Adding an external tool that gets the URL of the current page

Gerald Q. Maguire Jr.

I have long wanted to be able to invoke LTI tools and have them know the page they were invoked from.

# Background

This work builds upon the posting I had made to the Canvas LMS Community on February 15th 2019:

<https://community.canvaslms.com/t5/Developers-Group/Can-an-LTI-call-pass-the-page-it-is-called-from/td-p/130693>

# First step

On September 9th 2020, I realized, that there is a way to solve this that might be workable,

We will consider them in the context of the project that I have to help automate actions regarding degree project students. In this project, I wrote three external tools called AdminIt, ChipIT, and SinatraTest (each is a ruby program) – their course code is at <https://github.com/gqmaguirejr/E-learning>.

In this case I added them to a test course (course\_id = 2) - (see Figure 1). Next I added navigation buttons to the course with the program add-external-tool-for-course.py and this results in the navigation menu shown in Figure 1.

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Figure : External add as Apps in course

Some details of ChipIT are shown in Figure 2.

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Figure : Details of the ChipIT app

Using the following command we can get the details about all of the external tools in this course:

./list-external-tools-for-course.py -C

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| using HTTP for the container environment  [{'account\_navigation': None,  'assignment\_edit': None,  'assignment\_menu': None,  'assignment\_selection': None,  'assignment\_view': None,  'collaboration': None,  'consumer\_key': 'test',  'course\_assignments\_menu': None,  'course\_home\_sub\_navigation': None,  'course\_navigation': {'default': 'enabled',  'display\_type': 'full\_width\_in\_context',  'enabled': 'true',  'label': 'AdminIT',  'selection\_height': 400,  'selection\_width': 800,  'text': 'AdminIT',  'url': 'https://localhost:3598/getID',  'visibility': 'admins',  'windowTarget': '\_self'},  'course\_settings\_sub\_navigation': None,  'created\_at': '2019-06-01T11:01:19Z',  'custom\_fields': {},  'description': 'Help administrators with a degree project.',  'discussion\_topic\_menu': None,  'domain': None,  'editor\_button': None,  'file\_menu': None,  'global\_navigation': None,  'homework\_submission': None,  'id': 1,  'link\_selection': None,  'migration\_selection': None,  'module\_menu': None,  'name': 'AdminIt',  'not\_selectable': False,  'post\_grades': None,  'privacy\_level': 'public',  'quiz\_menu': None,  'resource\_selection': None,  'similarity\_detection': None,  'student\_context\_card': None,  'tool\_configuration': None,  'updated\_at': '2019-06-01T11:03:13Z',  'url': 'https://localhost:3598/getID',  'user\_navigation': None,  'vendor\_help\_link': None,  'version': '1.1',  'wiki\_page\_menu': None,  'workflow\_state': 'public'},  {'account\_navigation': None,  'assignment\_edit': None,  'assignment\_menu': None,  'assignment\_selection': None,  'assignment\_view': None,  'collaboration': None,  'consumer\_key': 'test',  'course\_assignments\_menu': None,  'course\_home\_sub\_navigation': None,  'course\_navigation': {'default': 'enabled',  'display\_type': 'full\_width\_in\_context',  'enabled': 'true',  'label': 'ChipIt',  'selection\_height': 400,  'selection\_width': 800,  'text': 'ChipIt',  'url': 'https://localhost:3597/announce',  'visibility': 'admins',  'windowTarget': '\_self'},  'course\_settings\_sub\_navigation': None,  'created\_at': '2019-06-01T11:01:19Z',  'custom\_fields': {'chip2\_canvas\_module\_id': '${Canvas.module.id}',  'chip2\_canvas\_module\_item\_id': '${Canvas.moduleItem.id}',  'chip3\_com\_instructure\_context\_label': '$com.instructure.contextLabel',  'chip\_canvas\_module\_id': '$Canvas.module.id',  'chip\_canvas\_module\_item\_id': '$Canvas.moduleItem.id',  'context\_id': '$Context.id',  'context\_source\_id': '$Context.sourcedId',  'context\_title': '$Context.title',  'coursecode': '$Canvas.course.id',  'message\_documenttarget': '$Message.documentTarget',  'module\_id': '$Canvas.module.id',  'module\_id\_item': '$Canvas.moduleItem.id',  'sis\_id': '$Canvas.user.sisSourceId',  'user\_sis\_id': '$Person.sourcedId',  'userid': '$Canvas.user.sisSourceId'},  'description': 'A test for being able to automate degree project '  'presentation announcements.',  'discussion\_topic\_menu': None,  'domain': None,  'editor\_button': None,  'file\_menu': None,  'global\_navigation': None,  'homework\_submission': None,  'id': 2,  'link\_selection': None,  'migration\_selection': None,  'module\_menu': None,  'name': 'ChipIT',  'not\_selectable': False,  'post\_grades': None,  'privacy\_level': 'anonymous',  'quiz\_menu': None,  'resource\_selection': None,  'similarity\_detection': None,  'student\_context\_card': None,  'tool\_configuration': None,  'updated\_at': '2019-07-06T13:28:50Z',  'url': 'https://localhost:3597/announce',  'user\_navigation': None,  'vendor\_help\_link': None,  'version': '1.1',  'wiki\_page\_menu': None,  'workflow\_state': 'anonymous'},  {'account\_navigation': None,  'assignment\_edit': None,  'assignment\_menu': None,  'assignment\_selection': None,  'assignment\_view': None,  'collaboration': None,  'consumer\_key': 'test',  'course\_assignments\_menu': None,  'course\_home\_sub\_navigation': None,  'course\_navigation': None,  'course\_settings\_sub\_navigation': None,  'created\_at': '2019-06-01T11:01:19Z',  'custom\_fields': {'sis\_id': '$Canvas.user.sisSourceId',  'user\_sis\_id': '$Person.sourcedId'},  'description': '',  'discussion\_topic\_menu': None,  'domain': None,  'editor\_button': None,  'file\_menu': None,  'global\_navigation': None,  'homework\_submission': None,  'id': 3,  'link\_selection': None,  'migration\_selection': None,  'module\_menu': None,  'name': 'SinatraTest',  'not\_selectable': False,  'post\_grades': None,  'privacy\_level': 'public',  'quiz\_menu': None,  'resource\_selection': None,  'similarity\_detection': None,  'student\_context\_card': None,  'tool\_configuration': None,  'updated\_at': '2019-06-01T11:04:29Z',  'url': 'http://localhost:4567',  'user\_navigation': None,  'vendor\_help\_link': None,  'version': '1.1',  'wiki\_page\_menu': None,  'workflow\_state': 'public'}] |

