Meta Layer

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# What is a layer?

* A layer is a logical collection of related recipes.
* Types of Layers: oe-core, BSP Layer, application layer
* Layer name starts with meta-, but this is not a technical restriction.
* Eg. meta-mycustom

# Why create a meta layer?

* Despite most of the customization can be done with the local.conf configuration file, it is not possible to:
  + Store recipes for your own software projects
  + Create your own images
  + Consolidate patches/modifications to other people’s recipes
  + Add a new custom kernel
  + Add a new machine
* Most important point: Do not edit POKY/UPSTREAM Layers, as it complicates future updates
* Advantage: This allows you to easily port from one version of Poky to another

## Depending on the type of layer, add the content:

* + If the layer is adding support for a machine, add the machine configuration in conf/machine/
  + If the layer is adding distro policy, add the distro configuration in conf/distro/
  + If the layer introduces new recipes, put the recipes you need in recipes-\* subdirectories of the layer directory.

# Recipe directories inside layers

* By convention, recipes are splitted into categories
* The most difficult part is deciding in which category your recipe will go
* By checking what was already done in the official layers should give you a good idea of what you should do

# Layer Priority:

* Each layer has a priority, which is used by bitbake to decide which layer takes precedence if there are recipe files with the same name in multiple layers
* A higher numeric value represents a higher priority.

# Creating Layer

* There are two ways to create your own layer.

1. Manually
2. Using script

# Manually:

* Step 1 : Create a directory for the layer. For example: 'meta-mylayer'
* Step 2 : Create a conf/layer.conf
  + You can simply copy meta-oe's one and just change "openembedded-layer" to something appropriate for your layer; you may also want to set the priority as appropriate.
* Step 3 : Update bblayers.conf file with the new layer

# Creating layer using tool

* You can create your own layer using the bitbake-layers create-layer command
  + $ bitbake-layers create-layer --help
* The tool automates layer creation by setting up a subdirectory with a layer.conf configuration file, a recipes-example subdirectory that contains an example.bb recipe, a licensing file, and a README
  + $ bitbake-layers create-layer ../source/meta-mylayer
* Default priority of the layer is 6
  + $ bitbake-layers add-layer ../source/meta-mylayer
  + $ bitbake-layers show-layers

# Layer Configuration File layer.conf

* # The configuration and classes directory is appended to BBPATH
  + BBPATH .= ":${LAYERDIR}"
* # The recipes for the layers are appended to BBFILES
  + BBFILES += "${LAYERDIR}/recipes-\*/\*/\*.bb ${LAYERDIR}/recipes-\*/\*/\*.bbappend"
* # The BBFILE\_COLLECTIONS variable is then appended with the layer name
  + BBFILE\_COLLECTIONS += "skeleton"
  + BBFILE\_PATTERN\_skeleton = "^${LAYERDIR}/"
* # The BBFILE\_PRIORITY variable then assigns a priority to the layer.
  + BBFILE\_PRIORITY\_skeleton = "1"
* # This should only be incremented on significant changes that will
* # cause compatibility issues with other layers
  + LAYERVERSION\_skeleton = "1"
  + LAYERDEPENDS\_skeleton = "core"
  + LAYERSERIES\_COMPAT\_skeleton = "zeus"

# yocto-check-layer

* The yocto-check-layer script provides you a way to assess how compatible your layer is with the Yocto Project
* You should use this script if you are planning to apply for Yocto Project Compatible Program
  + $ source oe-init-build-env
  + $ yocto-check-layer your\_layer\_directory

Challenge Find out in meta folder which one is used a lot: += or \_append