

UEFI & EDK II Training

UEFI Driver Wizard Lab

Currently only available in Ubuntu 16.04

tianocore.org

Lesson Objective

Linux Ubuntu 16.04 is only supported

Python Version 2.7 and
python-wxgtk V3.0

Non-Ubuntu - Continue to [Porting UEFI Driver Lab](#)

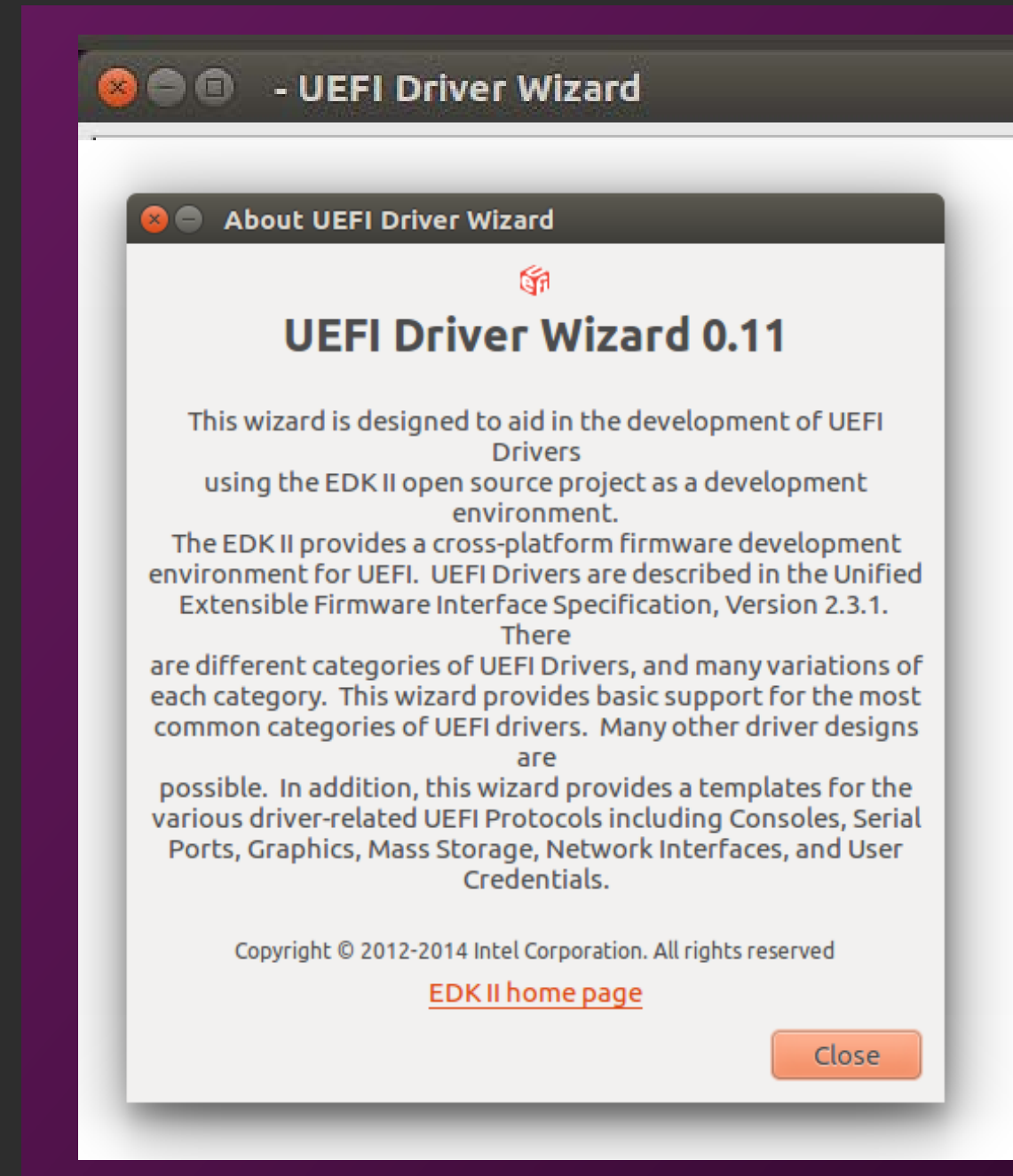
-  Setup the UEFI Driver Wizard
-  Create a UEFI Driver Template

UEFI DRIVER WIZARD

Creating a Template UEFI Driver with the UEFI Driver Wizard

UEFI Driver Wizard Overview

- ✓ Open source tool
- ✓ Based on *Driver Writer's Guide for UEFI 2.3.1* content
- ✓ Intel SSG engineers contributed
- ✓ Located on www.TianoCore.org



Installing Python for UEFI Driver Wizard

Requirements and Options

- Work space must contain BaseTools, MdePkg & MdeModulePkg Packages from [UDK2017](#) for Driver development on Tianocore.org
- Uses previous lab's setup \$HOME/src/edk2-ws
- Python* scripts from [Github Link](#) then use instructions from README for Python and wxPython versions to install then run

```
bash$ python launch.py
```

Requirements for Your Driver



Using UEFI Driver Wizard

- UEFI Device Driver
- UEFI Version 2.7 (0x00020046)
`#define EFI_2_70_SYSTEM_TABLE_REVISION ((2<<16)|(70DEC))`
- Unloadable driver
- Support IA32 & x64 CPUs
- Returns component name information
- Byte stream device (i.e. UART / Serial I/O)
- Option to produce HII strings & forms for setup

