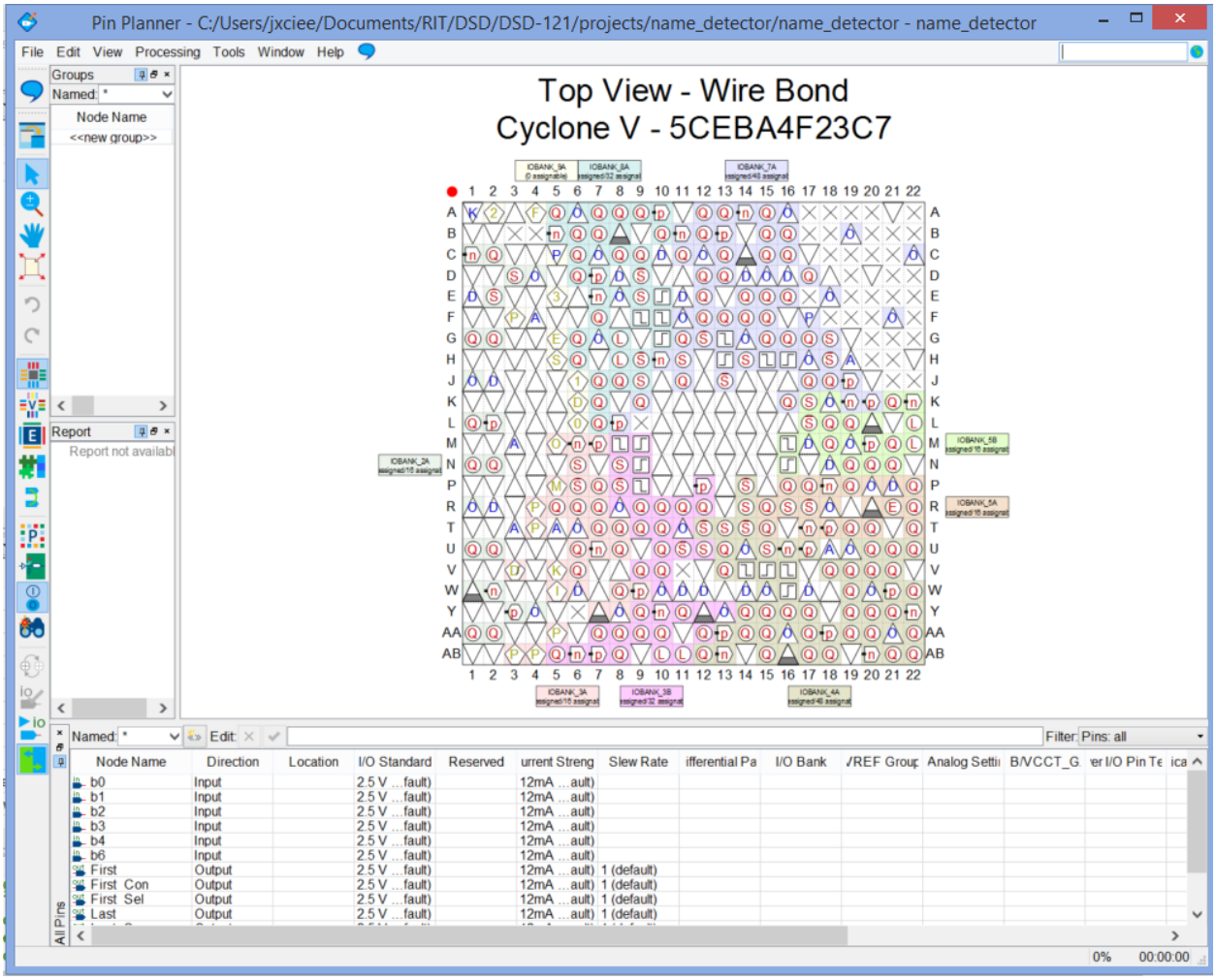
Assigning Pins and Programming in Quartus Prime

INTRO:

Every I/O device (switch, LED, etc.) on the Altera DE0-CV board is connected to a pin on the FPGA. In order to use the I/O devices, you must connect your design to the pins of the FPGA. This is done using the Pin Planner in Quartus Prime.

ASSIGNING PINS:

