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# Migrating course formats to Moodle 4.0

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# How to follow the workshop

1. Have a Moodle 4.0 instance installed locally
2. Clone/Download this Git project into your course/format folder

```
git clone git@github.com:ferranrecio/format_mootsample.git mootsample  
cd mootsample
```

3. Login as admin and install the plugin
4. Open your IDE environment to start editing the code.

# What is happening here?

Moodle 4.0+ course format have several new features:

- New core\_courseformat subsystem
- Rendered using output components and templates
- Add the course index
- Collapsible sections
- JS reactive interface
- Browser native drag&drop
- etc.

Moodle 3.x formats are still usable but  
**they lose all of the new features**



# Steps to migrate

More info:

<https://moodledev.io/docs/apis/pluginypes/format/migration>

1. Fix base class
2. Create a renderer
3. Update format.php
4. Override outputs
5. Provide alternative templates
6. Enable course editor
7. Add course index

# Step 1: fix base class

- The old `format_base` is now `core_courseformat\base`

**Note:** remember to purge caches after adding the renderer class.

Code commit:

[https://github.com/ferranrecio/format\\_mootsample/commit/ea83cdc136ac5c2aca36b66af57ff55e837b86bb](https://github.com/ferranrecio/format_mootsample/commit/ea83cdc136ac5c2aca36b66af57ff55e837b86bb)



## Step 2: create a renderer

- Format plugin renderer is now **mandatory**
- Almost all format plugins renderer will extend `core_courseformat\output\section_renderer`
- Create your renderer class in `classes/output/renderer.php`

More info:

<https://moodledev.io/docs/apis/plugin/types/format/migration#point-1-create-a-renderer-class>

Code commit:

[https://github.com/ferranrecio/format\\_mootsample/commit/3329d79e6d37c25950012b1aaa82fde0cd62d371](https://github.com/ferranrecio/format_mootsample/commit/3329d79e6d37c25950012b1aaa82fde0cd62d371)



## Step 3: update format.php (I)

Summary:

- Course is not rendered using output components
- Editing mode is now "show\_editor"
- Displaying a single section is now a format base attribute.

Code commit:

[https://github.com/ferranrecio/format\\_mootsample/commit/58c1d2ff9ff6b4460d32b990770c6891b266e129](https://github.com/ferranrecio/format_mootsample/commit/58c1d2ff9ff6b4460d32b990770c6891b266e129)



## Step 3: update format.php (II)

- Course editor options are now part of the format base class.
- Instead of using `$PAGE->user_is_editing()` to get the course editor state we will use `$format->show_editor()`.

More info:

<https://moodledev.io/docs/apis/plugintypes/format/migration#moodle-311-vs-40-course-editor-architecture>

Code commit:

[https://github.com/ferranrecio/format\\_mootsample/commit/58c1d2ff9ff6b4460d32b990770c6891b266e129](https://github.com/ferranrecio/format_mootsample/commit/58c1d2ff9ff6b4460d32b990770c6891b266e129)





## Step 3: update format.php (III)

- The renderer `print_single_section_page` and `print_multiple_section_page` are deprecated.
- The specific section to render is configured in the format class using **`$format->set_section_number($sectionnum)`**

More info:

<https://moodledev.io/docs/apis/plugin/types/format/migration#step-1-start-using-output-components-and-renderers>

Code commit:

[https://github.com/ferranrecio/format\\_mootsample/commit/58c1d2ff9ff6b4460d32b990770c6891b266e129](https://github.com/ferranrecio/format_mootsample/commit/58c1d2ff9ff6b4460d32b990770c6891b266e129)



## Step 3: update format.php (IV)

- To render a course we use the “content” output class.
- Formats can extend core output classes (next step). To get the specific format output class we use `$format->get_output_classname('content')`

More info:

<https://moodledev.io/docs/apis/plugin/types/format/migration#step-1-start-using-output-components-and-renderers>

Code commit:

[https://github.com/ferranrecio/format\\_mootsample/commit/58c1d2ff9ff6b4460d32b990770c6891b266e129](https://github.com/ferranrecio/format_mootsample/commit/58c1d2ff9ff6b4460d32b990770c6891b266e129)



***“Nice. I lost all my custom stuff”***

**Anyone at this point**

## Step 4: extend output classes

- Formats can override any core\_courseformat\output by placing the alternative version in their format\_PLUGIN\output\courseformat folder
- \$format->get\_output\_classname will find first in this directory

More info:

<https://moodledev.io/docs/apis/plugintypes/format#format-output-classes-and-templates>

Code commit:

[https://github.com/ferranrecio/format\\_mootsample/commit/b114650cb520bce7241a1a1937b168c703568a6](https://github.com/ferranrecio/format_mootsample/commit/b114650cb520bce7241a1a1937b168c703568a6)



format\_xxx\course\_format extends core\_coureformat\base

Method page\_title is now part of course\_format class

format\_xxx\output\renderer.php extends core\_courseformat\output\section\_renderer (which extends course\_renderer)

