LUXOUG
LUXEMBOURG ORACLE USER GROUP

LUXOUG DAY

JavaScript for PL/SQL DEVELOPERS

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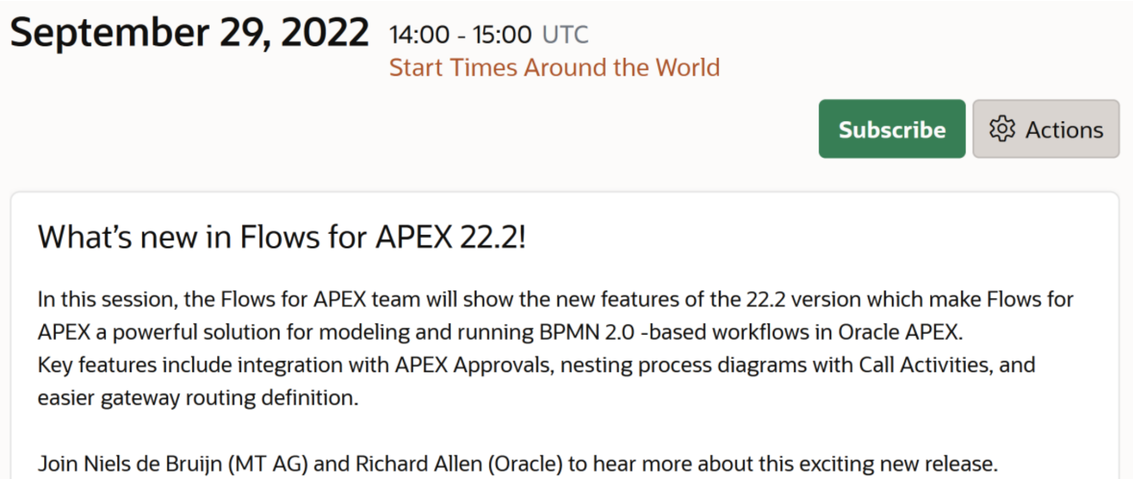
lschilde.blogspot.com

05-OCT-22

EMEA COMMUNITY TOUR 2022

EOUC

APEX Office hours



September 29, 2022 14:00 - 15:00 UTC
Start Times Around the World

What's new in Flows for APEX 22.2!

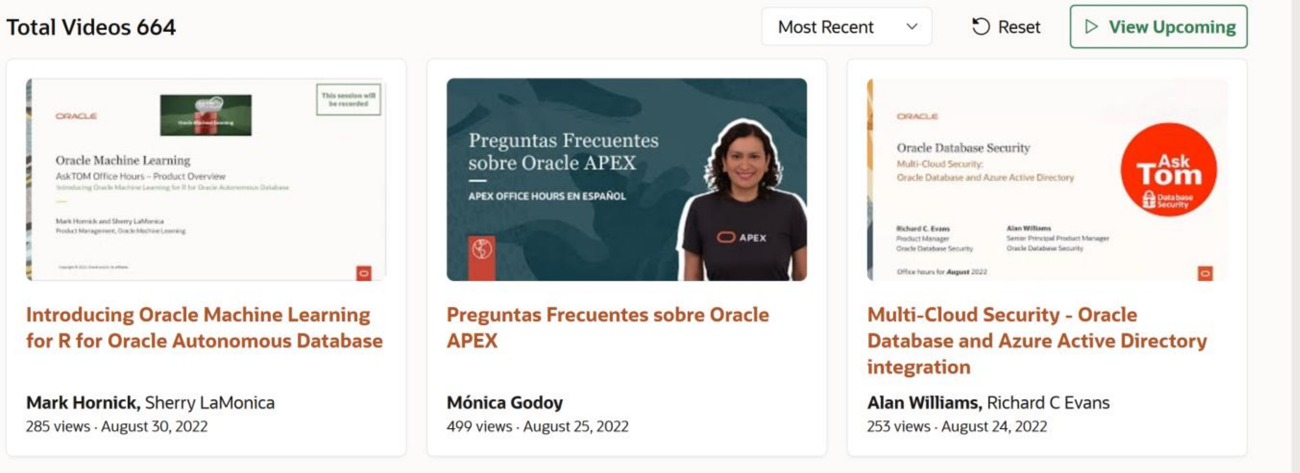
In this session, the Flows for APEX team will show the new features of the 22.2 version which make Flows for APEX a powerful solution for modeling and running BPMN 2.0 -based workflows in Oracle APEX.
Key features include integration with APEX Approvals, nesting process diagrams with Call Activities, and easier gateway routing definition.

Join Niels de Bruijn (MT AG) and Richard Allen (Oracle) to hear more about this exciting new release.

Catch up on the recording for our last session!

Don't miss our next live session!

This session: https://asktom.oracle.com/pls/apex/asktom.search?oh=18506



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Mark Hornick, Sherry LaMonica
285 views · August 30, 2022

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Mónica Godoy
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Multi-Cloud Security - Oracle Database and Azure Active Directory integration
Alan Williams, Richard C Evans
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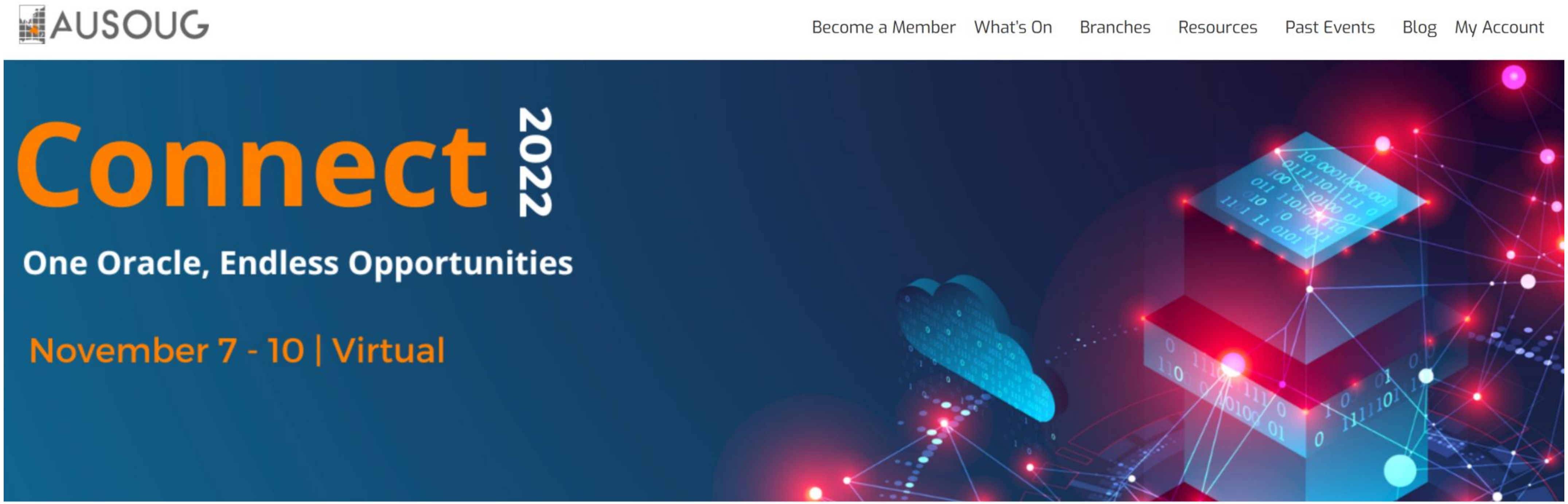
apex.oracle.com/officehours

AUSOUG APEX News



www.ausoug.org.au/connect-2022/

www.ausoug.org.au/connect-conference-2022-call-for-papers-submission/

Connect 2022 - online this November

4 days worth of content, from 7th to 10th November 2022

Each conference day is dedicated to a stream as follows -

7th November – Oracle E-Business Suite/Cloud Applications

8th November – Development/APEX Day Series

9th November – Big Data/Analytics/Security/EPM & BI Summit

10th November – Database/Cloud Day

We will have plenty of in-depth presentations on subjects such as Architecture and Design, ORACLE RDBMS, Analytics, Security, Operations, Scalability, Performance, Cloud, Big Data and other challenging business areas!

We are securing some amazing speakers both from within Australia and from around the globe, who will be presenting a varied and informative set of papers that are broadly split into the four streams above.

MASH PROGRAM

Mentor and Speaker Hub

- Our goal is to *connect* speakers with mentors to assist them in *preparing* technical sessions and/or *improving* presentation skills

Interested? Read more and get in touch

https://mashprogram.wordpress.com

My story

@LinoSchilde

SKILLBUILDERS

Oracle ACE Pro

AUSOUG

fabe
reduce • rescue • reconnect

AOP

APEX R&D
research & development

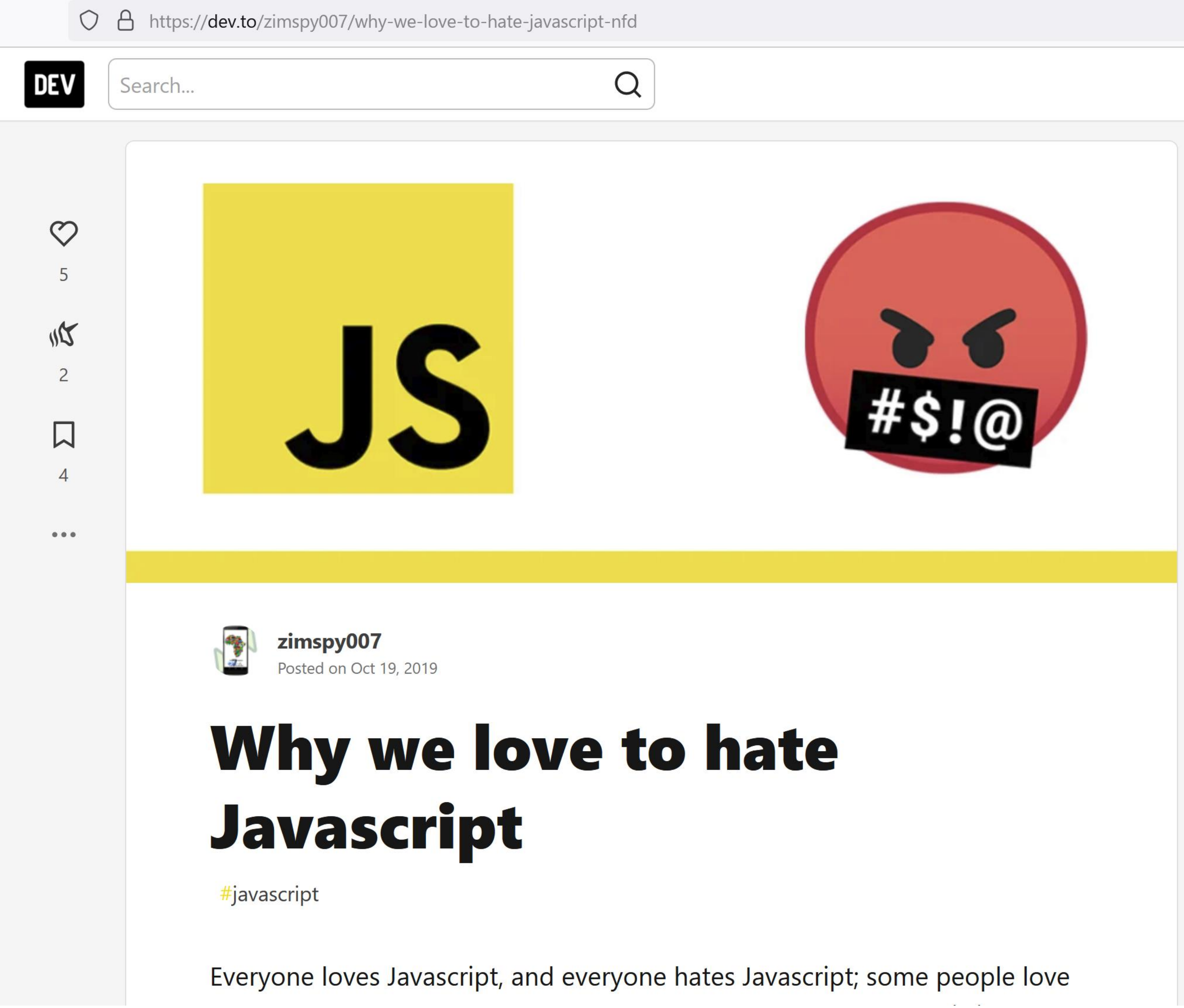
- AUSOUG APEX committee chair
- NZ APEX meetup organizer

