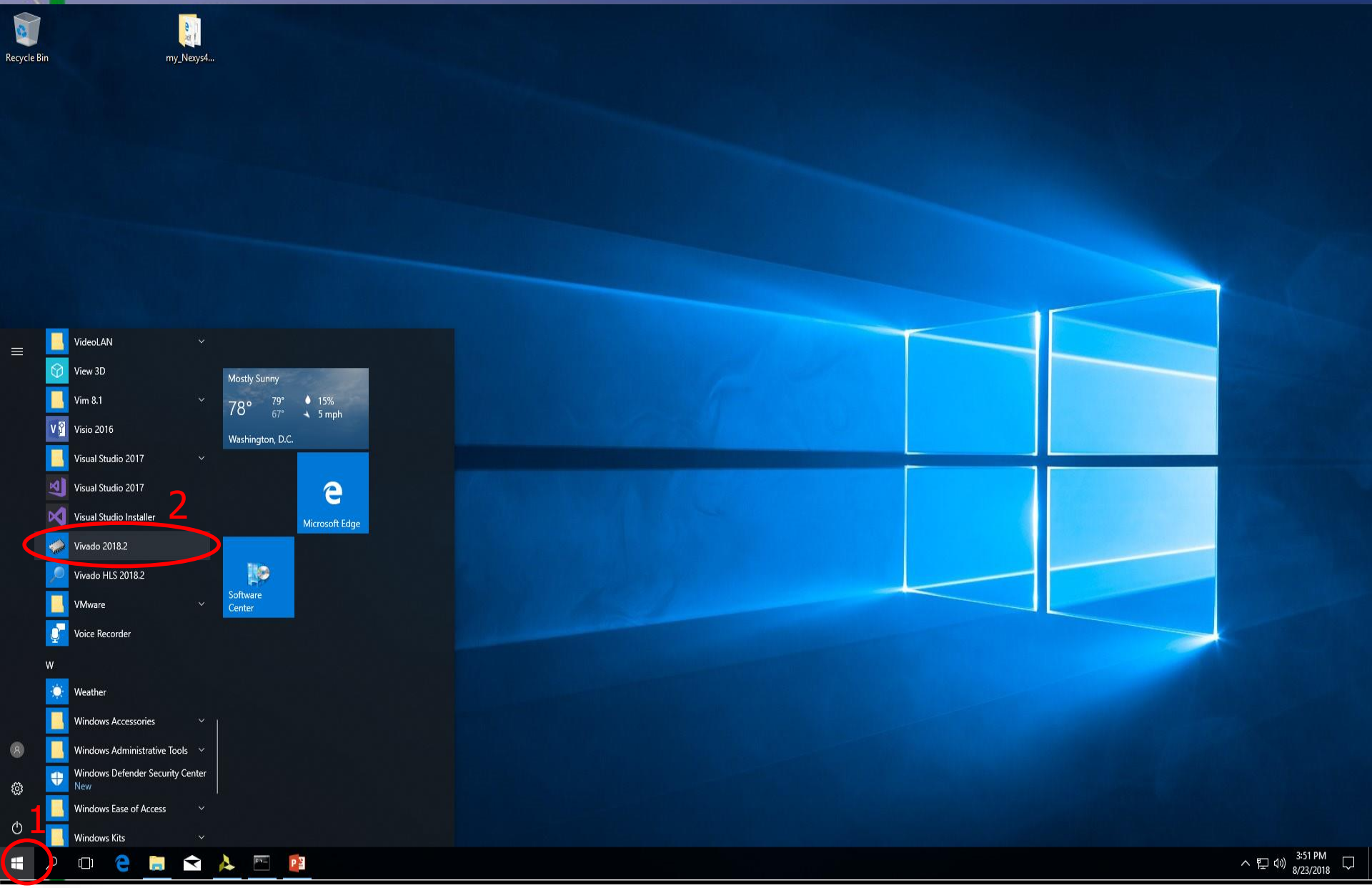
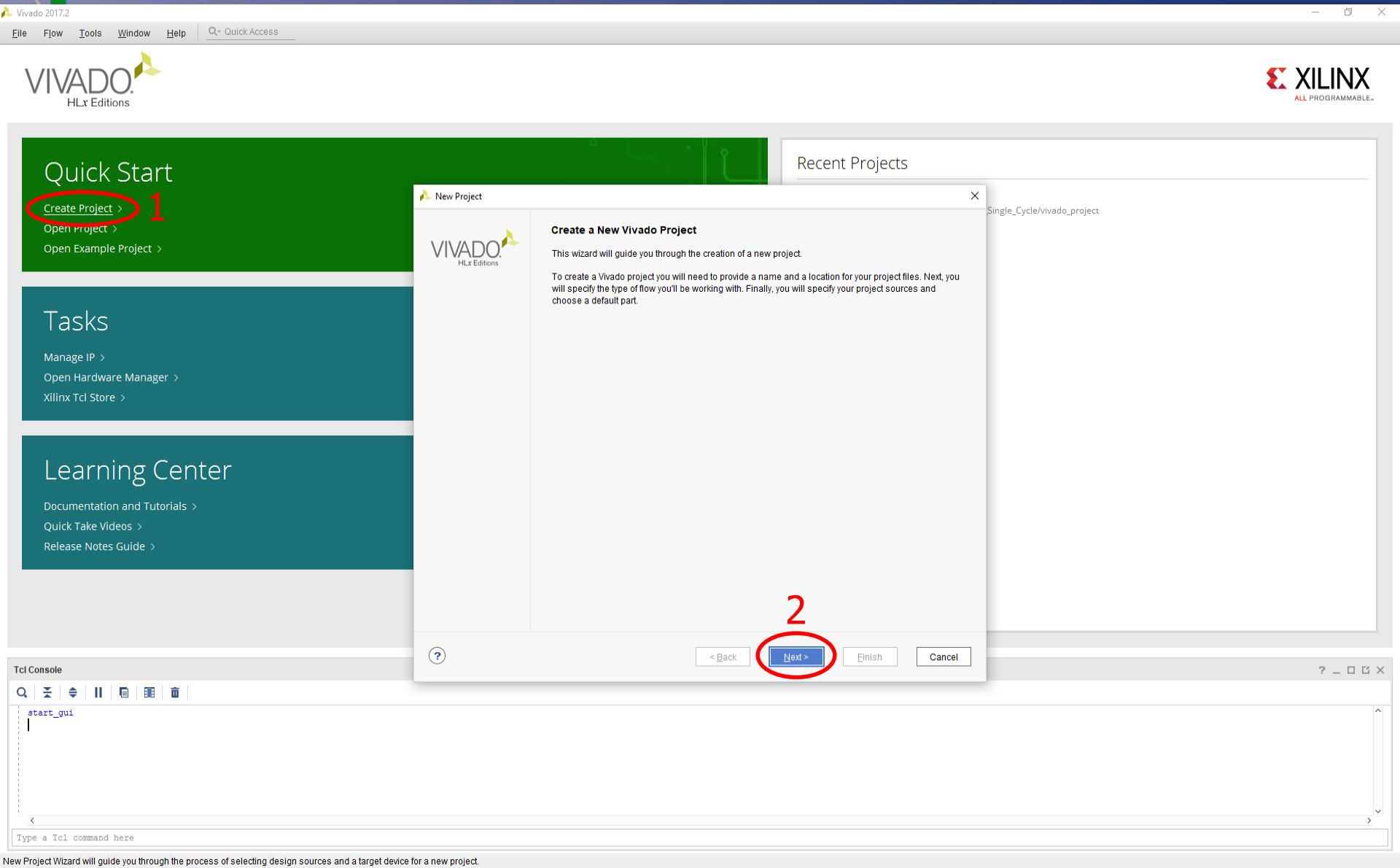
Functional Simulation using Xilinx Vivado 2019.2

1) Create a blank Vivado project
   - Project name
   - Project destination folder
   - Choose default settings
2) Add source files
   - Design file(s)
   - Simulation files
     - Testbench
     - Waveform configuration
3) Run behavioral/functional simulation
   - Simulation settings, e.g., simulation time
   - Edit waveform configuration, e.g., waveform style (digital, analog), add signals, add dividers, signal radix, etc.

Xilinx Vivado 2019.2 – (1) Create Project



Xilinx Vivado 2019.2 – (1) Create Project



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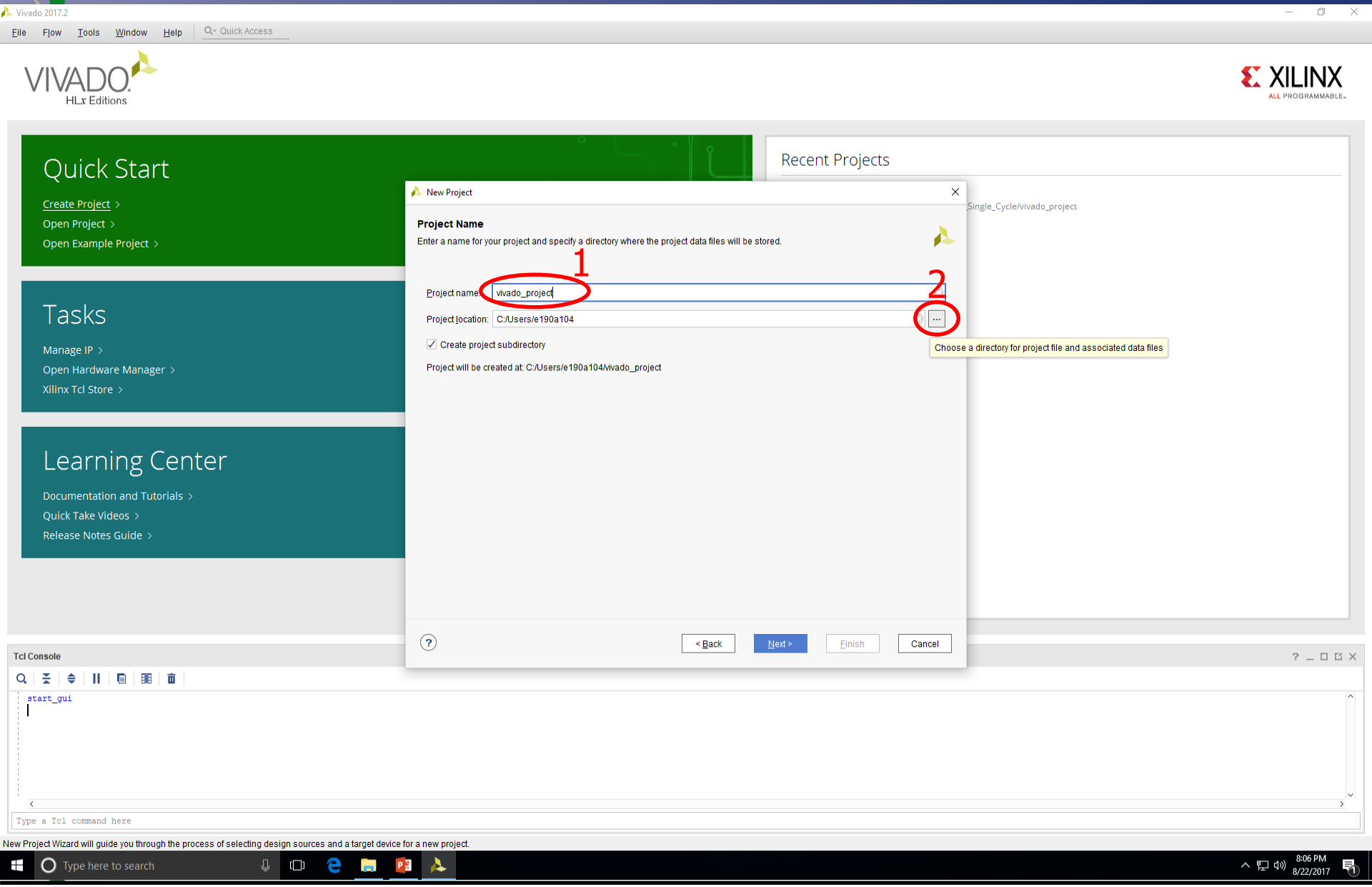

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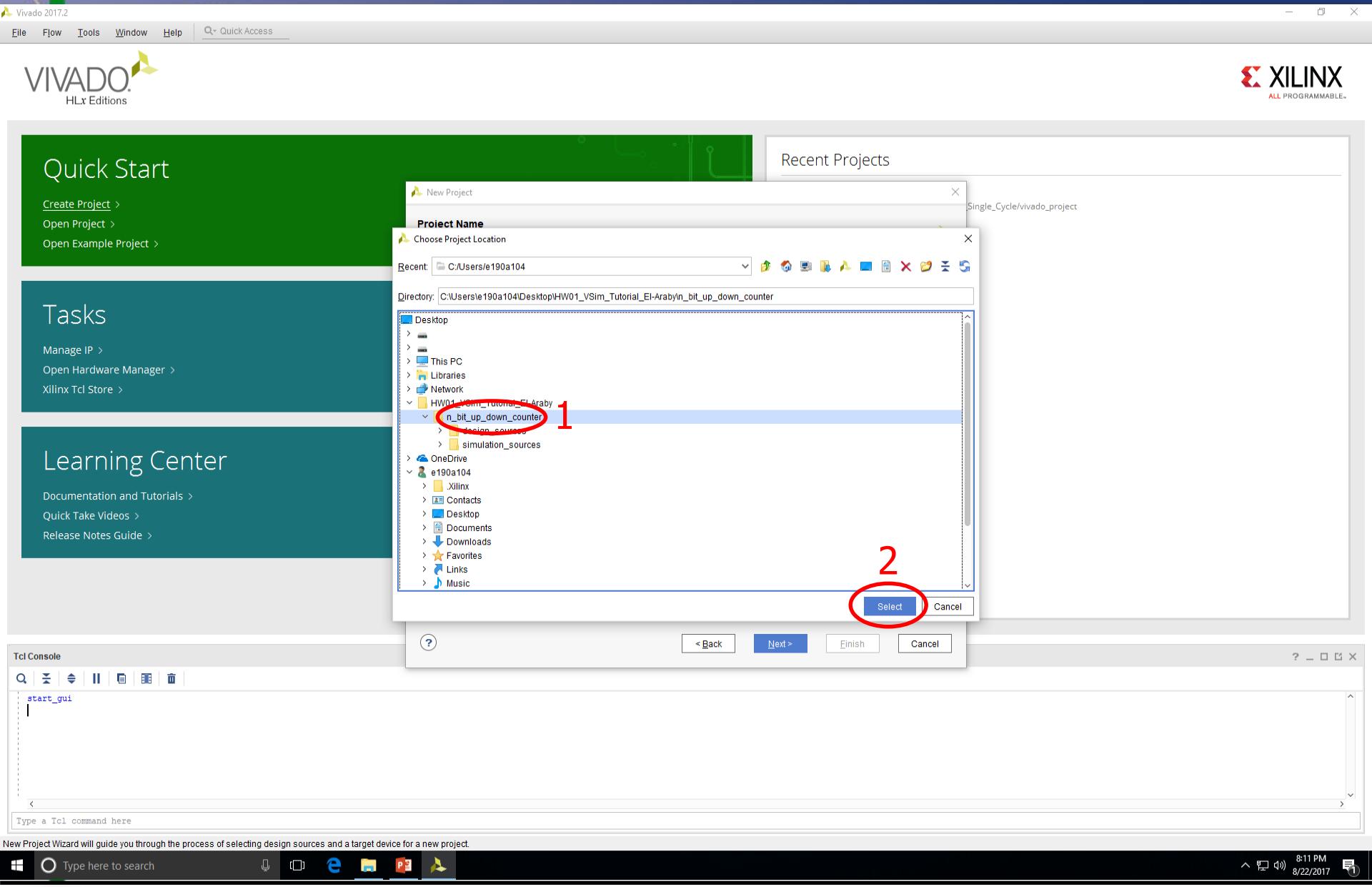

