

# Logic System Lab 2024

## Lab 0 : Intro + Env Setup



Department of Electrical Engineering  
National Cheng Kung University

# 本學期實驗課目的

1. 學習邏輯思維、硬體電路設計思維
2. 認識 IC Design Flow (IC 開發流程)
3. 學習如何透過硬體描述語言自行開發硬體 (以模擬的方式)
  - Design、Coding、Debug
4. 學習如何將自行開發的硬體實際變成實體電路運行
  - FPGA 是一個可重複編程的電路
  - 可以將自行開發的電路燒錄到 **FPGA** 上實際運行

# 本學期課程大綱

No.	Course
0	Introduction + Environment Setup
1	Mux & Demux
2	Encoder & Decoder
3	Combinational Circuit - Adder
4	Sequential Circuit – PWM Lights
5	Mini Project 1 – Vending machine
6	Mini Project 2 – Whack-a-Mole
7	Mini Project 3 – Snake
8	Mini Project 4 – Music Box
9	Mini Project 5 – Stack Based Calculator

逢期中期末/國定假日/連假則休息一週

較複雜的 Lab 可能會分兩次上課實作

## 學期分數

出席：10 %

實作：90 %

# 注意事項與規定

1. 實驗課講義與檔案都會放在 [實驗課網站](#)
2. 每次實驗完都要繳交結報 (這次不用)
  - 在下次實驗前一天晚上 23:59 前繳交至 moodle
  - 遲交一週內 70%，超過一週 0%
3. 上課時，每完成一個實作都麻煩同學請助教幫忙檢查正確性，以免發生遺憾
4. 實驗室嚴禁飲食，違規者每次扣總分10分
5. 如果有課程問題，請以 [LogicLab24] 作為主旨開頭寄信至 [course@caslab.ee.ncku.edu.tw](mailto:course@caslab.ee.ncku.edu.tw)，以方便助教檢視。

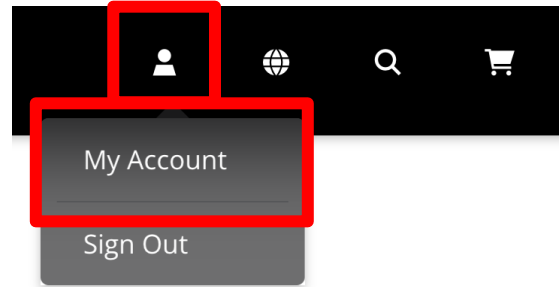
# 環境安裝與分組

- 請大家回家都先用自己的電腦嘗試安裝 Vivado
- 使用 Mac 或其他無法使用 Vivado 的同學，請找可以正常使用 Vivado 的人一組
- 一組 2 人，過幾天會在 moodle 開表單通知大家填寫請於
  - 請於下次上課前填寫完畢
  - 未找好組別的同學，會由助教幫忙分組

# 附錄：環境安裝 (Vivado)

# Vivado 安裝 (1/11)

## 1. 註冊帳號



Link :

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

## 2. 下載 Vivado ML Edition - 2023.2 Full Product Installation

Windows version



AMD Unified Installer for FPGAs & Adaptive SoCs 2023.2:  
Windows Self Extracting Web Installer (EXE – 203.13 MB)

MD5 SUM Value : 50e8baea82f54dc8a83b86dce491ee80

Download Verification ⓘ

Digests

Signature

Public Key

Linux version



AMD Unified Installer for FPGAs & Adaptive SoCs 2023.2:  
Linux Self Extracting Web Installer (BIN – 270.64 MB)