- APEX blogger
- Conference speaker

- APEX World Member of the Month
- Mentor and trainer

www.linkedin.com/in/lschilde

DB guys love JavaScript!



zimspy007

Posted on Oct 19, 2019

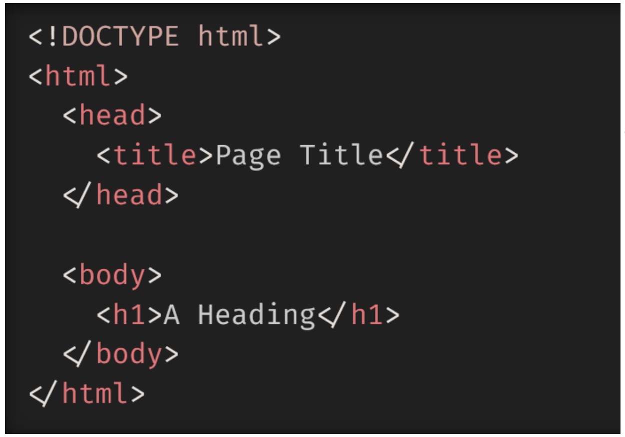
Why we love to hate Javascript

#javascript

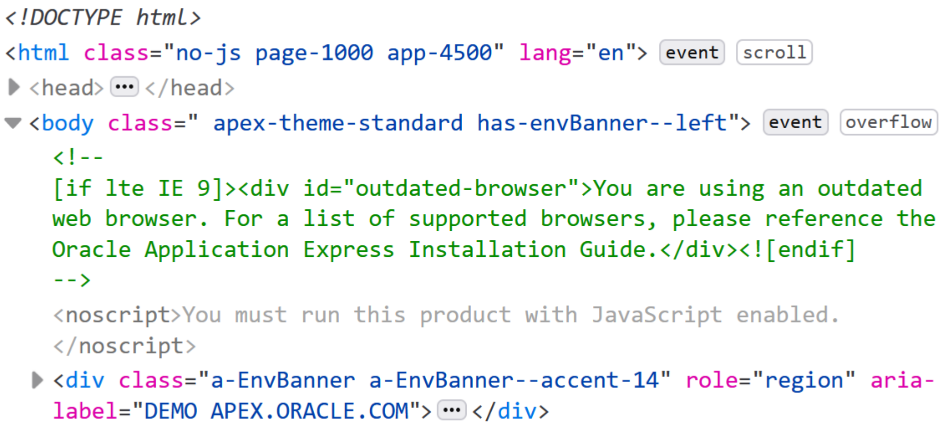
Everyone loves Javascript, and everyone hates Javascript; some people love

HTML

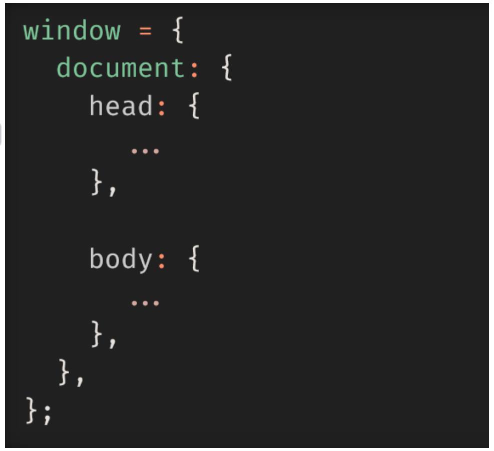
HTML DOM Basics



```
<!DOCTYPE html>
<html>
  <head>
    <title>Page Title</title>
  </head>

  <body>
    <h1>A Heading</h1>
  </body>
</html>
```



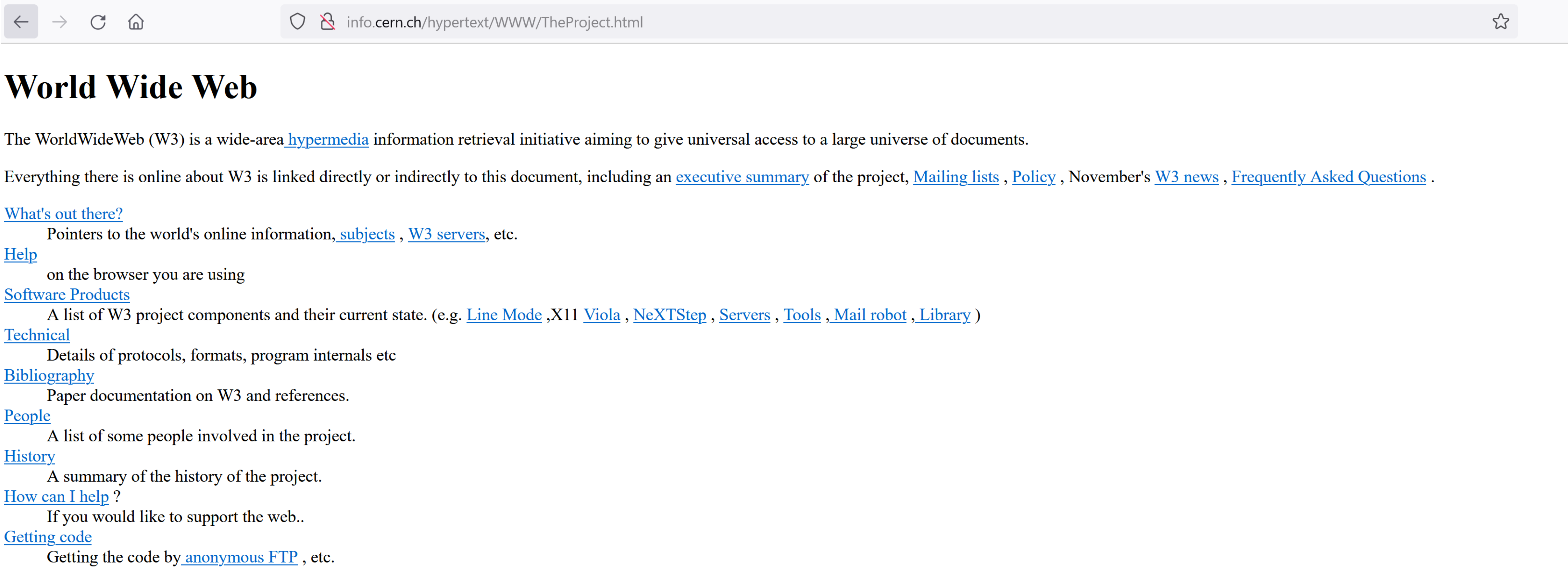
```
<!DOCTYPE html>
<html class="no-js page-1000 app-4500" lang="en"> event scroll
▶ <head> ··· </head>
▼ <body class=" apex-theme-standard has-envBanner--left"> event overflow
    <!--
    [if lte IE 9]><div id="outdated-browser">You are using an outdated
    web browser. For a list of supported browsers, please reference the
    Oracle Application Express Installation Guide.</div><![endif]
    -->
    <noscript>You must run this product with JavaScript enabled.
    </noscript>
  ▶ <div class="a-EnvBanner a-EnvBanner--accent-14" role="region" aria-
    label="DEMO APEX.ORACLE.COM"> ··· </div>
```



```
window = {
  document: {
    head: {
      ...
    },

    body: {
      ...
    },
  },
};
```

- To work with an HTML page in JavaScript, we create a representation of this structure - Document Object Model (DOM).

- **DOM** is a JavaScript object
- It lets us access and manipulate the elements in an HTML page
- APEX is no exception



World Wide Web

The WorldWideWeb (W3) is a wide-area hypermedia information retrieval initiative aiming to give universal access to a large universe of documents.

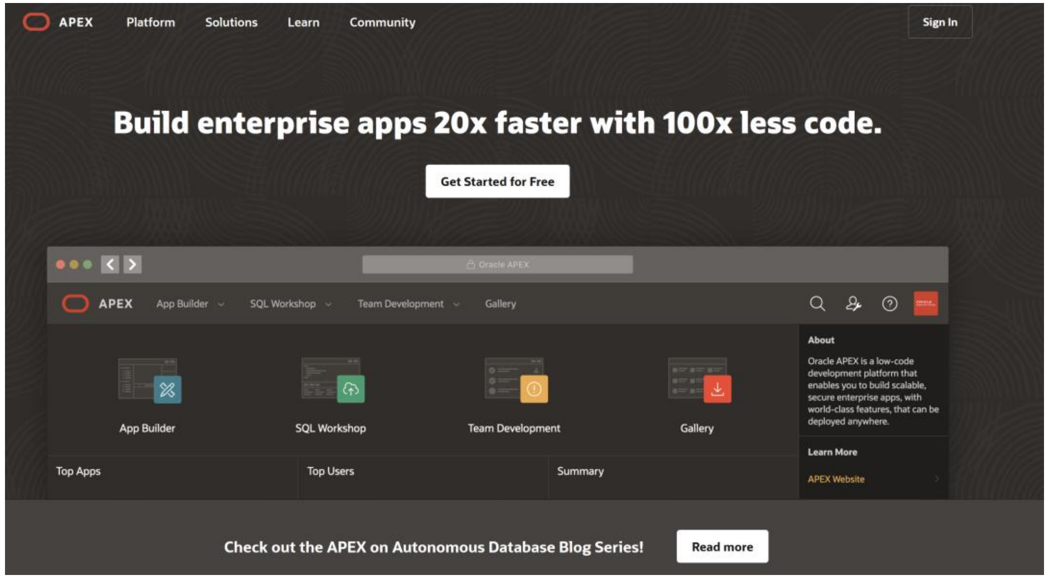
Everything there is online about W3 is linked directly or indirectly to this document, including an executive summary of the project, Mailing lists , Policy , November's W3 news , Frequently Asked Questions .

