

Diseño Digital Avanzado

Instalación de Herramientas

Ariel L. Pola
arielpola@gmail.com

August 10, 2017



Tabla de Contenidos

1 Instalación de Herramientas

2 Test Python

3 Test Vivado

Sección 1

Instalación de Herramientas

Instalar

- **Hercules [Puerto Serie]:**

- http://www.hw-group.com/products/hercules/index_en.html

- **Putty [Puerto Serie]:**

- <http://www.putty.org/>

- **Python 2.7:**

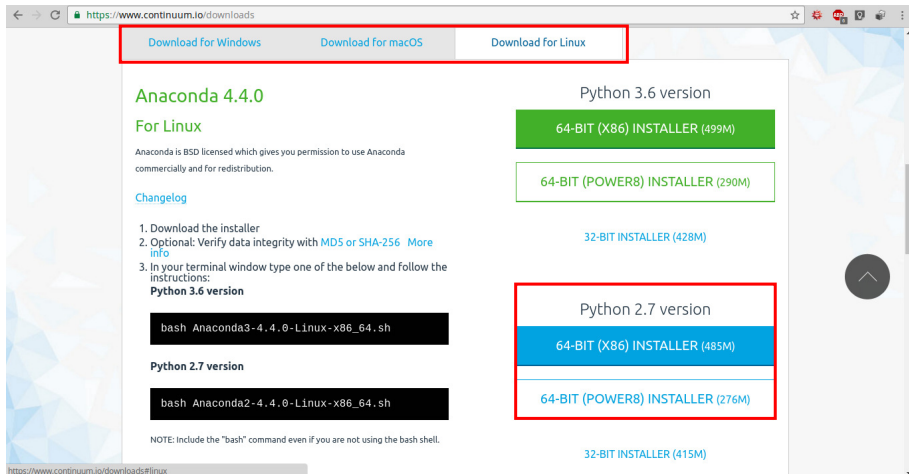
- <https://www.continuum.io/downloads>
 1. Seleccione la distribución
 2. Instale Python 2.7
- Ver Pag. 5

- **Xilinx - Vivado HL WebPACK 2017.1 con SDK**

- <https://www.xilinx.com/support/download/index.html/content/xilinx/en/downloadNav/vivado-design-tools/2017-1.html>
- Crear un usuario en Xilinx para poder descargar el instalador (<https://www.xilinx.com/registration/create-account.html>)
- Después de descargar el instalador dar permiso de ejecución y ejecutarlo (la extensión del instalador varía según la distribución).
- Ver pasos de instalación en Pag. 6-10

Instalación de Herramientas

Python 2.7



The screenshot shows the Anaconda download page for Linux. The browser address bar displays <https://www.continuum.io/downloads>. At the top, there are three tabs: "Download for Windows", "Download for macOS", and "Download for Linux", with the latter being selected and highlighted by a red box. The main content area is titled "Anaconda 4.4.0 For Linux". It includes a brief description of the BSD license, a "Changelog" link, and a list of three steps for installation. Below the steps, there are two sections: "Python 3.6 version" and "Python 2.7 version". The "Python 2.7 version" section is highlighted with a red box. It contains two links: "64-BIT (X86) INSTALLER (485M)" and "64-BIT (POWER8) INSTALLER (276M)". Below these links, there is a "32-BIT INSTALLER (415M)" link. The "Python 3.6 version" section also has links for "64-BIT (X86) INSTALLER (499M)" and "64-BIT (POWER8) INSTALLER (290M)", with a "32-BIT INSTALLER (428M)" link below them. At the bottom of the page, there is a terminal window showing the command `bash Anaconda3-4.4.0-Linux-x86_64.sh` and a note about including the "bash" command.

Download for Windows Download for macOS **Download for Linux**

Anaconda 4.4.0

For Linux

Anaconda is BSD licensed which gives you permission to use Anaconda commercially and for redistribution.

[Changelog](#)

1. Download the installer
2. Optional: Verify data integrity with [MD5](#) or [SHA-256](#) [More info](#)
3. In your terminal window type one of the below and follow the instructions:

Python 3.6 version

```
bash Anaconda3-4.4.0-Linux-x86_64.sh
```

Python 2.7 version

```
bash Anaconda2-4.4.0-Linux-x86_64.sh
```

NOTE: Include the "bash" command even if you are not using the bash shell.

