GRADHOPPERS

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Abstract

Classroom teaching has evolved dramatically since the widespread implementation of public education in the 19th century. The affordability of technology has facilitated the use of computer hardware in the classroom. The next step in this evolutionary process is the use of Learning Management Systems to facilitate the teaching process. An LMS can be used in a small way by providing an environment for student assessment, but also in far greater ways to provide instructional content such as recorded lectures and interactive learning exercises. It can also provide instructors with statistical data that enables them to intervene when students are not making adequate progress. Canvas LMS is an open source LMS that is available to teachers and schools for free. It provides tools to develop course materials for use in the classroom and creates an entire learning environment that benefits students and teachers alike.

Canvas LMS

Canvas is a flexible, customizable learning management system. It is a completely open resource for all learning institutions, from K-12 to Higher Education. It provides an extensive, open API that is published to the world, enabling third party apps to plug in, pull data out, and push data back in. An app center is available to make it easy for institutions and instructors to experiment and adapt new technologies into their courses.

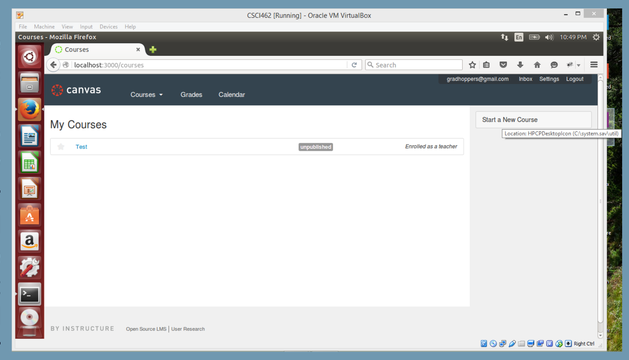
Paraphrased from CanvasLMS.com

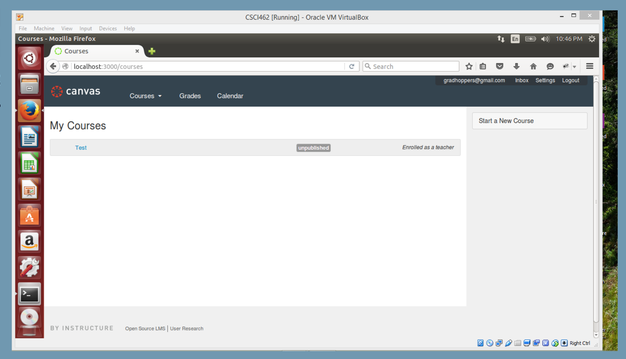
Conclusion

When an application is extremely complex, simple items such as CSS classes can also become complex. Making a small change to a single line of code can take quite a bit of time to test and re-test if the application requires you to re-compile its assets each time.

Issue #749

Issue 749 was a styling conflict on the courses index page. The courses table contains a list of courses, as well as a button for each that allows the user to favorite that course. The button is star shaped and is contained in the course row. The favorite button is a light grey color that blends into the course row when the course row is hovered upon by the user and the background color of the course row changes to the same as the favorite button, causing the button to disappear. Our solution was to change the color of the button to white when the row was hovered upon. This change had to be made in the stylesheets of the project which are precompiled before running the server. Because of the precompilation process, it takes 10-15 minutes to see if the code to fix the issue worked or not. Trial and error was therefore not a feasible way to test our code, and it took much longer than expected to fix. Eventually we had a suitable solution and submitted a pull request to Canvas. Unfortunately by the time we had fixed the issue and had merged Canvas's main branch back into our bug fix branch, Canvas's developers had changed the styling of the courses index page which made the bug no longer relevant.






```
5 app/stylesheets/bundles/course_list.scss                                  View

@@ -39,6 +39,9 @@ table.course-list-table {
   .course-list-table-row:hover {
     @if $use_new_styles { background-color: $lightBackground; }
     @else { background-color: #eee; }
+    .icon-star {
+      -webkit-filter: invert(.75);
+    }
   }
 }
@@ -63,4 +66,4 @@ table.course-list-table {
   color: #555;
   font-size: 10px;
   font-style: italic;
-}
\ No newline at end of file
+}
```

Issue #750

```
63      $node.appendTo($holder).
64        css(_.extend(zIndex: 1, cssOptions)).
65        show('drop', direction: "up", 'fast', -> $(this).css('z-index', 2)).
66        delay(timeout || 7000).
67        animate({'z-index': 1}, 0).
68        fadeOut('slow', -> $(this).slideUp('fast', -> $(this).remove()))
69
70      setTimeout((-> screenReaderFlashBox(type, content)), 100)
```

Issue #750 was about a timeout limit for Internet Explorer 9 browsers. The user states that "If the new user logs into the system in IE9 then the message is displayed that 'Your browser does not meet the minimum requirements for....' How can we increase its time limit." This issue was addressed by the Canvas LMS Instructure developer and they stated that the time limit was hardcoded into the file. We saw that this issue was due to the specific browser and still remained open on their issues tracker. We sent them an email on the mailing list to close the issue, as to not confuse new developers. They responded back and said that they will close the issue. This documentation fix should clear up some ground for new teams that want to develop for this open source project.

Underlying Technologies

PostgreSQL—an award-winning, enterprise class, open source object-relational database system with more than 15 years of active development. (http://www.postgresql.org/)

Apache HTTP Server—the #1 server on the Internet since 1996. (https://httpd.apache.org/)

Ruby—a dynamic, open source programming language with a focus on simplicity and productivity. (https://www.ruby-lang.org/en/)

Rails—an MVC web application framework written in Ruby under MIT License. (http://rubyonrails.org/)

Bundler—an environment for Ruby projects that tracks and installs the exact gems and versions the application needs. (http://bundler.io/)

Node.js—an event-driven, lightweight, cross-platform JavaScript runtime environment for server-side applications. (https://nodejs.org/en/)