Templates - Desired State vs Data

Extracting the Content for Clarity

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Objectives

After completing this module, you should be able to

➢ Explain when to use a template resource

➢ Create a template file

➢ Use ERB tags to display node data in a template

➢ Define a template resource

Cleaner Recipes

In the last section we installed apache and configured its homepage to display information about our node.

We added this content directly to the file resource

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Apache Recipe

cookbooks/apache/recipes/server.rb

```
package 'httpd'

file '/var/www/html/index.html' do
  content "<h1>Hello, world!</h1>
<h2>ipaddress: #{node['ipaddress']}</h2>
<h2>hostname: #{node['hostname']}</h2>
"
end


service 'httpd' do
  action [ :enable, :start ]
end
```

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Double Quotes Close Double Quotes
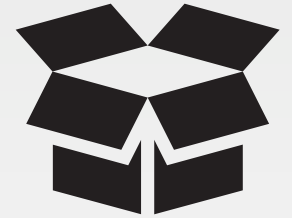
Double quoted strings are terminated by double quotes.

```
"<h1 style="color: red;">Hello, World!</h1>"
```

CONCEPT

Backslash
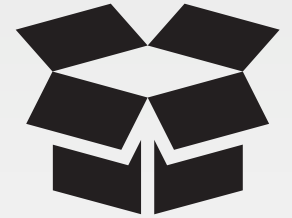
We can use double-quotes as long as we prefix them with a backslash.

```
"<h1 style=\"color: red;\">Hello, World!</h1>"
```
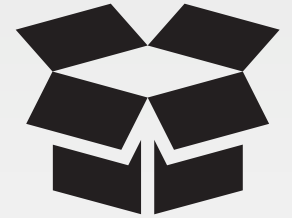
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CONCEPT

Backslash

Backslashes are reserved characters. So to use them you need to use a backslash.

```
"Root Path: \"
```

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CONCEPT

Backslash

Backslashes are reserved characters. So to use them you need to use a backslash.

```
"Root Path: \\"
```

Unexpected Formatting

```
file '/etc/motd' do
  content 'This is the first line of the file.
           This is the second line. If I try and line it up...

Don't even think about pasting ASCII ART in here!
'
end
```

This is the first line of the file.

           This is the second line. If I try and line

it up...

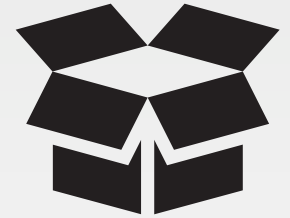Don't even think about pasting ASCII ART in here!

Copy Paste

This process is definitely error prone. Especially because a human has to edit the file again before it is deployed.

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CONCEPT

Separate Logic from Data

We need the ability to store the data in another file, which is in the native format of the file we are writing out but that still allows us to insert ruby code...

...specifically, the node attributes we have defined.

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DOCS

'Template' resource

A cookbook template is an Embedded Ruby (ERB) template that is used to generate files … Templates may contain Ruby expressions and statements and are a great way to...

Use the template resource to add cookbook templates to recipes; place the corresponding Embedded Ruby (ERB) template in a cookbook's /templates directory.

https://docs.chef.io/resource_template.html

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Demo: Template File's Source Matches Up

```
$ tree cookbooks/apache/templates/default
templates/default
└── index.html.erb

0 directories, 1 file
```

```
template '/var/www/index.html' do
  source 'index.html.erb'
end
```
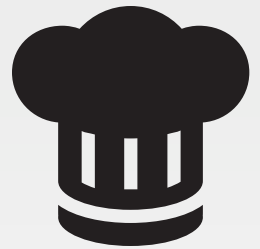
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DOCS

Template

To use a template, two things must happen:

1. A template resource must be added to a recipe
2. An Embedded Ruby (ERB) template must be added to a cookbook

https://docs.chef.io/resource_template.html#using-templates

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Lab: Clean workstation::setup recipe

Remove data from the recipe.

