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UEFI & EDK II Training

Changing PCDs – Linux Lab

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See also LabGuide.md for Copy & Paste examples in labs

Lesson Objective

- UEFI Application with PCDs

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UEFI APPLICATION W/ PCDS

EDK II PCD's Purpose and Goals Review

Documentaton : MdeModulePkg/Universal/PCD/Dxe/Pcd.inf

Purpose

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

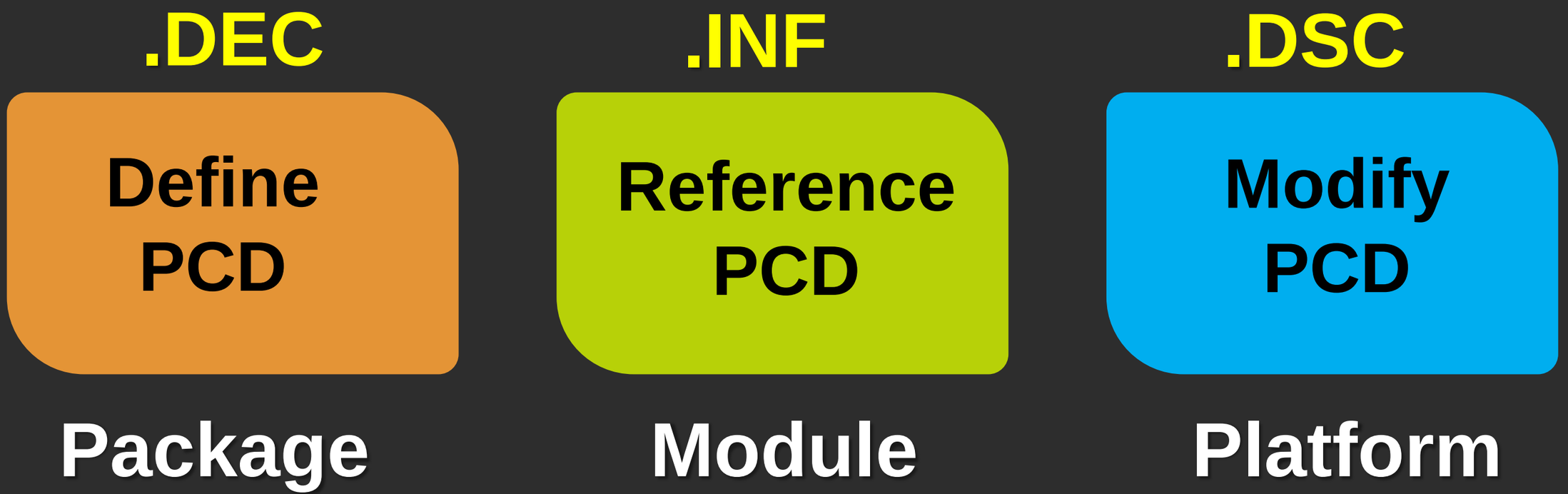
Goals

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

PCD Syntax

Review

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



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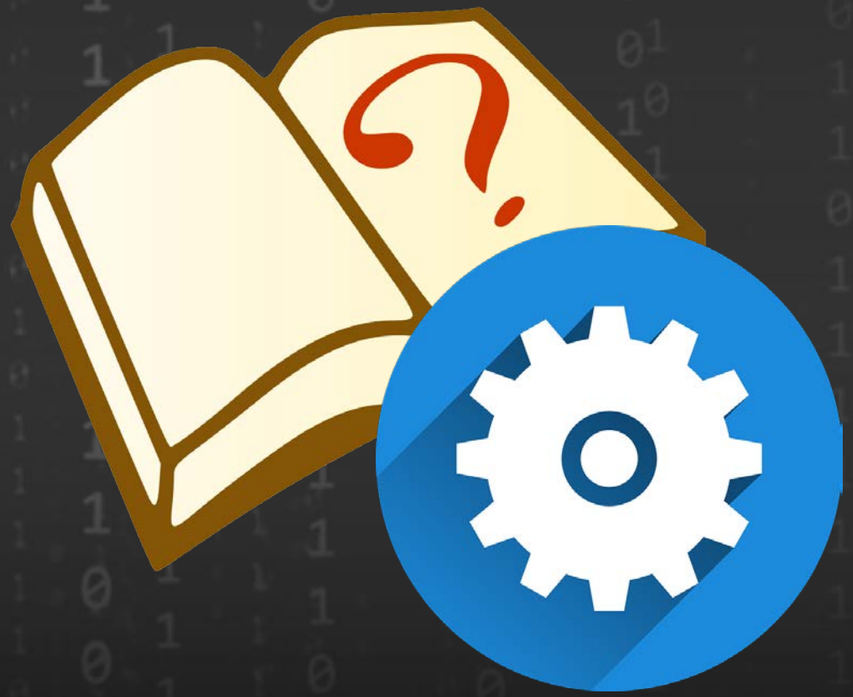
Lab 1: Writing UEFI Applications with PCDs