MD5 SUM Value : b8c785d03b754766538d6cde1277c4f0

Download Verification ⓘ

Digests

Signature

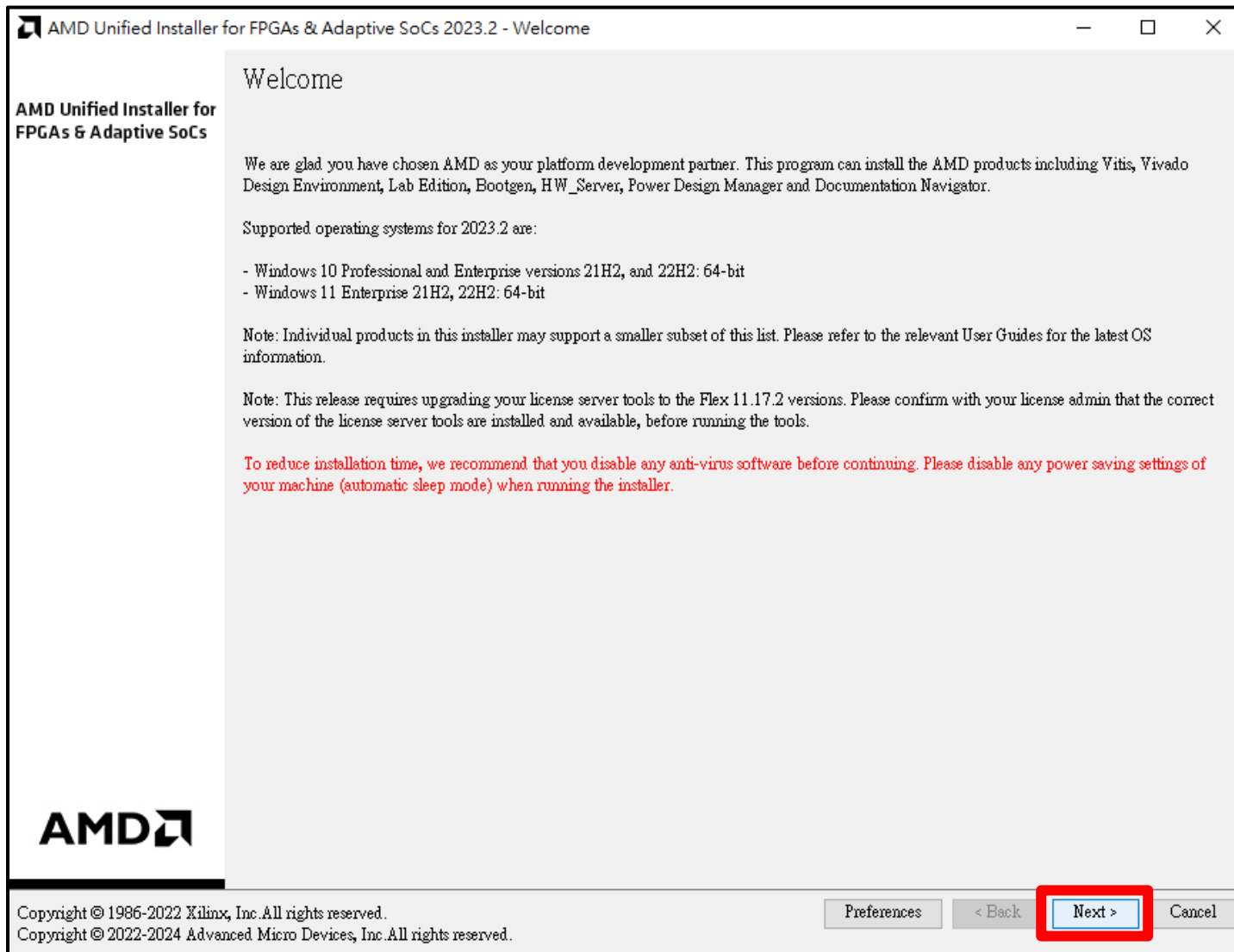
Public Key

## 3. 安裝

# Vivado 安裝 (2/11)



FPGAs\_Adaptive  
SoCs\_Unified\_2  
023.2\_1013\_225  
6\_Win64





# Vivado 安裝 (3/11)

AMD Unified Installer for FPGAs & Adaptive SoCs 2023.2 - Select Install Type

Select Install Type

Please select install type and provide your AMD.com E-mail Address and password for authentication.

User Authentication

Please provide your AMD user account credentials to download the required files.  
If you don't have an account, [please create one](#). If you forgot your password, you can [reset it here](#).

E-mail Address

Password

輸入你剛剛註冊的帳密

Download and Install Now

Select your desired device and tool installation options and the installer will download and install just what is required.