Template File Contents

Proper UEFI driver entry point

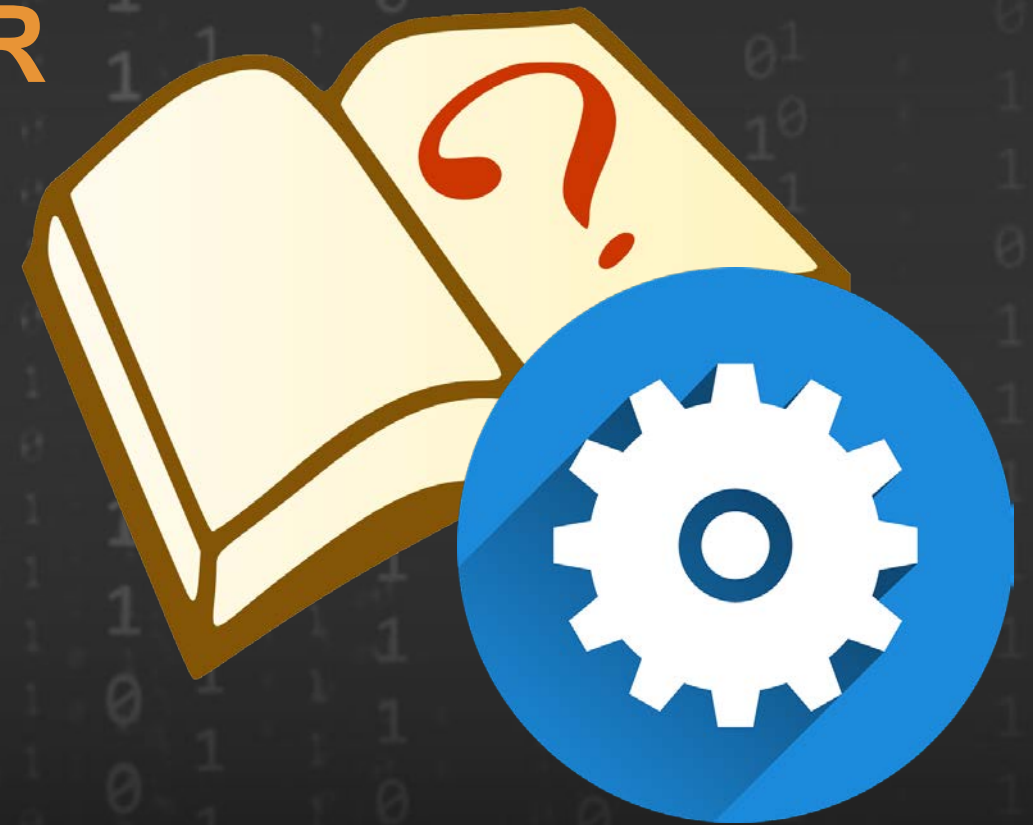
Basic driver libraries/headers

Skeletons for common driver functions

Error values until ported
EFI_UNSUPPORTED, EFI_DEVICE_ERROR

LAB 1: CREATE A UEFI DRIVER WITH THE UEFI DRIVER WIZARD

- In this lab, you'll create a new UEFI driver using the UEFI Driver Wizard.
- This will create a set of "c" code files to be used as a template UEFI Driver used in the subsequent driver labs



Lab 1: Install UEFI Driver Wizard, Python & wxPython

1. Perform [Lab Setup](#) from previous Labs
2. From the ~FW/DriverWizard folder, copy and paste folder “~FW/DriverWizard/UefiDriverWizard” to ~\$Home
3. Check if version 2.7.x is the default of Python from Terminal Prompt

```
bash$ python -V
```

```
Python 2.7.12
```

4. Install the wxPython (Version 3.0)

```
bash$ sudo apt-get install python-wxgtk3.0
```

Lab 1: UefiDriverWizard -Select Work Space

Terminal Prompt (Cnt-Alt-T)

```
bash$ cd ~UefiDriverWizard
bash$ python launch.py
```

