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CSSE 477
CM 1405
Assignment 6

Task 3: Configure a resource

```
skytap@host-1:~/chef-repo
skytap@host-1:~$ ls
Desktop Downloads Music Public Videos
Documents examples.desktop Pictures Templates
skytap@host-1:~$ mkdir ~/chef-repo
skytap@host-1:~$ ls
chef-repo Documents examples.desktop Pictures Templates
Desktop Downloads Music Public Videos
skytap@host-1:~$ cd ~/chef-repo/
```

```
skytap@host-1:~/chef-repo$ cat>hello.rb
file '/tmp/motd' do
  content 'hello world'
end
skytap@host-1:~/chef-repo$ ls
hello.rb
```

```
skytap@host-1:~/chef-repo$ chef-client --local-mode hello.rb
[2017-01-06T07:18:38-08:00] WARN: No config file found or specific
ine, using command line options.
[2017-01-06T07:18:38-08:00] WARN: No cookbooks directory found a
nt directory. Assuming /home/skytap/chef-repo.
Starting Chef Client, version 12.12.15
Resolving cookbooks for run list: []
Synchronizing Cookbooks:
Installing Cookbook Gems:
Compiling Cookbooks...
[2017-01-06T07:18:40-08:00] WARN: Node host-1.skytap.example has
st.
Converging 1 resources
  Recipe: @recipe_files:::/home/skytap/chef-repo/hello.rb
  * file[/tmp/motd] action create
    - update content in file /tmp/motd from b94d27 to c38c60
      --- /tmp/motd      2017-01-06 07:14:36.567091643 -0800
      +++ /tmp/.chef-motd20170106-7931-k7ps8g      2017-01-06 07:18
800
      @@ -1,2 +1,2 @@
      -hello world
      +hello chef

  Running handlers:
  Running handlers complete
Chef Client finished, 1/1 resources updated in 01 seconds
```

```
skytap@host-1:~/chef-repo$ chef-client --local-mode hello.rb
[2017-01-06T07:14:34-08:00] WARN: No config file found or specified, using command line options.
[2017-01-06T07:14:34-08:00] WARN: No cookbooks directory found at directory. Assuming /home/skytap/chef-repo.
Starting Chef Client, version 12.12.15
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Installing Cookbook Gems:
Compiling Cookbooks...
[2017-01-06T07:14:36-08:00] WARN: Node host-1.skytap.example has st.
Converging 1 resources
Recipe: @recipe_files:::/home/skytap/chef-repo/hello.rb
  * file[/tmp/motd] action create
    - create new file /tmp/motd
    - update content in file /tmp/motd from none to b94d27
      --- /tmp/motd      2017-01-06 07:14:36.567091643 -0800
      +++ /tmp/.chef-motd20170106-7447-m770nl      2017-01-06 07:14
800
      @@ -1 +1,2 @@
      +hello world

Running handlers:
Running handlers complete
Chef Client finished, 1/1 resources updated in 02 seconds
```

```
skytap@host-1:~/chef-repo$ more /tmp/motd
hello world
```

```
skytap@host-1:~/chef-repo$ chef-client --local-mode hello.rb
[2017-01-06T07:15:23-08:00] WARN: No config file found or specified, using command line options.
[2017-01-06T07:15:23-08:00] WARN: No cookbooks directory found at directory. Assuming /home/skytap/chef-repo.
Starting Chef Client, version 12.12.15
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Installing Cookbook Gems:
Compiling Cookbooks...
[2017-01-06T07:15:25-08:00] WARN: Node host-1.skytap.example has
st.
Converging 1 resources
Recipe: @recipe_files:::/home/skytap/chef-repo/hello.rb
 * file[/tmp/motd] action create (up to date)

Running handlers:
Running handlers complete
Chef Client finished, 0/1 resources updated in 01 seconds
```

```
skytap@host-1:~/chef-repo$ cat>hello.rb
file '/tmp/motd' do
  content 'hello chef'
endskytap@host-1:~/chef-repo$ ls
hello.rb  nodes
```

```
skytap@host-1:~/chef-repo$ chef-client --local-mode hello.rb
[2017-01-06T07:18:38-08:00] WARN: No config file found or specific
ine, using command line options.
[2017-01-06T07:18:38-08:00] WARN: No cookbooks directory found a
nt directory. Assuming /home/skytap/chef-repo.
Starting Chef Client, version 12.12.15
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Installing Cookbook Gems:
Compiling Cookbooks...