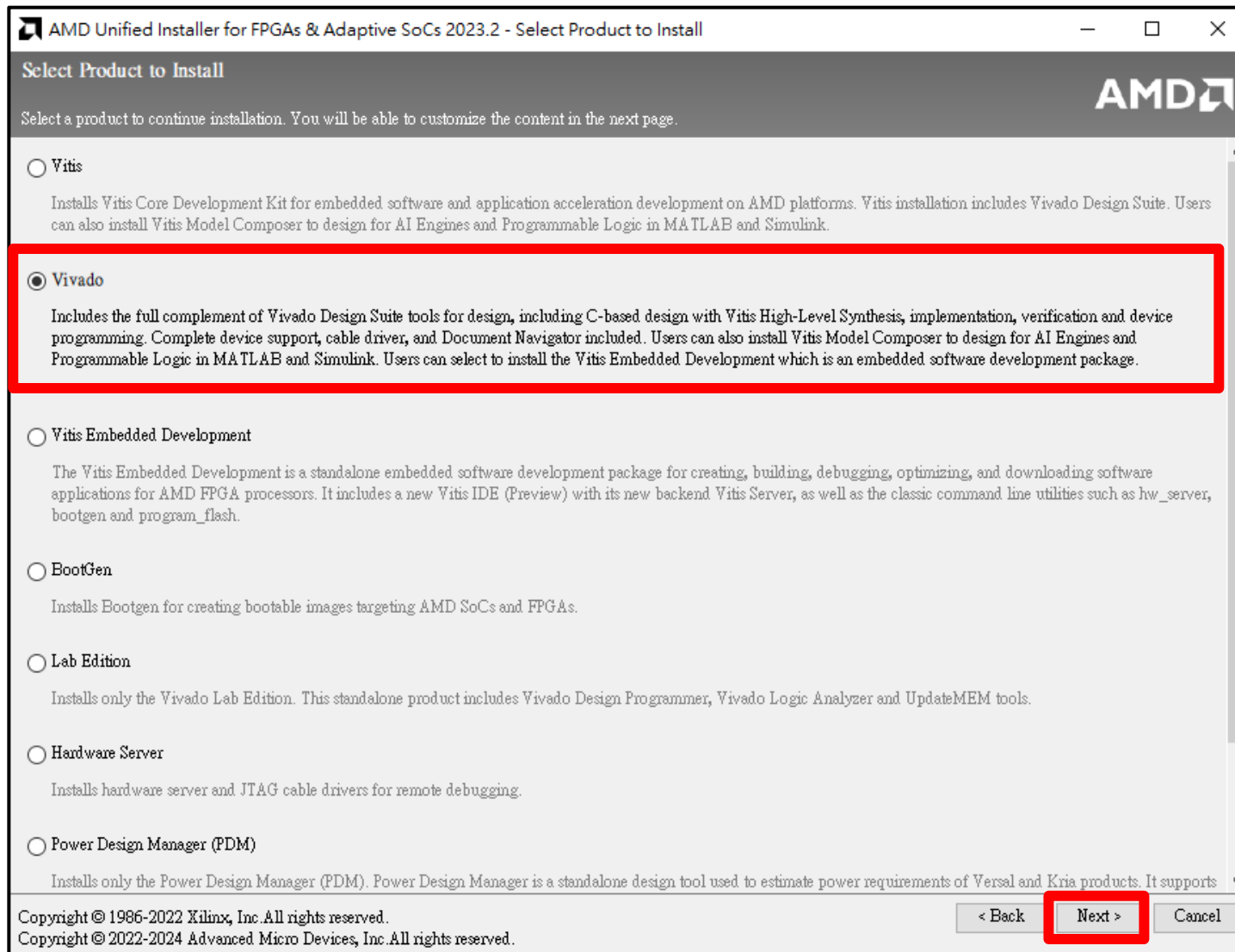
Download Image (Install Separately)

The installer will download an image containing all devices and tool options for later installation. Use this option if you wish to install a full image on a network drive or allow different users maximum flexibility when installing.