Based on the posting by Chu Nguyen on Oct 25 '19 at 10:54 at <https://stackoverflow.com/questions/58546352/how-to-append-current-window-location-in-the-href-value-of-anchor-tag> I realized that I could have a script that consisted of:

var link = document.getElementsByClassName('context\_external\_tool\_2')[0]

link.setAttribute('href',

link.getAttribute('href').replace('borderless',

'borderless&url='+location.href))

To test this idea I used the chrome inspector and entered in the Console window the following (red text shows the output of the command):

link = document.getElementsByClassName('context\_external\_tool\_2')[0]

<a href=​"/​courses/​1/​external\_tools/​2?display=borderless" class=​"context\_external\_tool\_2" target=​"\_blank" tabindex=​"0">​Sinatra​</a>​

link.getAttribute('href')

"/courses/1/external\_tools/2?display=borderless"

link.setAttribute('href', link.getAttribute('href').replace('borderless','borderless&url='+location.href))

undefined

link.getAttribute('href')

"/courses/1/external\_tools/2?display=borderless&url=http://127.0.0.1/courses/1"

Next I clicked on the Sinatra button and the Ruby program output:

http://127.0.0.1/courses/1/external\_tools/2?display=borderless&url=http://127.0.0.1/courses/1 -> /

As I had not defined any processing of the “url” argument the program did not do anything interesting. However, the key point is that if the script were executed on each Canvas page in this course, then the external tool could know on which page it had been invoked.

# Next step

Next step is to understand how this could be added by the localized customized Javascript that can be loaded on a site, account, or subaccount basis.

The first step in doing this is to enable custom CSS and Javascript for an account, as shown in Figure 3.