Python 3.6 version

- 64-BIT (X86) INSTALLER (499M)
- 64-BIT (POWER8) INSTALLER (290M)
- 32-BIT INSTALLER (428M)

Python 2.7 version

- 64-BIT (X86) INSTALLER (485M)
- 64-BIT (POWER8) INSTALLER (276M)
- 32-BIT INSTALLER (415M)

`https://www.continuum.io/downloads#linux`

Instalación de Herramientas

Vivado

https://www.xilinx.com/support/download/index.html/content/xilinx/en/downloadNav/vivado-design-tools/2017-1.html

XILINX
ALL PROGRAMMABLE.

APPLICATIONS PRODUCTS DEVELOPER ZONE **SUPPORT** ABOUT

Support
Knowledge Base
Documentation
Community Forums
Service Portal

Services
Training
Downloads & Licensing
Product Return
University Program

Download Now

Documentation Navigator
Download Today

Community Forums
Join Now

Vivado Embedded Development SDx Development Environments ISE Device Models CAE Vendor Libraries

New to Xilinx? Let us help guide you. [Learn More](#)

Searching for Design Tools?
Get Started

Xilinx Developer Forum
Learn More

2017.1
2016.4
[Archive](#)

Important Information

Vivado Web Installer

Use Vivado Web Installer to Download Only (Install Separately) or Download & Install

Download Only (Install Separately): Web Installer supports the feature to download full image containing all devices and running installation. Use this option to

Download Includes

Download Type

Last Updated

Answers

Documentation

Enablement

Vivado Design Suite HLX Editions (All Editions)

Full Product Installation

Apr 19, 2017

[2017.x - Vivado Known Issues](#)

[2017.1 - Release Notes](#)

[License Solution Center](#)

https://www.xilinx.com/support/download.html

Instalación de Herramientas

Vivado

<https://www.xilinx.com/support/download/index.html/content/xilinx/en/downloadNav/vivado-design-tools/2017-1.html>

APPLICATIONS PRODUCTS DEVELOPER ZONE SUPPORT ABOUT

Version

- [2017.2](#)
- [2017.1](#)**
- [2016.4](#)
- [Archive](#)

Vivado Design Suite - HLx Editions - 2017.1 Full Product Installation

Important Information

Vivado Web Installer

Use Vivado Web Installer to Download Only (Install Separately) or Download & Install

Download Only (Install Separately): Web Installer supports the feature to download full image containing all devices and tool options without running installation. Use this option to install full image on network drive or to allow different users maximum flexibility when installing.

The Web Installer will accept your login credentials and allow you to select the directory and OS to download full image.

Download and Install: Web Installer also allows you to download only what you need! Use this option to select and install your desired edition of Vivado Design Suite:

- Vivado HL WebPACK(License free)
- Vivado HL Design Edition
- Vivado HL System Edition
- Documentation Navigator (Standalone)

Download includes

- Download Type
- Last Updated
- Answers
- Documentation
- Enablement

Vivado Design Suite HLx Editions (All Editions)

Full Product Installation

Apr 19, 2017

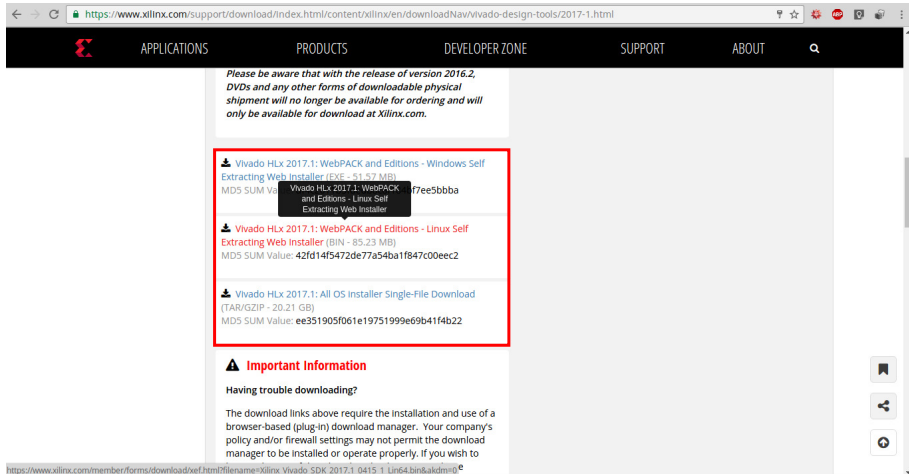
[2017.x - Vivado Known Issues](#)