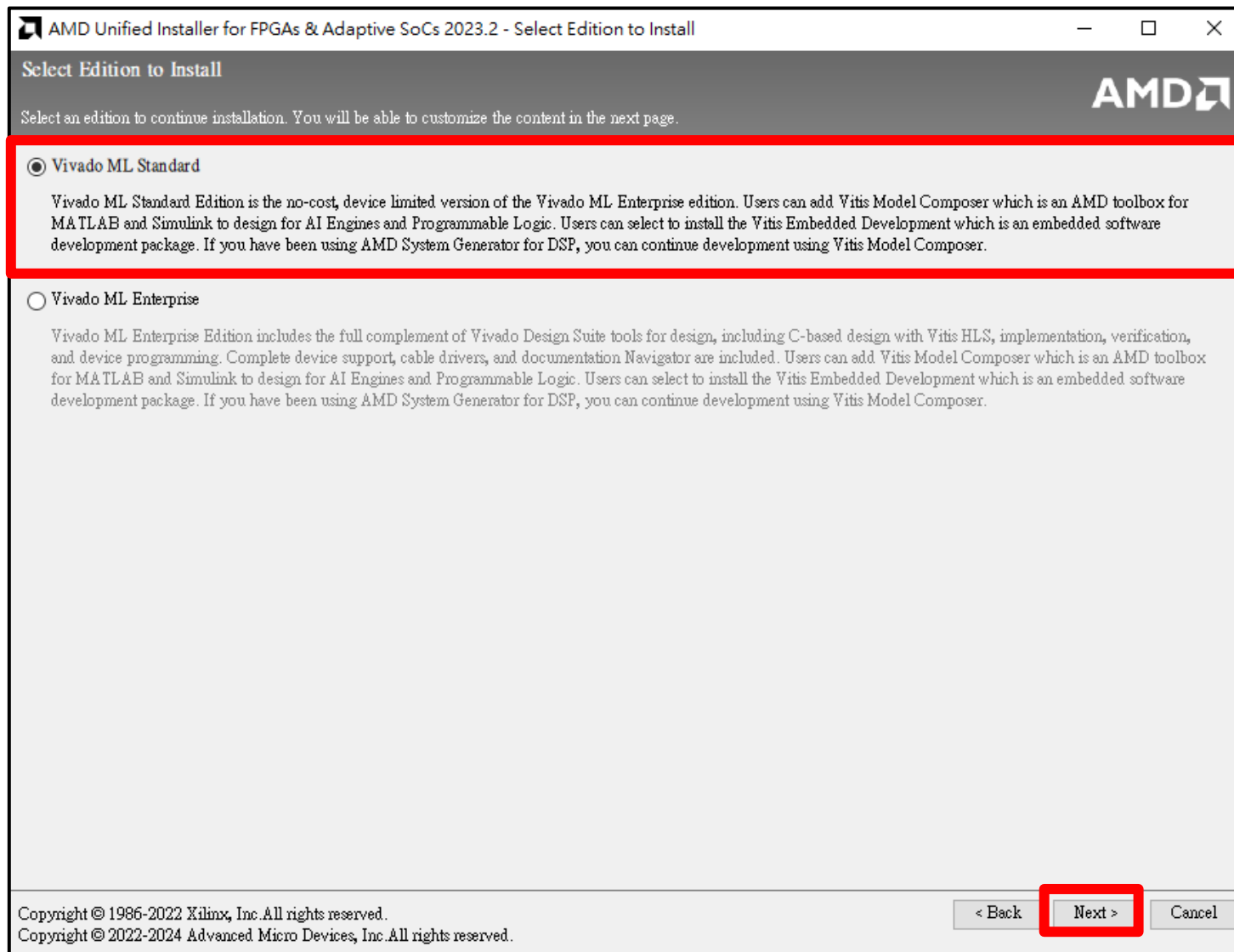
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Copyright © 2022-2024 Advanced Micro Devices, Inc. All rights reserved.

< Back **Next >** Cancel

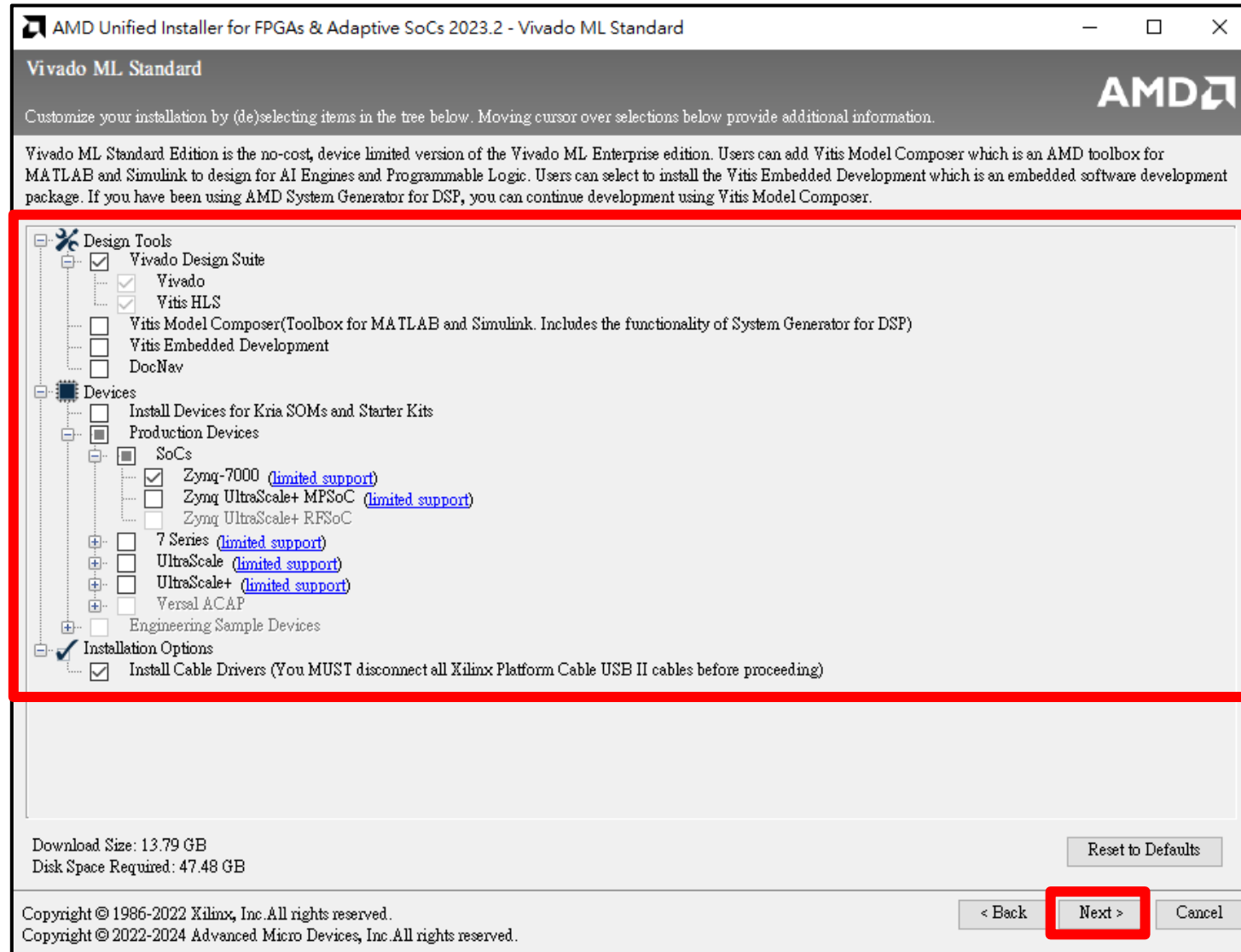
# Vivado 安裝 (4/11)



