

UEFI & EDK II Training

Changing PCDs – Linux Lab

tianocore.org

See also [LabGuide.md](#) for Copy & Paste examples in labs

Lesson Objective

UEFI Application with PCDs

UEFI APPLICATION W/ PCDS

EDK II PCD's Purpose and Goals **Review**



Documentaton : [MdeModulePkg/Universal/PCD/Dxe/Pcd.inf](https://github.com/tianocore/edk2/blob/master/MdeModulePkg/Universal/PCD/Dxe/Pcd.inf)

Purpose

- Establishes platform common definitions
- Build-time/Run-time aspects
- Binary Editing Capabilities

Goals

- Simplify porting
- Easy to associate with a module or platform

PCDs can be located anywhere within the Workspace even though a different package will use those PCDs for a given project

.DEC

**Define
PCD**

Package

.INF

**Reference
PCD**

Module

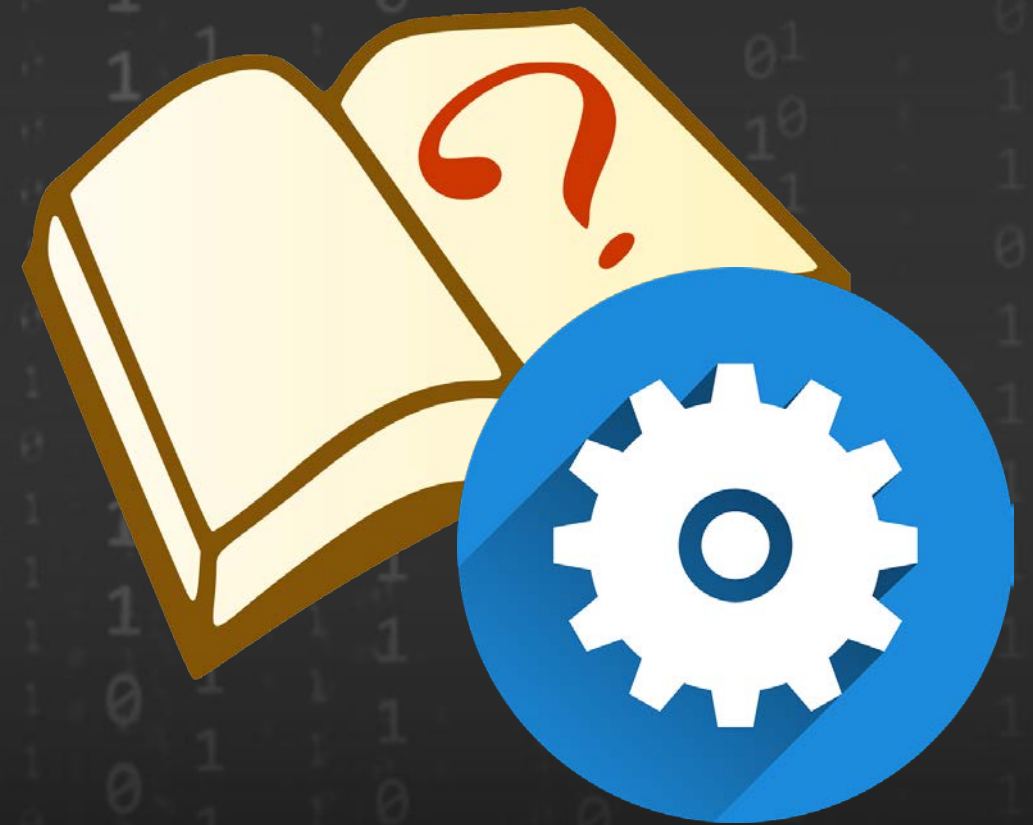
.DSC

**Modify
PCD**

Platform

Lab 1: Writing UEFI Applications with PCDs

In this lab, you'll learn how to write UEFI applications with PCDs.