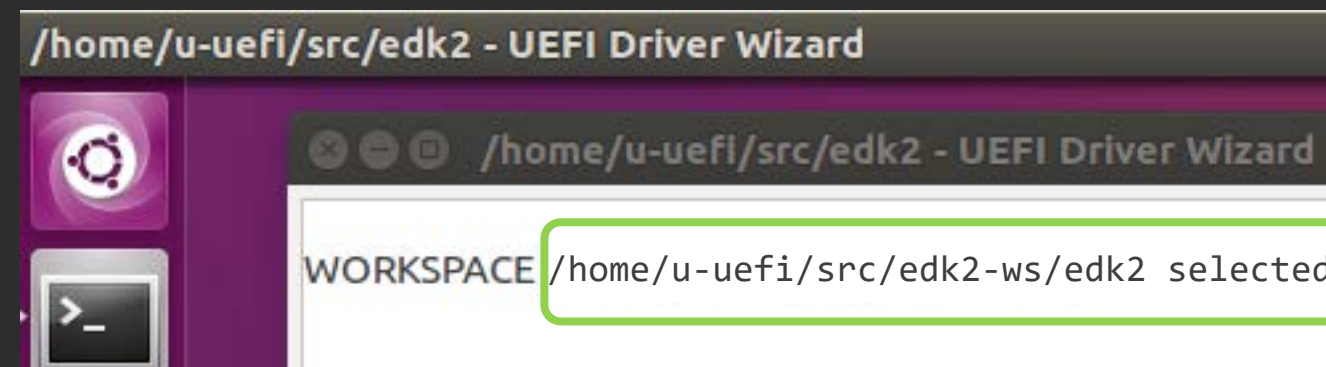
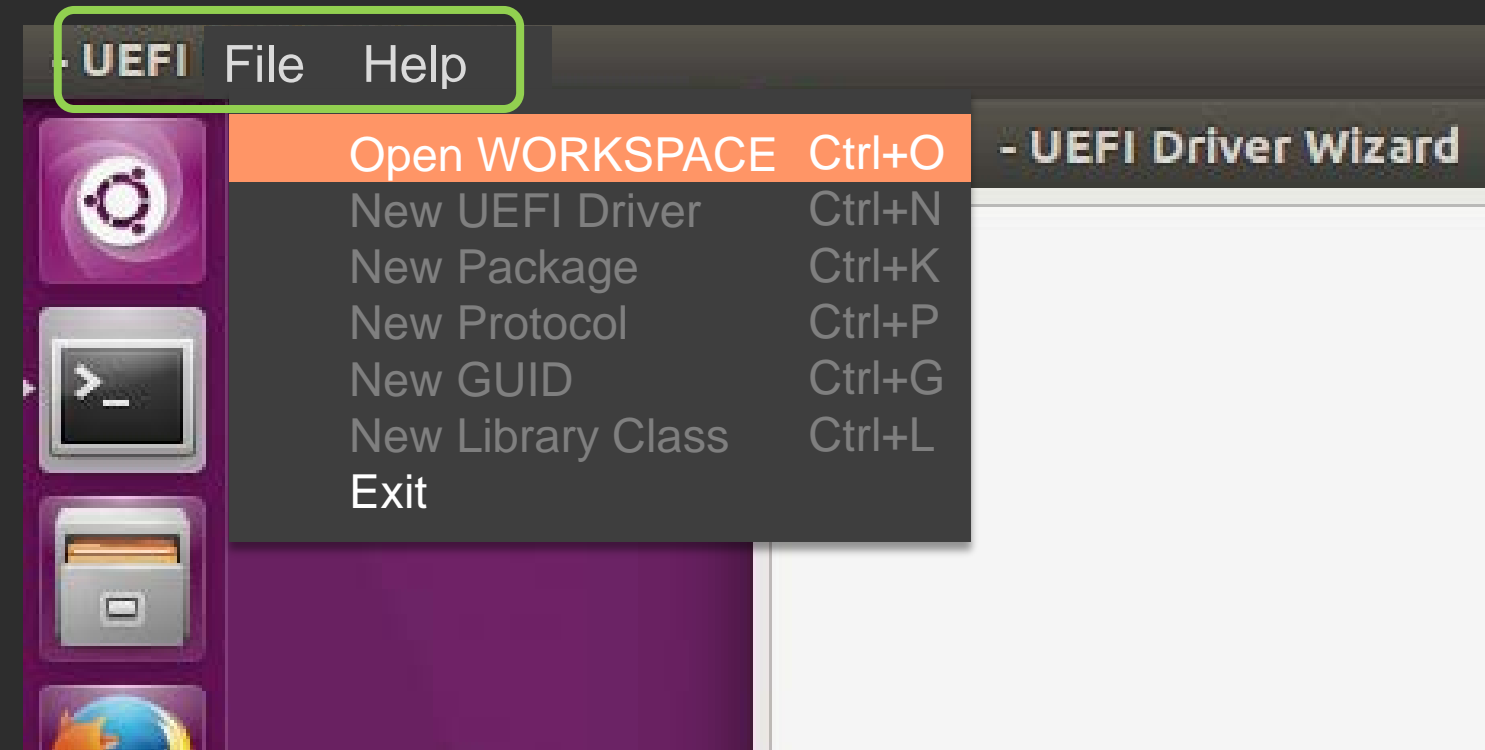
Select a Work Space

