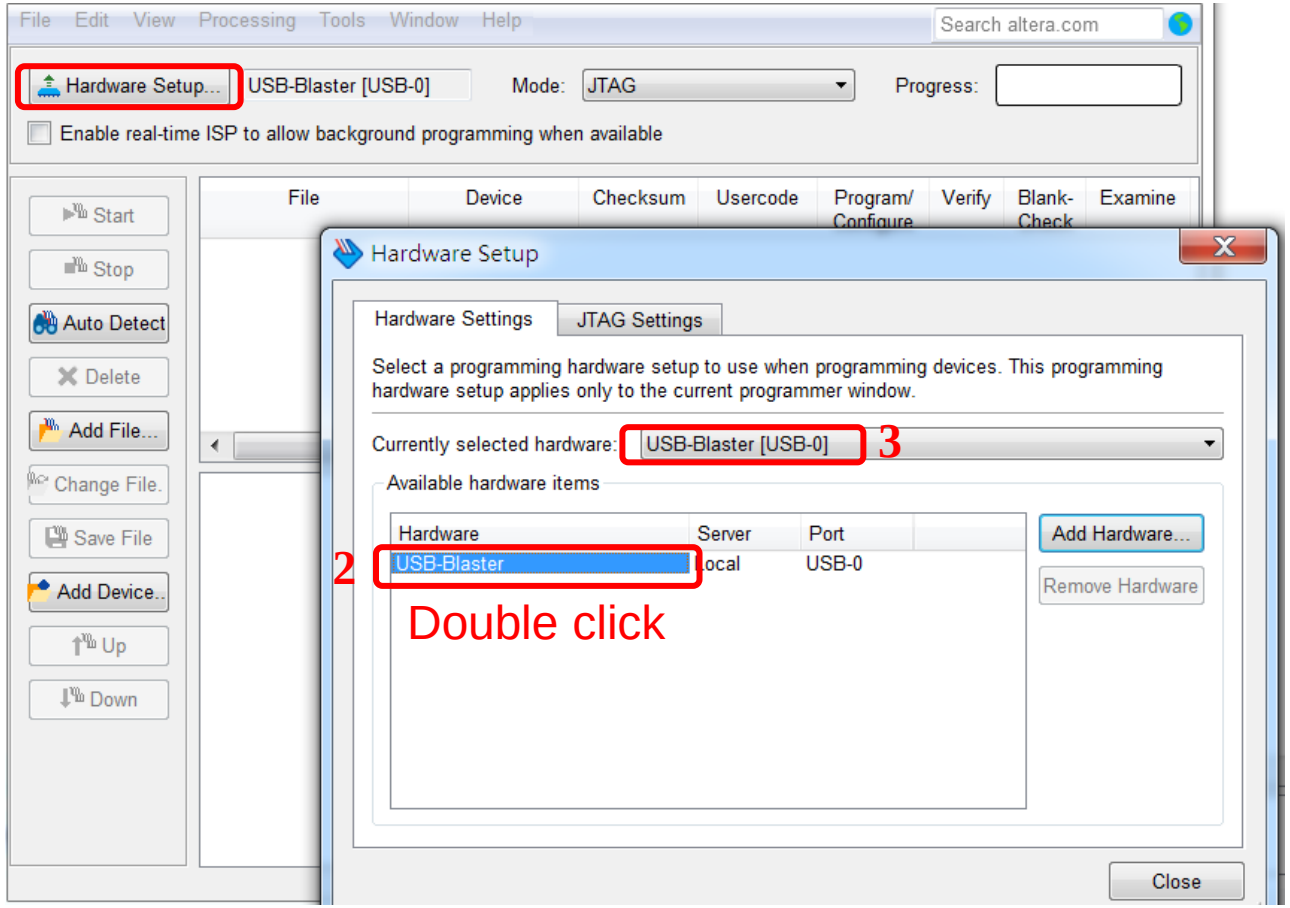
Programming DE0-CV (11/13)

- Programming device



Programming DE0-CV (12/13)

- Hardware setup: add USB-Blaster



Programming DE0-CV (13/13)

- Programming device