What's out there?
Pointers to the world's online information, subjects , W3 servers, etc.
Help
on the browser you are using
Software Products
A list of W3 project components and their current state. (e.g. Line Mode ,X11 Viola , NeXTStep , Servers , Tools , Mail robot , Library)
Technical
Details of protocols, formats, program internals etc
Bibliography
Paper documentation on W3 and references.
People
A list of some people involved in the project.
History
A summary of the history of the project.
How can I help ?
If you would like to support the web..
Getting code
Getting the code by anonymous FTP , etc.

http://info.cern.ch/hypertext/WWW/TheProject.html

Modern apps

- User-friendly
- Engaging apps
- User have expectations
- Provide immediate response and feedback
- Put it another way, users expect **web pages to be very interactive**
- They need to work on any device
- This applies to LOW CODE frameworks too



Build enterprise apps 20x faster with 100x less code.

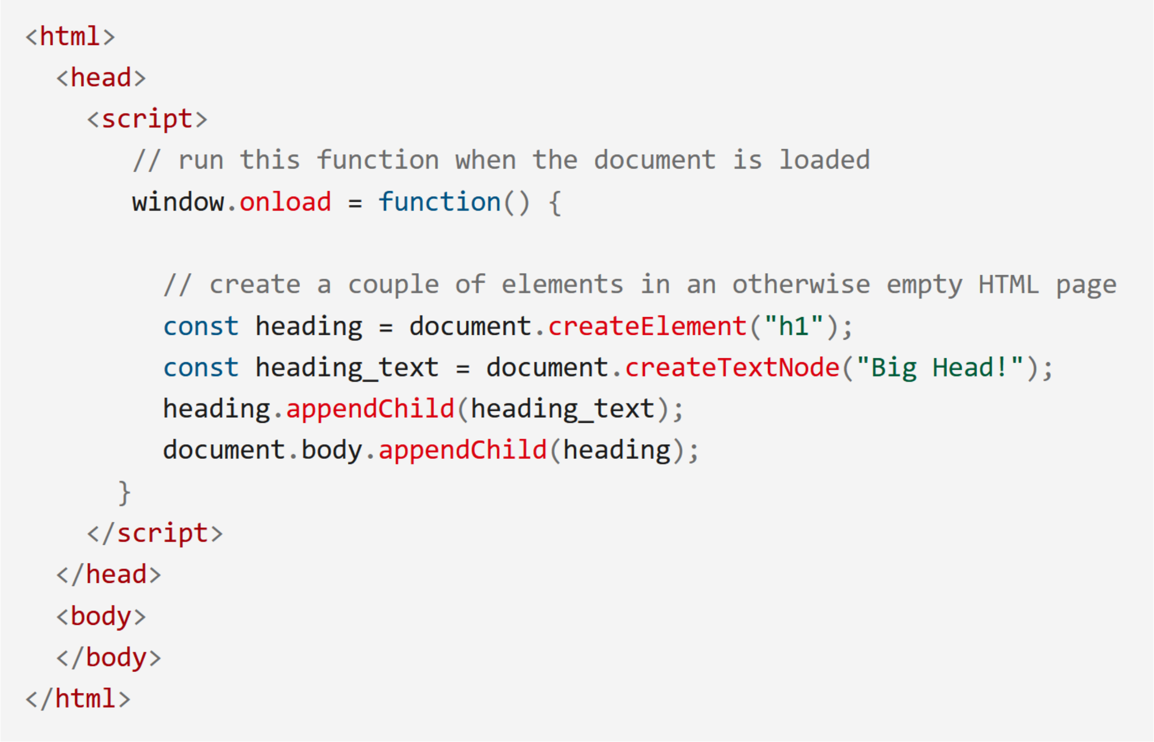
About

Oracle APEX is a low-code development platform that enables you to build scalable, secure enterprise apps, with world-class features, that can be deployed anywhere.

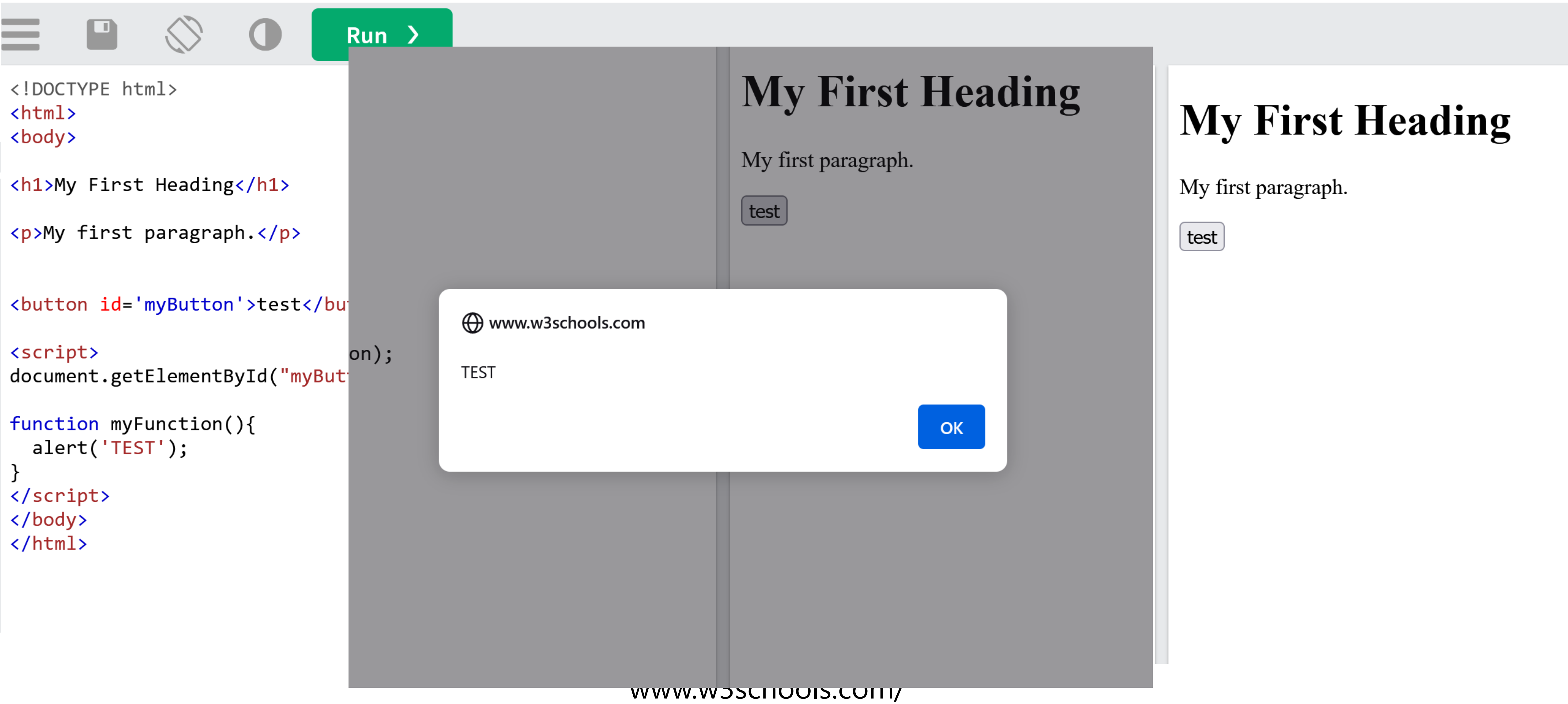
Check out the APEX on Autonomous Database Blog Series!

DOM manipulation

- Add/remove classes
- Modify attributes
- Element manipulation
- Remove or add elements
- Change css styles



```
<html>
  <head>
    <script>
       // run this function when the document is loaded
       window.onload = function() {

         // create a couple of elements in an otherwise empty HTML page
         const heading = document.createElement("h1");
         const heading_text = document.createTextNode("Big Head!");
         heading.appendChild(heading_text);
         document.body.appendChild(heading);
      }
    </script>
  </head>
  <body>
  </body>
</html>
```



```
<!DOCTYPE html>
<html>
<body>

<h1>My First Heading</h1>

<p>My first paragraph.</p>


<button id='myButton'>test</bu

<script>                                  on);
document.getElementById("myBut

function myFunction(){
  alert('TEST');
}
</script>
</body>
</html>
```

My First Heading

My first paragraph.

www.w3schools.com

TEST

My First Heading

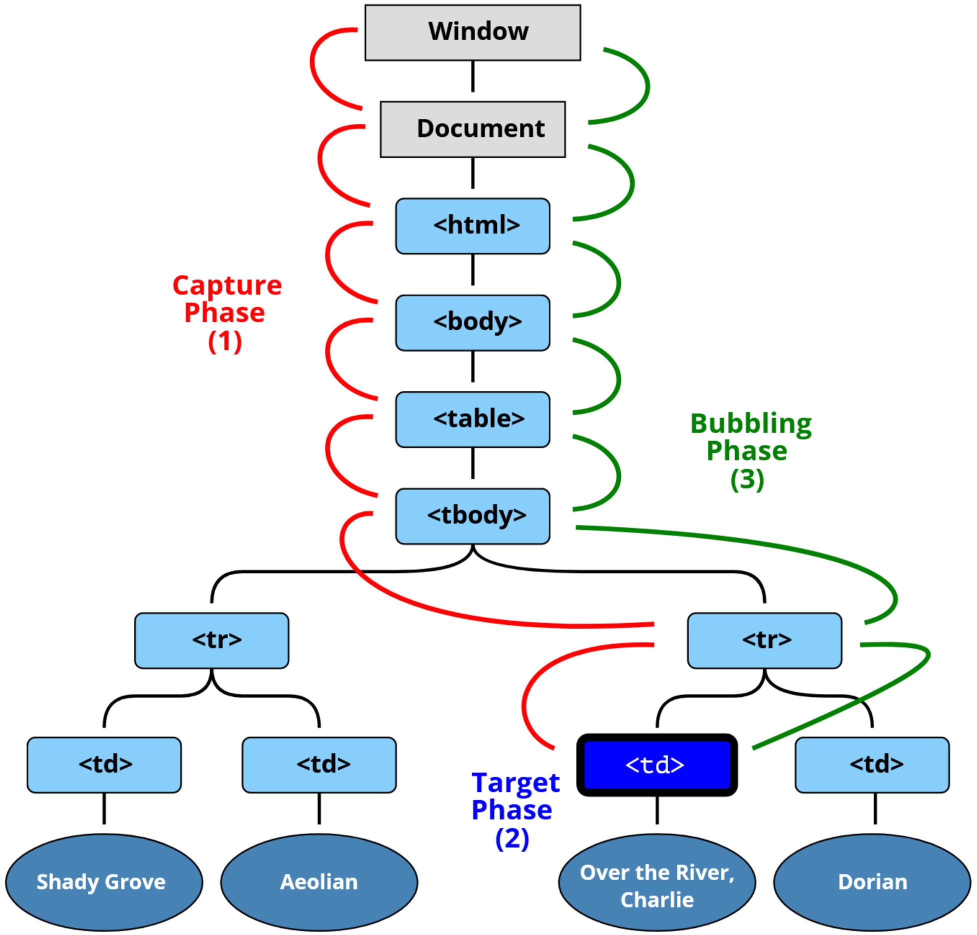
My first paragraph.

www.w3schools.com/

Common terms

Object	Description
window	Global object (browser window)
document	part of the DOM API
console	Our dbms_output
JSON	Methods provided for JSON manipulation
setTimeout	or timing the actions
…….	
apex.items	Some APEX stuff
apex.submit('DELETE');	…….