### OVERRIDABLE RENDERER METHODS

render\_content

To use a different main template for the course rendering

course\_section\_updated

Method used by ajax calls like "create section" to get the new section HTML

course\_section\_updated\_cm\_item

Method used by ajax calls like "duplicate activity" to get the new activity HTML

### OVERRIDABLE TEMPLATABLES (OVERRIDABLE)

core\_courseformat\output\local\content (\$format)

...\content\addsection

...\content\sectionnavigation

...\content\sectionselector

...\content\section (\$format, \$section)

...\content\section\availability

...\content\section\header

...\content\section\cmsummary

...\content\section\controlmenu

...\content\section\summary

...\content\section\cmitem

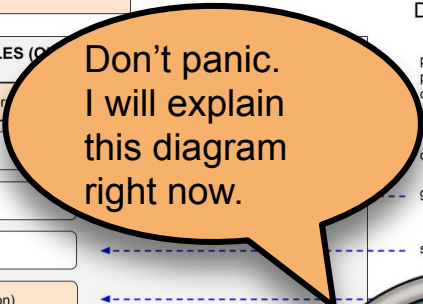
...\content\cm (\$format, \$section, \$cm)

...\content\cm\controlmenu

...\content\cm\availability

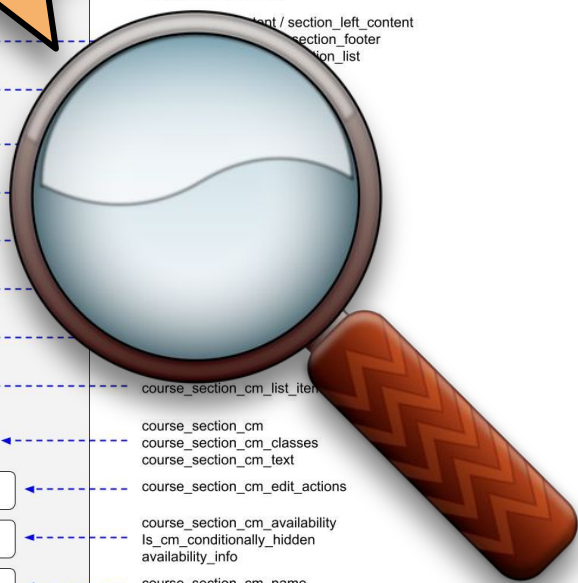
...\content\cm\cmname

...\content\cm\title



### Deprecated render methods (33)

- print\_single\_section\_page
- print\_multiple\_section\_page
- course\_activity\_clipboard
- page\_title
- change\_number\_sections
- get\_nav\_links
- section\_nav\_selection
- content / section\_left\_content
- section\_footer
- section\_list
- course\_section\_cm\_list\_item
- course\_section\_cm
- course\_section\_cm\_classes
- course\_section\_cm\_text
- course\_section\_cm\_edit\_actions
- course\_section\_cm\_availability
- is\_cm\_conditionally\_hidden
- availability\_info
- course\_section\_cm\_name
- core\_course\output\course\_module\_name
- course\_section\_cm\_name\_title