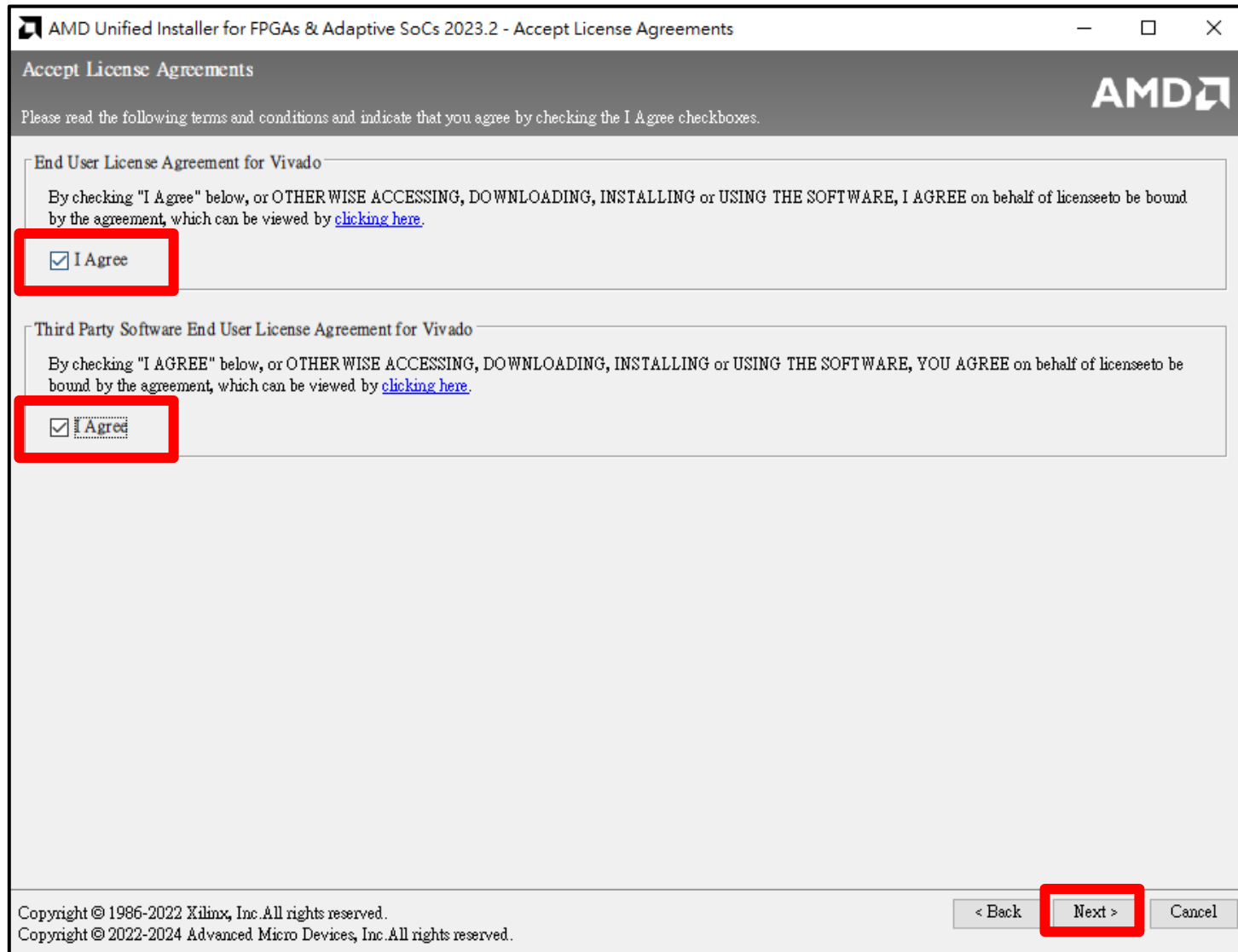
# Vivado 安裝 (5/11)