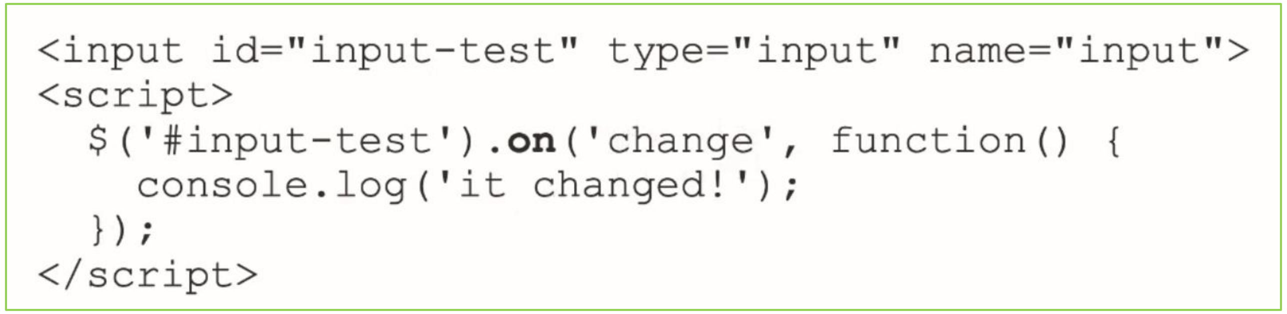
APEX page too



https://javascript.info/bubbling-and-capturing

jQuery web API

- Makes it more easy to manipulate a page of HTML
- Library we include on the page
- Fast, small, and feature-rich JavaScript library
- It is included in APEX too
- Wrappers



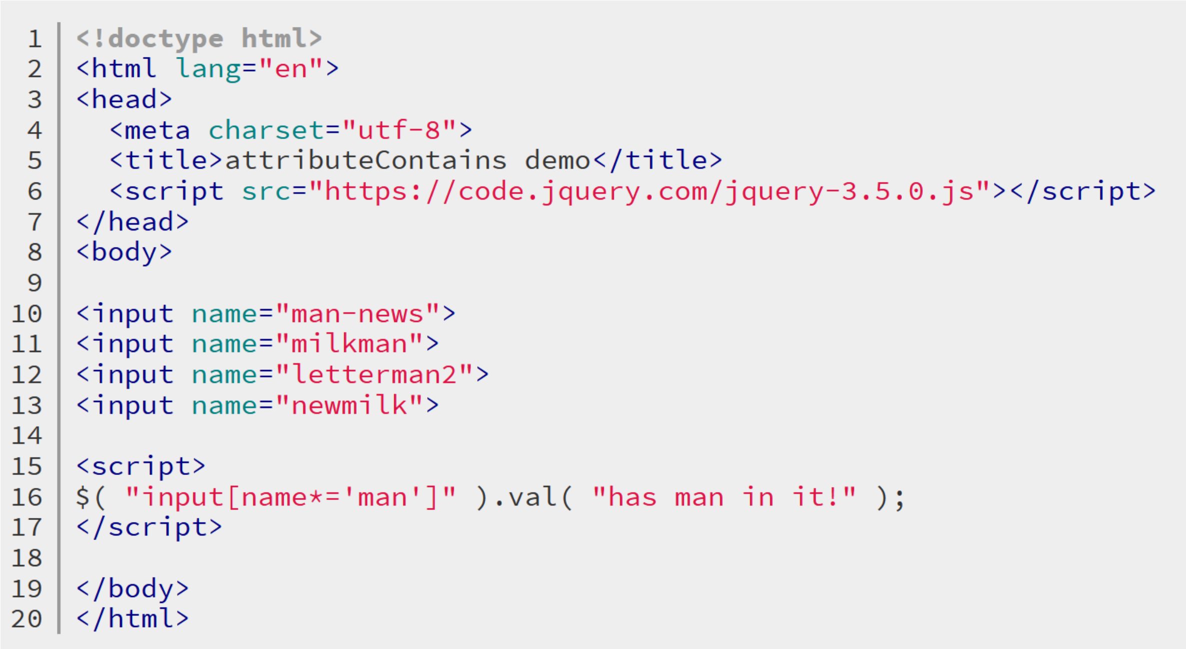
```
<input id="input-test" type="input" name="input">
<script>
  $('#input-test').on('change', function() {
    console.log('it changed!');
  });
</script>
```

- Simplified APIs
  `addClass,removeClass,attr,removeAttr,val,html,text,`
  `append,prepand,remove,empty`

SELECTORS

- Like:

```
$('#id')  - ID selector

$('.class') - class selector

$('td') - element selector

$("input[name~='man']" ) - attribute selector

…

…
```



```html
<!doctype html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <title>attributeContains demo</title>
  <script src="https://code.jquery.com/jquery-3.5.0.js"></script>
</head>
<body>

<input name="man-news">
<input name="milkman">
<input name="letterman2">
<input name="newmilk">

<script>
$( "input[name*='man']" ).val( "has man in it!" );
</script>

</body>
</html>
```

DOM vs JQuery

Example: ID selector

```
DOM     document.getElementById('myReport’)

JQUERY  $('#myReport')
```

JavaScript

PLSQL vs JS

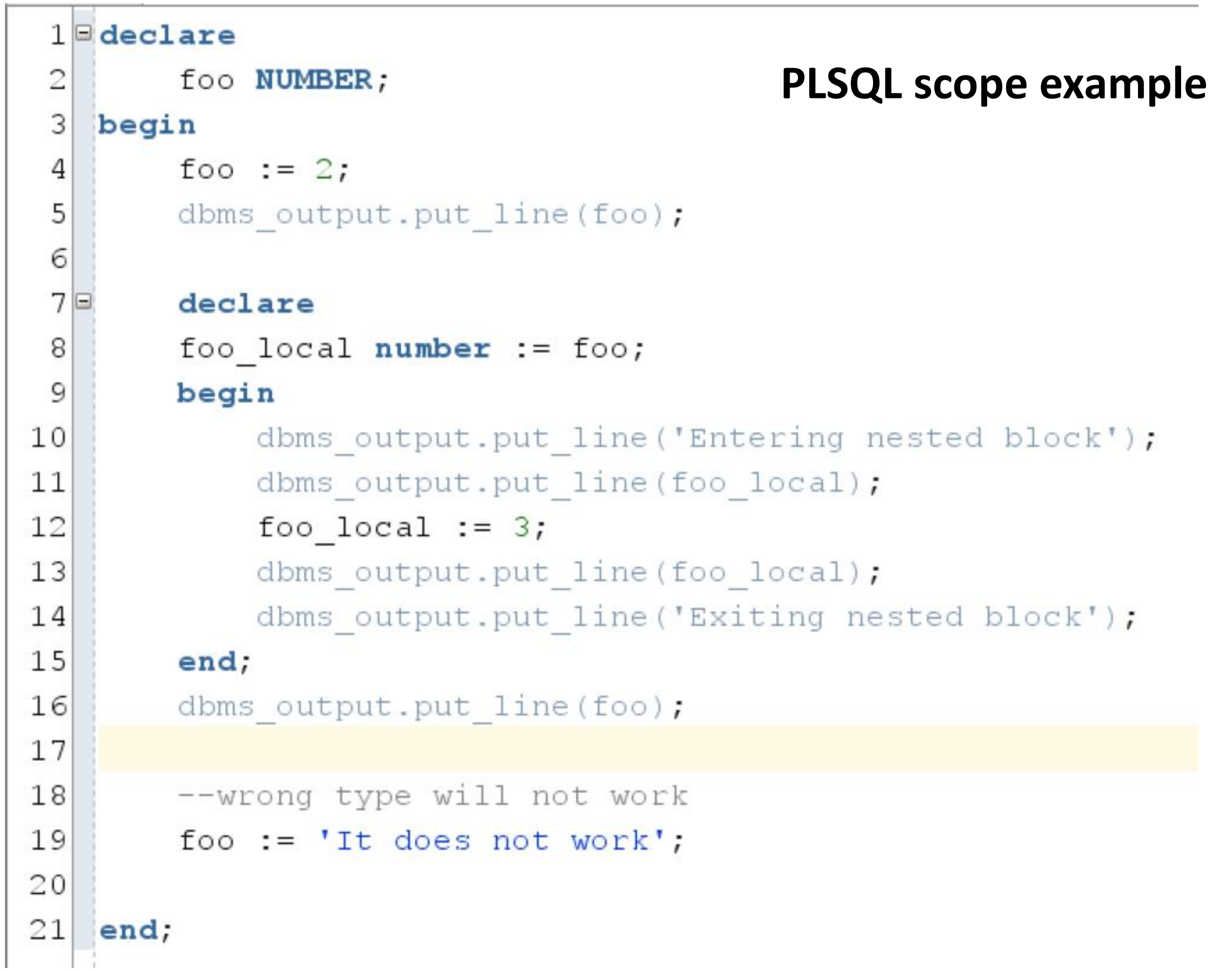
- **JavaScript is the only language to change data on client side in Browser**
- SQL & PLSQL manipulate the data
- It adds lots to overall “feeling” in modern apps
- JavaScript is everywhere

LOWCODE

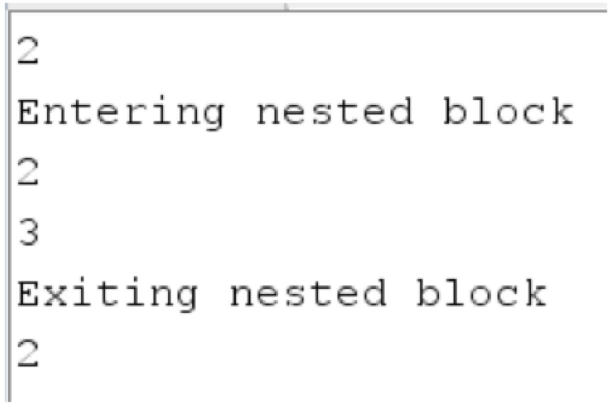
- We do not have to be masters
- Only few lines to make things work
- Or do we?