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Figure : Enabling custom CSS and Javascript for an account

The custom Javascript (add-url-to-button-push-for-lti.js) that will be loaded is shown in Figure 4. The regular expression “/\/courses\/\d+\/users/” causes this code to only be invoked on a user page and only invoked if the user who clicks on the button is a teacher. After being invoked it augments the ChipIT button’s anchor’s “href” by adding the current page’s location.

The Javascript code uses the functions onPage and hasAnyRole written by Ryan Florence of Instructure in his talk “Best Practices for Using Global Javascript” at InstructureCon 2013 on June 28, 2013 and shown in the video at <https://www.youtube.com/watch?v=ag6mxnBMTnQ>.

The formatting of the contents of the Javascript file are based upon the example from Robert Carroll’s Gist “courselinks-termsort.js” at <https://gist.github.com/robert-carroll/cf60322ac3af9ea56a613dd37be681f2>. See also <https://github.com/robert-carroll/ccsd-canvas>.

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| /\*\*  // @name augement navigation button links  // @namespace https://github.com/gqmaguirejr/E-learning  // @author Gerald Q. Maguire Jr. <maguire@kth.se>  \*\*/  (function() {  'use strict';  onPage(/\/courses\/\d+\/users/, function() {  hasAnyRole('teacher', function(hasRole) {  if (hasRole) {  // do something  var link = document.getElementsByClassName('context\_external\_tool\_2')[0]  link.setAttribute('href',  link.getAttribute('href').concat('?url='+location.href))    } else {  // do something else  }  })});  function onPage(regex, fn) {  if (location.pathname.match(regex)) fn();  }  function hasAnyRole(/\*roles, cb\*/) {  var roles = [].slice.call(arguments, 0);  var cb = roles.pop();  for (var i = 0; i < arguments.length; i++) {  if (ENV.current\_user\_roles.indexOf(arguments[i]) !== -1) {  return cb(true);  }  }  return cb(false);  }  })(); |

Figure : add-url-to-button-push-for-lti.js initial version to process a single button

You can now use the look at the themes (Figure 5) and then invoke the theme editor (Figure 6) to upload a file as shown in Figure 7.

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Figure : Available themes and current theme

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Figure : Theme editor

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Figure : Upload the Javascript file

This creates a file:

<http://canvas.docker/accounts/2/files/23/download?verifier=Fm2rPosklpbcvEQcajxGyI6e1uVQsTozwPyWhBje>

One can view this file, as shown in Figure 8. Preview the changes to the them, save, and then apply the changes (you will get a confirmation question that asks if you really want to apply the changes to the account) .

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Figure : View the uploaded Javascript file (initial version)

However, there is a catch – the file has to be uploaded via a FireFox browser and not a Chrome browser – as detailed in the posting “Uploading custom JS files with Chrome fails when using local storage #1011” by “etsikt” on March 24, 2017 at <https://github.com/instructure/canvas-lms/issues/1011> - unfortunately, the problem still exists (at least in the VM I have Canvas running in).

If you upload the file with a Chrome browser you will get 422 errors when the browser tries to load this javascript into a page. However, if you have use Firefox, then it works, see Figure 9 and the bottom of the HTML that is in the page as shown in Figure 10.

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Figure : Network log showing loading of the file