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

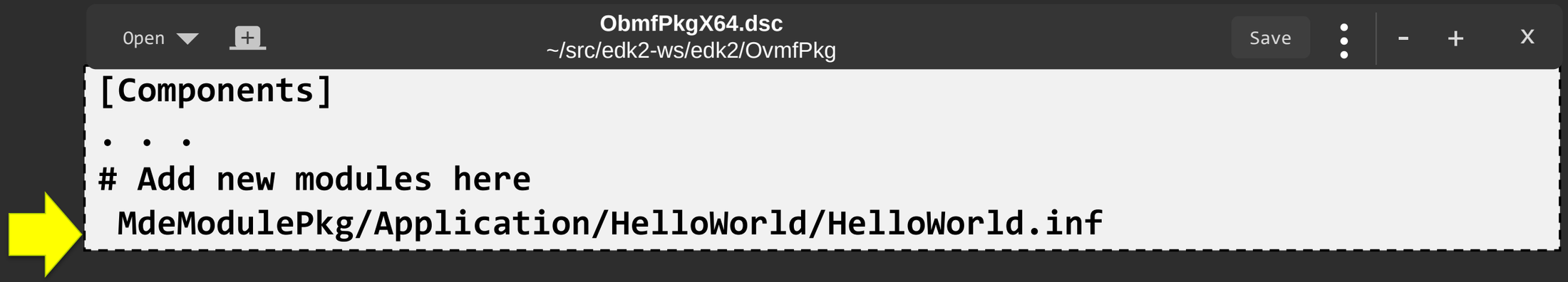


EDK II HelloWorld App Lab

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



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

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

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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
```

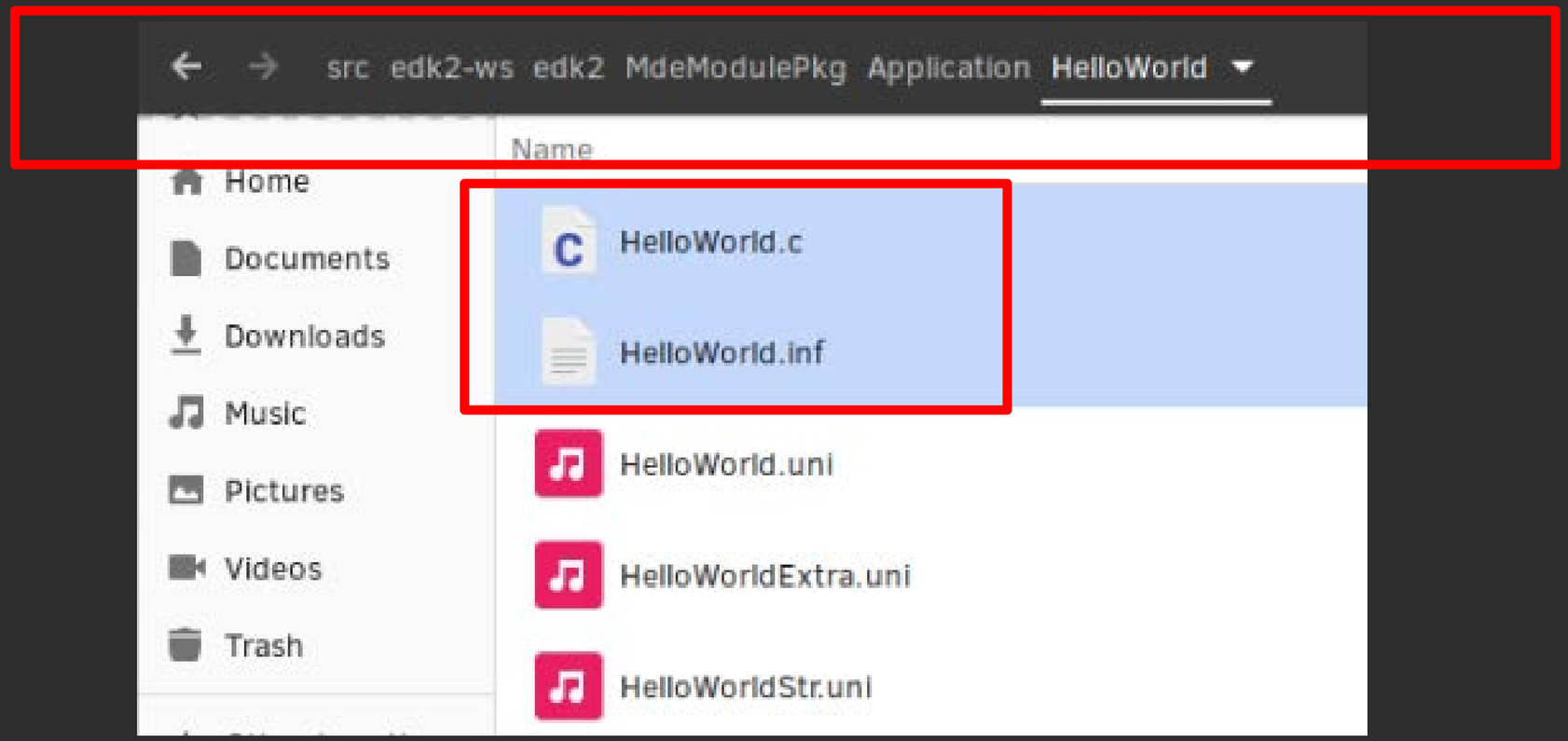