PLSQL vs JS

PLSQL scope example



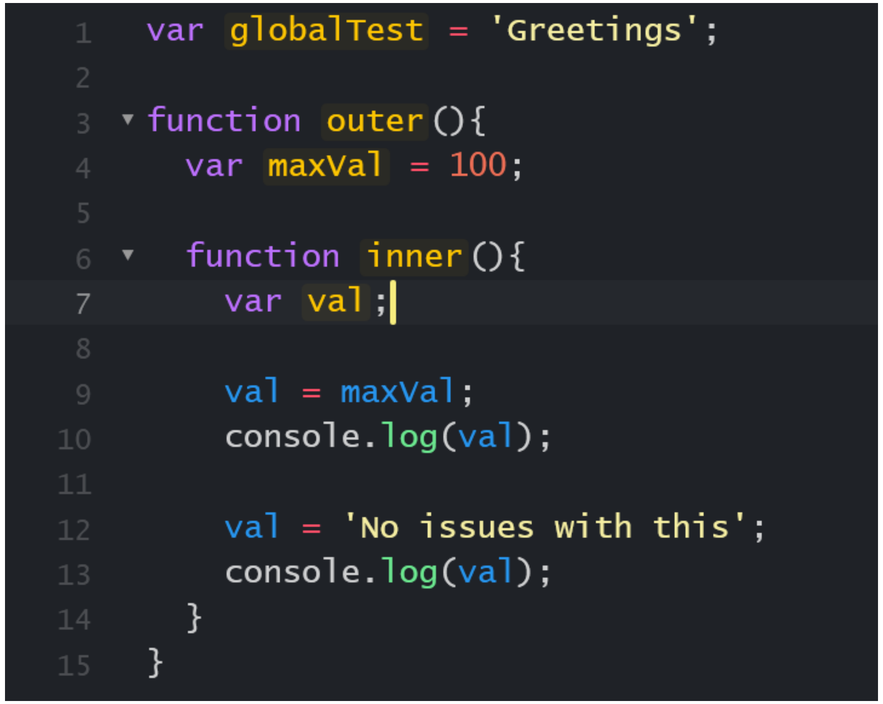
```
declare
    foo NUMBER;
begin
    foo := 2;
    dbms_output.put_line(foo);

    declare
    foo_local number := foo;
    begin
        dbms_output.put_line('Entering nested block');
        dbms_output.put_line(foo_local);
        foo_local := 3;
        dbms_output.put_line(foo_local);
        dbms_output.put_line('Exiting nested block');
    end;
    dbms_output.put_line(foo);

    --wrong type will not work
    foo := 'It does not work';

end;
```



```
2
Entering nested block
2
3
Exiting nested block
2
```

PLSQL vs JS

JS scope example



```
var globalTest = 'Greetings';

function outer(){
  var maxVal = 100;

  function inner(){
    var val;

    val = maxVal;
    console.log(val);

    val = 'No issues with this';
    console.log(val);
  }
}
```

PLSQL vs JS

PLSQL

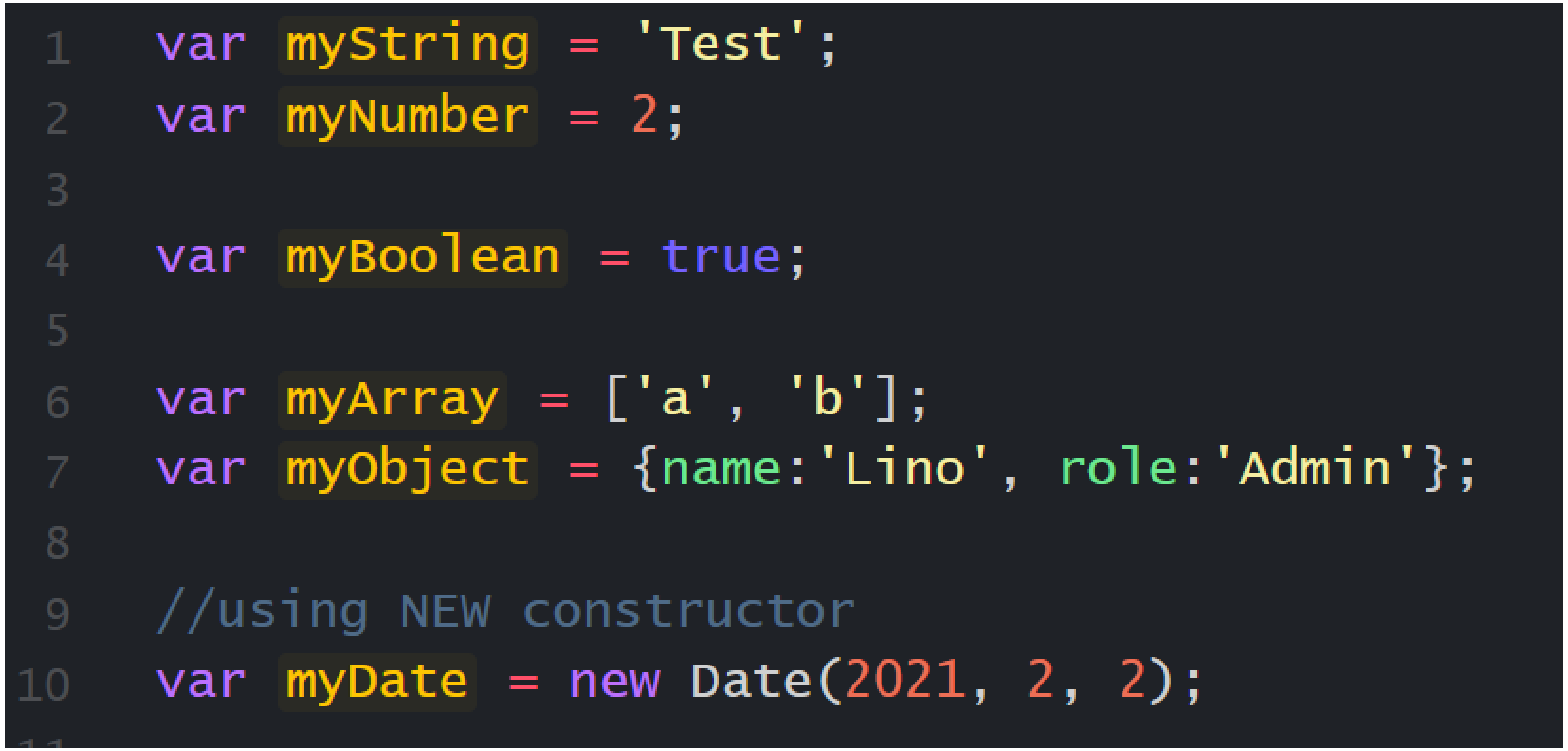
- Scope are PLSQL blocks
- Not case sensitive
- Data type does not change
- Variables are always in declaration section
- Procedures and functions supported
- Each variable needs a name and a type
- Many data types

```
clob, blob, records, collections,
number, varchar2, bololean, char, date,
timestamp…
```

JS

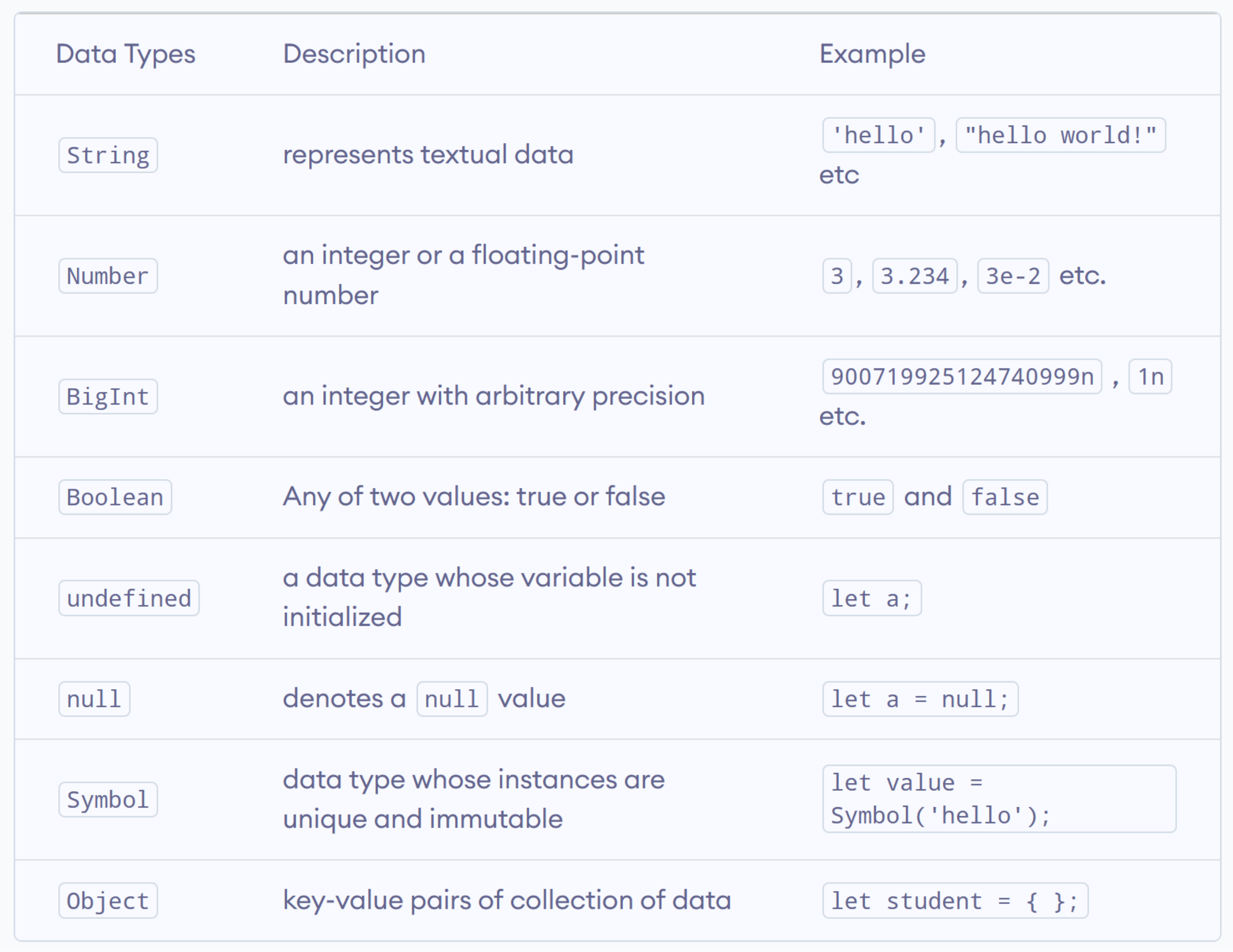
- Scopes are functions
- It is case sensitive
- Variables can be defined anywhere
- There are no procedures
- Data type can be swapped at any time
- Variable only needs a name