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| <div id="StudentTray\_\_Container"></div>    <script>  INST = {"environment":"development","disableCrocodocPreviews":true,"logPageViews":true,"maxVisibleEditorButtons":3,"editorButtons":[]};  ENV = {"ASSET\_HOST":"","active\_brand\_config\_json\_url":"/dist/brandable\_css/95eddef5aee9eb2270e228a826b4a81c/variables-8f05bb49a3f36c1ed21c589576567137.json","url\_to\_what\_gets\_loaded\_inside\_the\_tinymce\_editor\_css":["/dist/brandable\_css/95eddef5aee9eb2270e228a826b4a81c/variables-8f05bb49a3f36c1ed21c589576567137.css","/dist/brandable\_css/new\_styles\_normal\_contrast/bundles/what\_gets\_loaded\_inside\_the\_tinymce\_editor-1b6127b96f.css"],"url\_for\_high\_contrast\_tinymce\_editor\_css":["/dist/brandable\_css/default/variables-high\_contrast-8f05bb49a3f36c1ed21c589576567137.css","/dist/brandable\_css/new\_styles\_high\_contrast/bundles/what\_gets\_loaded\_inside\_the\_tinymce\_editor-f1248bf59a.css"],"current\_user\_id":"1","current\_user\_roles":["user","teacher","admin","root\_admin"],"current\_user\_disabled\_inbox":false,"files\_domain":"canvas.docker","DOMAIN\_ROOT\_ACCOUNT\_ID":10000000000001,"k12":false,"use\_responsive\_layout":false,"use\_rce\_enhancements":false,"use\_unsplash\_image\_search":null,"help\_link\_name":"Help","help\_link\_icon":"help","use\_high\_contrast":false,"LTI\_LAUNCH\_FRAME\_ALLOWANCES":["geolocation \*","microphone \*","camera \*","midi \*","encrypted-media \*","autoplay \*"],"DEEP\_LINKING\_POST\_MESSAGE\_ORIGIN":"http://canvas.docker","DEEP\_LINKING\_LOGGING":null,"SETTINGS":{"open\_registration":false,"eportfolios\_enabled":true,"collapse\_global\_nav":false,"show\_feedback\_link":false,"enable\_profiles":true},"current\_user":{"id":"1","display\_name":"chip.maguire@gmail.com","avatar\_image\_url":"http://canvas.instructure.com/images/messages/avatar-50.png","html\_url":"http://www.canvas.docker/about/1"},"context\_asset\_string":"course\_2","ping\_url":"http://canvas.docker/api/v1/courses/2/ping","TIMEZONE":"Europe/Stockholm","CONTEXT\_TIMEZONE":"America/Denver","LOCALE":"en","BIGEASY\_LOCALE":"en\_US","FULLCALENDAR\_LOCALE":"en","MOMENT\_LOCALE":"en","COURSE\_ID":2,"USER\_ID":2,"LAST\_ATTENDED\_DATE":null,"CONTEXT\_USER\_DISPLAY\_NAME":"Ann","ga\_page\_title":"Roster User","PASSWORD\_POLICY":{"min\_length":8},"PASSWORD\_POLICIES":{"2":{"min\_length":8},"1":{"min\_length":8}},"badge\_counts":{"submissions":0},"notices":[]};  </script>  <link rel="preload" href="/dist/webpack-dev/0-c-b622fcc47a.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/1-c-2630a3ea4c.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/user\_name-c-cb12473c07.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/2-c-fb5c16e664.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/link\_enrollment-c-fcb58ecef7.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/user\_logins-c-9d419ce714.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/3-c-3a96ce116c.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/4-c-d15ff7cb9e.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/5-c-51d8353b6e.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/6-c-22f9e31935.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/7-c-5240ea5127.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/8-c-ec3c1e7d86.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/9-c-777838c6d9.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/10-c-245d06fb3b.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/11-c-a490f5c8fa.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/12-c-c9cdc5c546.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/13-c-50513d0418.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/15-c-c2786ab581.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/16-c-c727e59f30.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/17-c-b9ab2a19d2.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/18-c-a28d8b7359.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/19-c-5ed6f45a20.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/20-c-24283a6967.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/21-c-549c17a9f5.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/22-c-021bf6306e.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/23-c-90f481d031.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/24-c-b39a798675.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/25-c-b7c7c56b7f.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/26-c-a63a055195.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/28-c-e0ebda9f8d.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/29-c-c818ac7883.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/70-c-00f3bfb8cc.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/legacy/context\_roster\_user-c-ef7c8c3782.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/35-c-54fb7539e4.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/59-c-5467db30d1.js" as="script" type="text/javascript"><link rel="preload" href="/dist/webpack-dev/navigation\_header-c-4cb4cdf7ec.js" as="script" type="text/javascript"><script>  //<![CDATA[  (window.bundles || (window.bundles = [])).push('user\_name');  (window.bundles || (window.bundles = [])).push('link\_enrollment');  (window.bundles || (window.bundles = [])).push('user\_logins');  (window.bundles || (window.bundles = [])).push('legacy/context\_roster\_user');  (window.bundles || (window.bundles = [])).push('navigation\_header');  //]]>  </script>  **<script src="http://canvas.docker/accounts/2/files/23/download?verifier=Fm2rPosklpbcvEQcajxGyI6e1uVQsTozwPyWhBje" defer="defer"></script>**  </div> <!-- #application -->  <div id="nav-tray-portal" style="position: relative; z-index: 99;"></div></body></html> |

Figure : Custom Javascript being loaded

# The Environment ENV

Looking a little deeper into the environment variable ENV that is in the web page (shown earlier in ), we can re-format it as shown in Figure 11.

