

Class 2: Org Mode Basics

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1 Headings

- In Org mode, a heading is denoted by preceding stars (*), and the level of a heading is determined by the number of stars.
- For example,

```
* Heading 1
** Subheading 1.1
* Heading 2
** Subheading 2.1
```

- A heading can have tags and properties associated with them, which allows very flexible usage that we exploit throughout Org-Coursepack.

1.1 Tags

- A heading can have tags associated with them. They are used in the form of :tag:, on the same line as the heading. For example,

```
* Heading with a tag :tag:
```

1.2 Properties

- Each heading can have properties associated with it. You can think of properties as data specific for the heading, as they consist of `:PROPERTY_NAME:` and `PROPERTY VALUE` pairs.
- For example, a heading for a lecture can have property values for lecture number, file name for exports, etc. One of the frequently used properties is `:CUSTOM_ID:`, which can be used to locate the particular heading. See the `Including Content from Another Org file` section for how it is used in Org-Coursepack.
- See the Org manual for more information.
- For example,

```
* Heading 1
:PROPERTIES:
:CUSTOM_ID: Heading 1
:END:
```

2 Macros

Org mode provides macro replacement functionality. This can be especially useful for instructors, as shown in the following cases.

- When defining terms that will be repeated within or across course-related materials, or needs to be changed in future semesters.

Example Suppose an instructor were to present a due date for "Assignment 1" in three different places (e.g., syllabus, lecture, and assignment guideline). By using a macro, an instructor can ensure that all documents have the same information, and make such updates easily in future semesters. Such a macro (named `DUE_ASSIGNMENT_1`) can be defined like the following:

```
#+MACRO: DUE_ASSIGNMENT_1 [2018-09-27 Thu]
```

One can then use the macro with `{{{MACRO_NAME}}}`. For example, all areas in documents where it says `{{{DUE_ASSIGNMENT_1}}}` will be replaced with `[2018-09-27 Thu]` upon export.

- When defining terms specific to a subtree (e.g., a specific class) that the instructor may want to use in multiple places. This can be useful when specifying class orders, class titles, or section numbers. One can achieve this by referring to property values of a subtree.

Example An instructor can define a class number property like the following:

```
* Heading
:PROPERTIES:
:CLASS:      2
:END:
```

Then `{{{property (PROPERTY_NAME) }}}}` will be replaced by the value of `PROPERTY_NAME` property:

This is class number `{{{property (CLASS) }}}}`.

- See the Org manual for more information.

3 Including Content from Another Org file

- In Org mode, a user can pull content, without making a copy, from any org file (including the current one) via the `#+INCLUDE:` statement. See the Org manual for more information.
- Taking advantage of this functionality, the template is created so that its content is modular and can be pulled flexibly as needed. This feature is useful when sharing content across different courses or semesters or when revisiting past materials (e.g., in exam reviews or when reviewing past cases to build on them).

Example This is how an instructor would use the `#+INCLUDE:` statement to pull content from a subtree with `:CUSTOM_ID: R-squared` in the file `Regression.org` so it is presented across multiple courses (i.e., Statistics 101 and Marketing Research). `:only-contents t` option means only the contents of the subtree, not its heading and properties, will be included. To visit the included file, press `C-c '` while the cursor is on the `#+INCLUDE:` statement.

- Regression.org

```
* R-squared
:PROPERTIES:
:CUSTOM_ID: R-squared
:END:
- The definition of  $R^2$  is:

$$R^2 = 1 - \frac{SS_{\text{res}}}{SS_{\text{tot}}}$$

```

- Statistics 101.org

```
* Regression
** R-squared
#+INCLUDE: "/Regression.org::R-squared" :only-contents t
```

- Marketing Research.org

```
* Regression
** R-squared
#+INCLUDE: "/Regression.org::R-squared" :only-contents t
```