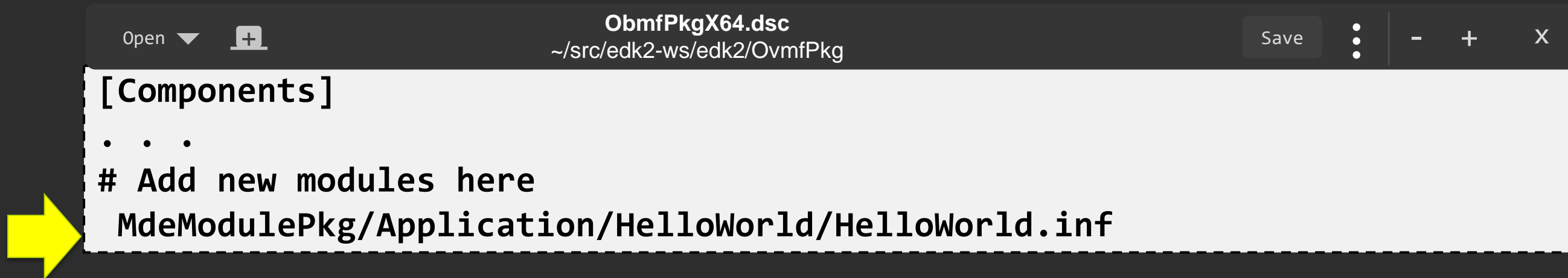



EDK II HelloWorld App Lab

First Setup for Building EDK II for OVMF, See [Lab Setup](#)

Edit and add the following line (at the end of the file)

Edit OvmfPkg/OvmfPkgX64.dsc add HelloWorld.inf - Save



```
Open ▼  OvmfPkgX64.dsc Save ⋮ - + X  
~/src/edk2-ws/edk2/OvmfPkg  
[Components]  
.  
.  
.  
# Add new modules here  
MdeModulePkg/Application/HelloWorld/HelloWorld.inf
```

Build the OvmfPkgX64 from Terminal Prompt (Cnt-Alt-T)

```
bash$ cd ~/src/edk2-ws/edk2  
bash$ build -D ADD_SHELL_STRING
```


EDK II HelloWorld App Lab

1. Copy the HelloWorld.efi to the ~run-ovmf/hda-contents directory

```
bash$ cd ~/run-ovmf/hda-contents  
bash$ cp ~/src/edk2-ws/Build/OvmfX64/DEBUG_GCC5/X64/HelloWorld.efi
```

2. CD to the run-ovmf directory and run Qemu with the RunQemu.sh shell

```
bash$ cd ~/run-ovmf  
bash$ . RunQemu.sh
```

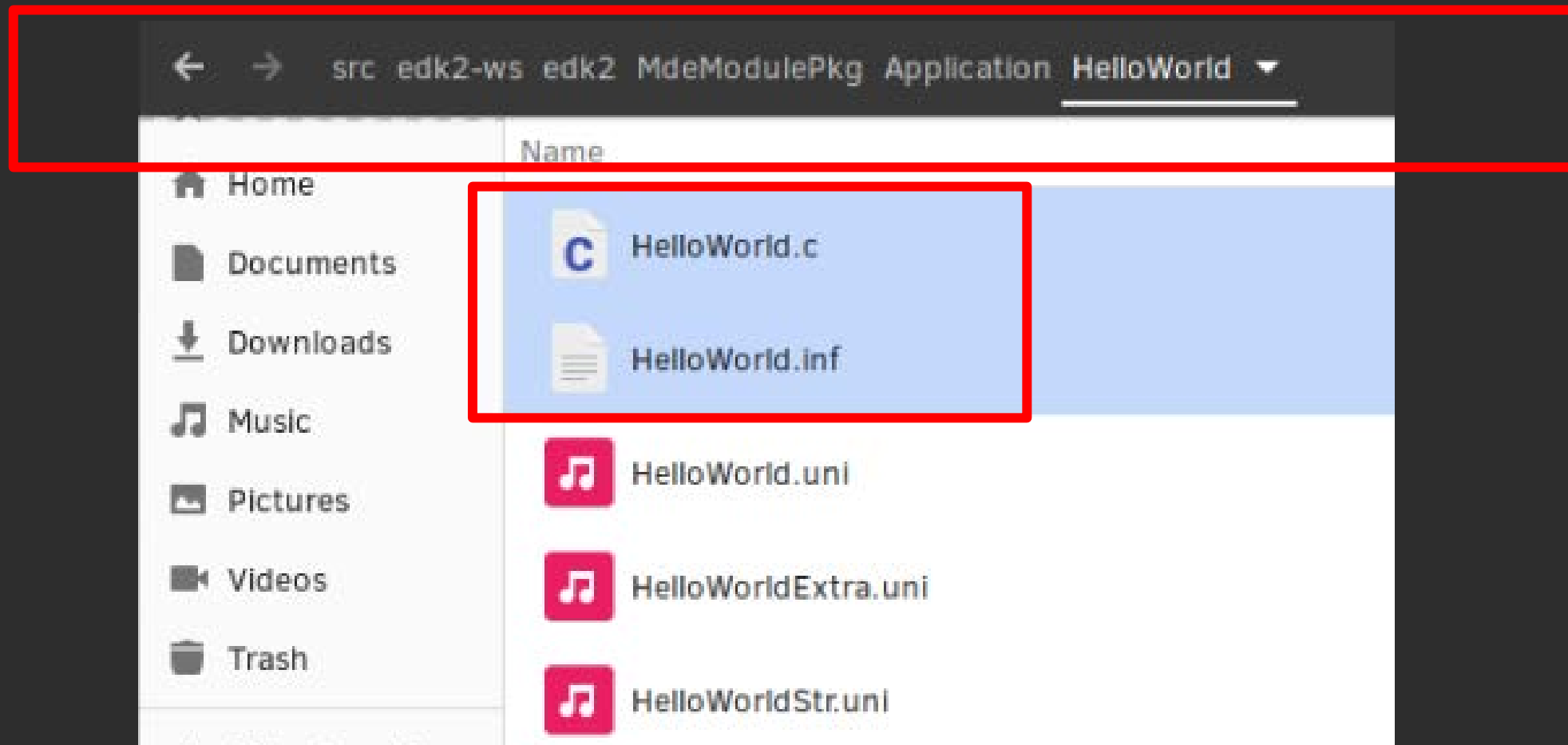
3. At the UEFI Shell prompt

```
Shell> HelloWorld  
UEFI Hello World!  
Shell>
```