[2017.1 - Release Notes](#)

[License Solution Center](#)




Instalación de Herramientas

Vivado



The screenshot shows a web browser window with the URL <https://www.xilinx.com/support/download/index.html/content/xilinx/en/downloadNav/vivado-design-tools/2017-1.html>. The page has a dark navigation bar with the Xilinx logo and links for APPLICATIONS, PRODUCTS, DEVELOPER ZONE, SUPPORT, and ABOUT. A notice at the top states that physical shipment of DVDs and other forms will no longer be available for ordering and will only be available for download at Xilinx.com. Below this, three download links are listed, each with a download icon, the file name, size, and MD5 SUM Value. The first two links are highlighted with a red box. The third link is for the All OS Installer Single-File Download. Below the links is an 'Important Information' section with a warning icon and text about browser-based download managers.

Please be aware that with the release of version 2016.2, DVDs and any other forms of downloadable physical shipment will no longer be available for ordering and will only be available for download at Xilinx.com.

-  [Vivado HLx 2017.1: WebPACK and Editions - Windows Self Extracting Web Installer](#) (EXE - 51.57 MB)
MD5 SUM Value: [Vivado HLx 2017.1: WebPACK and Editions - Linux Self Extracting Web Installer](#) f7ee5bbba
-  [Vivado HLx 2017.1: WebPACK and Editions - Linux Self Extracting Web Installer](#) (BIN - 85.23 MB)
MD5 SUM Value: 42fd14f5472de77a54ba1f847c00eec2
-  [Vivado HLx 2017.1: All OS Installer Single-File Download](#) (TAR/GZIP - 20.21 GB)
MD5 SUM Value: ee351905f061e19751999e69b41f4b22

⚠ Important Information

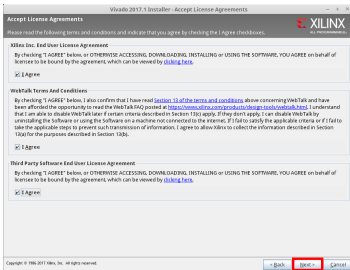
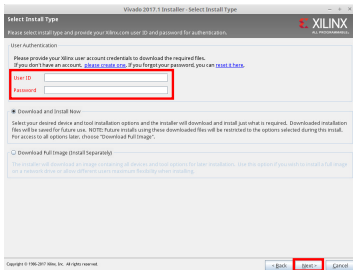
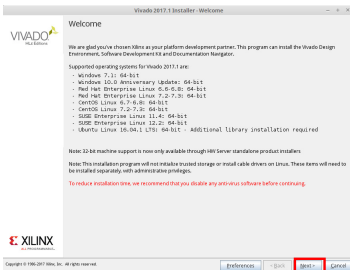
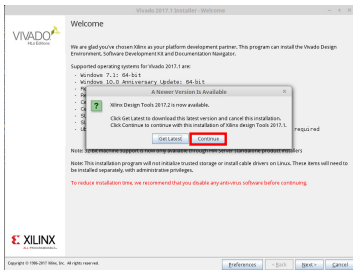
Having trouble downloading?

The download links above require the installation and use of a browser-based (plug-in) download manager. Your company's policy and/or firewall settings may not permit the download manager to be installed or operate properly. If you wish to

https://www.xilinx.com/member/forms/download/xef.html?filename=Xilinx_Vivado_SDK_2017.1_0415_1_Lin64.bin&akdm=0

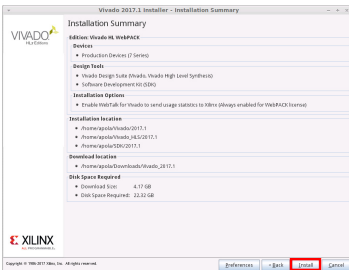
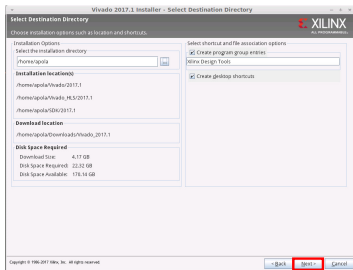
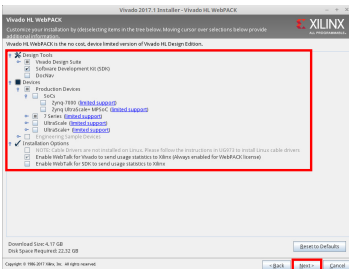
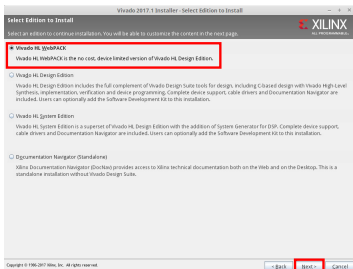
Instalación de Herramientas