3. At the UEFI Shell prompt

```
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



EDK II HelloWorld App

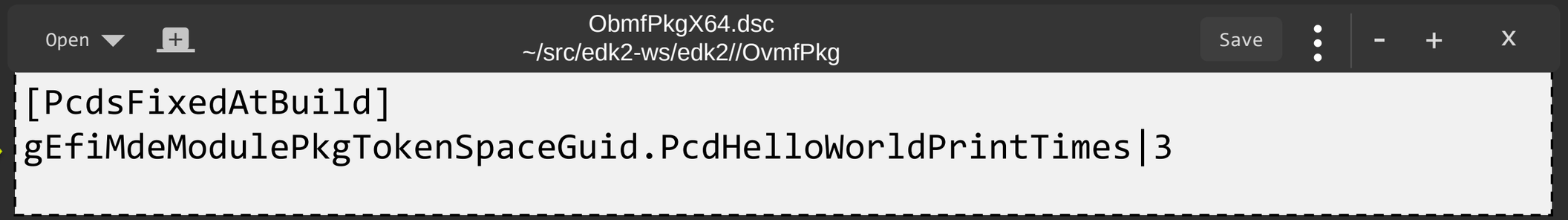
Source HelloWorld.c

```
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”**)



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

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Questions?

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ACKNOWLEDGEMENTS