[2017-01-06T07:18:40-08:00] WARN: Node host-1.skytap.example has
st.
Converging 1 resources
Recipe: @recipe_files:::/home/skytap/chef-repo/hello.rb
  * file[/tmp/motd] action create
    - update content in file /tmp/motd from b94d27 to c38c60
      --- /tmp/motd      2017-01-06 07:14:36.567091643 -0800
      +++ /tmp/.chef-motd20170106-7931-k7ps8g      2017-01-06 07:18
800
@@ -1,2 +1,2 @@
-hello world
+hello chef

Running handlers:
Running handlers complete
Chef Client finished, 1/1 resources updated in 01 seconds
skytap@host-1:~/chef-repo$ echo 'hello robots' >/tmp/motd
```

```
skytap@host-1:~/chef-repo$ chef-client --local-mode hello.rb
[2017-01-06T07:19:24-08:00] WARN: No config file found or specific
ine, using command line options.
[2017-01-06T07:19:24-08:00] WARN: No cookbooks directory found at
nt directory. Assuming /home/skytap/chef-repo.
Starting Chef Client, version 12.12.15
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Installing Cookbook Gems:
Compiling Cookbooks...
[2017-01-06T07:19:26-08:00] WARN: Node host-1.skytap.example has
st.
Converging 1 resources
Recipe: @recipe_files:::/home/skytap/chef-repo/hello.rb
* file[/tmp/motd] action create
  - update content in file /tmp/motd from 548078 to c38c60
    --- /tmp/motd      2017-01-06 07:19:17.541101512 -0800
    +++ /tmp/.chef-motd20170106-8140-1y4peo4      2017-01-06 07:19
800
  @@ -1,2 +1,2 @@
  -hello robots
  +hello chef

Running handlers:
Running handlers complete
Chef Client finished, 1/1 resources updated in 01 seconds
```

```
skytap@host-1:~/chef-repo$ cat>goodbye.rb
file '/tmp/motd' do
  action :delete
end
skytap@host-1:~/chef-repo$ chef-client --local-mode goodbye.r
[2017-01-06T07:22:22-08:00] WARN: No config file found or specif
ine, using command line options.
[2017-01-06T07:22:22-08:00] WARN: No cookbooks directory found a
nt directory. Assuming /home/skytap/chef-repo.
Starting Chef Client, version 12.12.15
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Installing Cookbook Gems:
Compiling Cookbooks...
[2017-01-06T07:22:24-08:00] WARN: Node host-1.skytap.example has
st.
Converging 1 resources
Recipe: @recipe_files:::/home/skytap/chef-repo/goodbye.rb
  * file[/tmp/motd] action delete
    - delete file /tmp/motd

Running handlers:
Running handlers complete
Chef Client finished, 1/1 resources updated in 01 seconds
skytap@host-1:~/chef-repo$ more /tmp/motd
/tmp/motd: No such file or directory
```

```
skytap@host-1:/$ cd tmp
skytap@host-1:/tmp$ ls
ssh-qwbe0iTguHSm  unity_support_test.1  vmware-skytap
tmp61jir38j        vmware-root
```

```
skytap@host-1:~/chef-repo$ cat>hello.rb
directory '/tmp/messages'

file '/tmp/messages/motd' do
  content 'hello world'
end
skytap@host-1:~/chef-repo$ chef-client --local-mode hello.rb
[2017-01-06T07:40:05-08:00] WARN: No config file found or specified on command line, using command line options.
[2017-01-06T07:40:05-08:00] WARN: No cookbooks directory found at or above current directory. Assuming /home/skytap/chef-repo.
Starting Chef Client, version 12.12.15
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Installing Cookbook Gems:
Compiling Cookbooks...
[2017-01-06T07:40:17-08:00] WARN: Node host-1.skytap.example has an empty run list.
Converging 2 resources
Recipe: @recipe_files:::/home/skytap/chef-repo/hello.rb
* directory[/tmp/messages] action create (up to date)
* file[/tmp/messages/motd] action create
  - create new file /tmp/messages/motd
  - update content in file /tmp/messages/motd from none to b94
d27
  --- /tmp/messages/motd      2017-01-06 07:40:17.362050133 -0
800
  +++ /tmp/messages/.chef-motd20170106-9070-12s2pl2 2017-01-06 07:40:17.362050133 -0800
    @@ -1 +1,2 @@
    +hello world

Running handlers:
Running handlers complete
Chef Client finished, 1/2 resources updated in 11 seconds
skytap@host-1:~/chef-repo$ more /tmp/messages/motd
hello world
```