Vivado



Instalación de Herramientas

Vivado



Sección 2

Test Python

Test de librerías de Python

1. Descargar el archivo adjunto Python_UART.py
2. Abrir un terminal y en la carpeta donde se descargó el archivo y ejecutar: `python Python_UART.py`
 - `apola@einstein $ python Python_UART.py`
3. Seguir los pasos del script

Sección 3

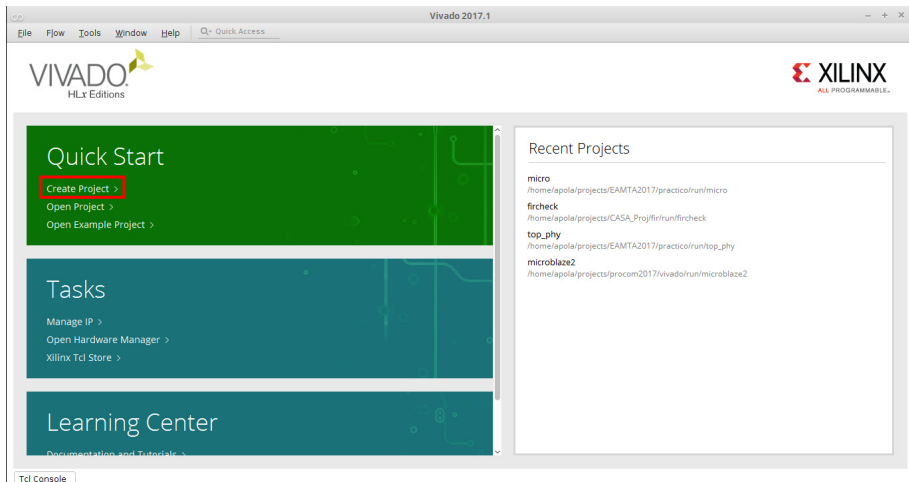
Test Vivado

Test de librerías de Vivado

- Incluir Kit de desarrollo en Vivado
 - Asegurarse que la herramienta Vivado no está ejecutada.
 - Se debe buscar la carpeta **Xilinx/Vivado/2017.1/data/boards/** dentro de donde está instalado Vivado.
 - Copiar el contenido de la carpeta **board_files** a **Xilinx/Vivado/2017.1/data/boards/board_files/**
 - Verificar que se haya copiado la carpeta **Xilinx/Vivado/2017.1/data/boards/board_files/art7/C.0**
- Generar Binario
 - Ejecutar el Vivado desde el acceso directo o terminal
 - Crear un proyecto nuevo
 - Seleccionar la placa Arty
 - Incluir los archivos **top_microblaze.v** y **Arty_Master.xdc**
 - Generar el binario
 - Los pasos mencionados se detallan en las figuras de las Pag.

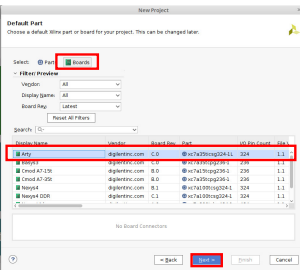
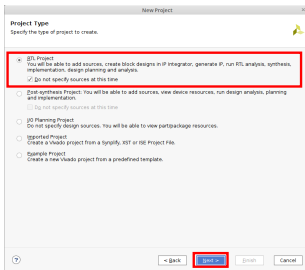
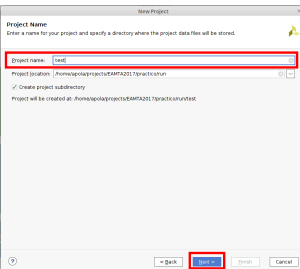
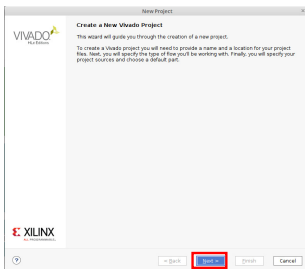
Test Vivado