Control+O – to browse for a directory

Browse to ~src/edk2-ws/edk2

Select

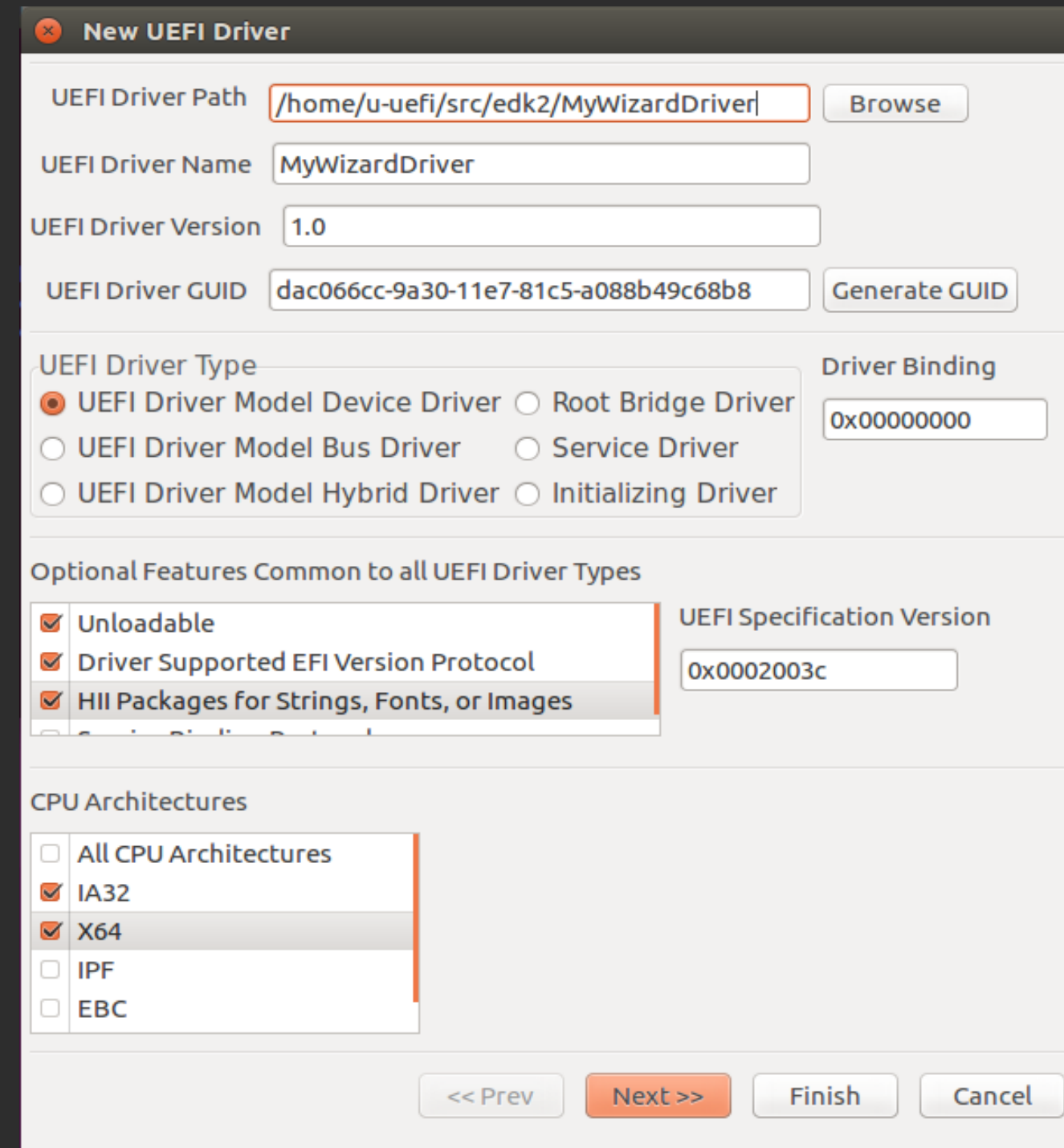
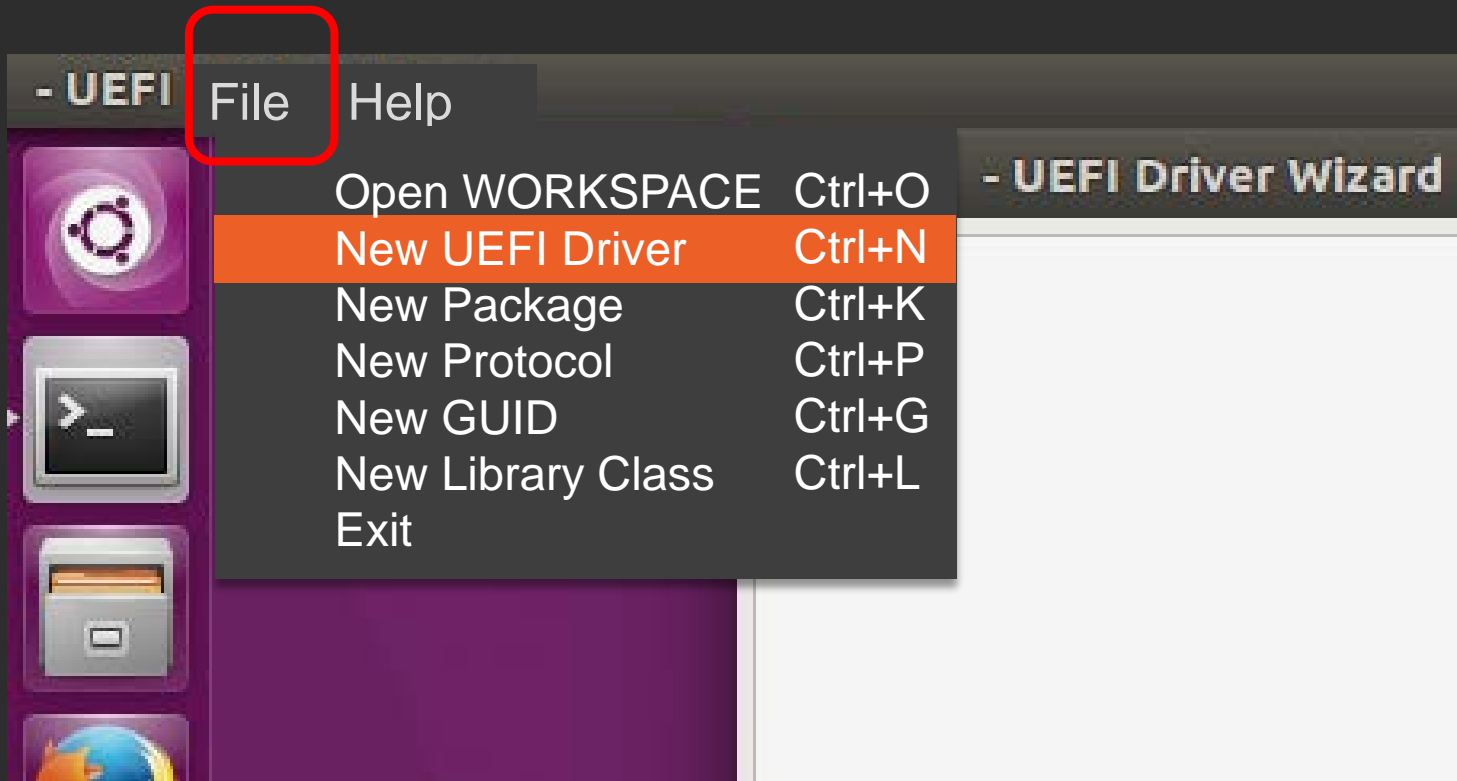
Open



Note: the environment for EDK II must be setup with edksetup.sh

Lab 1: Create a New UEFI Driver

Control+N – to Open Menu

A screenshot of the 'New UEFI Driver' dialog box. It contains the following fields and options:

- UEFI Driver Path: with a 'Browse' button.
- UEFI Driver Name:
- UEFI Driver Version:
- UEFI Driver GUID: with a 'Generate GUID' button.
- UEFI Driver Type: Radio buttons for 'UEFI Driver Model Device Driver' (selected), 'Root Bridge Driver', 'UEFI Driver Model Bus Driver', 'Service Driver', 'UEFI Driver Model Hybrid Driver', and 'Initializing Driver'.
- Driver Binding:
- Optional Features Common to all UEFI Driver Types: Checkboxes for 'Unloadable' (checked), 'Driver Supported EFI Version Protocol' (checked), and 'HII Packages for Strings, Fonts, or Images' (checked).
- UEFI Specification Version:
- CPU Architectures: Checkboxes for 'All CPU Architectures', 'IA32' (checked), 'X64' (checked), 'IPF', and 'EBC'.