Objective:

- ❑ Use chef generate to create a template named "motd.erb".
- ❑ Copy the source attribute from the file named '/etc/motd' into the template file "motd.erb"
- ❑ Remove a resource: The file named '/etc/motd'
- ❑ Add a resource: The template named '/etc/motd' is created with the source 'motd.erb'
- ❑ Update the "workstation" cookbook's version for this patch

What Can chef generate Do?

```
$ chef generate --help
```

```
UsaGL: chef generate GENERATOR [options]


Available generators:
  app          Generate an application repo
  cookbook     Generate a single cookbook
  recipe       Generate a new recipe
  attribute    Generate an attributes file
  template     Generate a file template
  file         Generate a cookbook file
  lwrp         Generate a lightweight resource/provider
  repo         Generate a Chef policy repository
```

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What Can chef generate template Do?

```
$ chef generate template --help
```

```
Usage: chef generate template [path/to/cookbook] NAME [options]
    -C, --copyright COPYRIGHT        Name of the copyright holder - defaults to 'The Authors'
    -m, --email EMAIL                Email address of the author - defaults to ...
    -a, --generator-arg KEY=VALUE    Use to set arbitrary attribute KEY to VALUE in the
    -I, --license LICENSE            all_rights, apache2, mit, gplv2, gplv3 - defaults to
    -s, --source SOURCE_FILE         Copy content from SOURCE_FILE
    -g GENERATOR_COOKBOOK_PATH,      Use GENERATOR_COOKBOOK_PATH for the code_generator
        --generator-cookbook
```

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Use chef to generate a template file

```
$ chef generate template cookbooks/workstation motd
```

```
Compiling Cookbooks...
Recipe: code_generator::template
  * directory[cookbooks/workstation/templates/default] action create
    - create new directory cookbooks/workstation/templates/default
  * template[cookbooks/workstation/templates/default/motd.erb] action create
    - create new file cookbooks/workstation/templates/default/motd.erb
    - update content in file cookbooks/workstation/templates/default/motd.erb from none to
e3b0c4
    (diff output suppressed by config)
```

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Lets Look at the Template File

```
$ tree cookbooks/workstation/templates
```
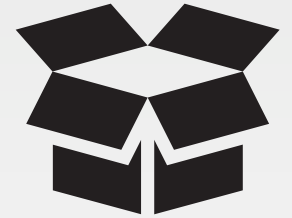
```
cookbooks/workstation/templates/
└── default
    └── motd.erb

1 directory, 1 file
```

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CONCEPT

ERB

An Embedded Ruby (ERB) template allows Ruby code to be embedded inside a text file within specially formatted tags.

Ruby code can be embedded using expressions and statements.

Text Within an ERB Template

```
<% if (50 + 50) == 100 %>
50 + 50 = <%= 50 + 50 %>
<% else %>
At some point all of MATH I learned in school changed.
<% end %>
```
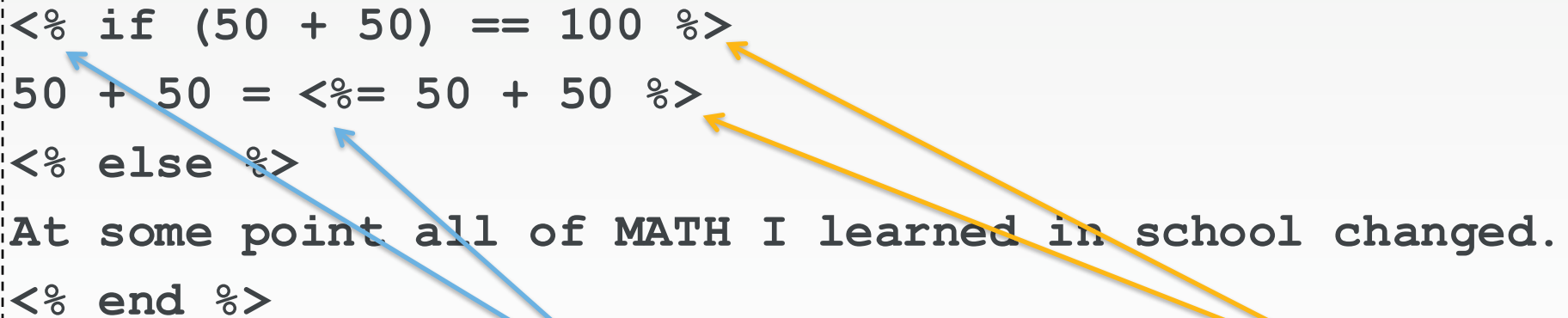
Each ERB tag has a beginning tag and a matched ending tag.