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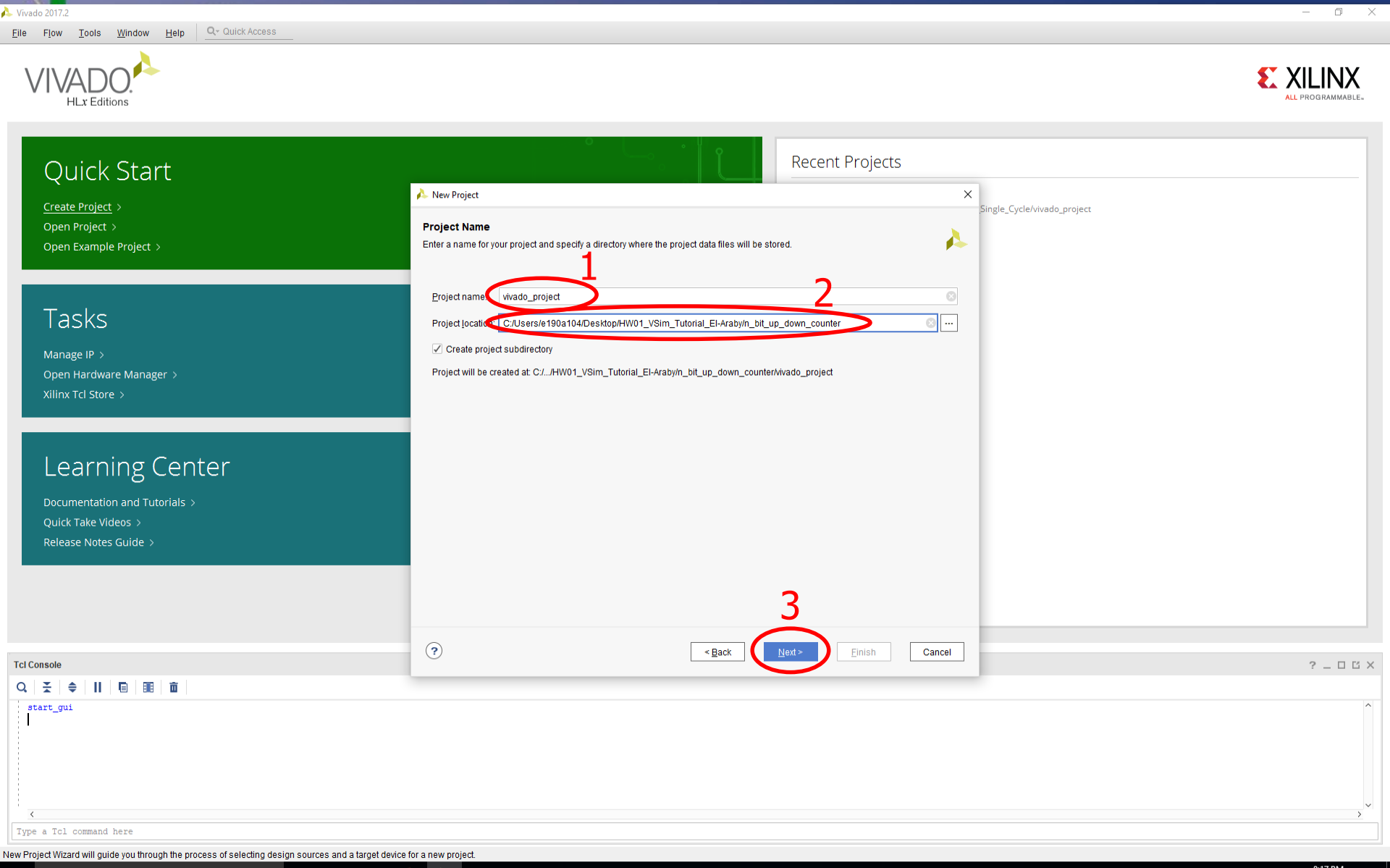

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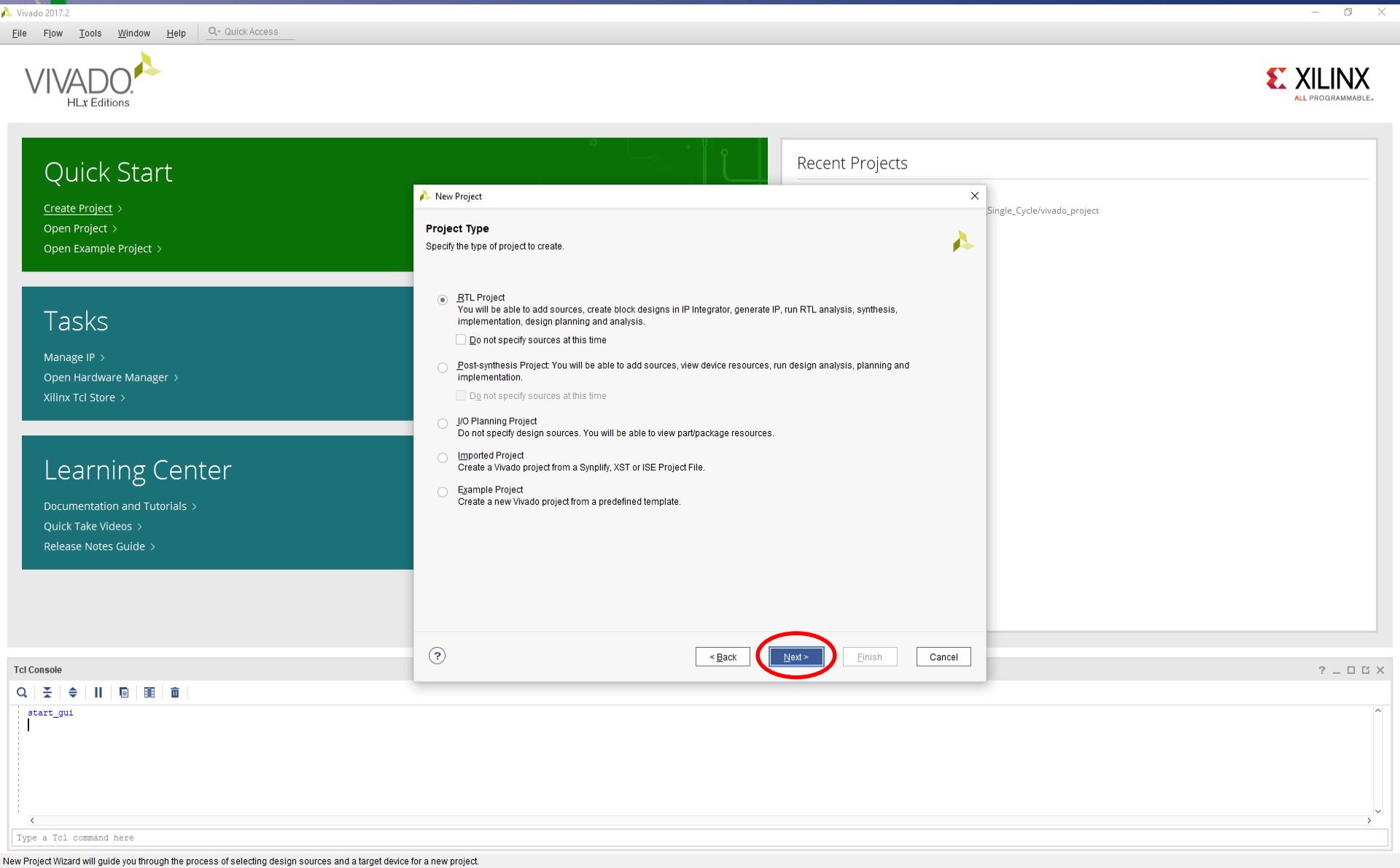

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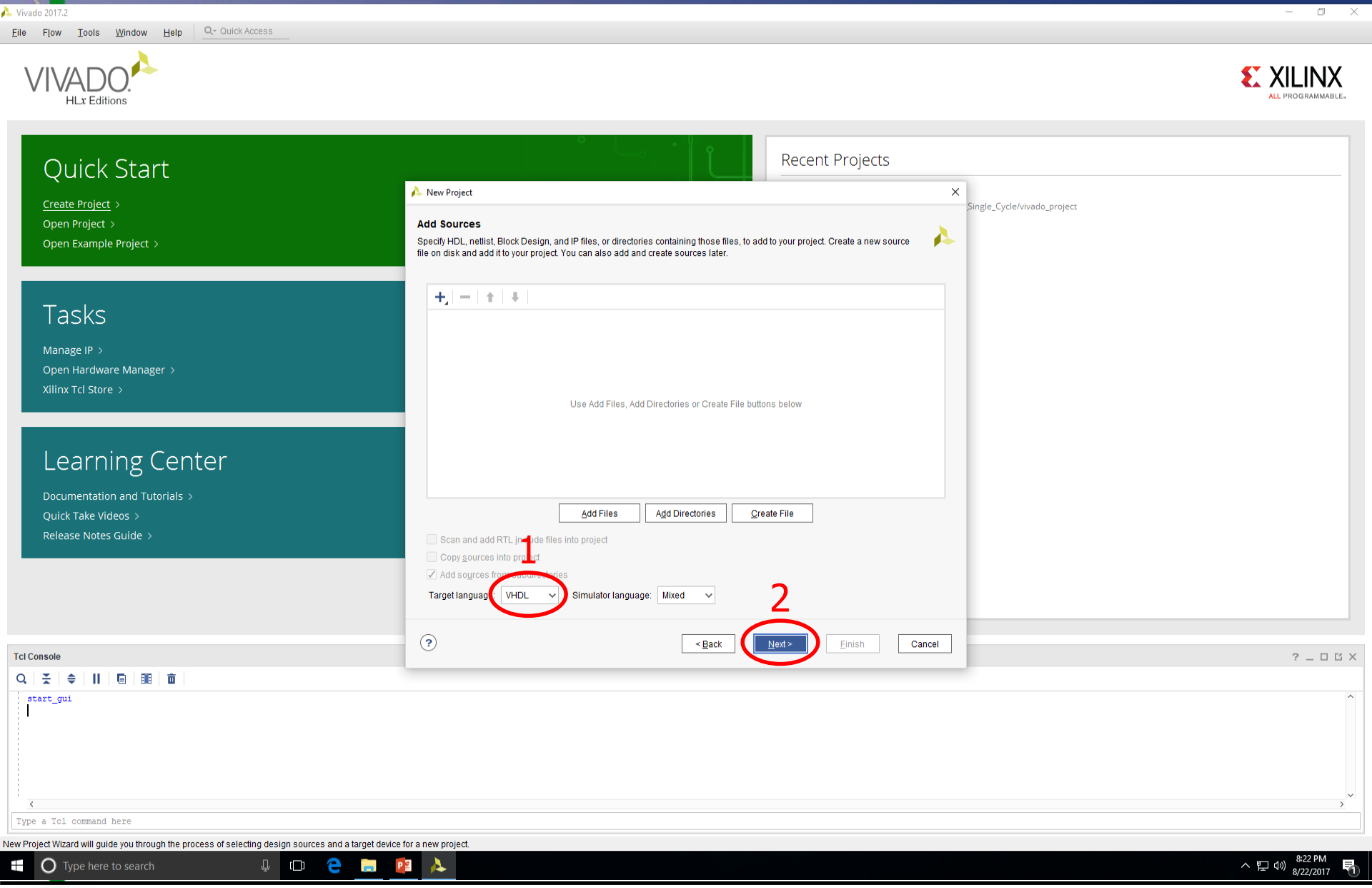

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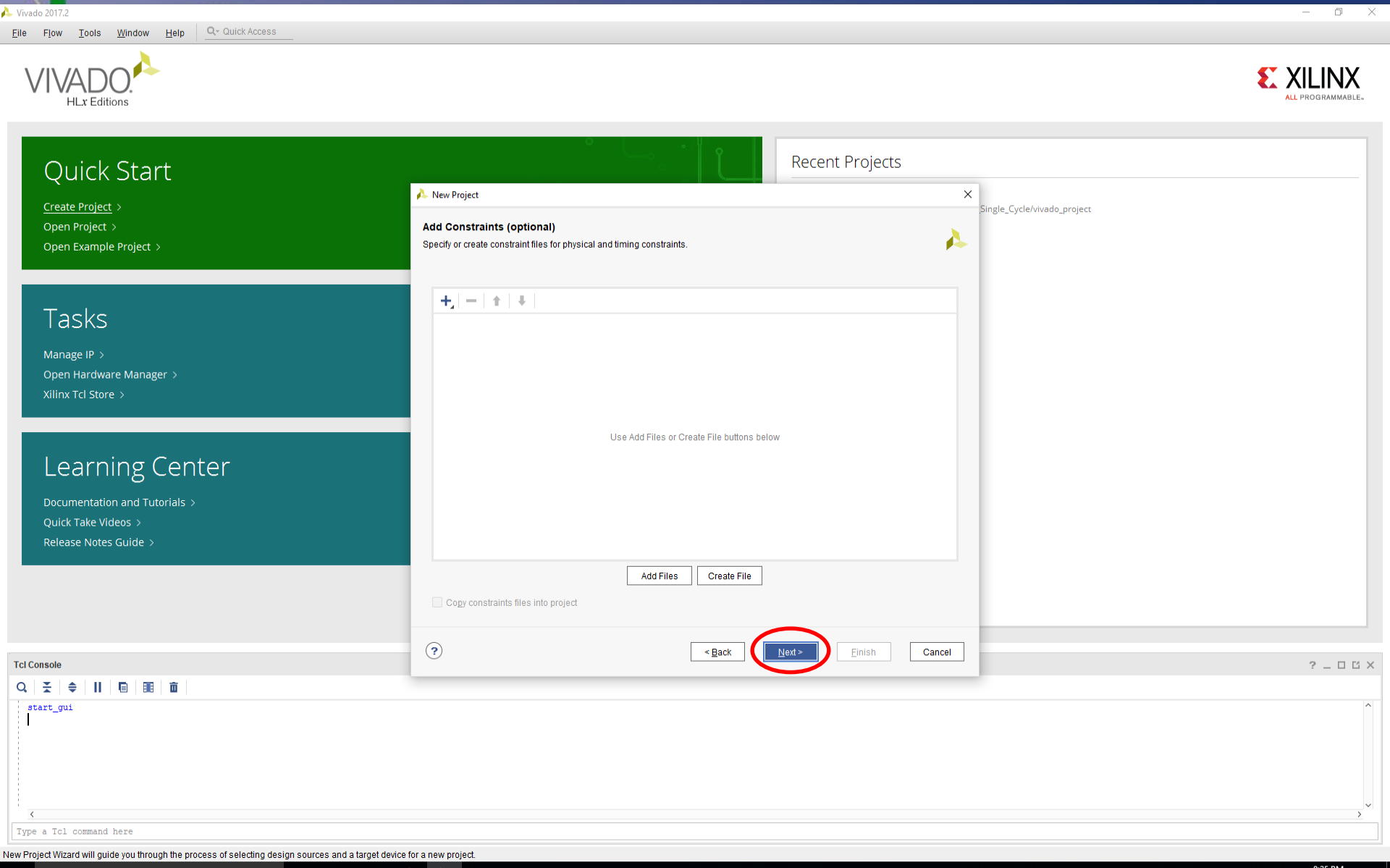