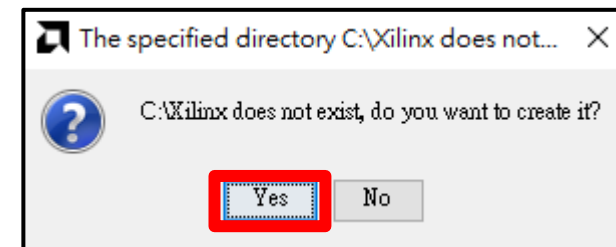
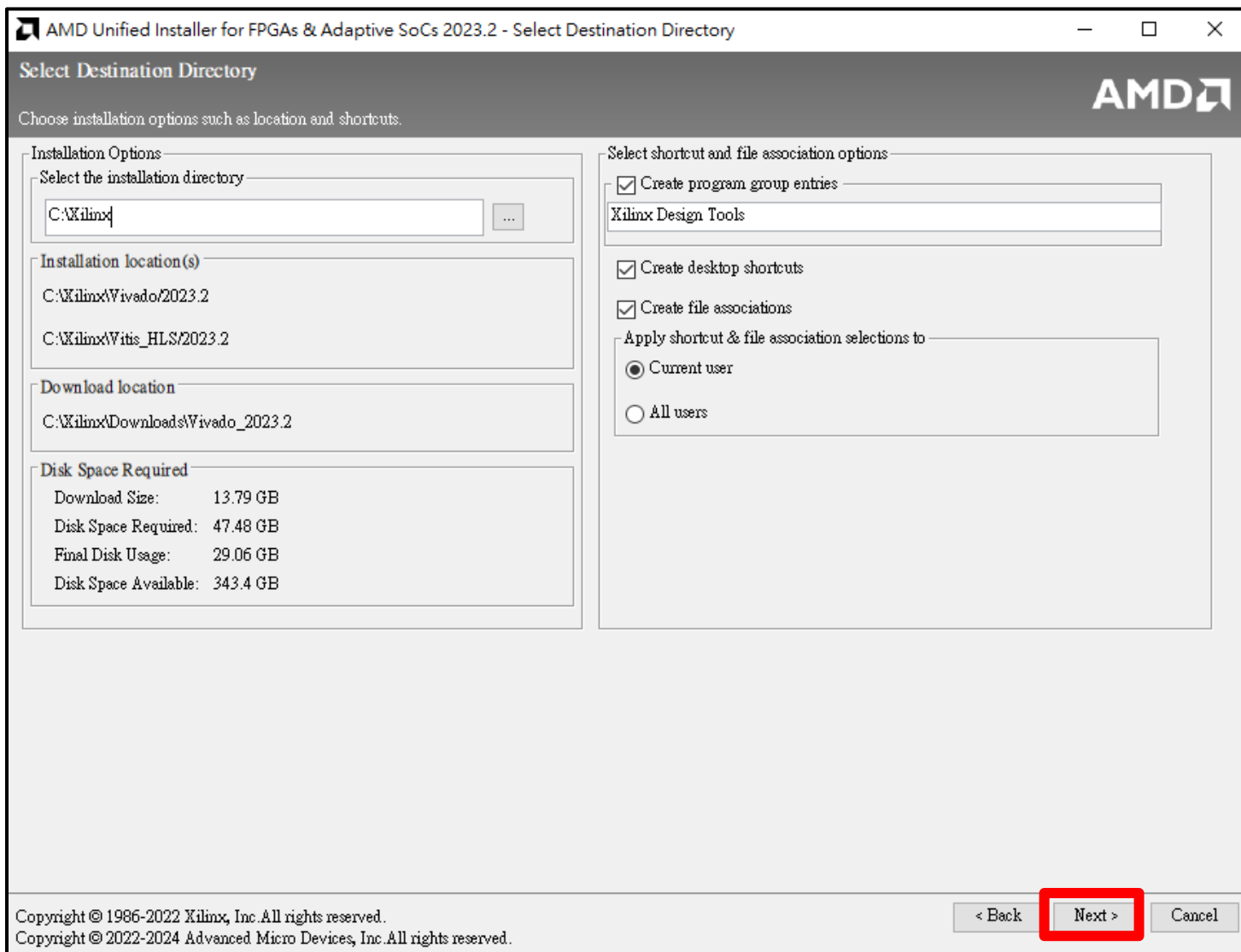
# Vivado 安裝 (6/11)