JS primitive vs object types



```
var myString = 'Test';
var myNumber = 2;

var myBoolean = true;

var myArray = ['a', 'b'];
var myObject = {name:'Lino', role:'Admin'};

//using NEW constructor
var myDate = new Date(2021, 2, 2);
```

JS data types

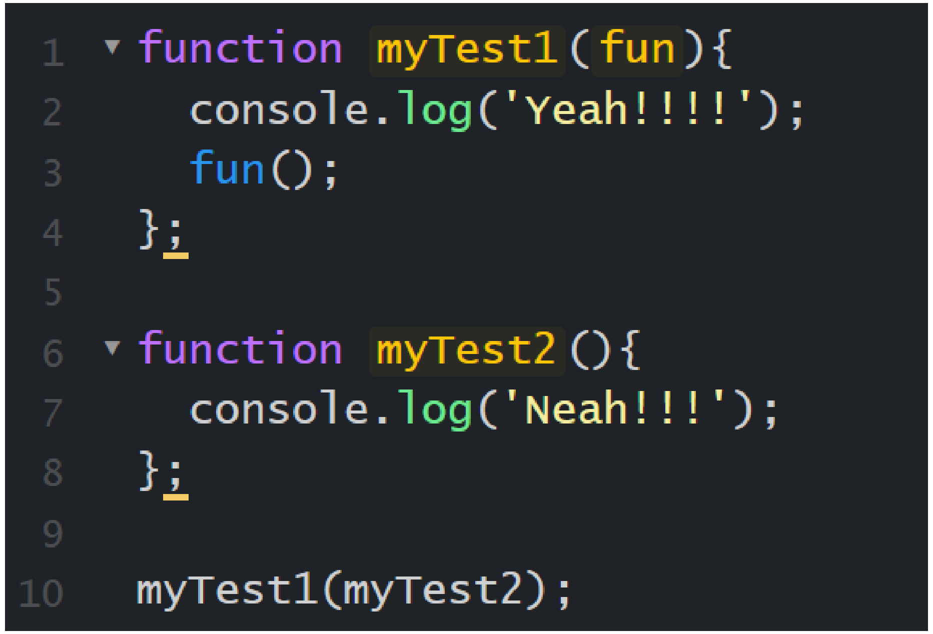


Data Types	Description	Example
`String`	represents textual data	`'hello'`, `"hello world!"` etc
`Number`	an integer or a floating-point number	`3`, `3.234`, `3e-2` etc.
`BigInt`	an integer with arbitrary precision	`900719925124740999n` , `1n` etc.
`Boolean`	Any of two values: true or false	`true` and `false`
`undefined`	a data type whose variable is not initialized	`let a;`
`null`	denotes a `null` value	`let a = null;`
`Symbol`	data type whose instances are unique and immutable	`let value = Symbol('hello');`
`Object`	key-value pairs of collection of data	`let student = { };`

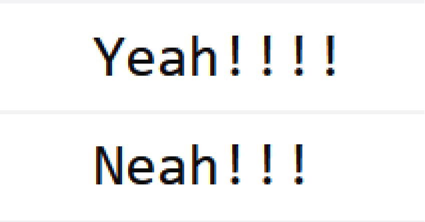
https://www.programiz.com/javascript/data-types

JS functions

- Functions are like any other data type
- Can be assign to a variable
- Passed around as parameters
- Returned from other functions



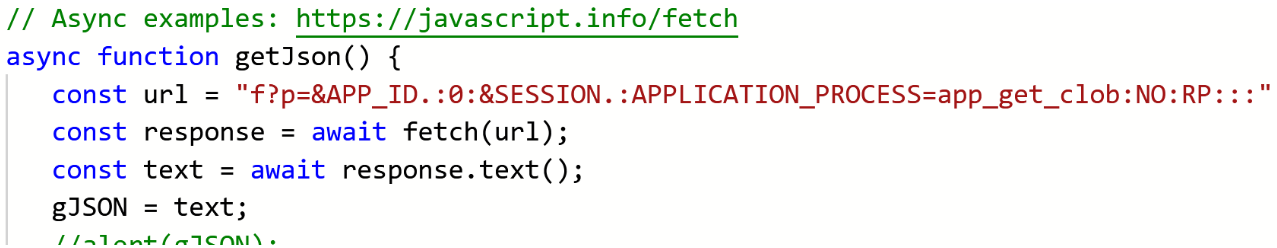
```
function myTest1(fun){
  console.log('Yeah!!!!');
  fun();
};

function myTest2(){
  console.log('Neah!!!');
};

myTest1(myTest2);
```



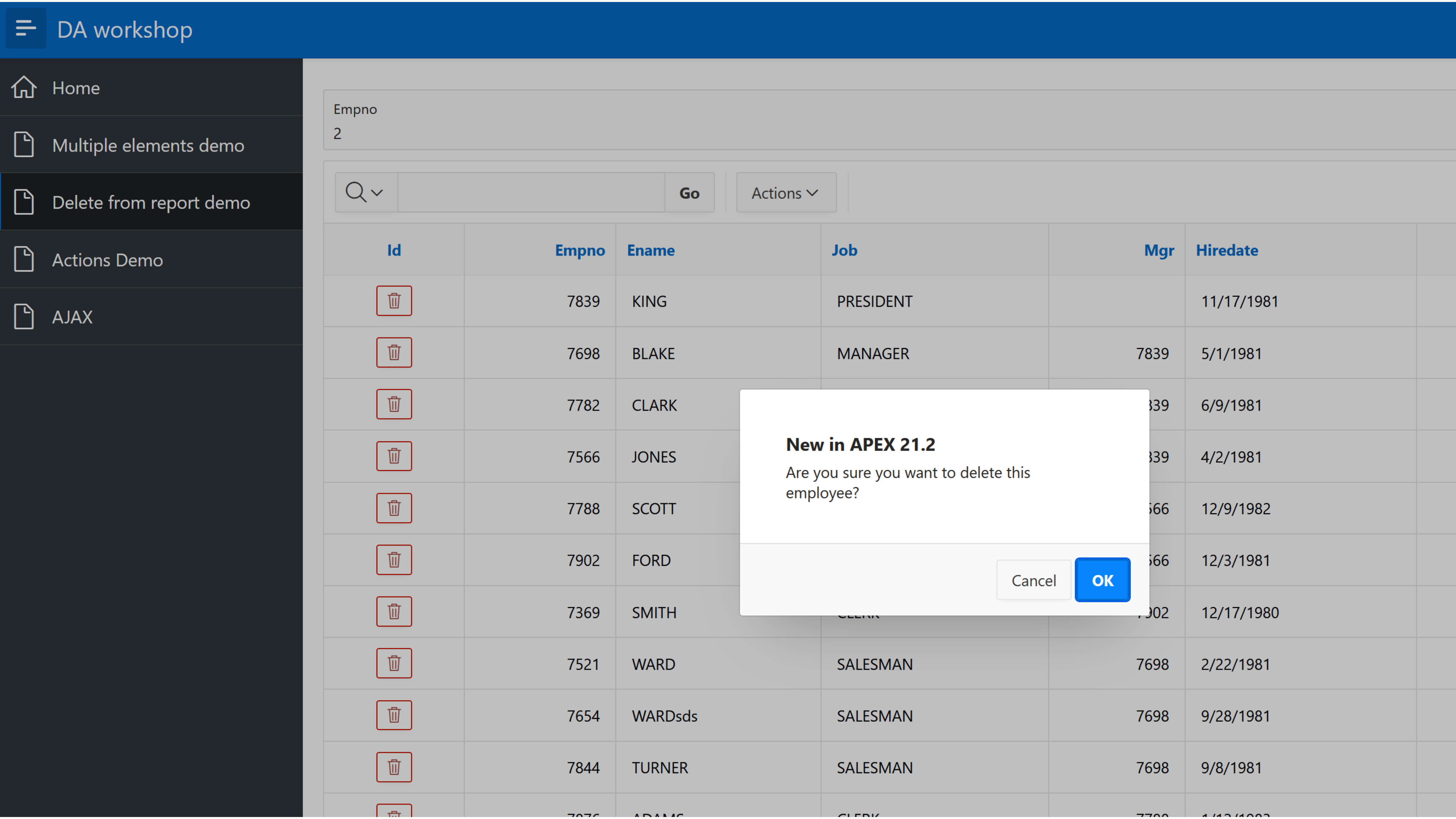
```
Yeah!!!!
Neah!!!
```

AJAX

- It stands for Asynchronous JavaScript and XML
- Web pages can send HTTP requests to the server and receive a response
- Without needing to reload the entire page
- We use it in APEX on many places
- Report refresh being a typical example



```
// Async examples: https://javascript.info/fetch
async function getJson() {
   const url = "f?p=&APP_ID.:0:&SESSION.:APPLICATION_PROCESS=app_get_clob:NO:RP:::"
   const response = await fetch(url);
   const text = await response.text();
   gJSON = text;
   //alert(gJSON);
```



Empno
2

Id	Empno	Ename	Job	Mgr	Hiredate
🗑	7839	KING	PRESIDENT		11/17/1981
🗑	7698	BLAKE	MANAGER	7839	5/1/1981
🗑	7782	CLARK		39	6/9/1981
🗑	7566	JONES		39	4/2/1981
🗑	7788	SCOTT		66	12/9/1982
🗑	7902	FORD		66	12/3/1981
🗑	7369	SMITH	CLERK	902	12/17/1980
🗑	7521	WARD	SALESMAN	7698	2/22/1981
🗑	7654	WARDsds	SALESMAN	7698	9/28/1981
🗑	7844	TURNER	SALESMAN	7698	9/8/1981
🗑	7876	ADAMS	CLERK	7788	1/12/1983