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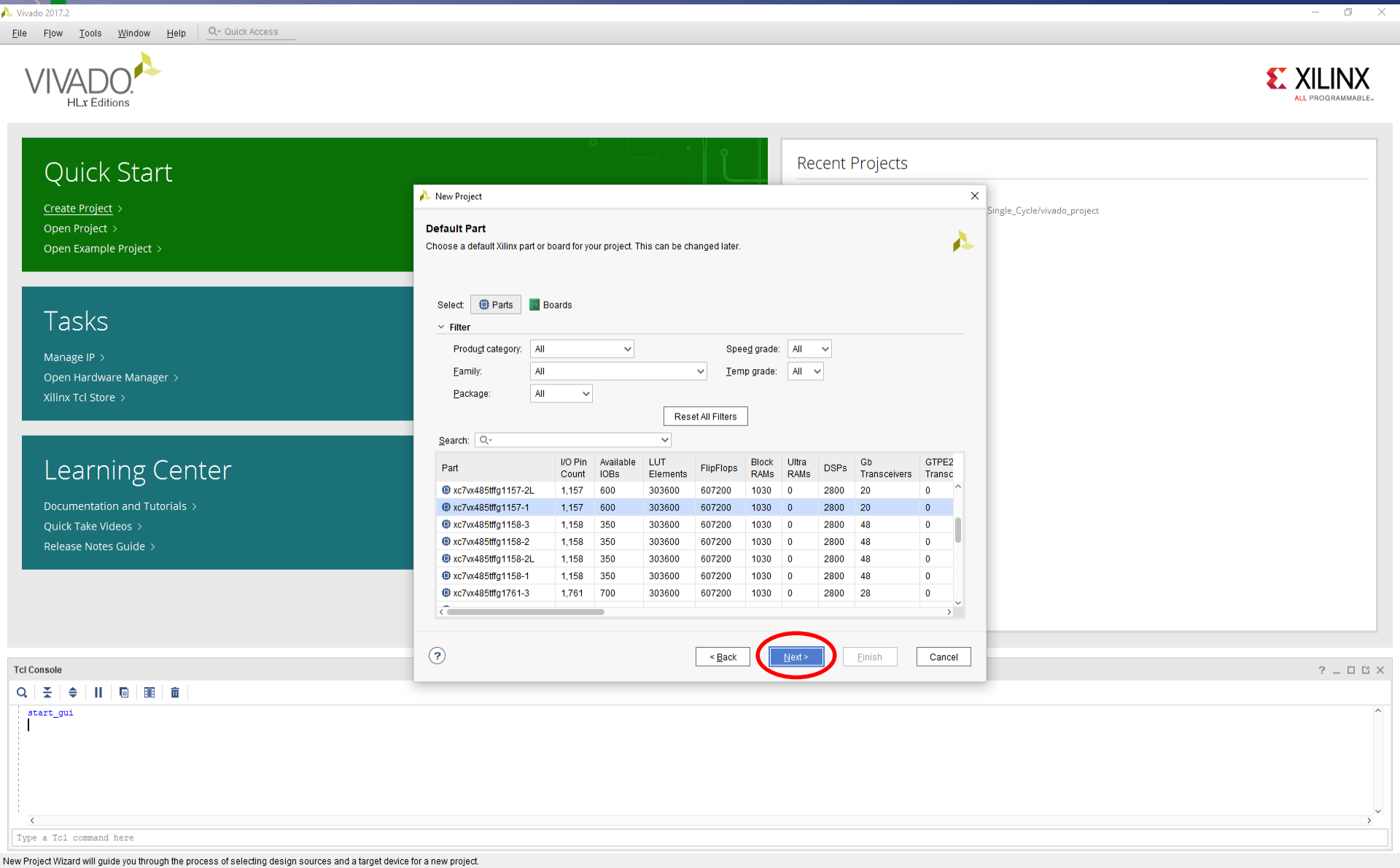

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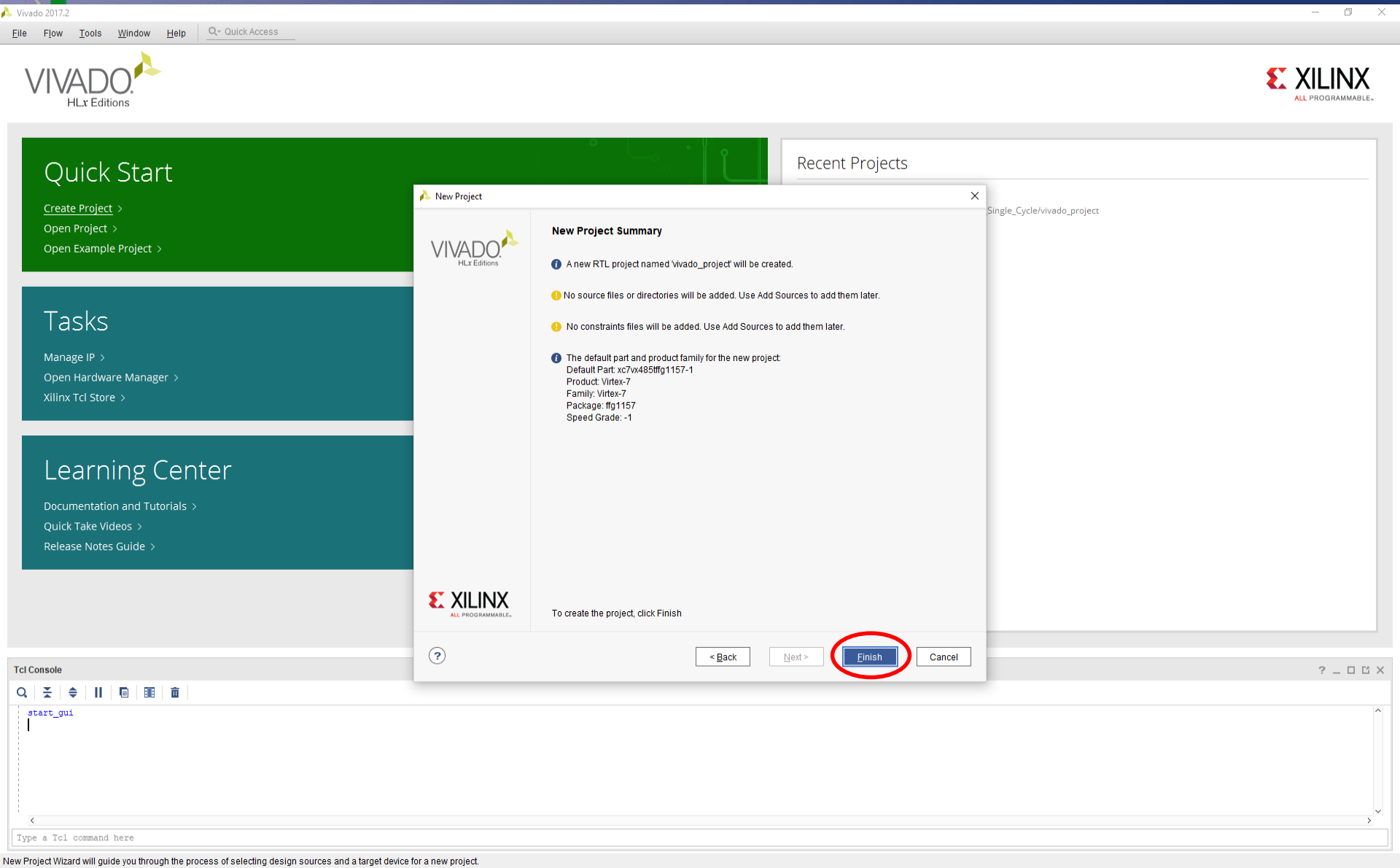
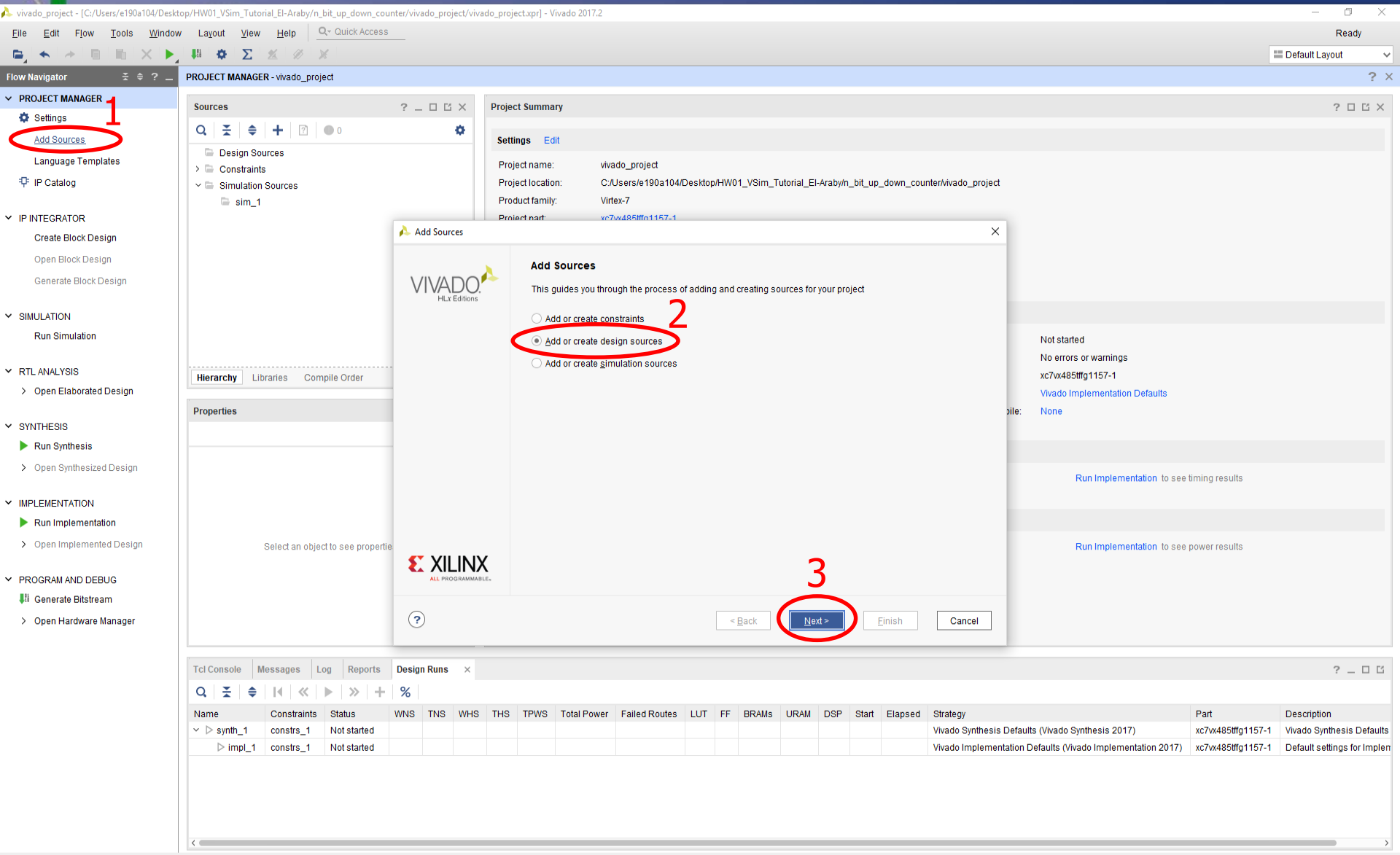


Xilinx Vivado 2019.2 – (2) Add Sources



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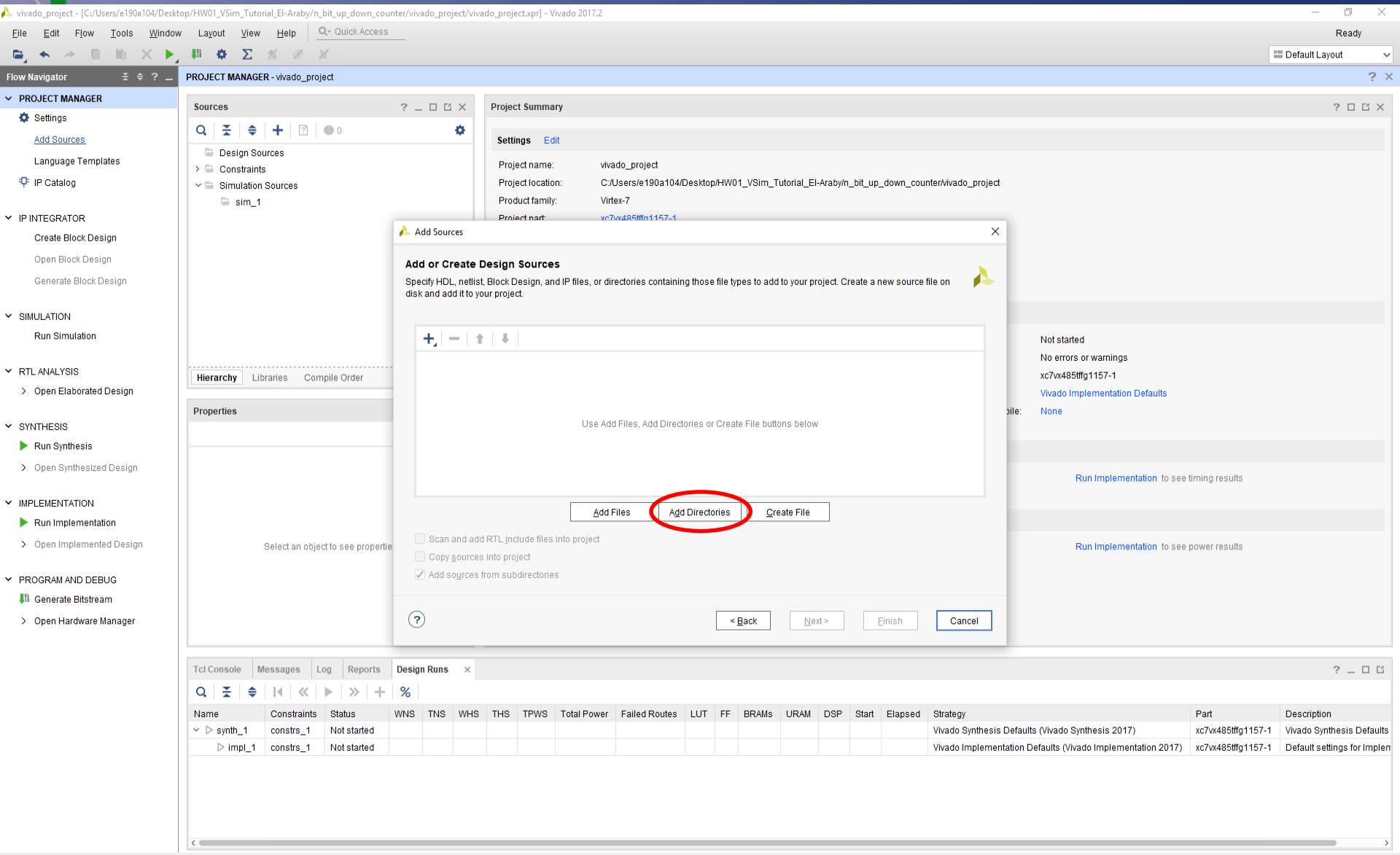