At the bottom are buttons for '<< Prev', 'Next >>' (highlighted in orange), 'Finish', and 'Cancel'.

Lab 1: New UEFI Driver Menu

- UEFI Driver Path” – Type: “MyWizardDriver”

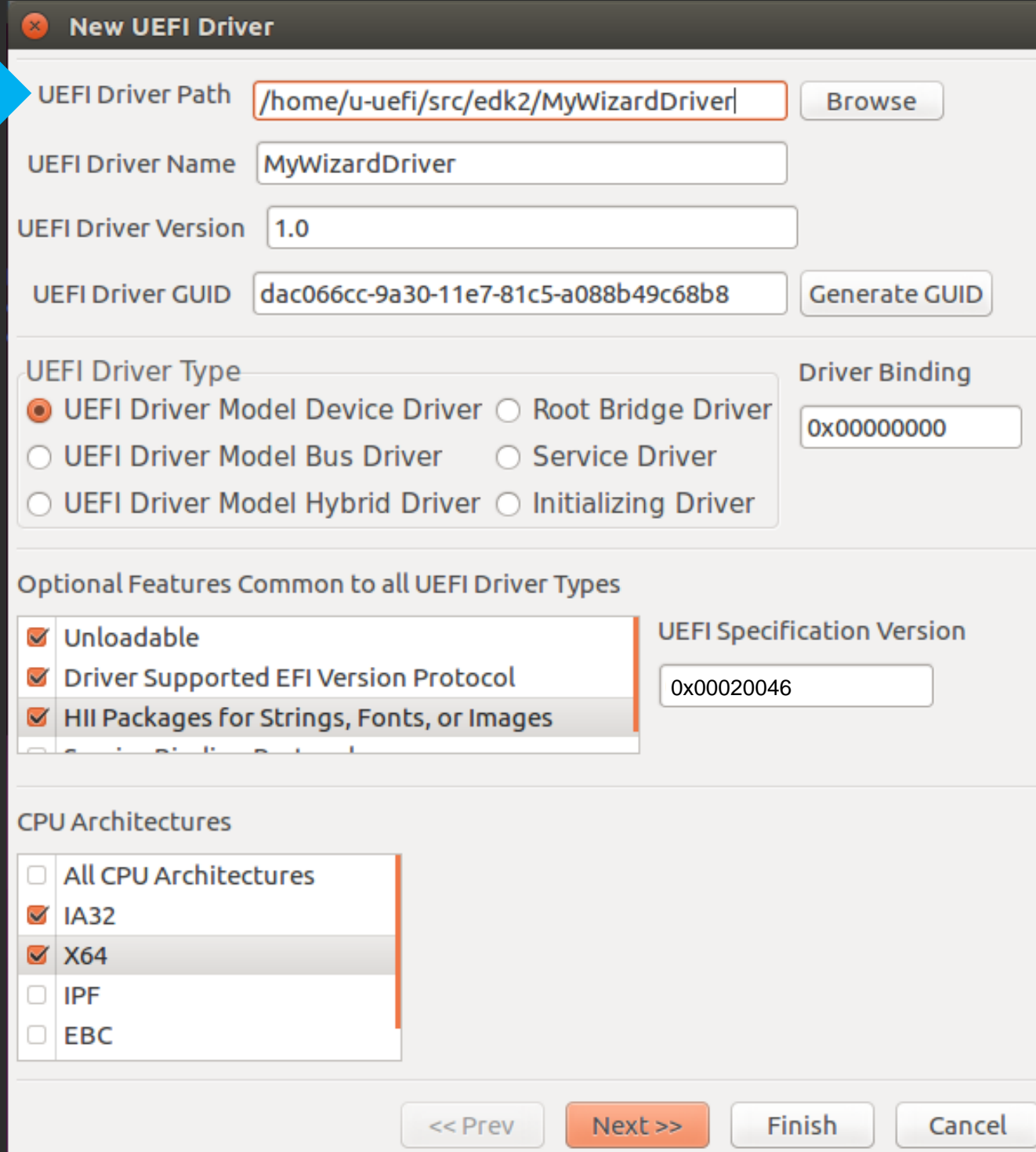
Note: “UEFI Driver Name” is filled in.

- **Ensure** all the forms, radio buttons, and boxes are filled in and **selected exactly** like the image to the right.

- **Note:** A new, specific driver GUID will populate, so it will be different than this image

Click

Next >>



New UEFI Driver

UEFI Driver Path:

UEFI Driver Name:

UEFI Driver Version:

UEFI Driver GUID:

UEFI Driver Type:

- ☒ UEFI Driver Model Device Driver
- ☐ Root Bridge Driver
- ☐ UEFI Driver Model Bus Driver
- ☐ Service Driver
- ☐ UEFI Driver Model Hybrid Driver
- ☐ Initializing Driver

Driver Binding:

Optional Features Common to all UEFI Driver Types:

- ☒ Unloadable
- ☒ Driver Supported EFI Version Protocol
- ☒ HII Packages for Strings, Fonts, or Images

UEFI Specification Version:

CPU Architectures:

- ☐ All CPU Architectures
- ☒ IA32
- ☒ X64
- ☐ IPF
- ☐ EBC

Navigation: << Prev **Next >>** Finish Cancel

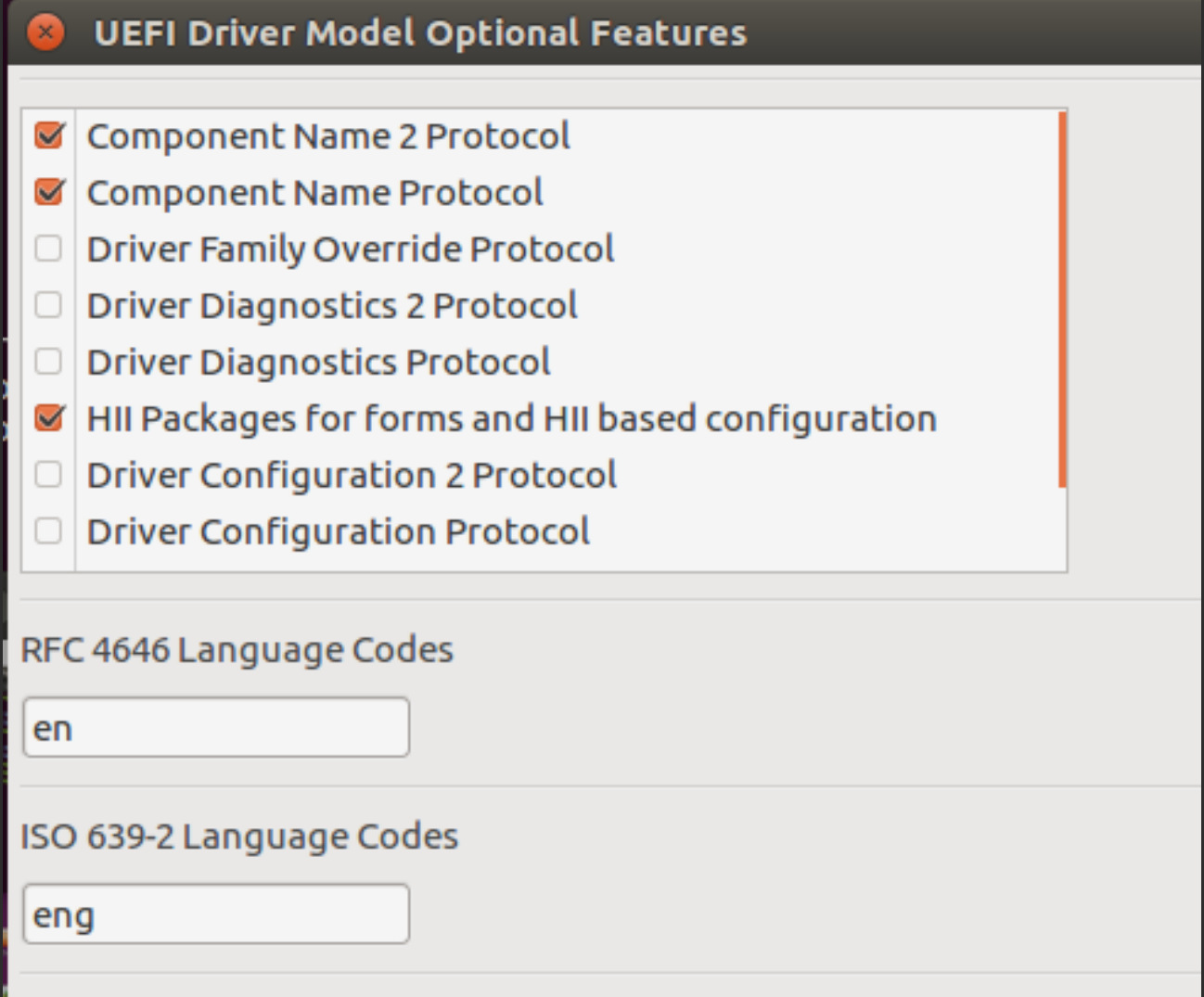
Lab 1: UEFI Driver Model Optional Features

Ensure all the forms, radio buttons, and boxes are filled in and **selected exactly** like the image to the right.

- ✓ "Component Name 2 Protocol"
- ✓ "Component Name Protocol"
- ✓ "HII Packages for Forms . . ."

Click

Next >>



UEFI Driver Model Optional Features

- ☒ Component Name 2 Protocol
- ☒ Component Name Protocol
- ☐ Driver Family Override Protocol
- ☐ Driver Diagnostics 2 Protocol
- ☐ Driver Diagnostics Protocol
- ☒ HII Packages for forms and HII based configuration
- ☐ Driver Configuration 2 Protocol
- ☐ Driver Configuration Protocol