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| ENV = {"ASSET\_HOST":"",  "active\_brand\_config\_json\_url":"/dist/brandable\_css/95eddef5aee9eb2270e228a826b4a81c/variables-8f05bb49a3f36c1ed21c589576567137.json",  "url\_to\_what\_gets\_loaded\_inside\_the\_tinymce\_editor\_css":["/dist/brandable\_css/95eddef5aee9eb2270e228a826b4a81c/variables-8f05bb49a3f36c1ed21c589576567137.css",  "/dist/brandable\_css/new\_styles\_normal\_contrast/bundles/what\_gets\_loaded\_inside\_the\_tinymce\_editor-1b6127b96f.css"],  "url\_for\_high\_contrast\_tinymce\_editor\_css":["/dist/brandable\_css/default/variables-high\_contrast-8f05bb49a3f36c1ed21c589576567137.css",  "/dist/brandable\_css/new\_styles\_high\_contrast/bundles/what\_gets\_loaded\_inside\_the\_tinymce\_editor-f1248bf59a.css"],  "current\_user\_id":"1",  "current\_user\_roles":["user",  "teacher",  "admin",  "root\_admin"],  "current\_user\_disabled\_inbox":false,  "files\_domain":"canvas.docker",  "DOMAIN\_ROOT\_ACCOUNT\_ID":10000000000001,  "k12":false,  "use\_responsive\_layout":false,  "use\_rce\_enhancements":false,  "use\_unsplash\_image\_search":null,  "help\_link\_name":"Help",  "help\_link\_icon":"help",  "use\_high\_contrast":false,  "LTI\_LAUNCH\_FRAME\_ALLOWANCES":["geolocation \*",  "microphone \*",  "camera \*",  "midi \*",  "encrypted-media \*",  "autoplay \*"],  "DEEP\_LINKING\_POST\_MESSAGE\_ORIGIN":"http://canvas.docker",  "DEEP\_LINKING\_LOGGING":null,  "SETTINGS":{"open\_registration":false,  "eportfolios\_enabled":true,  "collapse\_global\_nav":false,  "show\_feedback\_link":false,  "enable\_profiles":true},  "current\_user":{"id":"1",  "display\_name":"chip.maguire@gmail.com",  "avatar\_image\_url":"http://canvas.instructure.com/images/messages/avatar-50.png",  "html\_url":"http://www.canvas.docker/about/1"},  "context\_asset\_string":"course\_2",  "ping\_url":"http://canvas.docker/api/v1/courses/2/ping",  "TIMEZONE":"Europe/Stockholm",  "CONTEXT\_TIMEZONE":"America/Denver",  "LOCALE":"en",  "BIGEASY\_LOCALE":"en\_US",  "FULLCALENDAR\_LOCALE":"en",  "MOMENT\_LOCALE":"en",  "COURSE\_ID":2,"USER\_ID":2,  "LAST\_ATTENDED\_DATE":null,  "CONTEXT\_USER\_DISPLAY\_NAME":"Ann",  "ga\_page\_title":"Roster User",  "PASSWORD\_POLICY":{"min\_length":8},  "PASSWORD\_POLICIES":{"2":{"min\_length":8},  "1":{"min\_length":8}},  "badge\_counts":{"submissions":0},"notices":[]  }; |

Figure : ENV value (reformatted)

We can now understand how the function hasAnyRole works, since it access the user’s roles looking in the array of roles from ENV (shown in Figure 12) for each of the roles passed in the arguments list:

ENV.current\_user\_roles.indexOf(arguments[i])

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| "current\_user\_roles":["user",  "teacher",  "admin",  "root\_admin"], |

Figure : current\_user\_roles

# Third step – try it out

We first go to the People page, as shown in Figure 11. There we selected the user “Ann FakeStudent” and this takes us to the page shown in Figure 12.