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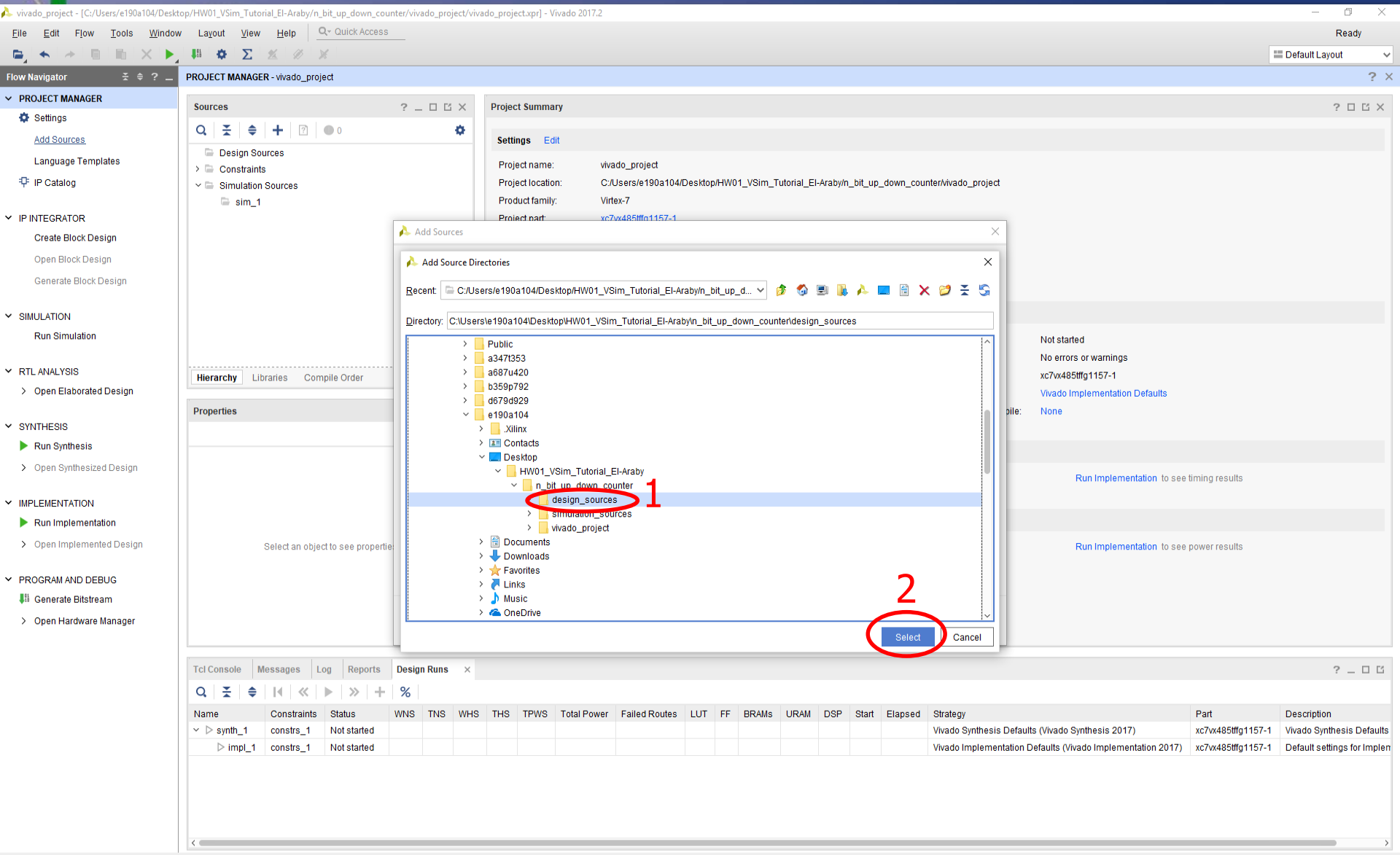

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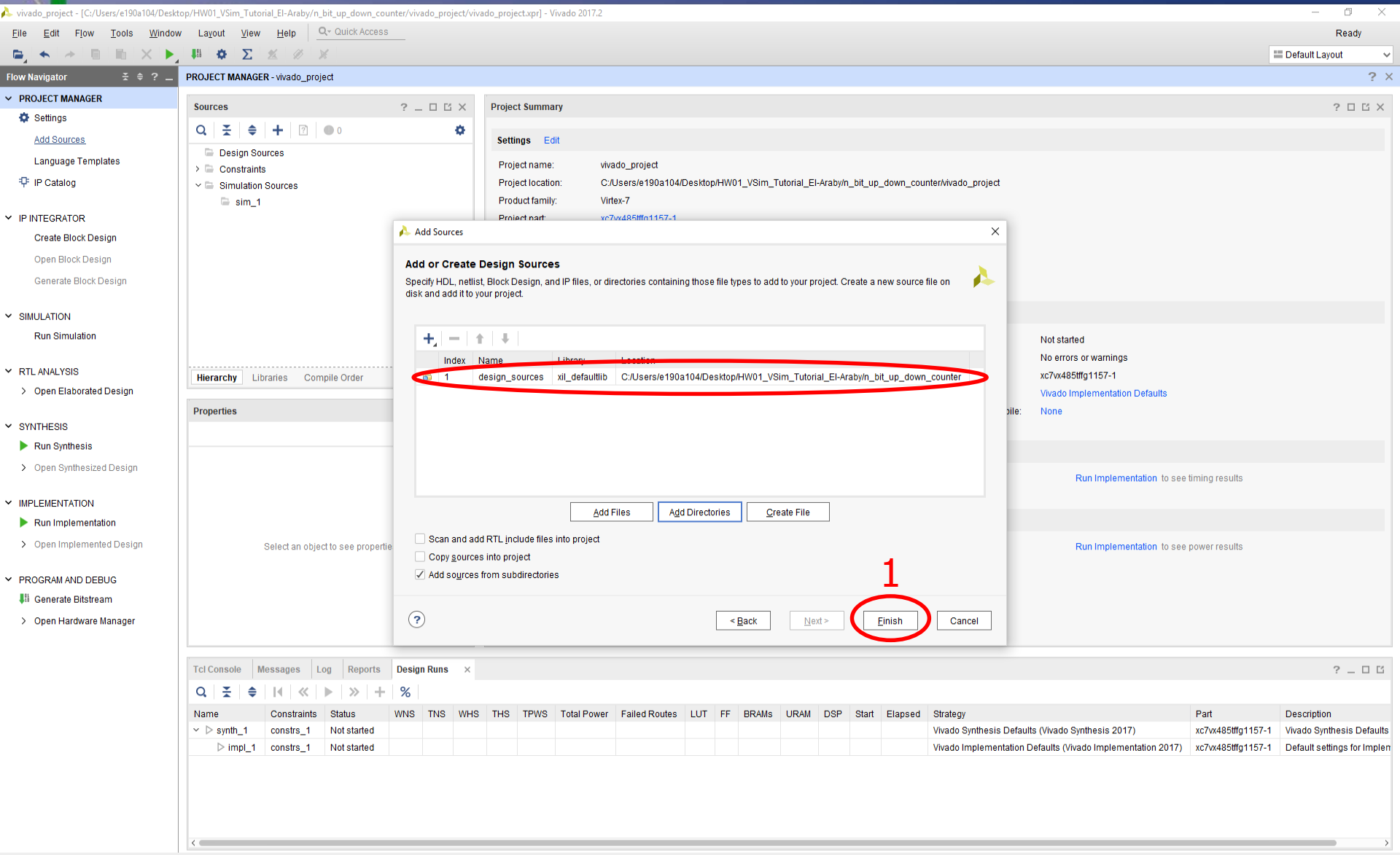
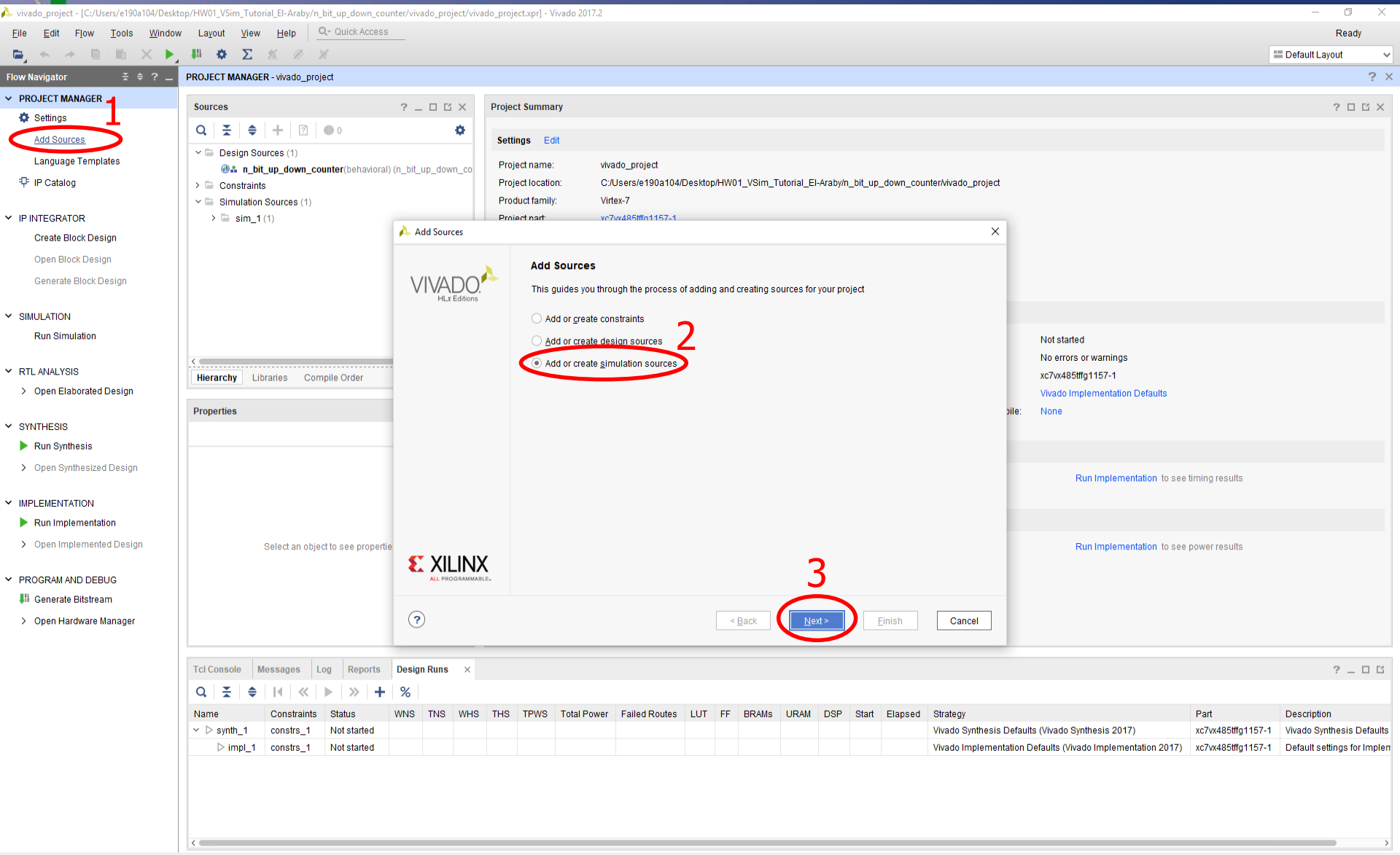