Task 4: Configure a package and service

```
skytap@host-1:~/chef-repo$ ls  
goodbye.rb  hello.rb  nodes  
skytap@host-1:~/chef-repo$ cat>webserver.rb  
apt_update 'Update the apt cache daily' do  
  frequency 86_400  
  action :periodic
```

```
skytap@host-1:~/chef-repo$ cat>webserver.rb  
apt_update 'Update the apt cache daily' do  
  frequency 86_400  
  action :periodic  
end  
  
package 'apache2'
```

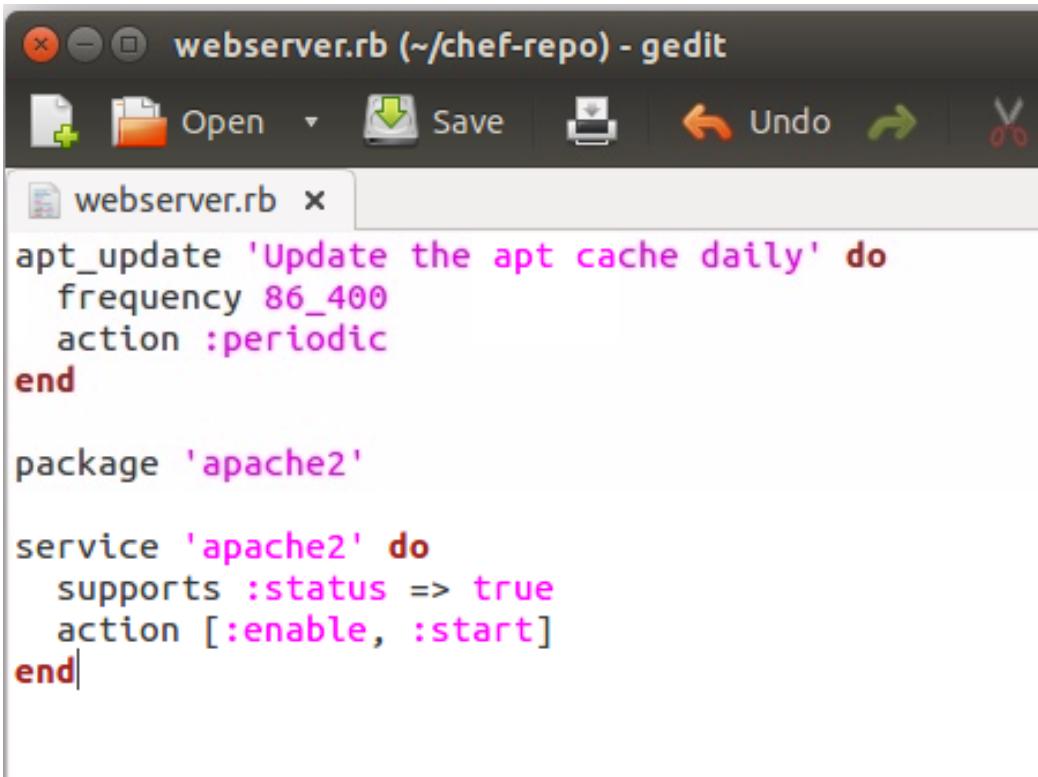
```
skytap@host-1:~/chef-repo$ sudo chef-client --local-mode webserver.rb
^[[C^[[B[2017-01-06T08:08:03-08:00] WARN: No config file found or specified on command line, using command line options.
[2017-01-06T08:08:03-08:00] WARN: No cookbooks directory found at or above current directory. Assuming /home/skytap/chef-repo.
Starting Chef Client, version 12.12.15
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Installing Cookbook Gems:
Compiling Cookbooks...
[2017-01-06T08:08:09-08:00] WARN: Node host-1.skytap.example has an empty run list.
Converging 2 resources
Recipe: @recipe_files:::/home/skytap/chef-repo/webserver.rb
  * apt_update[Update the apt cache daily] action periodic
    - update new lists of packages
  * directory[/var/lib/apt/periodic] action create (up to date)
  * directory[/etc/apt/apt.conf.d] action create (up to date)
  * file[/etc/apt/apt.conf.d/15update-stamp] action create_if_missing (up to date)
  * execute[apt-get -q update] action run
    - execute apt-get -q update

  * apt_package[apache2] action install
    - install version 2.4.7-1ubuntu4 of package apache2

Running handlers:
Running handlers complete
Chef Client finished, 3/6 resources updated in 58 seconds
```

```
skytap@host-1:~/chef-repo$ sudo chef-client --local-mode webserver.rb
[2017-01-06T08:09:33-08:00] WARN: No config file found or specified on command line, using command line options.
[2017-01-06T08:09:33-08:00] WARN: No cookbooks directory found at or above current directory. Assuming /home/skytap/chef-repo.
Starting Chef Client, version 12.12.15
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Installing Cookbook Gems:
Compiling Cookbooks...
[2017-01-06T08:09:37-08:00] WARN: Node host-1.skytap.example has an empty run list.
Converging 2 resources
Recipe: @recipe_files:::/home/skytap/chef-repo/webserver.rb
  * apt_update[Update the apt cache daily] action periodic (up to date)
  * apt_package[apache2] action install (up to date)

Running handlers:
Running handlers complete
Chef Client finished, 0/2 resources updated in 03 seconds
```



The screenshot shows a window titled "webserver.rb (~/chef-repo) - gedit". The window contains a code editor with the following Ruby code:

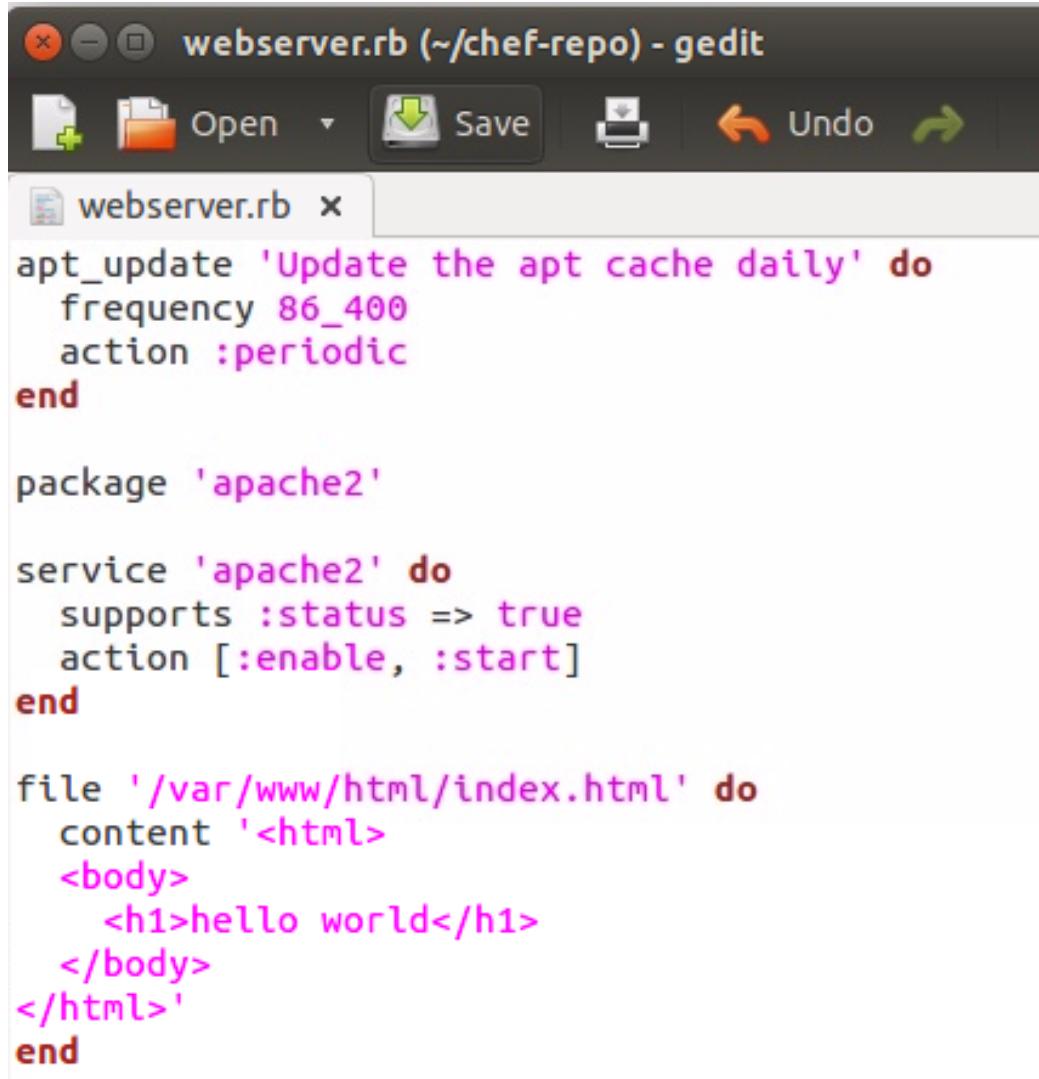
```
apt_update 'Update the apt cache daily' do
  frequency 86_400
  action :periodic
end

package 'apache2'

service 'apache2' do
  supports :status => true
  action [:enable, :start]
end
```

```
skytap@host-1:~/chef-repo$ sudo chef-client --local-mode webserver.rb
[2017-01-06T08:15:06-08:00] WARN: No config file found or specified on command line, using command line options.
[2017-01-06T08:15:06-08:00] WARN: No cookbooks directory found at or above current directory. Assuming /home/skytap/chef-repo.
Starting Chef Client, version 12.12.15
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Installing Cookbook Gems:
Compiling Cookbooks...
[2017-01-06T08:15:08-08:00] WARN: Node host-1.skytap.example has an empty run list.
Converging 3 resources
Recipe: @recipe_files:::/home/skytap/chef-repo/webserver.rb
  * apt_update[Update the apt cache daily] action periodic (up to date)
  * apt_package[apache2] action install (up to date)
  * service[apache2] action enable (up to date)
  * service[apache2] action start (up to date)

Running handlers:
Running handlers complete
Chef Client finished, 0/4 resources updated in 03 seconds
skytap@host-1:~/chef-repo$
```