1. Compile your design
2. Select Assignments > Pin Planner
3. You should get the following:



4. Consult the file named “DE0-CV Pinout” to find the pin numbers.

5. For example, to connect port a to SW0 (switch 0) you see that this is PIN_U13:

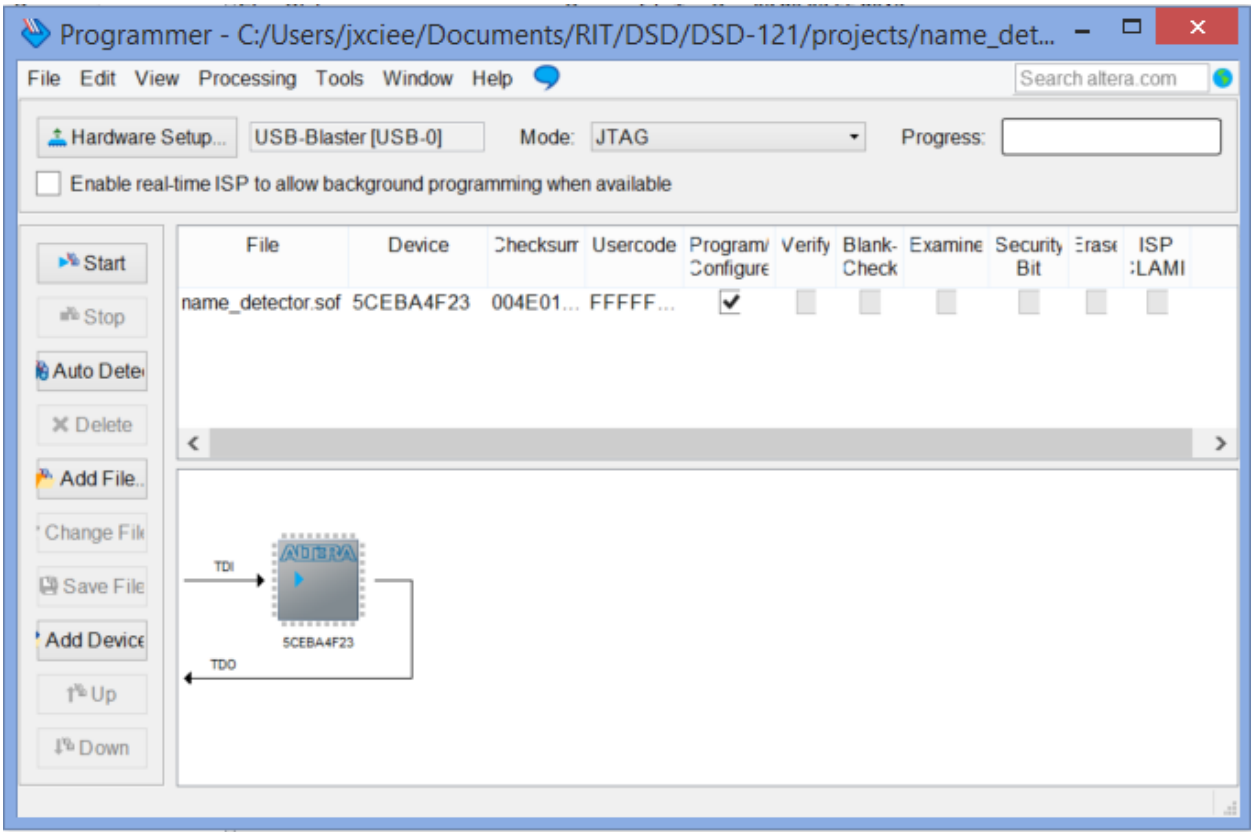
6. Signal Name	FPGA Pin Number	Description
KEY0	**PIN_U7**	**Push-button[0]**
KEY1	**PIN_W9**	**Push-button[1]**
KEY2	**PIN_M7**	**Push-button[2]**
KEY3	**PIN_M6**	**Push-button[3]**
SW0	**PIN_U13**	**Slide Switch[0]**
SW1	**PIN_V13**	**Slide Switch[1]**
SW2	**PIN_T13**	**Slide Switch[2]**
SW3	**PIN_T12**	**Slide Switch[3]**
SW4	**PIN_AA15**	**Slide Switch[4]**
SW5	**PIN_AB15**	**Slide Switch[5]**
SW6	**PIN_AA14**	**Slide Switch[6]**
SW7	**PIN_AA13**	**Slide Switch[7]**
SW8	**PIN_AB13**	**Slide Switch[8]**
SW9	**PIN_AB12**	**Slide Switch[9]**

7. In the Pin Planner, enter PIN_U13 in the Location column for port b0.

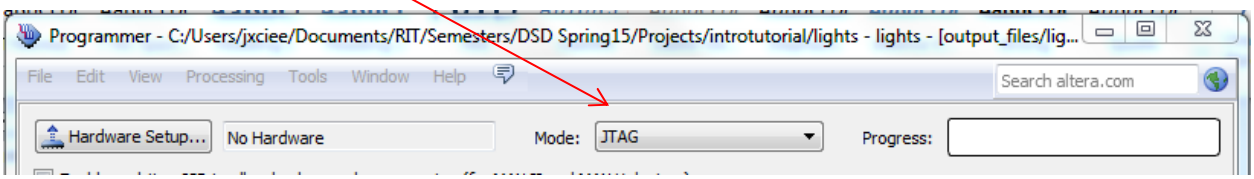
8. Continue for all of the ports
9. Recompile the design

PROGRAMMING THE BOARD:

1. Choose Tools > Programmer from the tool bar
2. The following screen should appear:

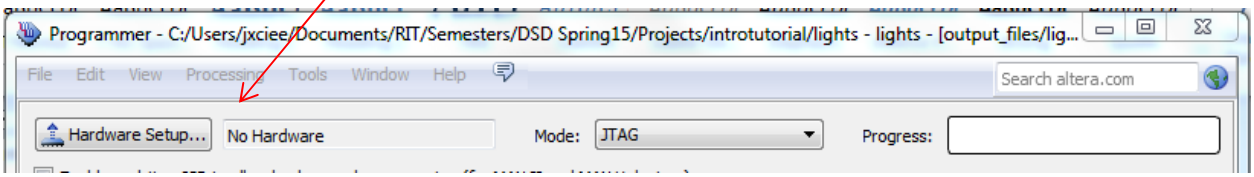


3. There should be a file listed, but sometimes it is not correct. Verify that the file is named <your project>.sof
    a. If there is no file listed or it is not correct, delete the incorrect file and click on Add File…
    b. In the pop-up window open the folder named ‘Output Files’ and select the file named <your_project>.sof.
    c. Click ‘Open’
    d. Verify that the Program/Configure box is checked
    e.
4. Set the mode to ‘JTAG’



5. Verify that the board is connected to the USB cable, the USB cable is plugged into the computer and the board is powered on. Move the Run/Prog switch on the left hand side of the board to the Run (up) position.

6. If no hardware is listed, click on ‘Hardware Setup’



7. In the Hardware Setup pop-up window, ‘USB Blaster’ should be listed. Double click on it so that it appears next to ‘currently selected hardware’. Click on ‘Close’
8. In the programmer window click on ‘Start’.
9. After progress reaches 100%, the board contains the design