Xilinx Vivado 2019.2 – (2) Add Sources



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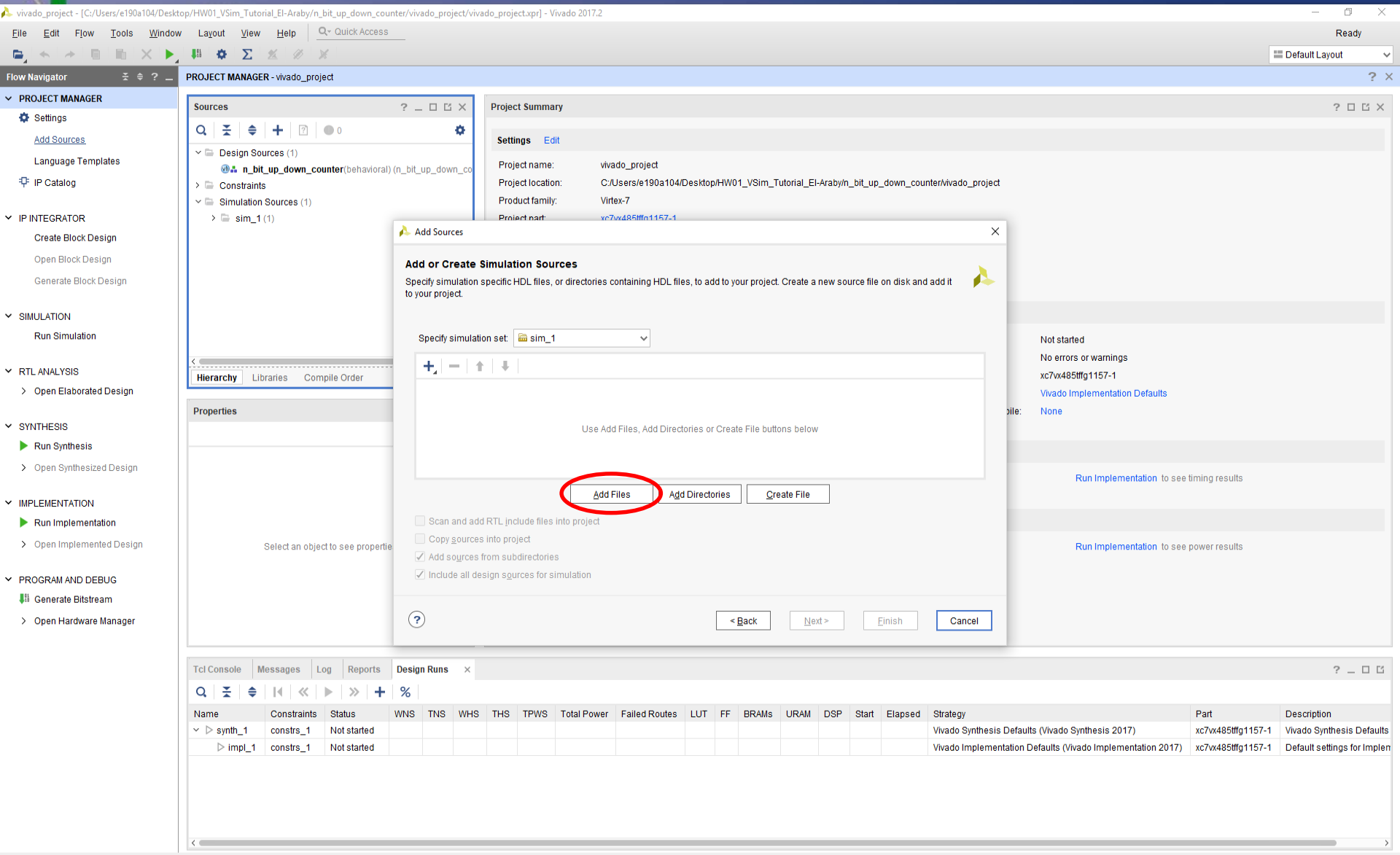
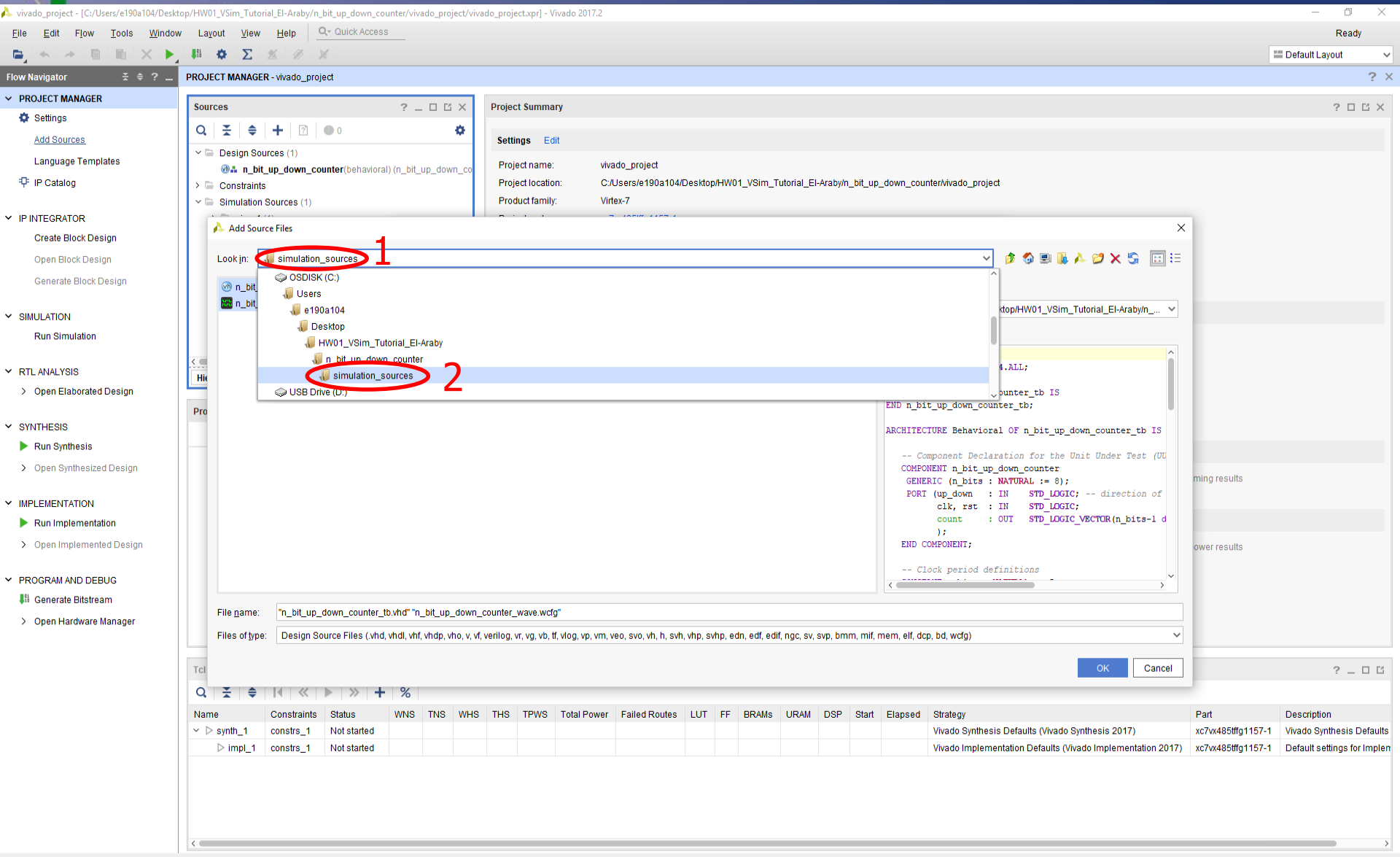
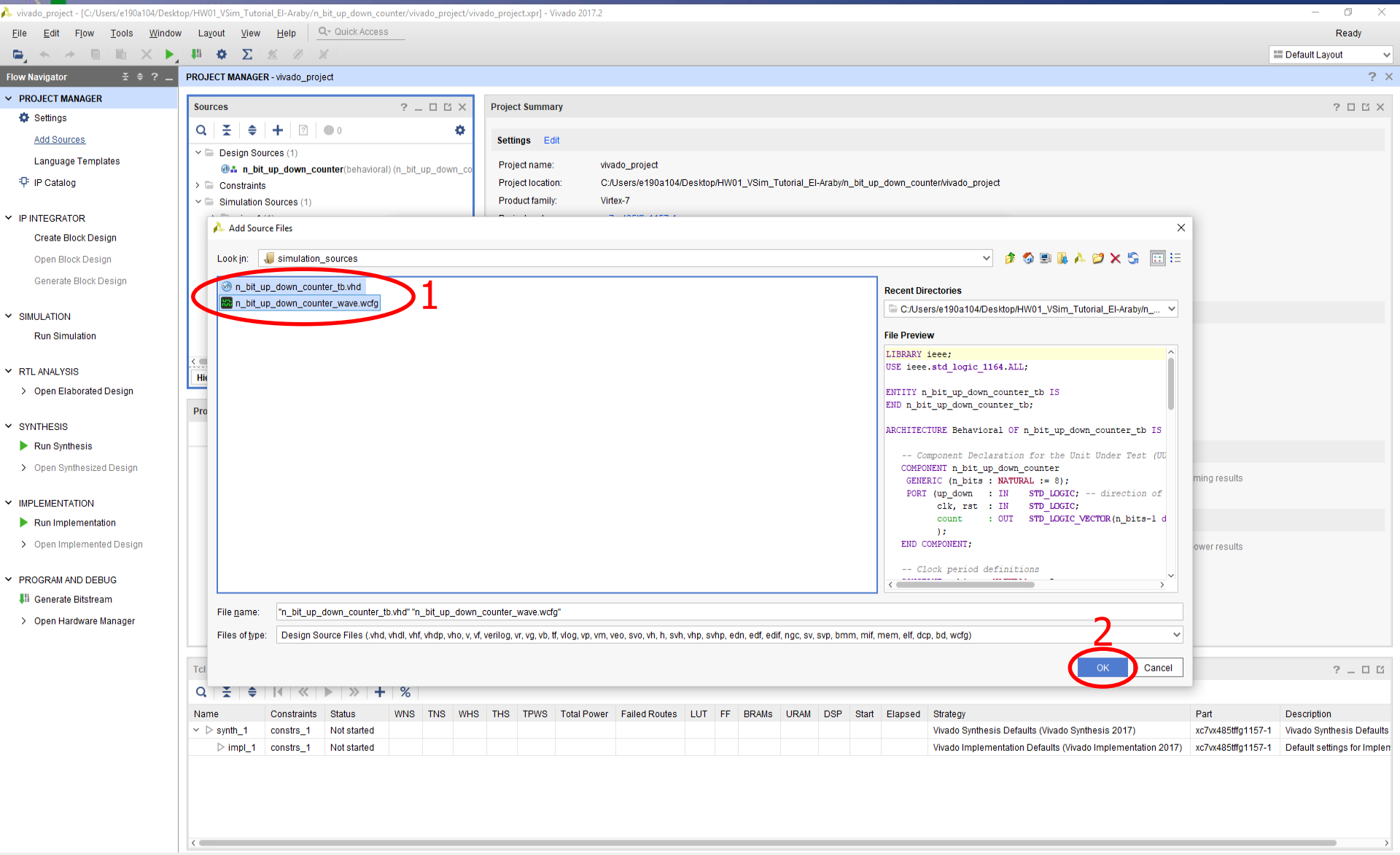