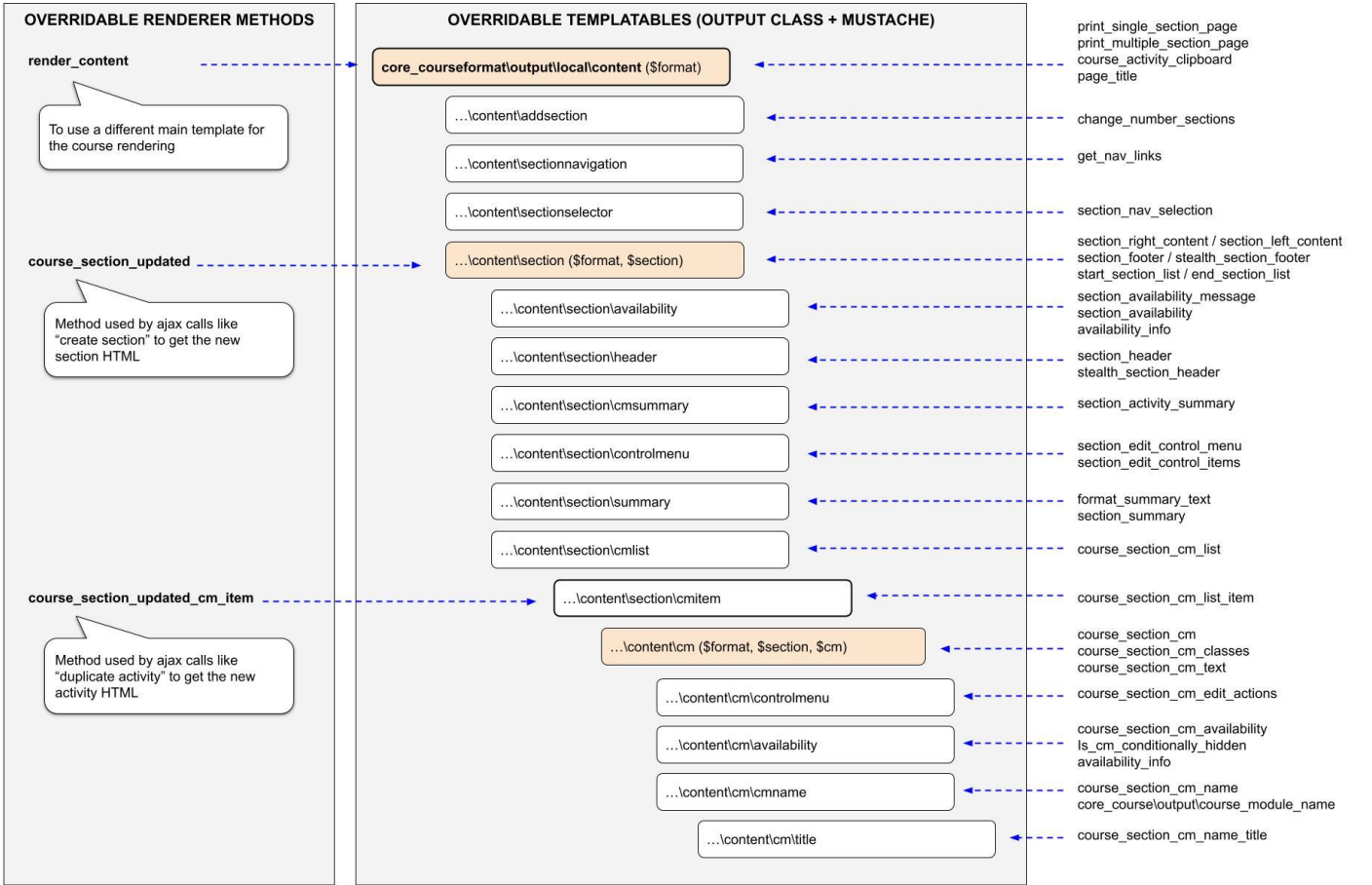


format\_xxx\course\_format extends core\_coureformat\base

Method page\_title is now part of course\_format class

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### Deprecated render methods (33)





**Beware!**

**Here comes the hard part.**

# Step 5: provide alternative templates (I)

- **Templates cannot be overridden** like output classes.
- Each output class must provide its own **template path**
- The plugin must provide a **basic templates structure**

More info:

<https://moodledev.io/docs/apis/plugin/types/format/migration#step-3-create-the-basic-mustache-structure>



# Step 5.1: basic template structure

- Create **course**, **section** and **cmitem** output classes
- Create the basic **course**, **section** and **cmitem** templates
- Redirect templates using output's **get\_template\_name** method

Basic structure documentation:

<https://moodledev.io/docs/apis/plugin/types/format#creating-the-basic-output-structure>

Code commit:

[https://github.com/ferranrecio/format\\_mootsample/commit/5460fbe119233527d87fabf8f046ae4aa6d5974c](https://github.com/ferranrecio/format_mootsample/commit/5460fbe119233527d87fabf8f046ae4aa6d5974c)



# Step 5.2: override mustache blocks

- All course format template uses overridable blocks
- Plugins can add new template blocks to the basic template structure

More info:

<https://moodledev.io/docs/apis/plugin/types/format#override-mustache-blocks>

Code commit:

[https://github.com/ferranrecio/format\\_mootsample/commit/664f90c033d250e1229fe2c60bb70e8a03f8476b](https://github.com/ferranrecio/format_mootsample/commit/664f90c033d250e1229fe2c60bb70e8a03f8476b)





**Well done!**

**You survived the hard part.**

# Step 6: enable code editor

- The new course editor **uses data attributes instead of CSS classes**.
- Until Moodle 4.3, the new editor is opt-in
- **Override \$format->supports\_components()** method
- Ensure all templates has **the necessary data attributes**.

More info:

<https://moodledev.io/docs/apis/plugintypes/format#the-course-editor-structure>

Commit:

[https://github.com/ferranrecio/format\\_mootsample/commit/c91f6386984a1bd5a26cd090a6cab4490b7f10a3](https://github.com/ferranrecio/format_mootsample/commit/c91f6386984a1bd5a26cd090a6cab4490b7f10a3)

# And step 7: enable course index

- The course index is an opt-in feature
- **Override \$format->uses\_course\_index()** method

More info:

<https://moodledev.io/docs/apis/plugin/types/format#course-features>

Commit:

[https://github.com/ferranrecio/format\\_mootsample/commit/a63db7bbfa0291702c2ca9921dbceb80d51f422d](https://github.com/ferranrecio/format_mootsample/commit/a63db7bbfa0291702c2ca9921dbceb80d51f422d)



Thanks for your  
attention!