CHEF

Text Within an ERB Template

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50 + 50 = <%= 50 + 50 %>
<% else %>
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CHEF

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CHEF

Text Within an ERB Template

```
<% if (50 + 50) == 100 %>
50 + 50 = <%= 50 + 50 %>
<% else %>
At some point all of MATH I learned in school changed.
<% end %>
```

Executes the ruby code within the brackets and do not display the result.

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Text Within an ERB Template

```
<% if (50 + 50) == 100 %>
50 + 50 = <%= 50 + 50 %>
<% else %>
At some point all of MATH I learned in school changed.
<% end %>
```
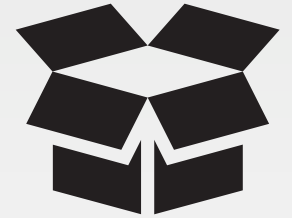
Executes the ruby code within the brackets and display the results.

CHEF

CONCEPT

The Angry Squid

<%=

CHEF

Lab: Copy Contents from motd to the .erb

`cookbooks/workstation/templates/default/motd.erb`

```
Property of ...


    IPADDRESS: <%= node['ipaddress'] %>

    HOSTNAME : <%= node['hostname'] %>

    MEMORY   : <%= node['memory']['total'] %>

    CPU      : <%= node['cpu']['0']['mhz'] %>

```

CHEF

Remove the file Resource

cookbooks/workstation/recipes/setup.rb

```
# ... PACKAGE RESOURCES ...

file '/etc/motd' do
  content "Property of ...

  IPADDRESS: #{node['ipaddress']}
  HOSTNAME : #{node['hostname']}
  MEMORY   : #{node['memory']['total']}
  CPU      : #{node['cpu']['0']['mhz']}
"
  mode '0644'
  owner 'root'
  group 'root'
end
```

CHEF

Replace it with the Template Resource

cookbooks/workstation/recipes/setup.rb

```
# ... PACKAGE RESOURCES ...

template '/etc/motd' do
  source 'motd.erb'
  mode '0644'
  owner 'root'
  group 'root'
end
```

CHEF

# Change Directories and Apply the Cookbook

```
$ sudo chef-client --local-mode -r "recipe[workstation]"
```

```
...

  * template[/etc/motd] action create
    - update content in file /etc/motd from f55d46 to 7fec26
    --- /etc/motd          2016-04-08 12:49:50.234093936 +0000
    +++ /etc/.motd20160408-9400-1f8z98b 2016-04-08 13:04:22.726093933 +0000
    @@ -4,4 +4,5 @@
      HOSTNAME : ip-172-31-0-106
      MEMORY   : 604308kB
      CPU      : 1799.999

    +
Running handlers:
Running handlers complete
Chef Client finished, 1/2 resources updated in 08 seconds
```

CHEF

Update the Cookbook's Patch Number

cookbooks/workstation/metadata.rb

```
name                'workstation'
maintainer          'The Authors'
maintainer_email    'you@example.com'
license             'all_rights'
description         'Installs/Configures workstation'
long_description    'Installs/Configures workstation'
version             '0.2.1'
```
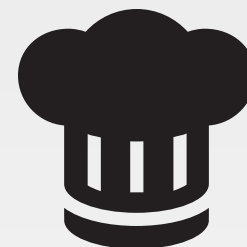
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Lab: Cleaner Apache Recipe

Adding the node attributes to the index page made it hard to read the recipe.