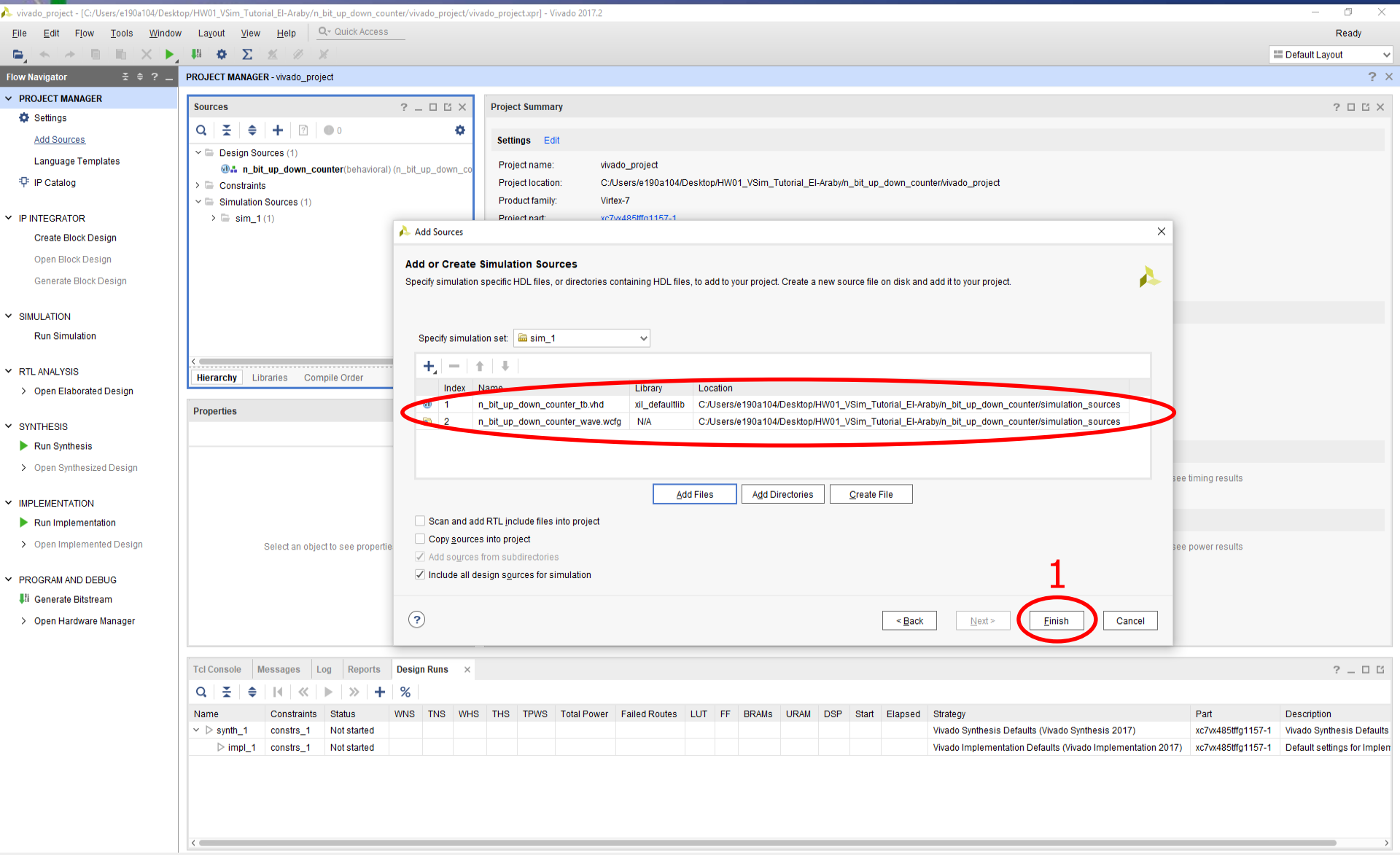
Xilinx Vivado 2019.2 – (2) Add Sources



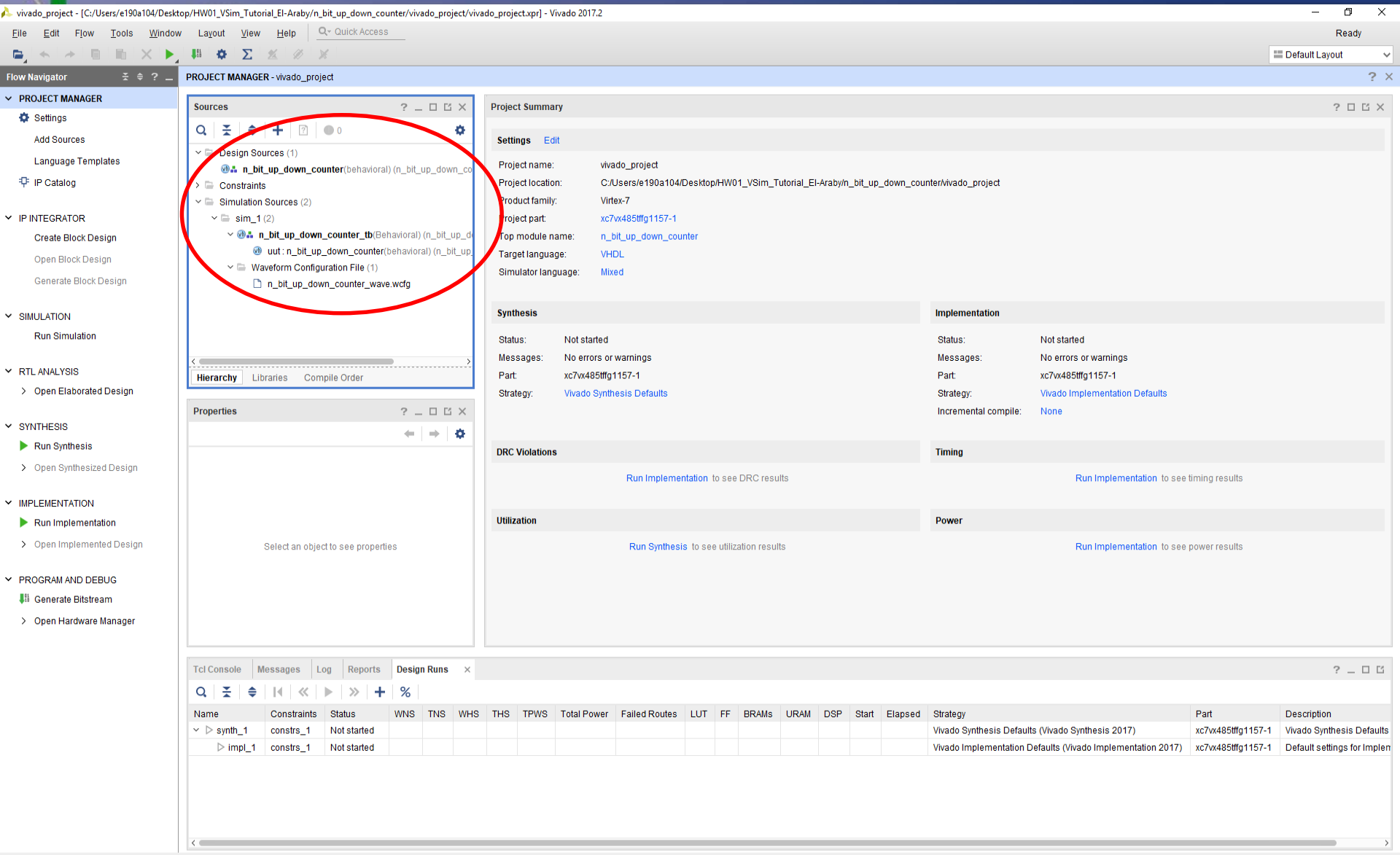
Xilinx Vivado 2019.2 – (2) Add Sources



Xilinx Vivado 2019.2 – (2) Add Sources



Xilinx Vivado 2019.2 – (2) Add Sources



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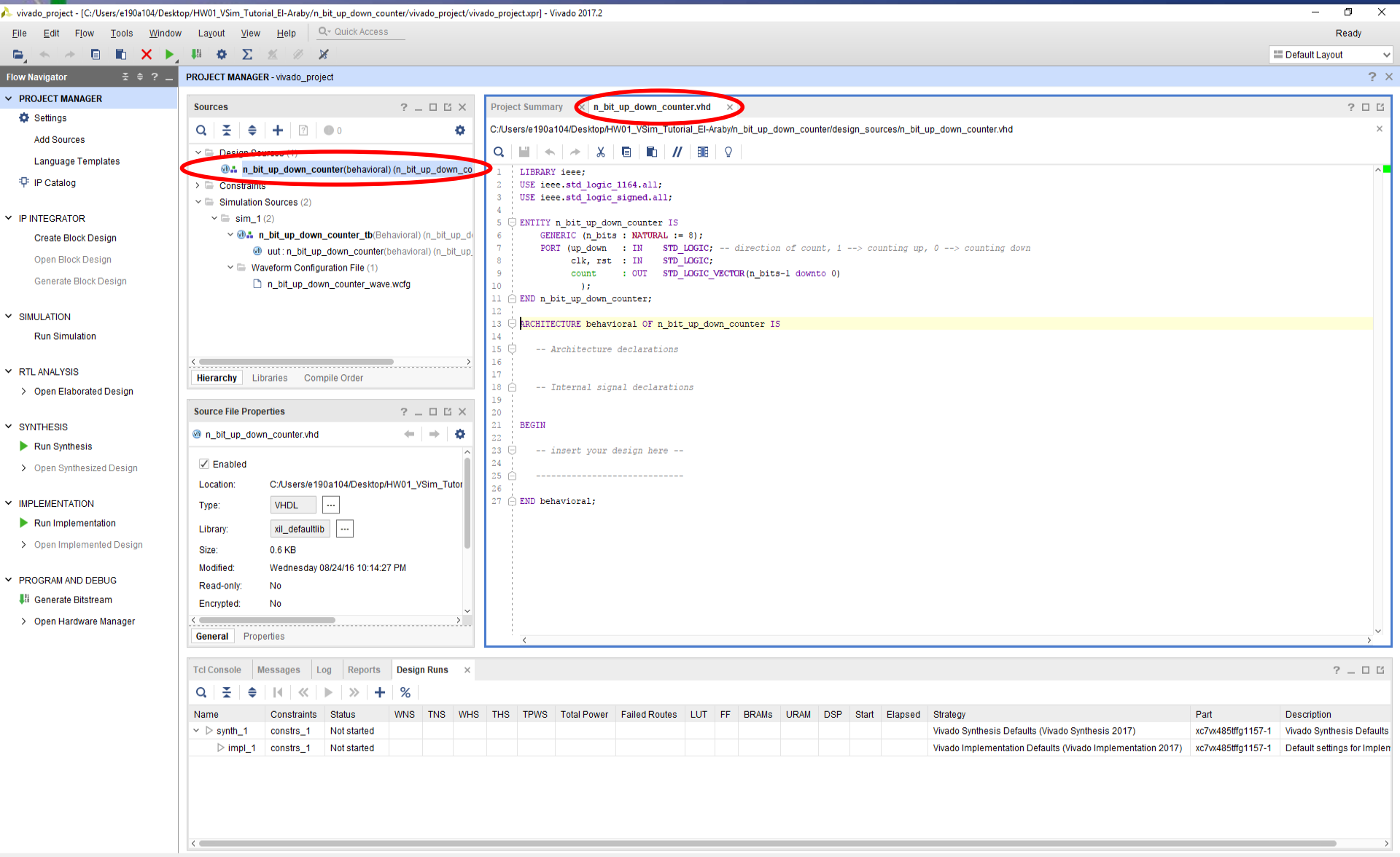
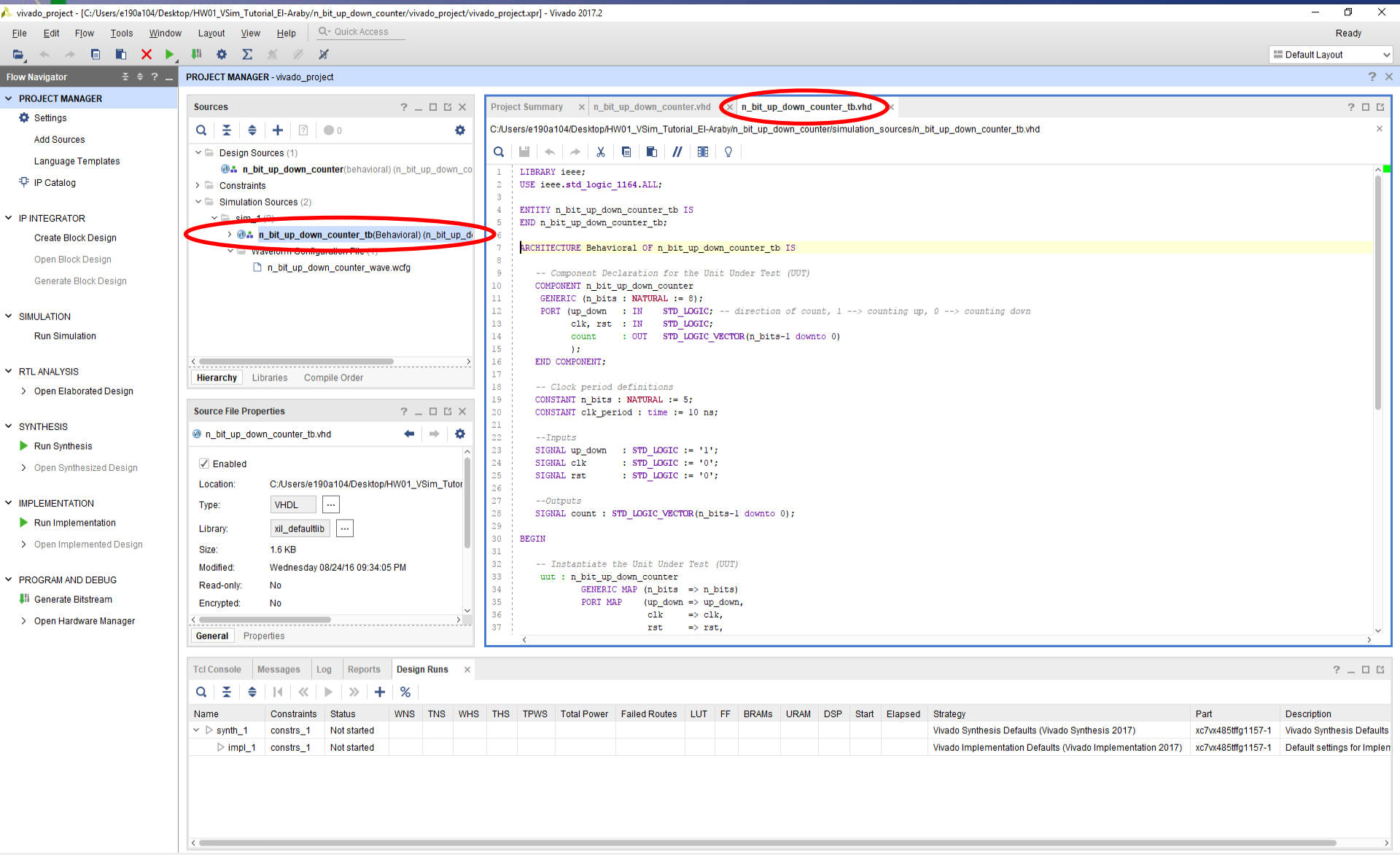
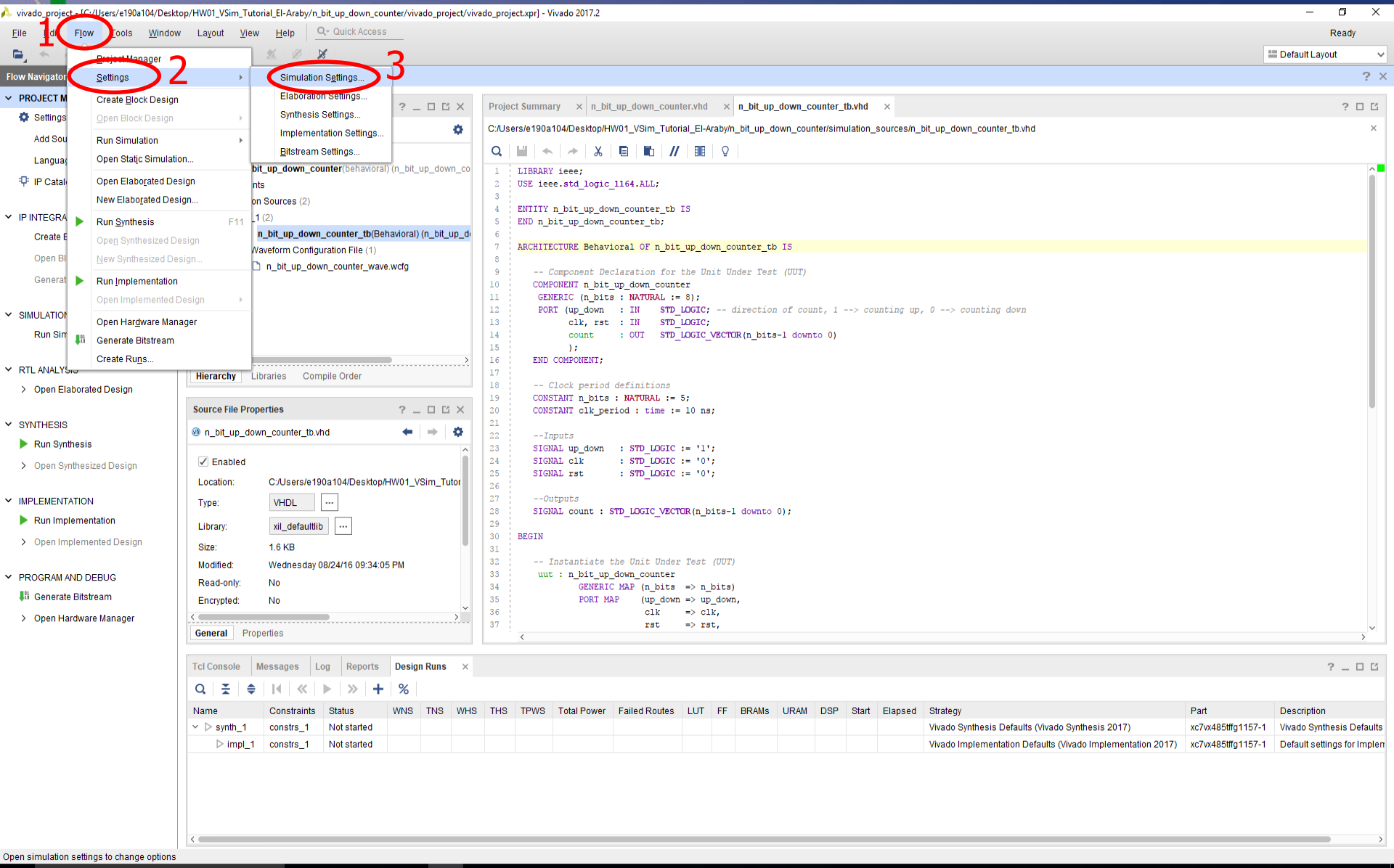