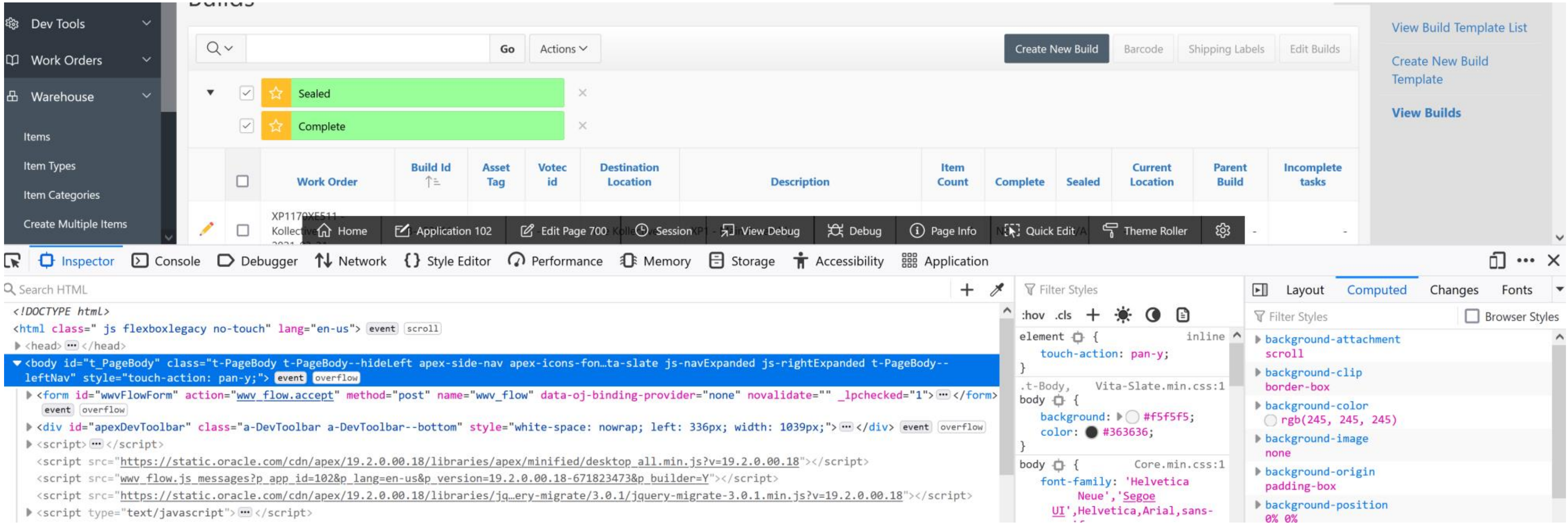
New in APEX 21.2

Are you sure you want to delete this employee?

In practice

DEVELOPER TOOLS

- Good text editor and browser
- Similar to SQL Developer
- Open it with F12 or right click Inspect (Ctrl + Shift + I)
- Inspecting elements



	Work Order	Build Id	Asset Tag	Votec id	Destination Location	Description	Item Count	Complete	Sealed	Current Location	Parent Build	Incomplete tasks

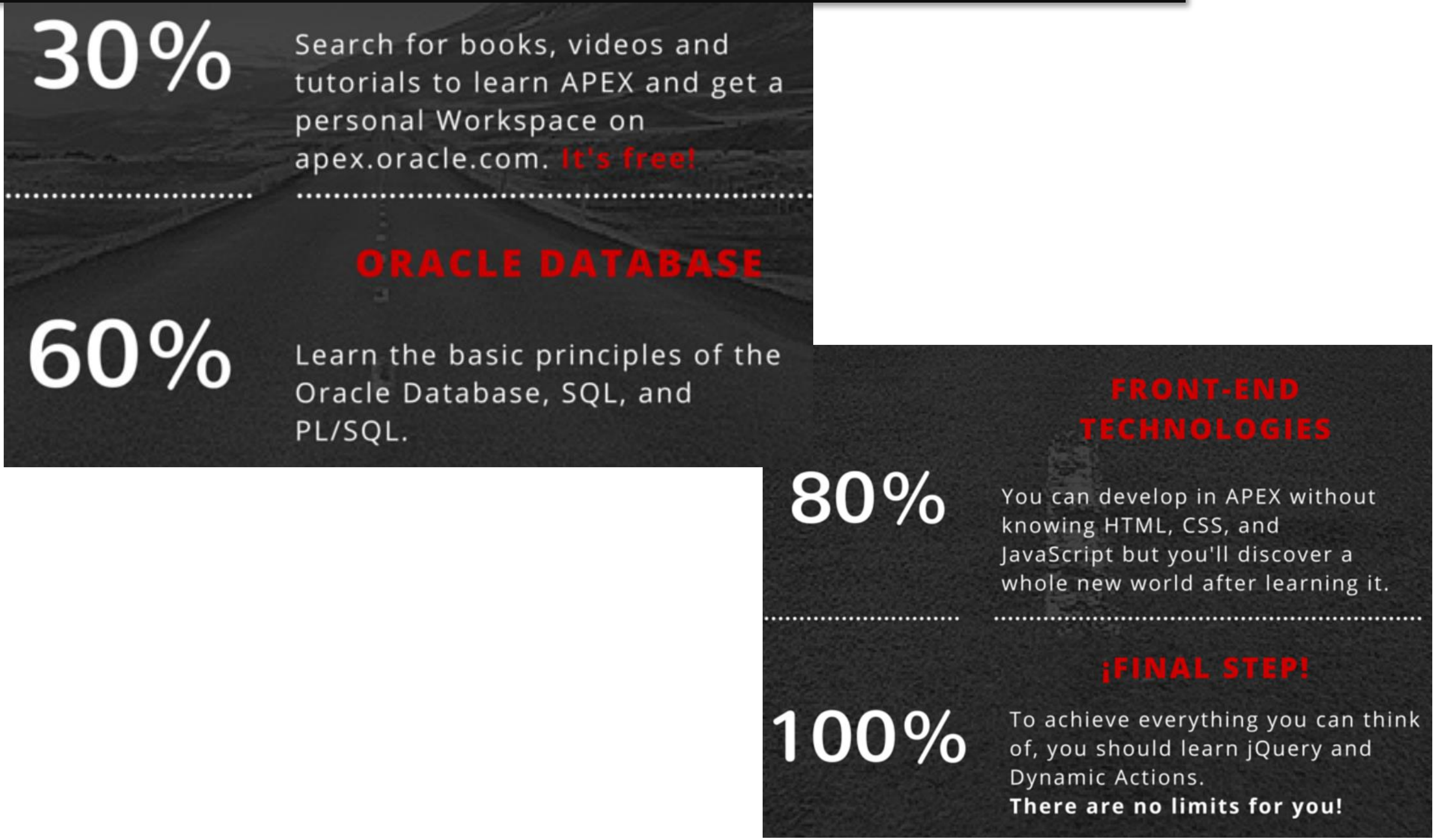
```
<!DOCTYPE html>
<html class=" js flexboxlegacy no-touch" lang="en-us"> event scroll
 <head> ··· </head>
 <body id="t_PageBody" class="t-PageBody t-PageBody--hideLeft apex-side-nav apex-icons-fon…ta-slate js-navExpanded js-rightExpanded t-PageBody--
 leftNav" style="touch-action: pan-y;"> event overflow
  <form id="wwvFlowForm" action="wwv_flow.accept" method="post" name="wwv_flow" data-oj-binding-provider="none" novalidate="" _lpchecked="1"> ··· </form>
  event overflow
  <div id="apexDevToolbar" class="a-DevToolbar a-DevToolbar--bottom" style="white-space: nowrap; left: 336px; width: 1039px;"> ··· </div> event overflow
  <script> ··· </script>
  <script src="https://static.oracle.com/cdn/apex/19.2.0.00.18/libraries/apex/minified/desktop_all.min.js?v=19.2.0.00.18"></script>
  <script src="wwv_flow.js_messages?p_app_id=102&p_lang=en-us&p_version=19.2.0.00.18-671823473&p_builder=Y"></script>
  <script src="https://static.oracle.com/cdn/apex/19.2.0.00.18/libraries/jq…ery-migrate/3.0.1/jquery-migrate-3.0.1.min.js?v=19.2.0.00.18"></script>
  <script type="text/javascript"> ··· </script>
```

```
element {                      inline
  touch-action: pan-y;
}
.t-Body,      Vita-Slate.min.css:1
body {
  background: #f5f5f5;
  color: #363636;
}
body {            Core.min.css:1
  font-family: 'Helvetica
       Neue','Segoe
   UI',Helvetica,Arial,sans-
```

```
background-attachment
scroll
background-clip
border-box
background-color
rgb(245, 245, 245)
background-image
none
background-origin
padding-box
background-position
0% 0%
```

Oracle Developers

Perfect candidates



30%

Search for books, videos and tutorials to learn APEX and get a personal Workspace on apex.oracle.com. It's free!

ORACLE DATABASE

60%

Learn the basic principles of the Oracle Database, SQL, and PL/SQL.

FRONT-END TECHNOLOGIES

80%

You can develop in APEX without knowing HTML, CSS, and JavaScript but you'll discover a whole new world after learning it.

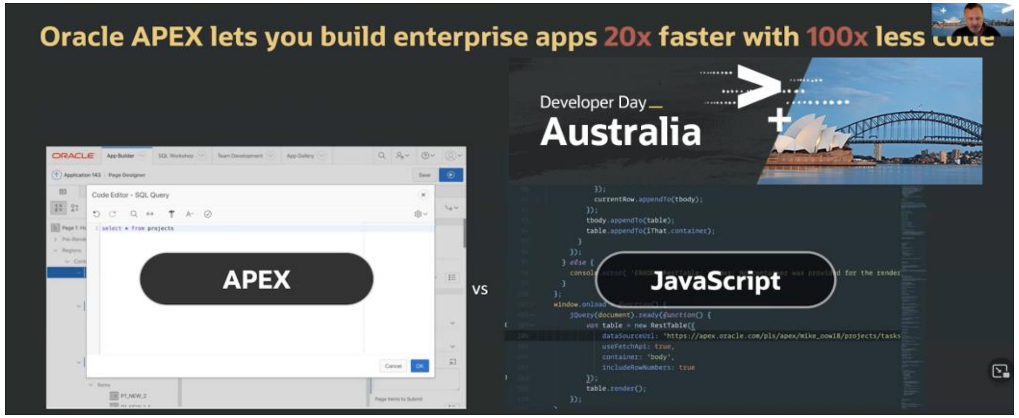
¡FINAL STEP!

100%

To achieve everything you can think of, you should learn jQuery and Dynamic Actions.
There are no limits for you!