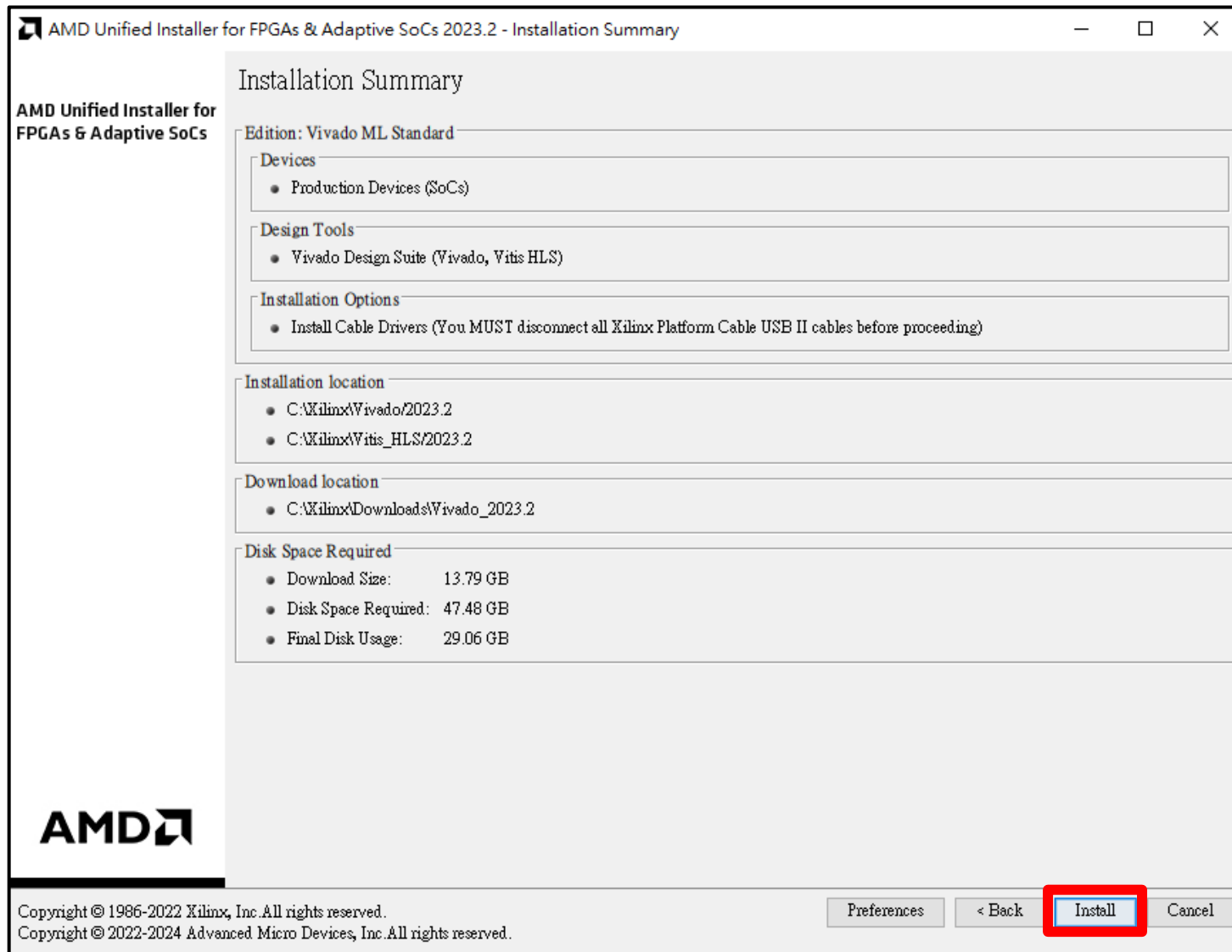
# Vivado 安裝 (7/11)