RFC 4646 Language Codes

en

ISO 639-2 Language Codes

eng

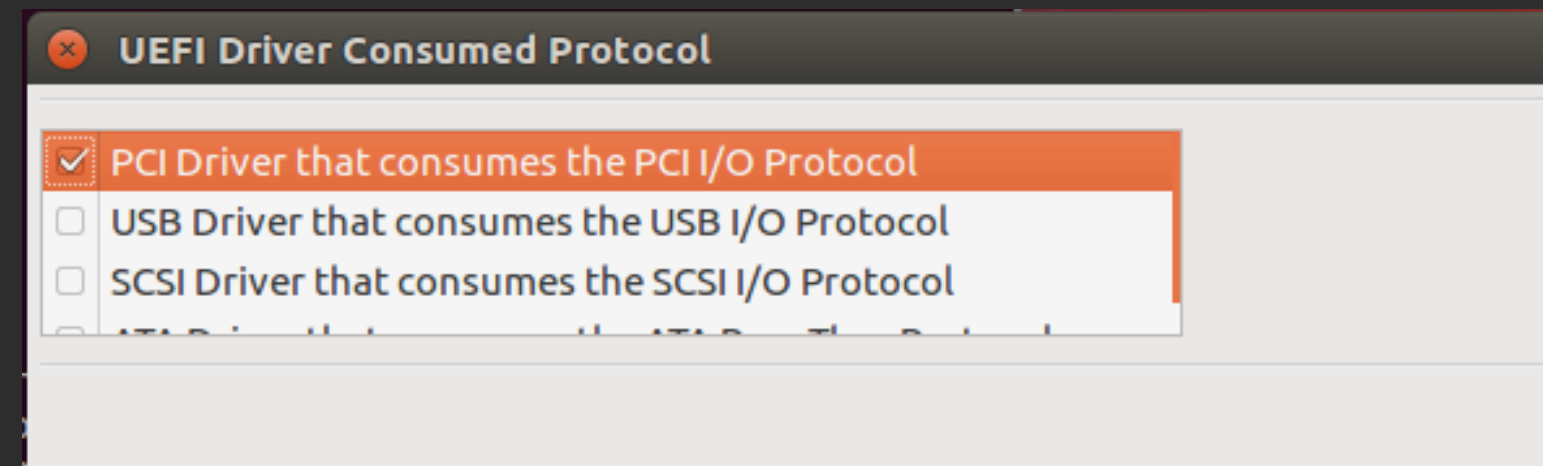
Lab 1: UEFI Driver Consumed Protocol

Select

✓ “PCI Driver that consumes the PCI I/O Protocol”

Click

Next >>



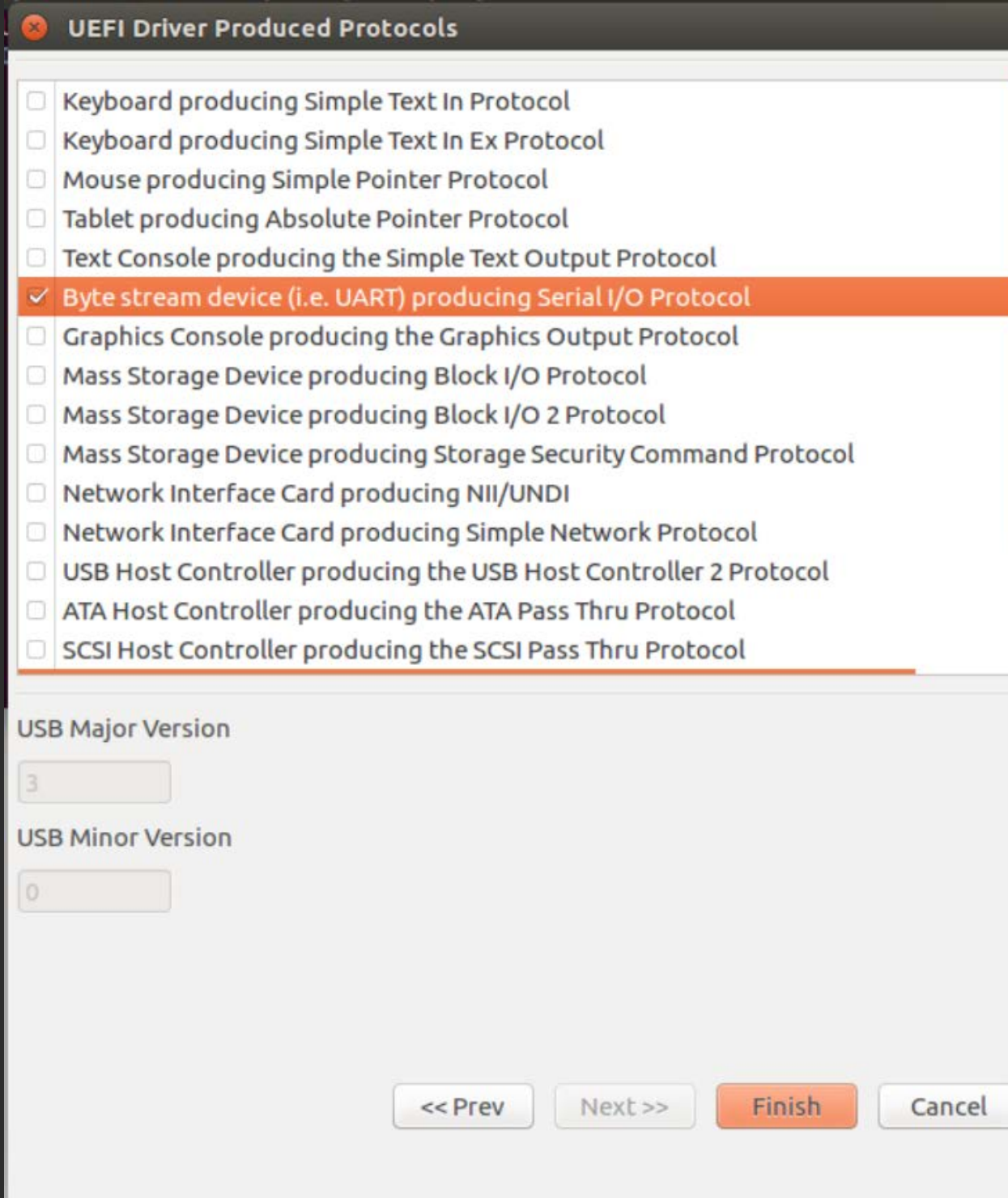
Lab1: UEFI Driver Produced Protocols

Select

- ✓ "Byte stream device (i.e. UART) producing Serial I/O Protocol"

Click

Finish



UEFI Driver Produced Protocols

- ☐ Keyboard producing Simple Text In Protocol
- ☐ Keyboard producing Simple Text In Ex Protocol
- ☐ Mouse producing Simple Pointer Protocol
- ☐ Tablet producing Absolute Pointer Protocol
- ☐ Text Console producing the Simple Text Output Protocol
- ☒ Byte stream device (i.e. UART) producing Serial I/O Protocol
- ☐ Graphics Console producing the Graphics Output Protocol
- ☐ Mass Storage Device producing Block I/O Protocol
- ☐ Mass Storage Device producing Block I/O 2 Protocol
- ☐ Mass Storage Device producing Storage Security Command Protocol
- ☐ Network Interface Card producing NII/UNDI
- ☐ Network Interface Card producing Simple Network Protocol
- ☐ USB Host Controller producing the USB Host Controller 2 Protocol
- ☐ ATA Host Controller producing the ATA Pass Thru Protocol
- ☐ SCSI Host Controller producing the SCSI Pass Thru Protocol