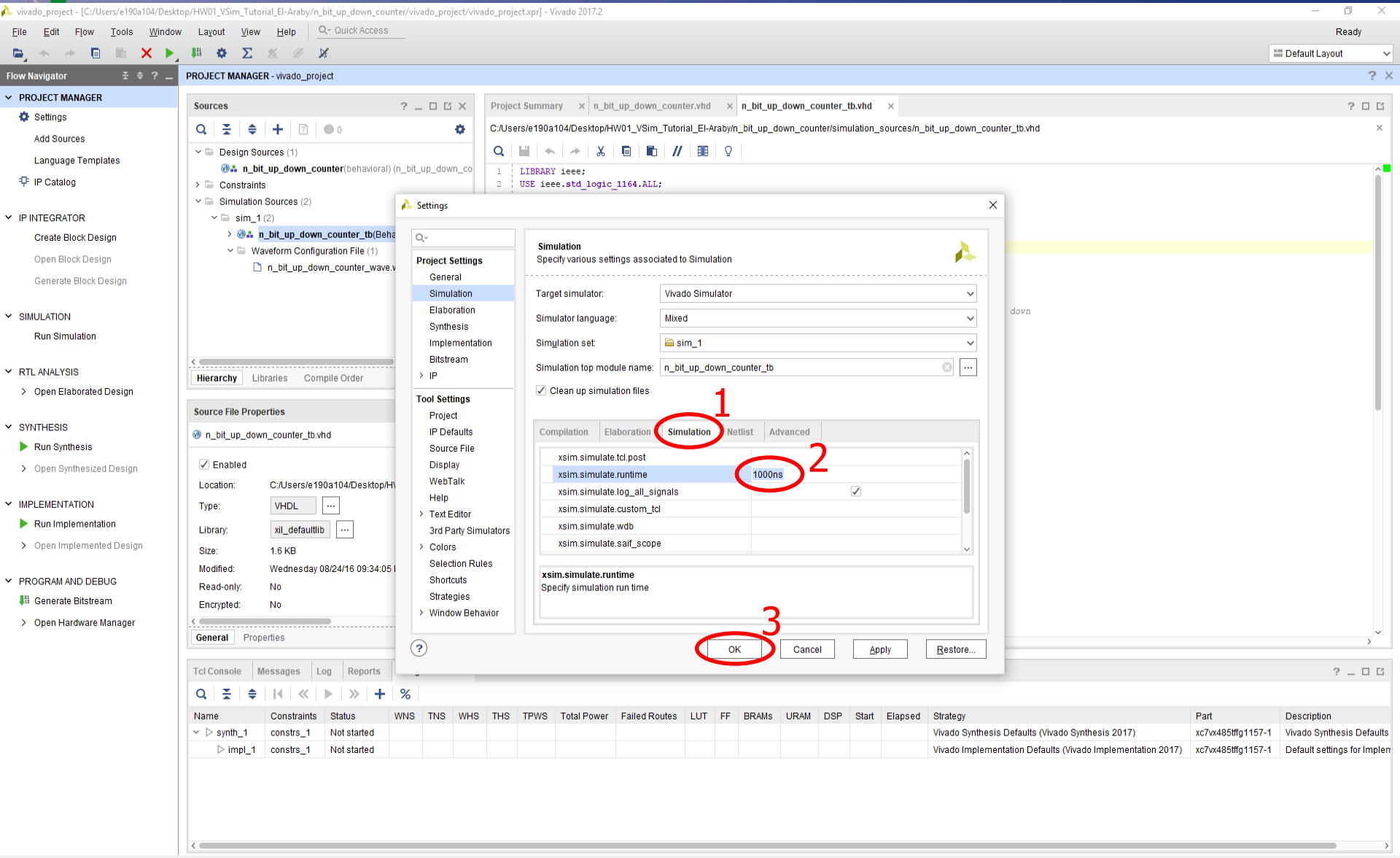
Xilinx Vivado 2019.2 – (2) Add Sources



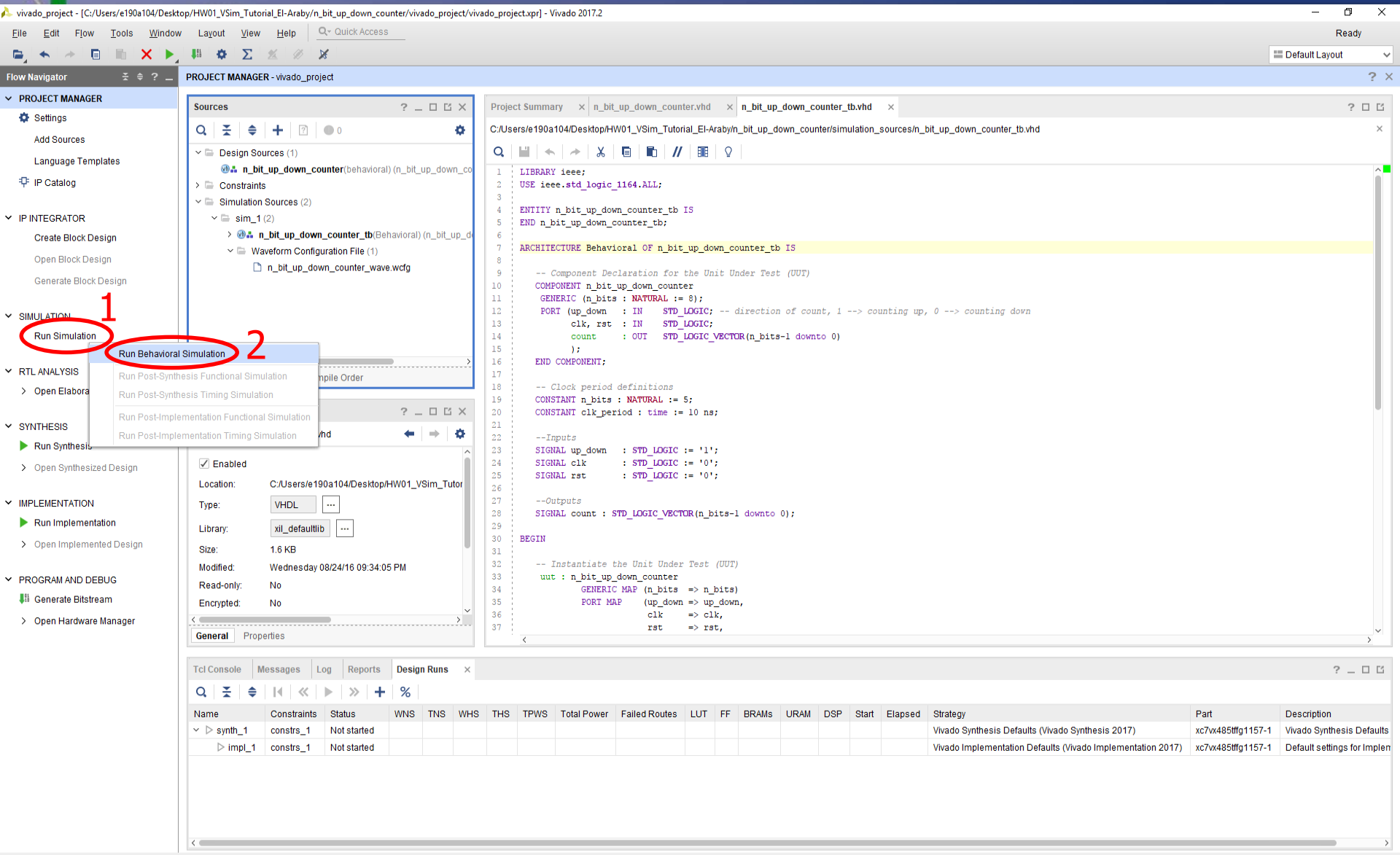
Xilinx Vivado 2019.2 – (3) Run Behavioral Simulation



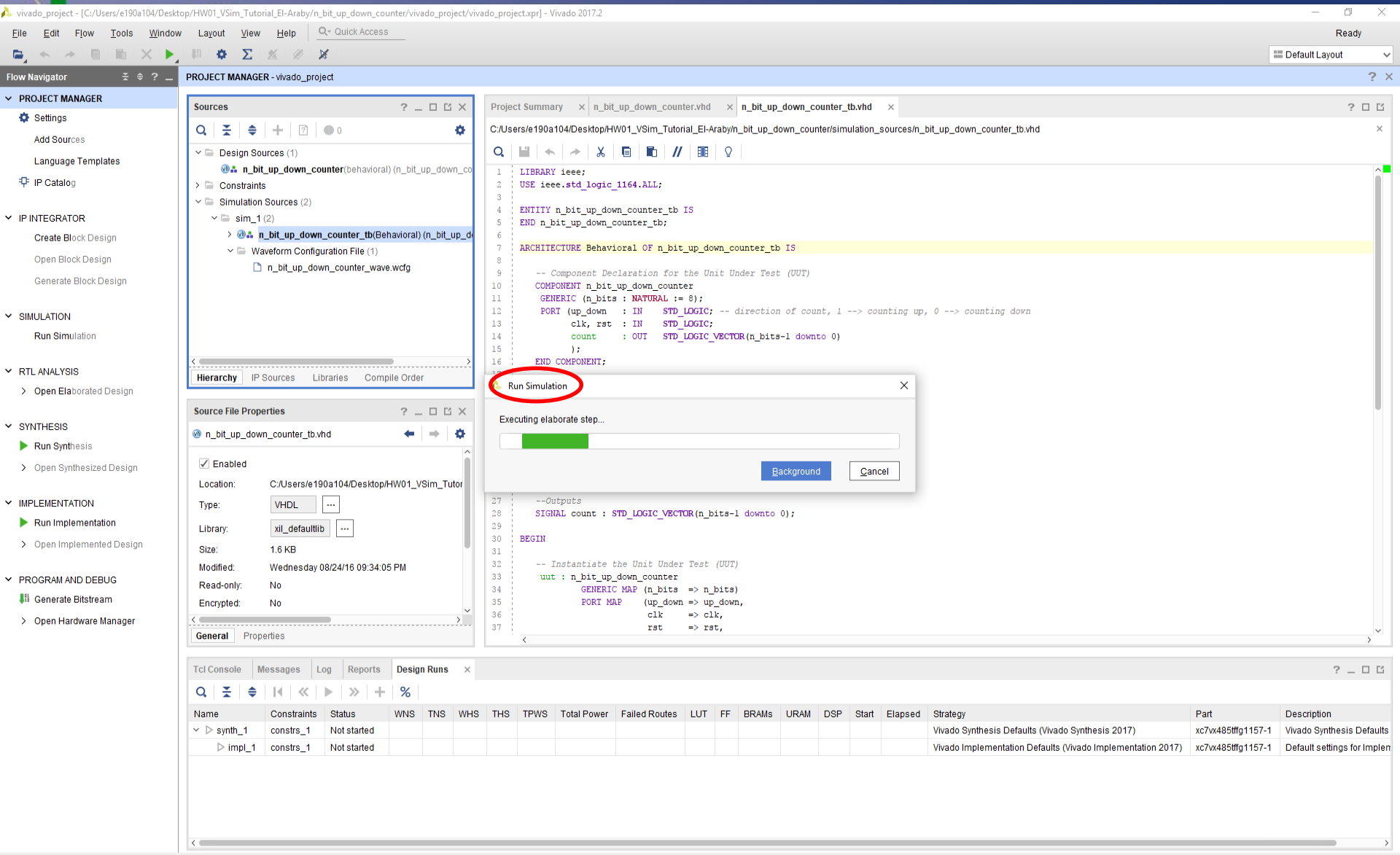
Xilinx Vivado 2019.2 – (3) Run Behavioral Simulation



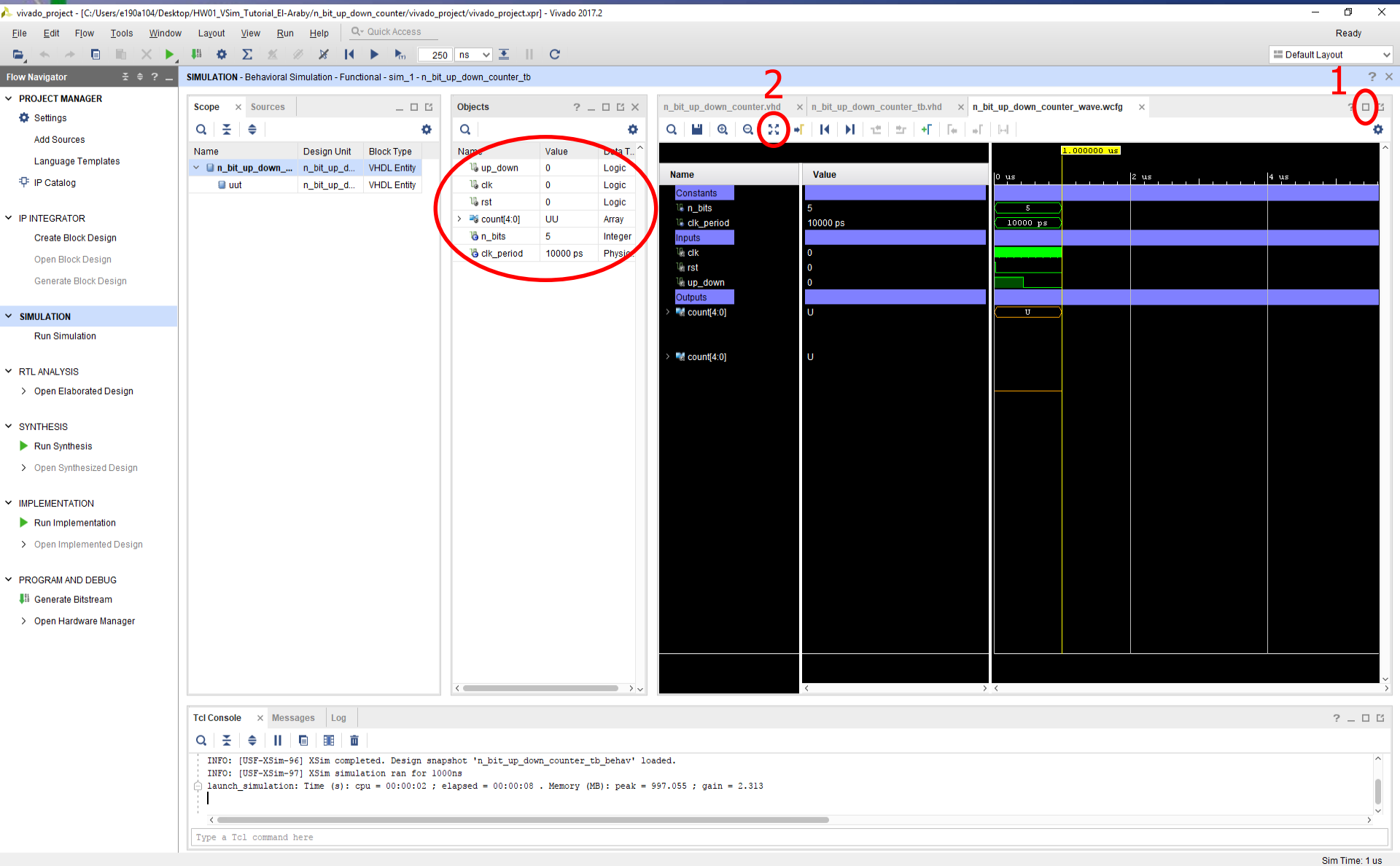
Xilinx Vivado 2019.2 – (3) Run Behavioral Simulation