# Vivado 安裝 (8/11)

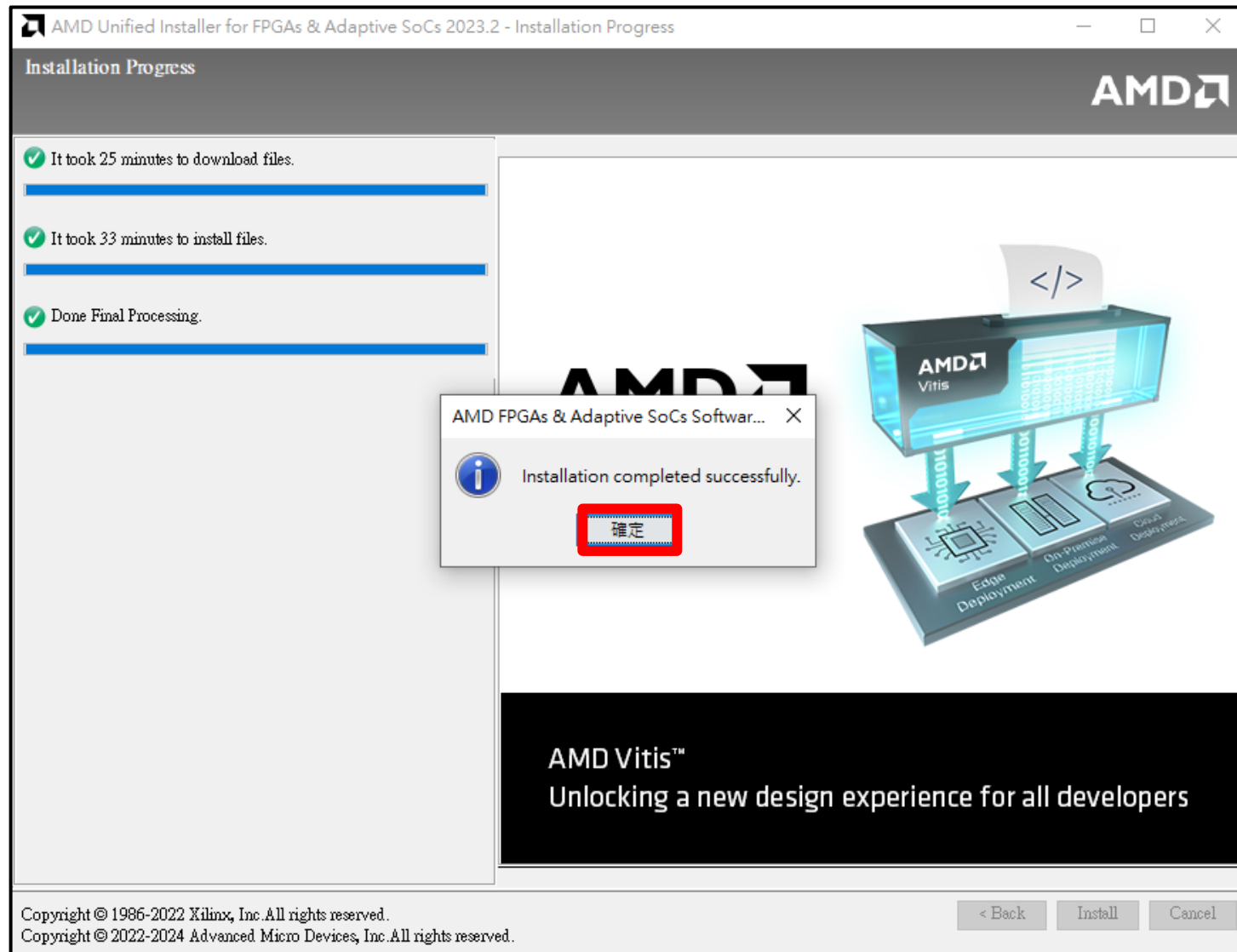


# Vivado 安裝 (9/11)



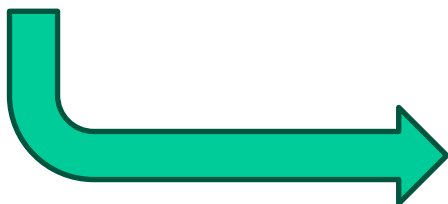
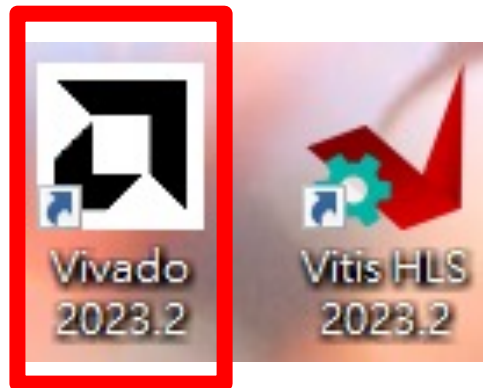
# Vivado 安裝 (10/11)

等待安裝完成 ...





# Vivado 安裝 (11/11)



安裝完後會有兩個執行檔  
雙擊左側這個  
能跑出右邊畫面即成功