The screenshot shows a terminal window titled "webserver.rb (~/chef-repo) - gedit". The file content is a Chef configuration script:

```
apt_update 'Update the apt cache daily' do
  frequency 86_400
  action :periodic
end

package 'apache2'

service 'apache2' do
  supports :status => true
  action [:enable, :start]
end

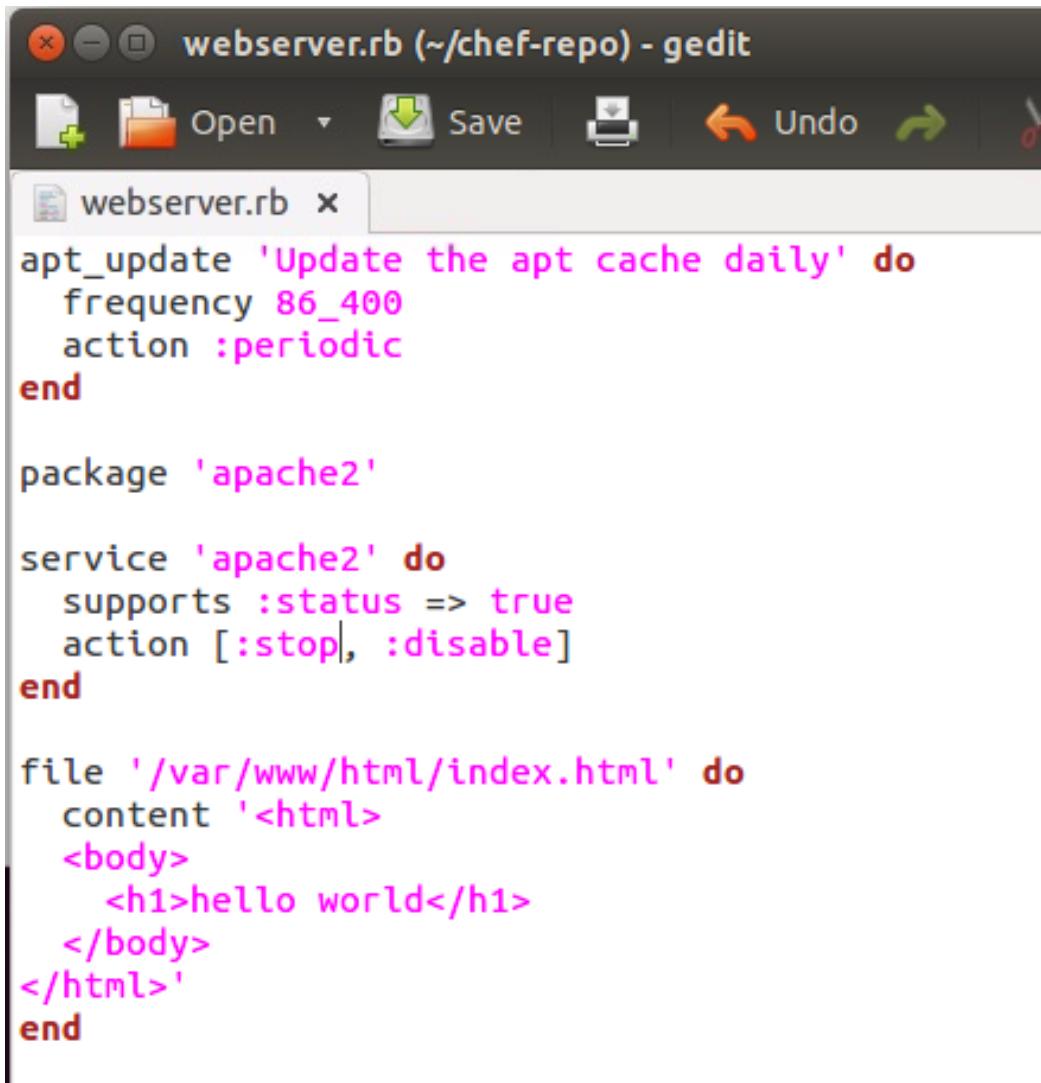
file '/var/www/html/index.html' do
  content '<html>
<body>
  <h1>hello world</h1>
</body>
</html>'
end
```

```
skytap@host-1:~/chef-repo$ sudo chef-client --local-mode webserver.rb
[2017-01-06T08:22:49-08:00] WARN: No config file found or specified on command line, using command line options.
[2017-01-06T08:22:49-08:00] WARN: No cookbooks directory found at or above current directory. Assuming /home/skytap/chef-repo.
Starting Chef Client, version 12.12.15
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Installing Cookbook Gems:
Compiling Cookbooks...
[2017-01-06T08:22:52-08:00] WARN: Node host-1.skytap.example has an empty run list.
Converging 4 resources
Recipe: @recipe_files:::/home/skytap/chef-repo/webserver.rb
  * apt_update[Update the apt cache daily] action periodic (up to date)
  * apt_package[apache2] action install (up to date)
  * service[apache2] action enable (up to date)
  * service[apache2] action start (up to date)
  * file[/var/www/html/index.html] action create
    - update content in file /var/www/html/index.html from 538f31 to 2914
aa
  --- /var/www/html/index.html      2017-01-06 08:08:53.561694440 -08
00
  +++ /var/www/html/.chef-index.html 20170106-11438-qjjx54      2017-01-0
6 08:22:52.239925790 -0800
@@ -1,379 +1,6 @@
-
-<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
-<html xmlns="http://www.w3.org/1999/xhtml">
-  <!--
-  Modified from the Debian original for Ubuntu
-  Last updated: 2014-03-19
-  See: https://launchpad.net/bugs/1288690
-  -->
-  <head>
```

```
      -           <p>
      -           Please use the <tt>ubuntu-bug</tt> tool to report bu
gs in the
      -           Apache2 package with Ubuntu. However, check <a
he2">existing
      -           bug reports</a> before reporting a new bug.
      -       </p>
      -       <p>
      -           Please report bugs specific to modules (such as PHP
and others)
      -           to respective packages, not to the web server itself
      .
      -       </p>
      -   </div>
      -
      -
      -
      -       </div>
      -   </div>
      -   <div class="validator">
      -     <p>
      -       <a href="http://validator.w3.org/check?uri=referer"></a>
      -     </p>
      -   </div>
      +   <h1>hello world</h1>
      -   </body>
      - </html>
      -
Running handlers:
Running handlers complete
Chef Client finished, 1/5 resources updated in 03 seconds
```

```
skytap@host-1:~/chef-repo$ curl localhost
<html>
  <body>
    <h1>hello world</h1>
  </body>
</html>skytap@host-1:~/chef-repo$
```

```
skytap@host-1:~/chef-repo$ curl -I localhost
HTTP/1.1 200 OK
Date: Fri, 06 Jan 2017 16:26:44 GMT
Server: Apache/2.4.7 (Ubuntu)
Last-Modified: Fri, 06 Jan 2017 16:22:52 GMT
ETag: "3a-5456f6df87835"
Accept-Ranges: bytes
Content-Length: 58
Content-Type: text/html
```