Objective:

- ❑ Create a template with chef generate
- ❑ Define the contents of the ERB template
- ❑ Change the file resource to the template resource in the 'apache' cookbook

CHEF

Lab: Use `chef` to Generate a Template

```
$ cd chef-repo
$ chef generate template cookbooks/apache index.html
```

```
Compiling Cookbooks...

Recipe: code_generator::template
  * directory[cookbooks/apache/templates/default] action create

    - create new directory cookbooks/apache/templates/default
  * template[cookbooks/apache/templates/default/index.html.erb] action create

    - create new file cookbooks/apache/templates/default/index.html.erb

    - update content in file cookbooks/apache/templates/default/index.html.erb
from none to e3b0c4

    (diff output suppressed by config)
```
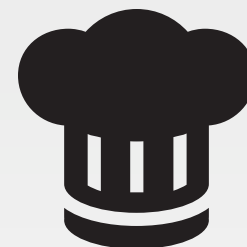
CHEF

Lab: Lets Look at the Template File

```
$ tree cookbooks/apache/templates
```

```
cookbooks/apache/templates/
└── default
    └── index.html.erb

1 directory, 1 file
```

CHEF

Lab: Cleaner Apache Recipe

Adding the node attributes to the default page did make it harder to read the recipe.
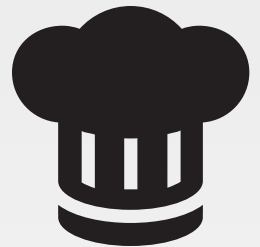
Objective:

- ✓ Create a template with chef generate
- ❑ Define the contents of the ERB template
- ❑ Change the file resource to the template resource in the 'apache' cookbook

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Lab: Update the template file

cookbooks/apache/templates/default/index.html.erb

```
<html>
  <body>

    <h1>Hello, world!</h1>
    <h2>ipaddress: <%= node['ipaddress'] %></h2>
    <h2>hostname: <%= node['hostname'] %></h2>
</body>
</html>
```

Cleaner Recipes

Adding the node attributes to the default page did make it harder to read the recipe.

Objective:

- ✓ Create a template with chef generate
- ✓ Define the contents of the ERB template
- ❑ Change the file resource to the template resource in the 'apache' cookbook

Lab: Remove the Existing Content Attribute

cookbooks/apache/recipes/server.rb

```
...
file '/var/www/html/index.html' do
  content "<h1>Hello, world!</h1>
<h2>IPADDRESS: #{node['ipaddress']}</h2>
<h2>HOSTNAME : #{node['hostname']}</h2>
"
end
...
```

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Lab: Update the Source Attribute

`cookbooks/apache/recipes/server.rb`

```
...

template '/var/www/html/index.html' do
    source 'index.html.erb'
end

...
```

CHEF™

Lab: Change Directories and Apply the Cookbook

```
$ cd chef-repo
$ sudo chef-client -zr "recipe[apache]"
```

```
[2015-09-16T14:18:05+00:00] WARN: No config file found or specified on command line,
using command line options.
Starting Chef Client, version 12.3.0
resolving cookbooks for run list: ["apache"]
Synchronizing Cookbooks:
  - apache
Compiling Cookbooks...
[2015-09-16T14:18:09+00:00] WARN: Cloning resource attributes for service[httpd]
from prior resource (CHEF-3694)
[2015-09-16T14:18:09+00:00] WARN: Previous service[httpd]: /root/.chef/local-mode-
cache/cache/cookbooks/apache/recipes/server.rb:8:in `from_file'
[2015-09-16T14:18:09+00:00] WARN: Current  service[httpd]: /root/.chef/local-mode-
cache/ ...
```
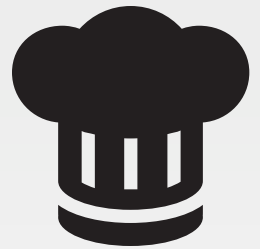
Lab: Update the Cookbook's Patch Number

cookbooks/apache/metadata.rb

```
name                'apache'
maintainer          'The Authors'
maintainer_email    'you@example.com'
license             'all_rights'
description         'Installs/Configures apache'
long_description    'Installs/Configures apache'
version             '0.2.1'
```

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Cleaner Recipes

Adding the node attributes to the default page did make it harder to read the recipe.

Objective:

- ✓ Create a template with chef generate
- ✓ Define the contents of the ERB template
- ✓ Change the file resource to the template resource in the 'apache' cookbook

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DISCUSSION

Discussion

What is the benefit of using a template over defining the content within a recipe?

What do each of the ERB tags accomplish?

DISCUSSION

Q&A

What questions can we help you answer?

- Resources
- Templates
- ERB

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