How can we force the HelloWorld application to print out 3 times ?

EDK II HelloWorld App Lab

 [MdeModulePkg/Application/HelloWorld](https://github.com/tianocore/MdeModulePkg/Application/HelloWorld)



Source HelloWorld.c

```
EFI_STATUS
EFIAPI
UefiMain (
    IN EFI_HANDLE      ImageHandle,
    IN EFI_SYSTEM_TABLE *SystemTable
)
{
    UINT32 Index;
    Index = 0;
    // Three PCD type (FeatureFlag, UINT32
    // and String) are used as the sample.
    if (FeaturePcdGet (PcdHelloWorldPrintEnable)) {
        for (Index = 0; Index < PcdGet32 (PcdHelloWorldPrintTimes); Index++) {

            // Use UefiLib Print API to print
            // string to UEFI console

            Print ((CHAR16*)PcdGetPtr (PcdHelloWorldPrintString));

        }
    }

    return EFI_SUCCESS;
}
```

EDK II HelloWorld App Solution

1. Edit the file OvmfPkg/OvmfPkgX64.dsc

After the section **[PcdsFixedAtBuild]** (search for “PcdsFixedAtBuild” or “Hello”)



```
ObmfPkgX64.dsc
~/src/edk2-ws/edk2//OvmfPkg

[PcdsFixedAtBuild]
gEfiMdeModulePkgTokenSpaceGuid.PcdHelloWorldPrintTimes|3
```

2. Re-Build – Cd to ~/src/edk2-ws/edk2~ dir

```
bash$ build -D ADD_SHELL_STRING
```

3. Copy Helloworld.efi

```
bash$ cd ~/run-ovmf/hda-contents
```

```
bash$ cp ~/src/Build/OvmfX64/DEBUG_GCC5/X64/HelloWorld.efi .
```

EDK II HelloWorld App Solution

4. Run Qemu

```
bash$ cd ~/run-ovmf  
bash$ . RunQemu.sh
```

5. At the Shell prompt

```
Shell> HelloWorld  
UEFI Hello World!  
UEFI Hello World!  
UEFI Hello World!  
Shell>
```

Exit QEMU

How can we change the **string** of the HelloWorld application?

Also see `~src/edk2-ws/edk2/MdeModulePkg/MdeModulePkg.Dec`

Summary

UEFI Application with PCDs

Questions?



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ACKNOWLEDGEMENTS

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