The screenshot shows a Gedit text editor window titled "webserver.rb (~/chef-repo) - gedit". The file content is a Chef configuration script:

```
apt_update 'Update the apt cache daily' do
  frequency 86_400
  action :periodic
end

package 'apache2'

service 'apache2' do
  supports :status => true
  action [:stop, :disable]
end

file '/var/www/html/index.html' do
  content '<html>
<body>
  <h1>hello world</h1>
</body>
</html>'
end
```

```
skytap@host-1:~/chef-repo$ sudo chef-client --local-mode webserver.rb
[2017-01-06T08:28:39-08:00] WARN: No config file found or specified on command line, using command line options.
[2017-01-06T08:28:39-08:00] WARN: No cookbooks directory found at or above current directory. Assuming /home/skytap/chef-repo.
Starting Chef Client, version 12.12.15
resolving cookbooks for run list: []
Synchronizing Cookbooks:
Installing Cookbook Gems:
Compiling Cookbooks...
[2017-01-06T08:28:42-08:00] WARN: Node host-1.skytap.example has an empty run list.
Converging 4 resources
Recipe: @recipe_files:::/home/skytap/chef-repo/webserver.rb
  * apt_update[Update the apt cache daily] action periodic (up to date)
  * apt_package[apache2] action install (up to date)
  * service[apache2] action stop
    - stop service service[apache2]
  * service[apache2] action disable
    - disable service service[apache2]
  * file[/var/www/html/index.html] action create (up to date)

Running handlers:
Running handlers complete
Chef Client finished, 2/5 resources updated in 04 seconds
skytap@host-1:~/chef-repo$ curl -I localhost
curl: (7) Failed to connect to localhost port 80: Connection refused
```

Task 5: Make your recipe more manageable

```
skytap@host-1:~/chef-repo$ mkdir cookbooks
mkdir: cannot create directory 'cookbooks': File exists
skytap@host-1:~/chef-repo$ chef generate cookbook cookbooks/learn_chef_apache2
Generating cookbook learn_chef_apache2
- Ensuring correct cookbook file content
- Ensuring delivery configuration
- Ensuring correct delivery build cookbook content

Your cookbook is ready. Type `cd cookbooks/learn_chef_apache2` to enter it.

There are several commands you can run to get started locally developing and testing your cookbook.
Type `delivery local --help` to see a full list.

Why not start by writing a test? Tests for the default recipe are stored at:

test/recipes/default_test.rb

If you'd prefer to dive right in, the default recipe can be found at:

recipes/default.rb
```