Vivado



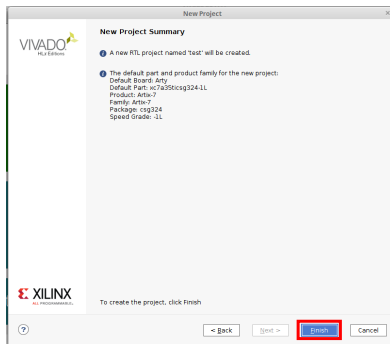
Test Vivado

Vivado



Test Vivado

Vivado



Test Vivado

Vivado

test - /home/apola/projects/EAMTA2017/practico/run/test/test.xpr - Vivado 2017.1

File Edit Flow Tools Window Layout View Help Quick Access

Ready

Default Layout

Flow Navigator PROJECT MANAGER - test

PROJECT MANAGER

- Settings
 - Add Sources**
 - Language Templates
- IP Catalog
- IP INTEGRATOR
 - Create Block Design
 - Open Block Design
 - Generate Block Design
- SIMULATION
 - Run Simulation
- RTL ANALYSIS
 - Open Elaborated Design
- SYNTHESIS
 - Run Synthesis
 - Open Synthesized Design
- IMPLEMENTATION
 - Run Implementation
 - Open Implemented Design

Sources

Design Sources

- Constraints
- Simulation Sources
 - sim_1

Hierarchy Libraries Compile Order

Properties

Select an object to see properties

Project Summary

Settings Edit

Project name: test

Project location: /home/apola/projects/EAMTA2017/practico/run/test

Product family: Artix-7

Project part: Arty (xc7a35t1csg324-1L)

Top module name: Not defined

Target language: Verilog

Simulator language: Mixed

Board Part

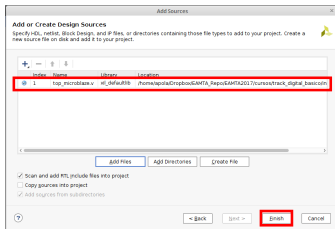
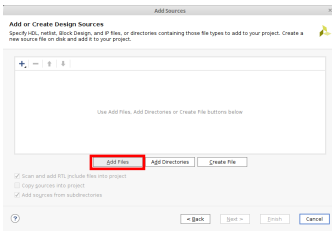
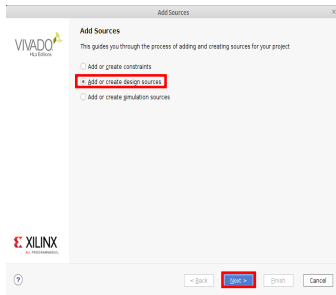
Tcl Console Messages Log Reports **Design Runs**

Name	Constraints	Status	WNS	TNS	WHS	THS	TPWS	Total Power	Failed Routes	LUT	FF	BRAMs	URAM	DSP	Start	Elapsed
synth_1	constrs_1	Not started														
impl_1	constrs_1	Not started														

Specify and/or create source files to add to the project

Test Vivado

Vivado



Test Vivado

Vivado

test - /home/apola/projects/EAMTA2017/practico/run/test/test.xpr - Vivado 2017.1

File Edit Flow Tools Window Layout View Help Quick Access

Ready

Default Layout

Flow Navigator PROJECT MANAGER - test

PROJECT MANAGER

- Settings
 - Add Sources**
 - Language Templates
- IP Catalog
- IP INTEGRATOR
 - Create Block Design
 - Open Block Design
 - Generate Block Design
- SIMULATION
 - Run Simulation
- RTL ANALYSIS
 - Open Elaborated Design
- SYNTHESIS
 - Run Synthesis
 - Open Synthesized Design
- IMPLEMENTATION
 - Run Implementation
 - Open Implemented Design

Sources

Design Sources

- Constraints
- Simulation Sources
 - sim_1

Hierarchy Libraries Compile Order

Properties

Select an object to see properties

Project Summary

Settings Edit

Project name: test

Project location: /home/apola/projects/EAMTA2017/practico/run/test

Product family: Artix-7

Project part: Arty (xc7a35t1csg324-1L)