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Figure : People page

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Figure : Ann FakeStudent user page

If we zoom in on the upper left corner (see Figure 13) and look at the URL is says:

http://canvas.docker/courses/2/users/2

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Figure : Zoomed view of the URL for Ann's user page

Now if we click on the “ChipIT” button, it takes use to the ChipIT user interface and has placed the following in the URL box (see ):

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Figure : ChipIT LTI tool first page

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Figure : ChipIT receives the LTI tool request

Zooming in on the URL box on the form (Figure 16) we see:

http://canvas.docker/courses/2/external\_tools/2?url=http://canvas.docker/courses/2/users/2

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Figure : Zoomed view of form

The magic has worked, we got the URL of Ann’s page inside the LTI tool!

# The Javascript code

The actual Javascript code for versin 1 is shown in Figure 17. It uses the functions onPage and hasAnyRole written by Ryan Florence of Instructure in his talk “Best Practices for Using Global Javascript” at InstructureCon 2013 on June 28, 2013 and shown in the video at <https://www.youtube.com/watch?v=ag6mxnBMTnQ>.

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| /\*\*  // @name augement navigation button links  // @namespace https://github.com/gqmaguirejr/canvas-tools  // @author Gerald Q. Maguire Jr. <maguire@kth.se>  \*\*/  (function() {  'use strict';  onPage(/\/courses\/\d+\/users/, function() {  hasAnyRole('teacher', function(hasRole) {  if (hasRole) {  // do something  var link = document.getElementsByClassName('context\_external\_tool\_2')[0]  link.setAttribute('href',  link.getAttribute('href').concat('?url='+location.href))    } else {  // do something else  }  })});  function onPage(regex, fn) {  if (location.pathname.match(regex)) fn();  }  function hasAnyRole(/\*roles, cb\*/) {  var roles = [].slice.call(arguments, 0);  var cb = roles.pop();  for (var i = 0; i < arguments.length; i++) {  if (ENV.current\_user\_roles.indexOf(arguments[i]) !== -1) {  return cb(true);  }  }  return cb(false);  }  })(); |

Figure : add-url-to-button-push-for-lti.js

The regular expression “/\/courses\/\d+\/users/” causes this code to only be invoked on a user page and only invoked if the user who clicks on the button is a teacher. After being invoked it augments the ChipIT button’s anchor’s “href” by adding the current page’s location.

The formatting of the contents of the Javascript file are based upon the example from Robert Carroll’s Gist “courselinks-termsort.js” at <https://gist.github.com/robert-carroll/cf60322ac3af9ea56a613dd37be681f2>. See also <https://github.com/robert-carroll/ccsd-canvas>.

# Output of ChipIT when it gets the LTI call

Figure 18 shows some of the output from ChipIT when it receives the LTI call.