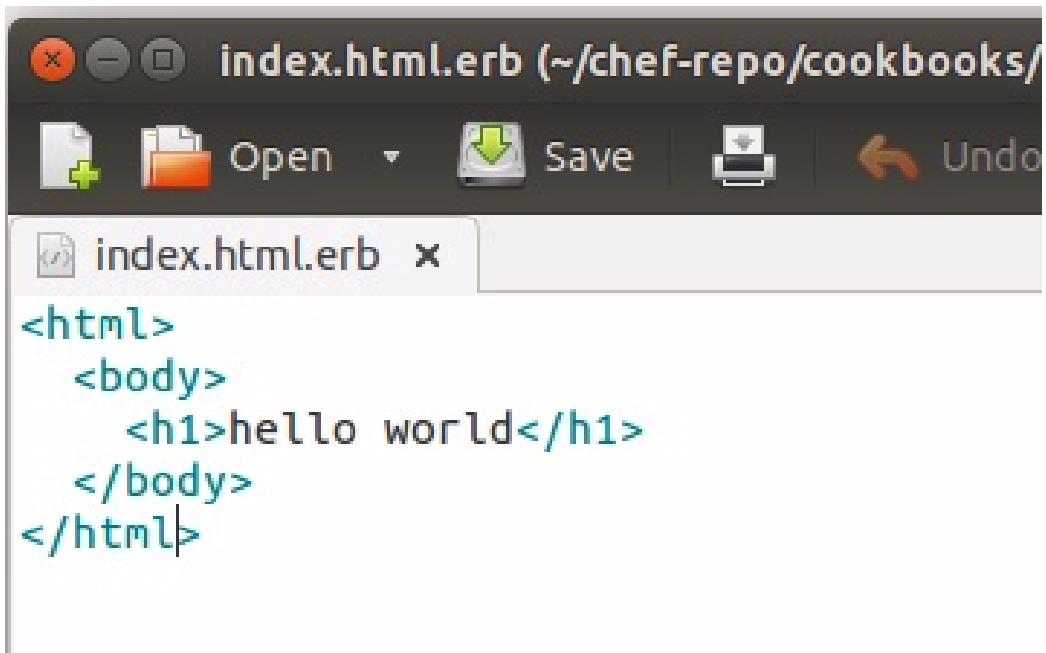
```
skytap@host-1:~/chef-repo$ tree cookbooks
cookbooks
├── learn_chef_apache2
│   ├── Berksfile
│   ├── chefignore
│   ├── metadata.rb
│   ├── README.md
│   ├── recipes
│   │   └── default.rb
│   ├── spec
│   │   └── spec_helper.rb
│   └── test
│       └── recipes
│           └── default_test.rb
└── learn_chef_apache2
    ├── Berksfile
    ├── chefignore
    ├── metadata.rb
    ├── README.md
    ├── recipes
    │   └── default.rb
    ├── spec
    │   └── spec_helper.rb
    └── test
        └── recipes
            └── default_test.rb

14 directories, 16 files
```

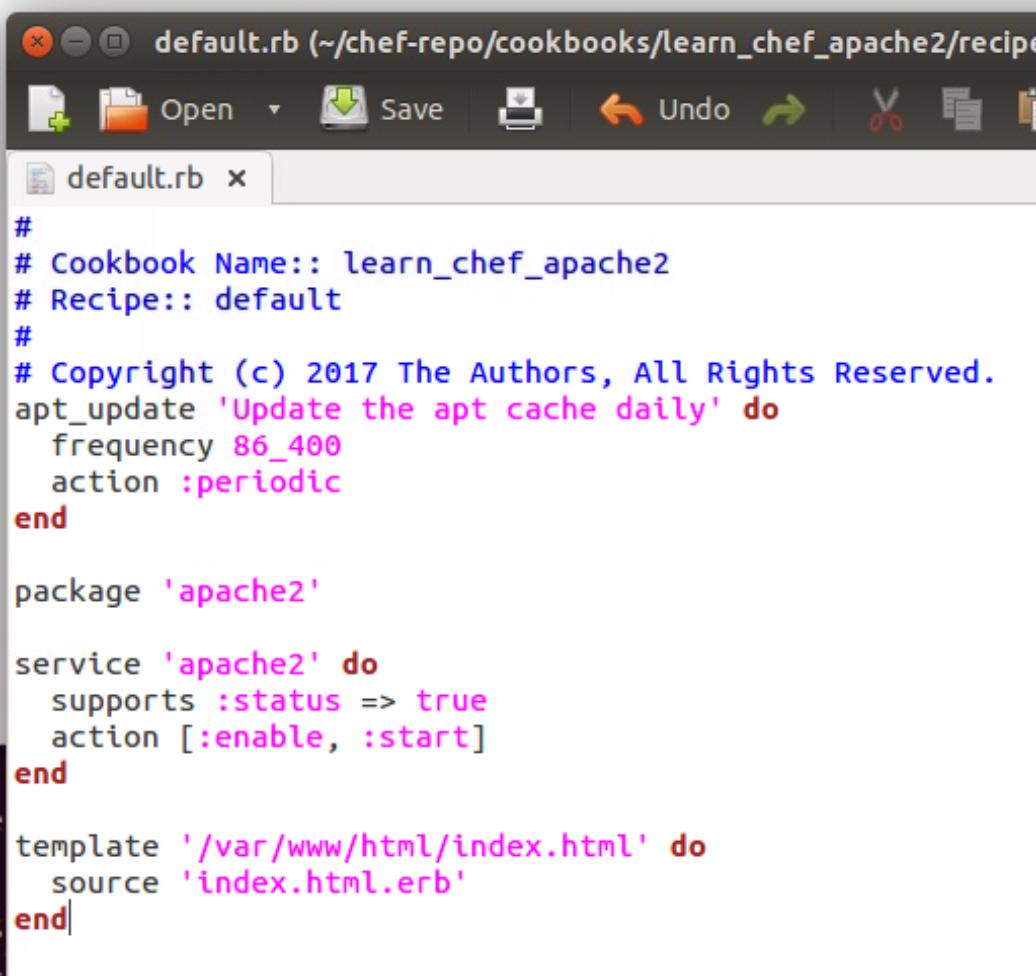
```
skytap@host-1:~/chef-repo$ chef generate template cookbooks/learn_chef_apache2 index.html
Recipe: code_generator::template
  * directory[cookbooks/learn_chef_apache2/templates/default] action create
    - create new directory cookbooks/learn_chef_apache2/templates/default
  * template[cookbooks/learn_chef_apache2/templates/index.html.erb] action create
    - create new file cookbooks/learn_chef_apache2/templates/index.html.erb
      - update content in file cookbooks/learn_chef_apache2/templates/index.html.erb from none to e3b0c4
        (diff output suppressed by config)
```

```
skytap@host-1:~/chef-repo$ tree cookbooks
cookbooks
├── learn_chef_apache2
│   ├── Berksfile
│   ├── chefignore
│   ├── metadata.rb
│   ├── README.md
│   ├── recipes
│   │   └── default.rb
│   ├── spec
│   │   ├── spec_helper.rb
│   │   └── unit
│   │       └── recipes
│   │           └── default_spec.rb
│   ├── templates
│   │   ├── default
│   │   └── index.html.erb
│   └── test
│       └── recipes
│           └── default_test.rb
└── learn_chef_apache2
    ├── Berksfile
    ├── chefignore
    ├── metadata.rb
    ├── README.md
    ├── recipes
    │   └── default.rb
    ├── spec
    │   ├── spec_helper.rb
    │   └── unit
    │       └── recipes
    │           └── default_spec.rb
    └── test
        └── recipes
            └── default_test.rb

16 directories, 17 files
```



```
index.html.erb (~chef-repo/cookbooks/
index.html.erb x
<html>
  <body>
    <h1>hello world</h1>
  </body>
</html>
```