Top module name: Not defined

Target language: Verilog

Simulator language: Mixed

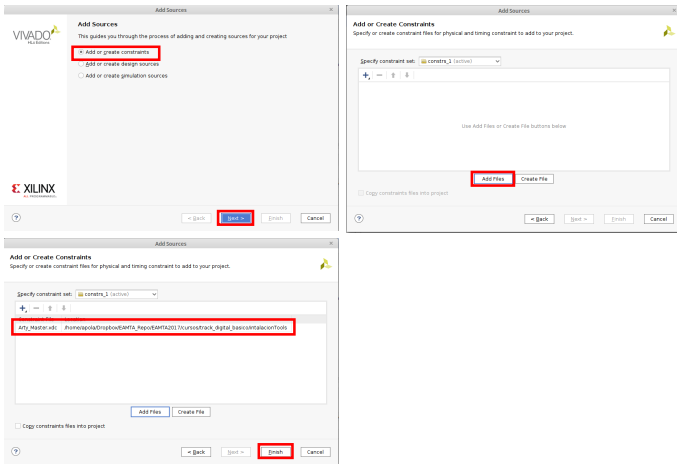
Board Part

Tcl Console Messages Log Reports **Design Runs**

Name	Constraints	Status	WNS	TNS	WHS	THS	TPWS	Total Power	Failed Routes	LUT	FF	BRAMs	URAM	DSP	Start	Elapsed
synth_1	constrs_1	Not started														
impl_1	constrs_1	Not started														

Specify and/or create source files to add to the project

Vivado



Test Vivado

Vivado

The screenshot shows the Vivado 2017.1 Project Manager window for a project named 'test'. The 'PROGRAM AND DEBUG' section is expanded, and the 'Generate Bitstream' option is highlighted with a red box. The 'Sources' pane shows the project hierarchy: 'constrs_1 (1)' containing 'Arty_Master.xdc' and 'Simulation Sources (1)' containing 'sim_1 (1)'. The 'Project Summary' pane shows project details: Project name: test, Project location: /home/apola/projects/EAMTA2017/practico/run/test/test.xprj, Product family: Artix-7, Project part: Arty (xc7a35tcsig324-1L), Top module name: top_microblaze, Target language: Verilog, Simulator language: Mixed. The 'Design Runs' table shows the status of synthesis and implementation.

test - [/home/apola/projects/EAMTA2017/practico/run/test/test.xprj] - Vivado 2017.1

File Edit Flow Tools Window Layout View Help Quick Access

Ready

Default Layout

Flow Navigator

- IP Catalog
- IP INTEGRATOR
 - Create Block Design
 - Open Block Design
 - Generate Block Design
- SIMULATION
 - Run Simulation
- RTL ANALYSIS
 - Open Elaborated Design
- SYNTHESIS
 - Run Synthesis
 - Open Synthesized Design
- IMPLEMENTATION
 - Run Implementation
 - Open Implemented Design
- PROGRAM AND DEBUG
 - Generate Bitstream**
 - Open Hardware Manager

PROJECT MANAGER - test

Sources

- constrs_1 (1)
 - Arty_Master.xdc
- Simulation Sources (1)
 - sim_1 (1)

Hierarchy Libraries Compile Order

Properties

Select an object to see properties

Project Summary

Settings Edit

Project name: test

Project location: /home/apola/projects/EAMTA2017/practico/run/test

Product family: Artix-7

Project part: Arty (xc7a35tcsig324-1L)

Top module name: top_microblaze

Target language: Verilog

Simulator language: Mixed

Board Part

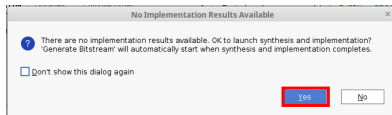
Tcl Console Messages Log Reports Design Runs

Name	Constraints	Status	WNS	TNS	WHS	THS	TPWS	Total Power	Failed Routes	LUT	FF	BRAMS	URAM	DSP	Start	Elapsed
synth_1	constrs_1	Not started														
impl_1	constrs_1	Not started														