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| http://canvas.docker/courses/2/external\_tools/2 -> /announce  in POST route for /announce  custom\_loc is  request['custom\_loc'] is  request.path\_info is /announce  request.path is /announce  request.referer is http://canvas.docker/courses/2/external\_tools/2?url=http://canvas.docker/courses/2/users/2  params are {"oauth\_consumer\_key"=>"test", "oauth\_signature\_method"=>"HMAC-SHA1", "oauth\_timestamp"=>"1599831904", "oauth\_nonce"=>"eIkPYxqQr0YhQhAKcM80G3ET6ibSDGc89QSficf6l0E", "oauth\_version"=>"1.0", "context\_id"=>"f97330a96452fc363a34e0ef6d8d0d3e9e1007d2", "context\_label"=>"J5", "context\_title"=>"J5 from other canvas", "custom\_canvas\_enrollment\_state"=>"active", "custom\_chip2\_canvas\_module\_id"=>"$Canvas.module.id", "custom\_chip2\_canvas\_module\_item\_id"=>"$Canvas.moduleItem.id", "custom\_chip3\_com\_instructure\_context\_label"=>"J5", "custom\_chip\_canvas\_module\_id"=>"$Canvas.module.id", "custom\_chip\_canvas\_module\_item\_id"=>"$Canvas.moduleItem.id", "custom\_context\_id"=>"f97330a96452fc363a34e0ef6d8d0d3e9e1007d2", "custom\_context\_source\_id"=>"", "custom\_context\_title"=>"J5 from other canvas", "custom\_coursecode"=>"2", "custom\_message\_documenttarget"=>"iframe", "custom\_module\_id"=>"$Canvas.module.id", "custom\_module\_id\_item"=>"$Canvas.moduleItem.id", "custom\_sis\_id"=>"z0", "custom\_user\_sis\_id"=>"z0", "custom\_userid"=>"z0", "ext\_roles"=>"urn:lti:instrole:ims/lis/Administrator,urn:lti:instrole:ims/lis/Instructor,urn:lti:role:ims/lis/Instructor,urn:lti:sysrole:ims/lis/SysAdmin,urn:lti:sysrole:ims/lis/User", "launch\_presentation\_document\_target"=>"iframe", "launch\_presentation\_height"=>"400", "launch\_presentation\_locale"=>"en", "launch\_presentation\_return\_url"=>"http://canvas.docker/courses/2/external\_content/success/external\_tool\_redirect", "launch\_presentation\_width"=>"800", "lti\_message\_type"=>"basic-lti-launch-request", "lti\_version"=>"LTI-1p0", "oauth\_callback"=>"about:blank", "resource\_link\_id"=>"f97330a96452fc363a34e0ef6d8d0d3e9e1007d2", "resource\_link\_title"=>"ChipIT", "roles"=>"Instructor,urn:lti:instrole:ims/lis/Administrator", "tool\_consumer\_info\_product\_family\_code"=>"canvas", "tool\_consumer\_info\_version"=>"cloud", "tool\_consumer\_instance\_contact\_email"=>"canvas@canvas.docker", "tool\_consumer\_instance\_guid"=>"wb7OxztPJxfljnzvF13O5VtC4OS8N6YgJ6XLvfCs:canvas-lms", "tool\_consumer\_instance\_name"=>"chiptest", "user\_id"=>"535fa085f22b4655f48cd5a36a9215f64c062838", "oauth\_signature"=>"O8WHfSUt5n3DqnhGx73XSOexwbo="}  session['lis\_person\_sourcedid'] is  session['custom\_canvas\_course\_id'] is  session['custom\_sis\_id'] is z0  session['custom\_user\_sis\_id'] is z0  session['custom\_coursecode'] is 2  ...  session is #<Rack::Session::Abstract::SessionHash:0x00005620014b9f98>  ::1 - - [11/Sep/2020:17:26:32 +0200] "POST /announce HTTP/1.1" 200 916 0.0025  ::1 - - [11/Sep/2020:17:26:32 CEST] "POST /announce HTTP/1.1" 200 916  http://canvas.docker/courses/2/external\_tools/2?url=http://canvas.docker/courses/2/users/2 -> /announce |

Figure : Some output from ChipIT when it get the LTI call

The version of the code shown in Figure 21 processes each of the buttons that involves an external tool.

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| /\*\*  // @name augement navigation button links  // @namespace https://github.com/gqmaguirejr/E-learning  // @author Gerald Q. Maguire Jr. <maguire@kth.se>  // @description Extend the URL of buttons for external tools with URL of the page we are on.  \*\*/  (function() {  'use strict';  onPage(/\/courses\/\d+\/users/, function() {  hasAnyRole('teacher', function(hasRole) {  if (hasRole) {  // process all tools  var links=document.querySelectorAll("[class^=context\_external\_tool\_")  var i;  var link;  for (i = 0; i < links.length; i++) {  link=links[i].getAttribute('href')  if (link.indexOf("?") == -1) {  link=link.concat('?url='+location.href)  } else {  // if there is already a question mark then there is a parameter  link=link.concat('&url='+location.href)  }  links[i].setAttribute('href',link)  }  } else {  // do something else  }  })});  function onPage(regex, fn) {  if (location.pathname.match(regex)) fn();  }  function hasAnyRole(/\*roles, cb\*/) {  var roles = [].slice.call(arguments, 0);  var cb = roles.pop();  for (var i = 0; i < arguments.length; i++) {  if (ENV.current\_user\_roles.indexOf(arguments[i]) !== -1) {  return cb(true);  }  }  return cb(false);  }  })(); |

Figure : Second verison of the Javascript code