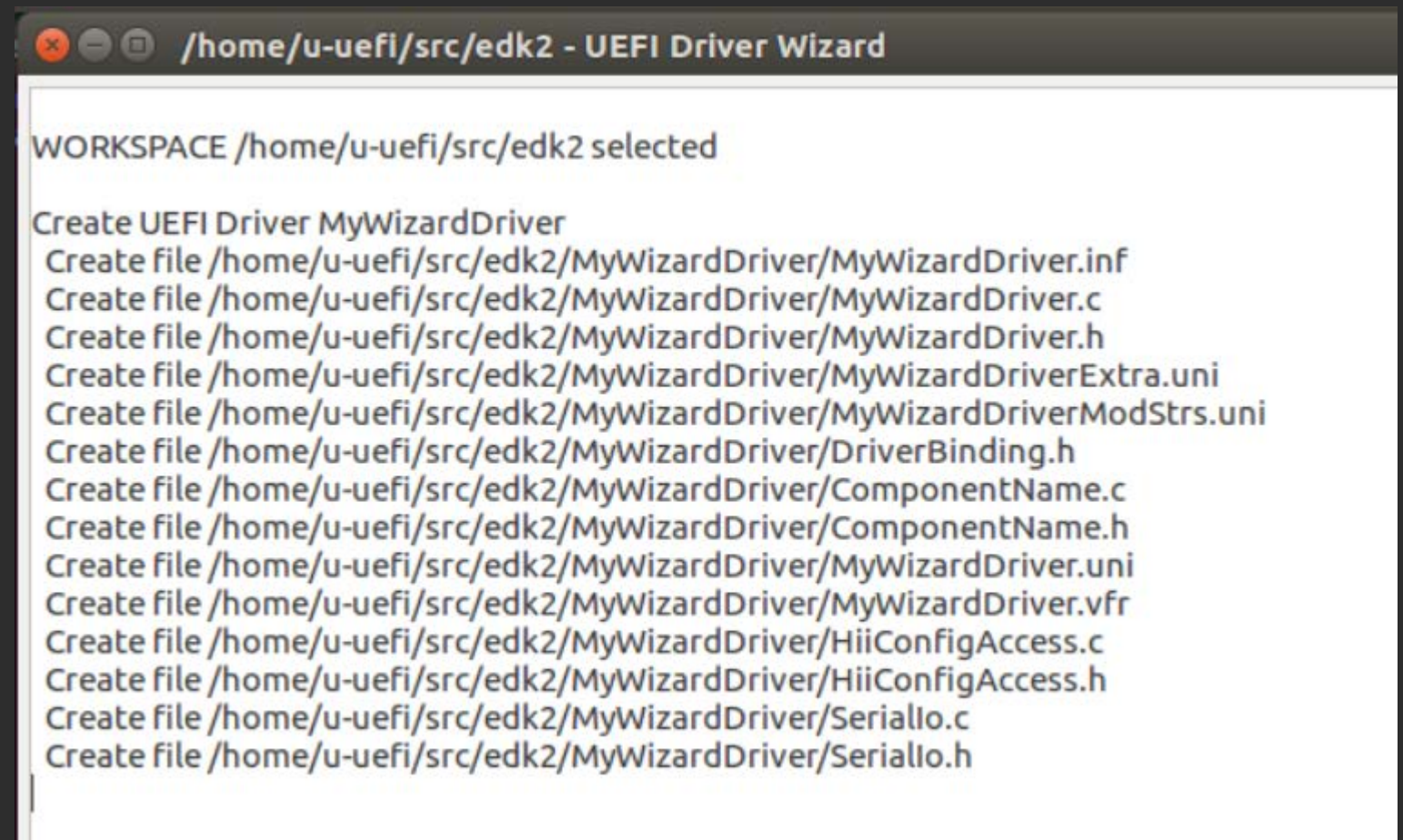
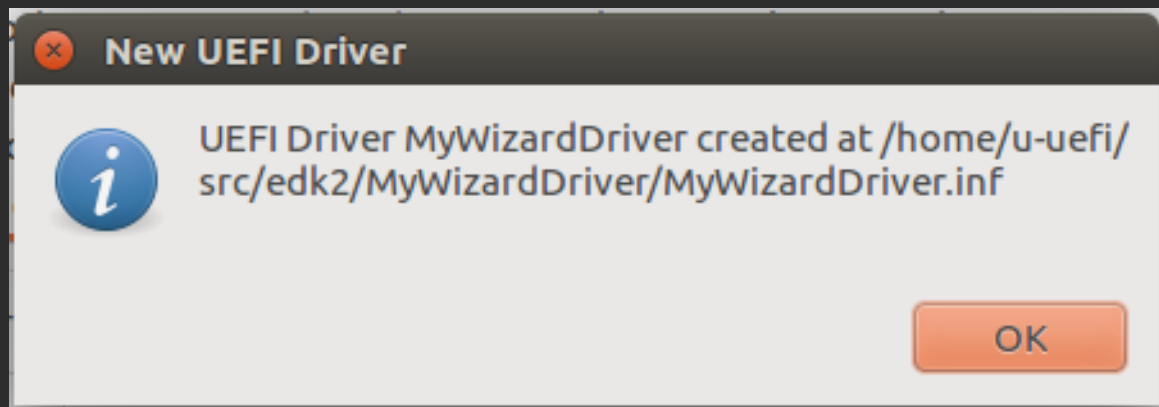
USB Major Version
3

USB Minor Version
0

<< Prev Next >> Finish Cancel

Lab 1: UEFI Driver Created

UEFI Driver template created



Summary

- ✿ Setup the UEFI Driver Wizard
- ✿ Create a UEFI Driver Template

Questions?



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ACKNOWLEDGEMENTS

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