Generate a programming file after implementation

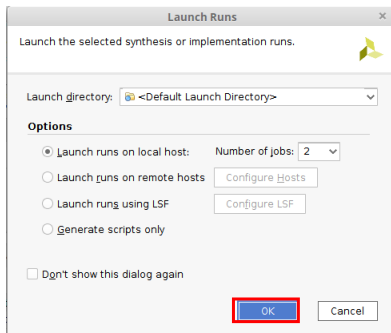
Test Vivado

Vivado



Test Vivado

Vivado



Test Vivado

Vivado

The screenshot shows the Vivado 2017.1 IDE interface. The title bar indicates the project path: `test - [/home/apola/projects/EAMTA2017/practico/run/test/test.xpr] - Vivado 2017.1`. The top menu bar includes File, Edit, Flow, Tools, Window, Layout, View, and Help. A toolbar with various icons is located below the menu bar. The main workspace is divided into several panels:

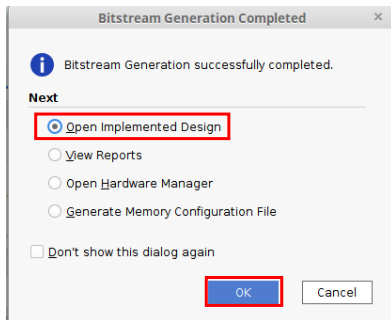
- Flow Navigator** (left): Shows the project flow with sections for IP INTEGRATOR, SIMULATION, RTL ANALYSIS, SYNTHESIS, and IMPLEMENTATION. The 'Run Synthesis' button is highlighted.
- PROJECT MANAGER - test** (center): Contains the 'Sources' panel (listing `constrs_1 (1)`, `Arty_Master.xdc`, and `sim_1 (1)`), the 'Hierarchy' tab, and the 'Properties' panel.
- Project Summary** (right): Displays project details such as Project name, Project location, Product family, Project part, Top module name, Target language, and Simulator language.
- Tcl Console** (bottom): Shows the execution of the `Running synth_design...` command, with a table of results.

A red box highlights the 'Running synth_design' button in the top right corner of the interface, next to a 'Cancel' button and a green checkmark icon.

Name	Constraints	Status	WNS	TNS	WHS	THS	TPWS	Total Power	Failed Routes	LUT	FF	BRAMs	URAM	DSP	Start
synth_1	constrs_1	Running synth_design...													7/1...
impl_1	constrs_1	Queued...													

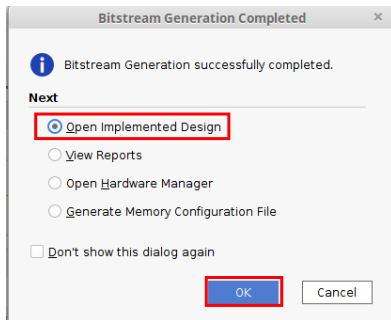
Test Vivado

Vivado



Test Vivado

Vivado



Test Vivado

Vivado

The screenshot displays the Vivado 2017.1 IDE interface. The top menu bar includes File, Edit, Flow, Tools, Window, Layout, View, and Help. The title bar shows the project path: test - [j:/home/apola/projects/EAMTA2017/practico/run/test/test.xpr] - Vivado 2017.1. The status bar at the top right indicates 'write_bitstream Complete' with a green checkmark and 'Default Layout'.

The left sidebar contains the Flow Navigator, which is expanded to show the 'IMPLEMENTATION' section. The 'Run Implementation' task is selected, and the 'Open Implemented Design' sub-task is active.

The main workspace is divided into several panes:

- Sources**: Shows the project hierarchy with 'top_microblaze', 'Nets (21)', and 'Leaf Cells (19)'.
- Netlist**: Displays the netlist for the selected object.
- Properties**: A pane for viewing properties of selected objects.
- Project Summary**: A summary of the project details.
- Device**: A diagram of the device layout showing components like X0Y0, X0Y1, X1Y0, and X1Y1.
- Design Timing Summary**: A report showing timing analysis results.

The **Design Timing Summary** report is expanded, showing the following data:

Setup		Hold		Pulse Width	
Worst Negative Slack (WNS):	7.592 ns	Worst Hold Slack (WHS):	0.130 ns	Worst Pulse Width Slack (WPWS):	
Total Negative Slack (TNS):	0.000 ns	Total Hold Slack (THS):	0.000 ns	Total Pulse Width Negative Slack:	
Number of Failing Endpoints:	0	Number of Failing Endpoints:	0	Number of Failing Endpoints:	
Total Number of Endpoints:	6	Total Number of Endpoints:	6	Total Number of Endpoints:	

Below the table, a message states: **All user specified timing constraints are met.**

The bottom of the report shows the file name: **Timing Summary - impl_1 (saved)**.

Muchas Gracias