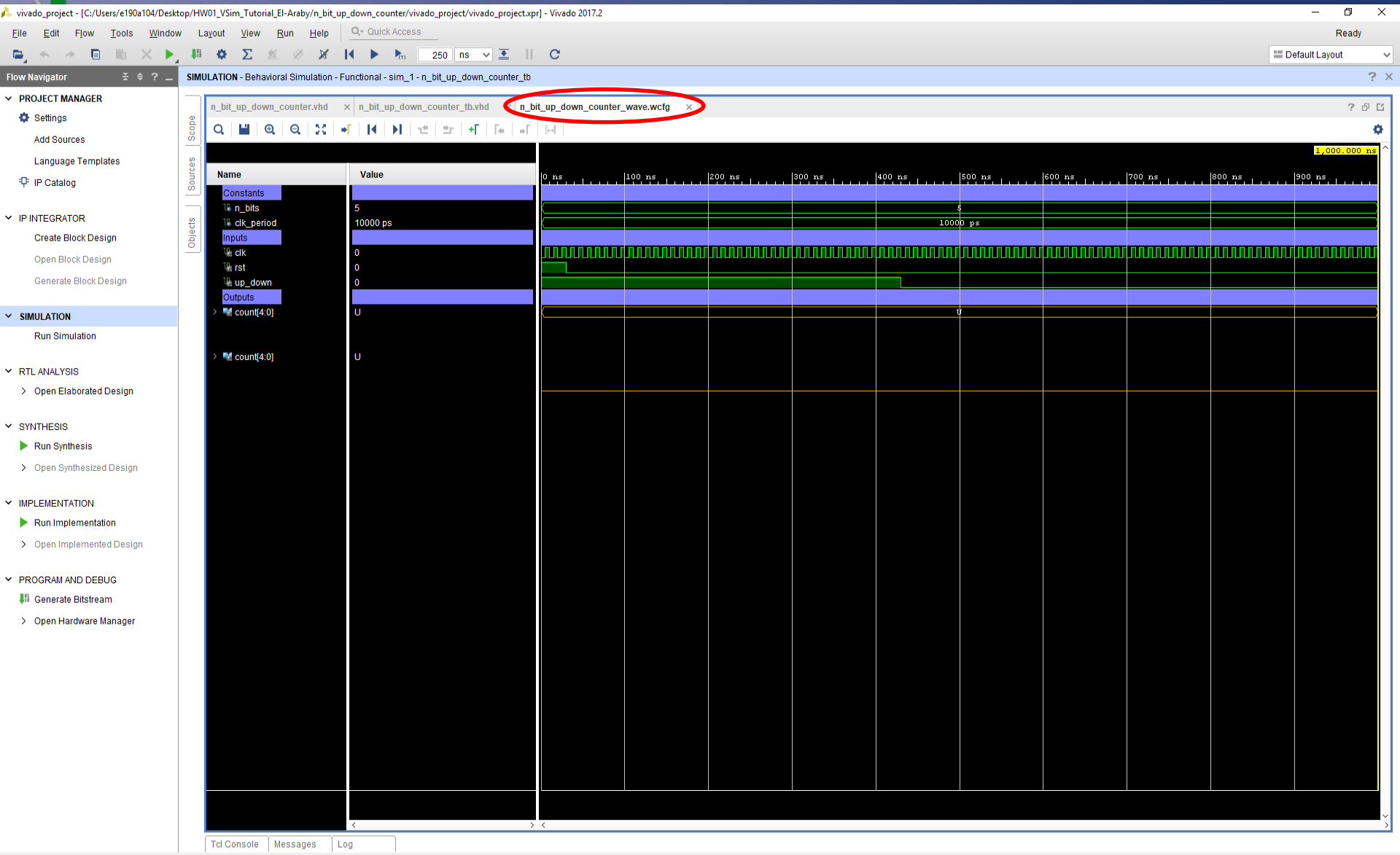
Xilinx Vivado 2019.2 – (3) Run Behavioral Simulation



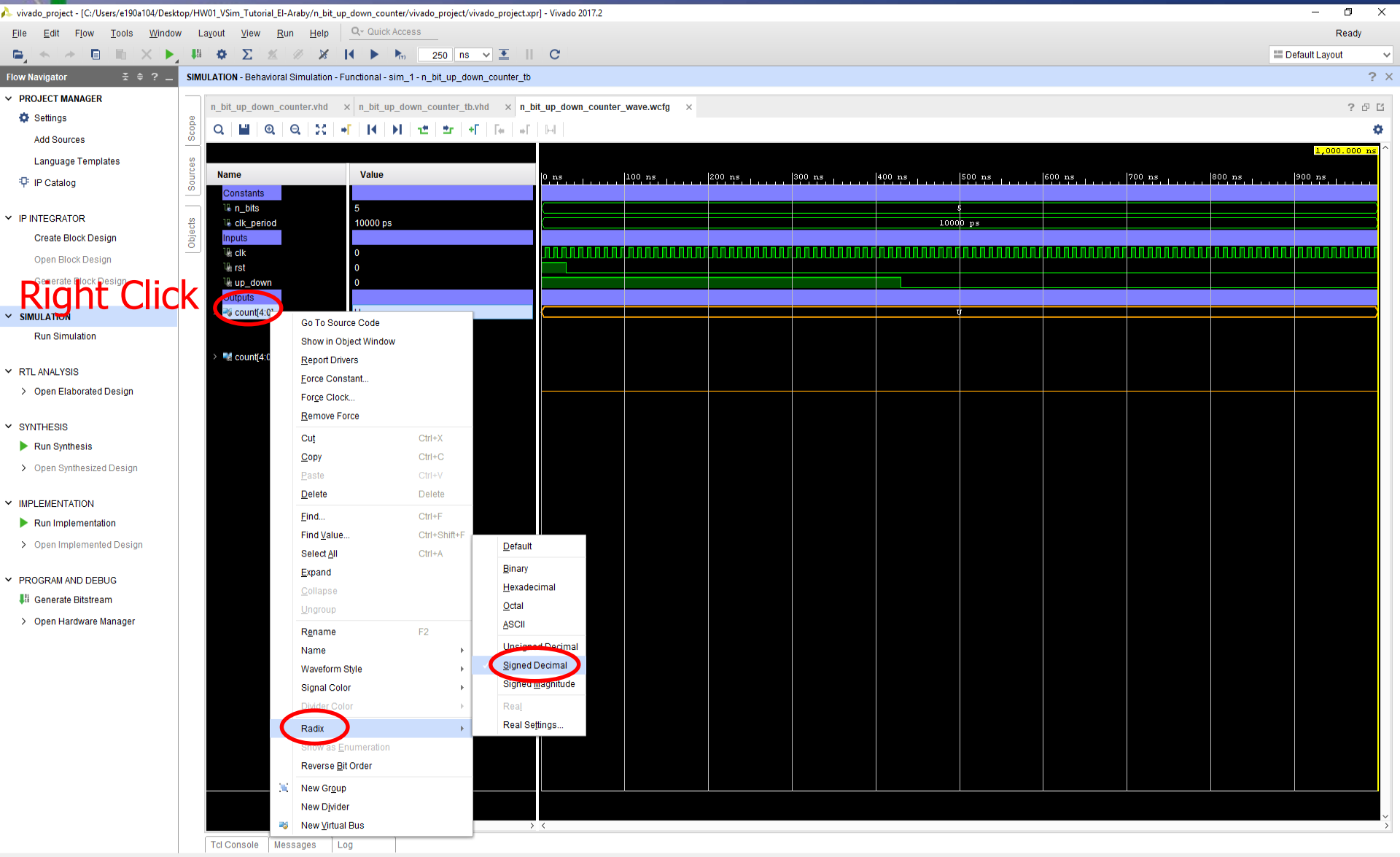
Xilinx Vivado 2019.2 – (3) Run Behavioral Simulation



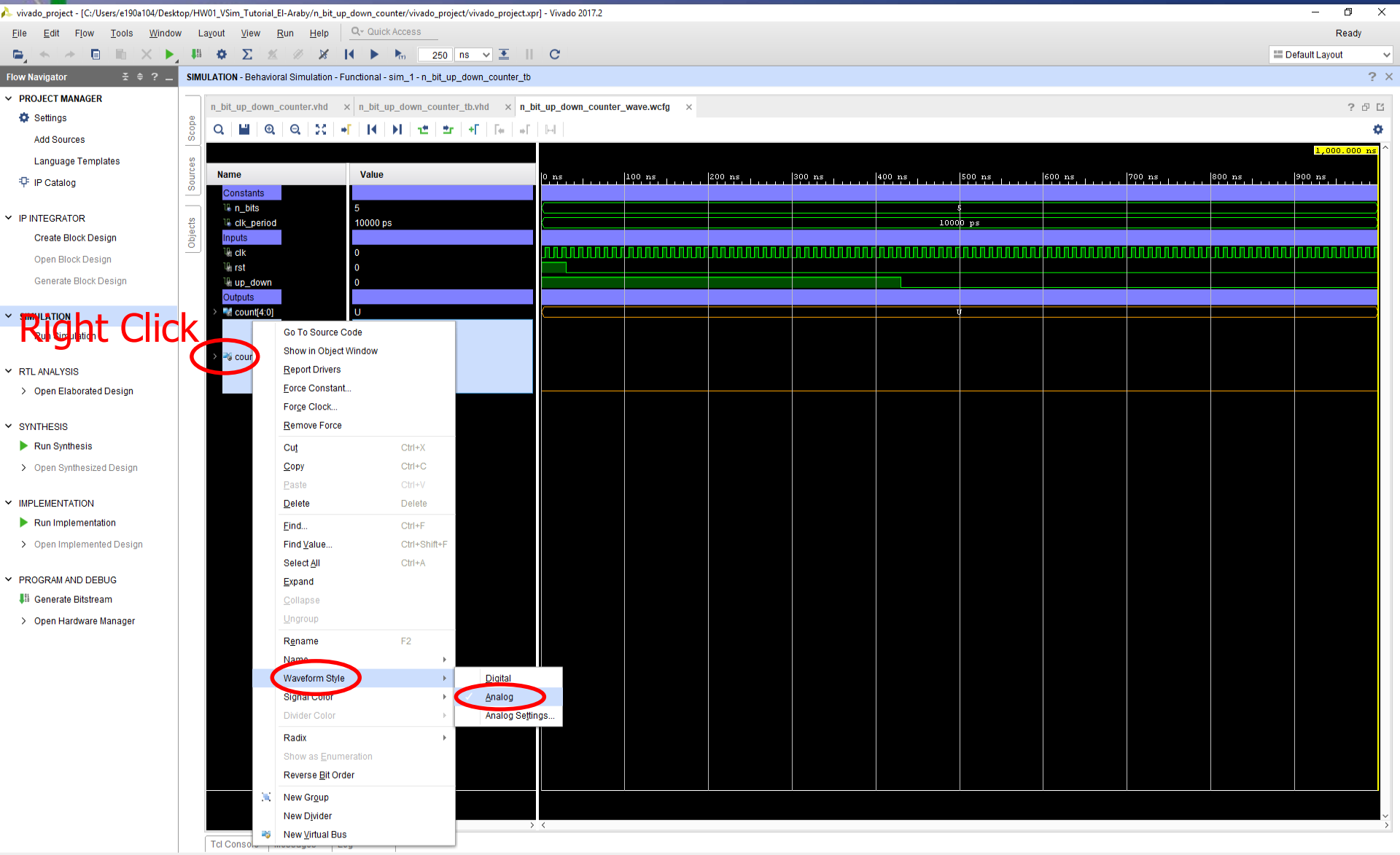
Xilinx Vivado 2019.2 – (3) Run Behavioral Simulation



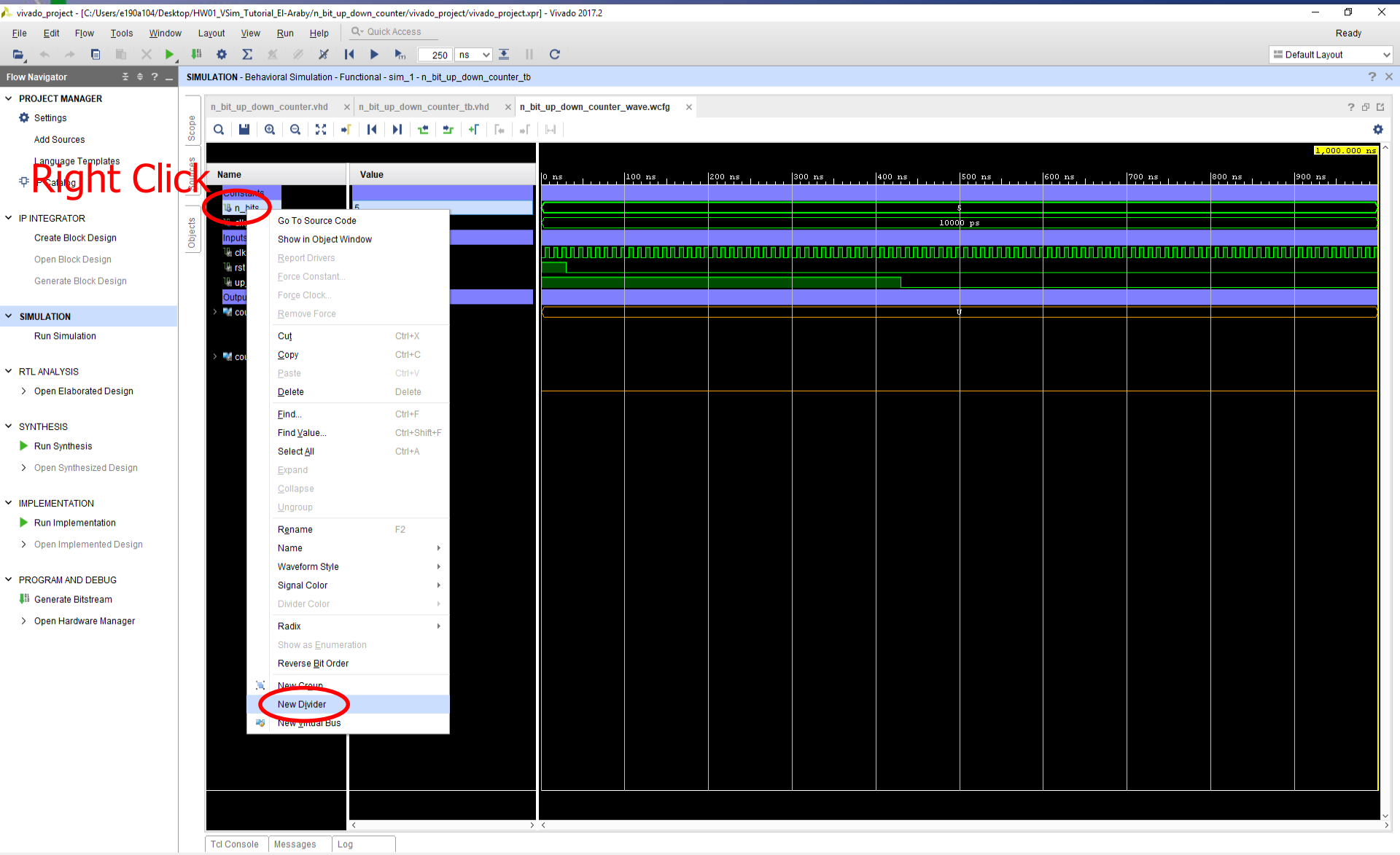
Xilinx Vivado 2019.2 – (3) Run Behavioral Simulation



Xilinx Vivado 2019.2 – (3) Run Behavioral Simulation



Xilinx Vivado 2019.2 – (3) Run Behavioral Simulation



HW01 (Vivado Simulator Tutorial)

- **Describe in behavioral VHDL a *modulo-m* up/down counter with the following interface:**
  - **Generics**
    - **Modulo base (*m* with default value of 16)**
  - **Inputs**
    - **Clock (clk → 1 bit)**
    - **Asynchronous reset (rst → 1 bit)**
    - **Counting direction (up_down → 1 bit)**
      - **1 → Counting up**
      - **0 → Counting down**
  - **Outputs**
    - **Count value (count → $\lceil \log_2(m) \rceil$ bits)**
- **In Vivado**
  - **Create a project**
  - **Add source files**
  - **Run behavioral simulation**
  - **Your waveform configuration should be identical to the provided waveform snapshot.**

- **NOTE:** Homework submission is a **"Single Attempt"**, i.e., carefully review everything that you want to submit before hitting the "submit" button and make sure that you have uploaded all documents you want to submit and have not missed anything.

- **Due on Friday 09/04/2020 at 12:00pm (NOON) on Blackboard**