The screenshot shows a code editor window with the title bar "default.rb (~/chef-repo/cookbooks/learn_chef_apache2/recipes)". The menu bar includes "File", "Edit", "View", "Search", "Help", and "File". The toolbar contains icons for "Open", "Save", "Undo", "Redo", and "Find". The main editor area displays the following Chef recipe code:

```
#  
# Cookbook Name:: learn_chef_apache2  
# Recipe:: default  
#  
# Copyright (c) 2017 The Authors, All Rights Reserved.  
apt_update 'Update the apt cache daily' do  
  frequency 86_400  
  action :periodic  
end  
  
package 'apache2'  
  
service 'apache2' do  
  supports :status => true  
  action [:enable, :start]  
end  
  
template '/var/www/html/index.html' do  
  source 'index.html.erb'  
end
```

```
skytap@host-1:~/chef-repo$ sudo chef-client --local-mode --runlist 'recip  
e[learn_chef_apache2]'  
[2017-01-06T08:49:00-08:00] WARN: No config file found or specified on co  
mmand line, using command line options.  
Starting Chef Client, version 12.12.15  
resolving cookbooks for run list: ["learn_chef_apache2"]  
Synchronizing Cookbooks:  
  - learn_chef_apache2 (0.1.0)  
Installing Cookbook Gems:  
Compiling Cookbooks...  
Converging 4 resources  
Recipe: learn_chef_apache2::default  
  * apt_update[Update the apt cache daily] action periodic (up to date)  
  * apt_package[apache2] action install (up to date)  
  * service[apache2] action enable  
    - enable service service[apache2]  
  * service[apache2] action start  
    - start service service[apache2]  
  * template[/var/www/html/index.html] action create  
    - update content in file /var/www/html/index.html from 2914aa to ef4f  
fd  
  (no diff)  
  
Running handlers:  
Running handlers complete  
Chef Client finished, 3/5 resources updated in 04 seconds
```

```
skytap@host-1:~/chef-repo$ curl localhost  
<html>  
  <body>  
    <h1>hello world</h1>  
  </body>  
</html>
```

6. Explain in a few lines how chef enables the Infrastructure as Code paradigm

Programmers can just write a few lines of chef recipes code to set up the environment and configuration. Those recipe codes can run in different clients, which save the trouble of copying the whole VM file.

7. Image you are Rose-Hulman IT guy who figure all the vm for the students, will chef be fit in the situation?

Chef will be perfect for the Rose-Hulman student body since every Rose student have a similar VM/computer set up. Those set up can include Rose network configuration, SVN, Maple license etc. Instead of copying and paste the whole VM or computer file over, which costs a lot of time and space. Writing a chef recipes code which configures all the set up and just run those code in each VM or laptop will be super efficient. Chef also does version control so if there is update or new configuration, then just update the Chef receipe script then run again on the vm/laptop.