LOWCODE = APEX

- Focus on business solutions
- Improve productivity
- Deliver quality and consistency
- Directly leverage scalability, security attributes on Oracle DB
- Utilize all of your Oracle skills


Oracle APEX lets you build enterprise apps 20x faster with 100x less code
Developer Day
Australia
Code Editor - SQL Query
APEX
vs
JavaScript

```
select * from projects
```

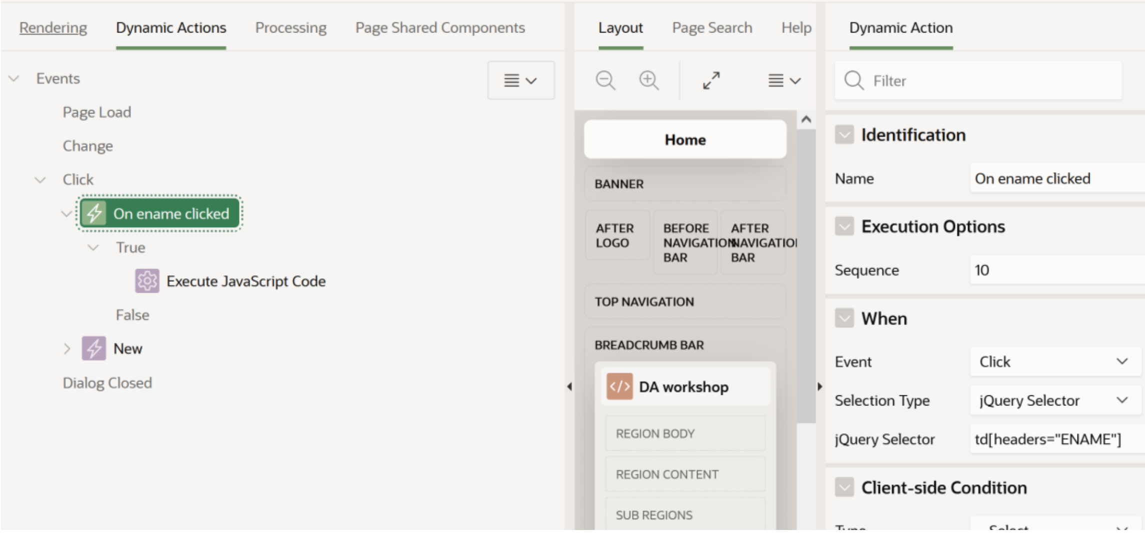
```
                });
                currentRow.appendTo(tbody);
              });
              tbody.appendTo(table);
              table.appendTo(lThat.container);
            }
          });
        } else {
          console
        }
      };
      window.onload
        jQuery(document).ready(function() {
          var table = new RestTable({
            dataSourceUrl: 'https://apex.oracle.com/pls/apex/mike_oow18/projects/tasks
            useFetchApi: true,
            container: 'body',
            includeRowNumbers: true
          });
          table.render();
        });
```

APEX and JavaScript

- Inline on a page
- Static application file or as application theme referenced files
- Anywhere where we can do HTML in APEX

Where can we find JS in APEX:

- Dynamic actions
- Interactive grids configurations (Cards and other regions)
- JET Chart configurations
- Actions interface
- Inclusion of additional JS library like Numeral.js
- Plugins
- Perform client side validations
- Links



Identification

Name: On ename clicked

Execution Options

Sequence: 10

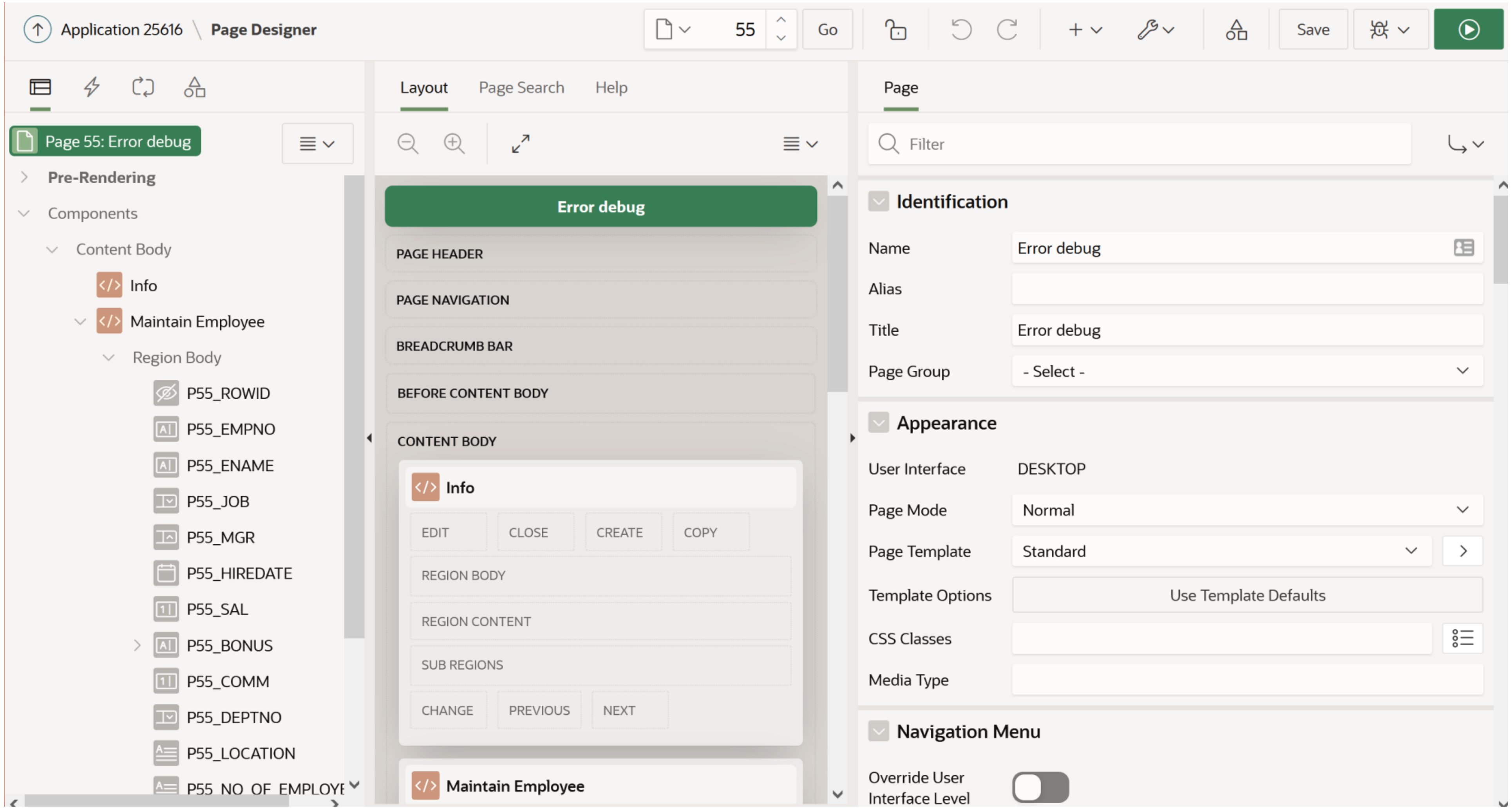
When

Event: Click

Selection Type: jQuery Selector

jQuery Selector: td[headers="ENAME"]

Client-side Condition



Page 55: Error debug

- Pre-Rendering
- Components
  - Content Body
    - Info
    - Maintain Employee
      - Region Body
        - P55_ROWID
        - P55_EMPNO
        - P55_ENAME
        - P55_JOB
        - P55_MGR
        - P55_HIREDATE
        - P55_SAL
        - P55_BONUS
        - P55_COMM
        - P55_DEPTNO
        - P55_LOCATION
        - P55_NO_OF_EMPLOYE

Identification

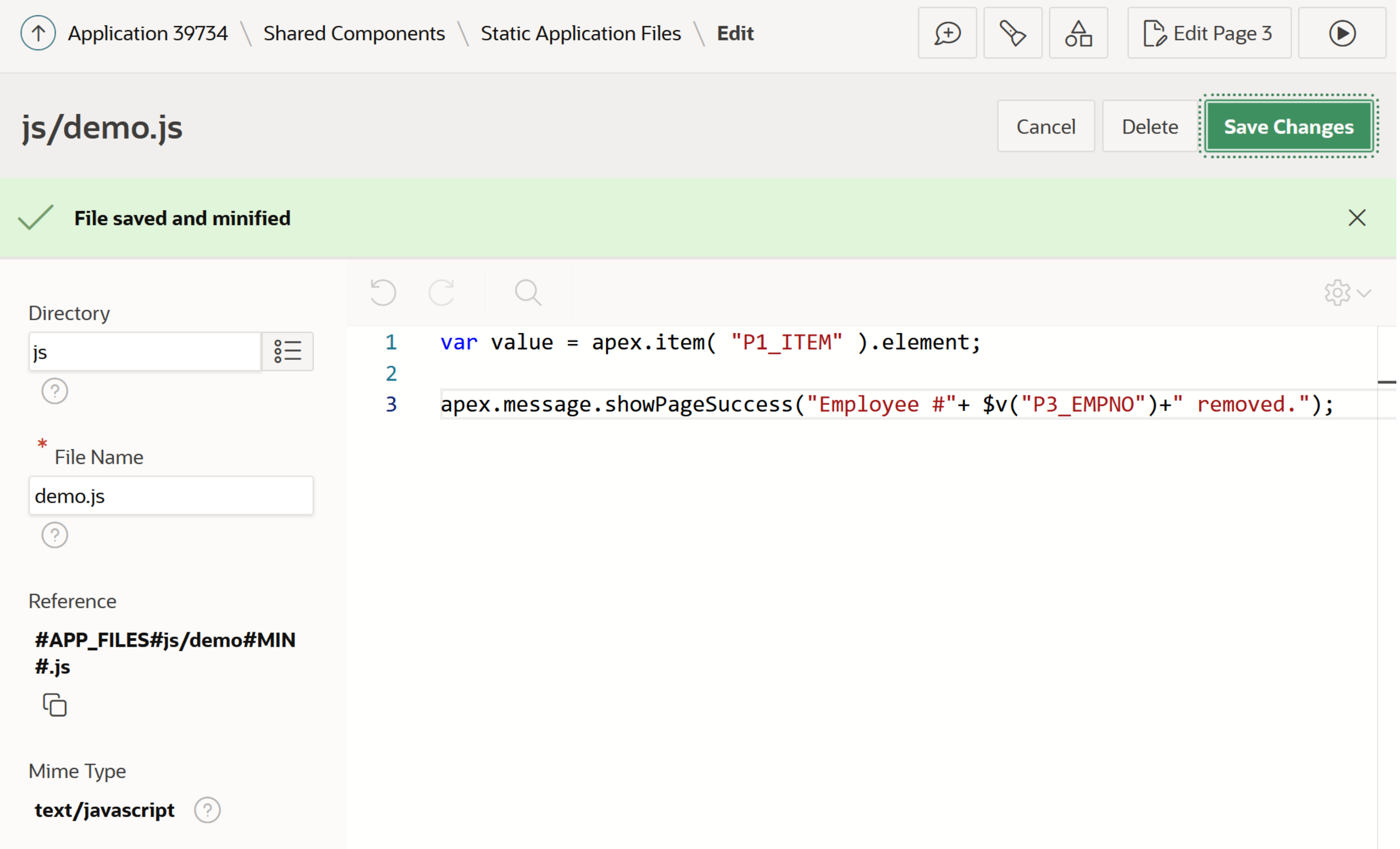
Name	Error debug
Alias	
Title	Error debug
Page Group	- Select -

Appearance

User Interface	DESKTOP
Page Mode	Normal
Page Template	Standard
Template Options	Use Template Defaults
CSS Classes	
Media Type	

Navigation Menu

Override User Interface Level	○



Application 39734 \ Shared Components \ Static Application Files \ Edit
Edit Page 3
Cancel
Delete
Save Changes

js/demo.js

File saved and minified

Directory: js

File Name: demo.js

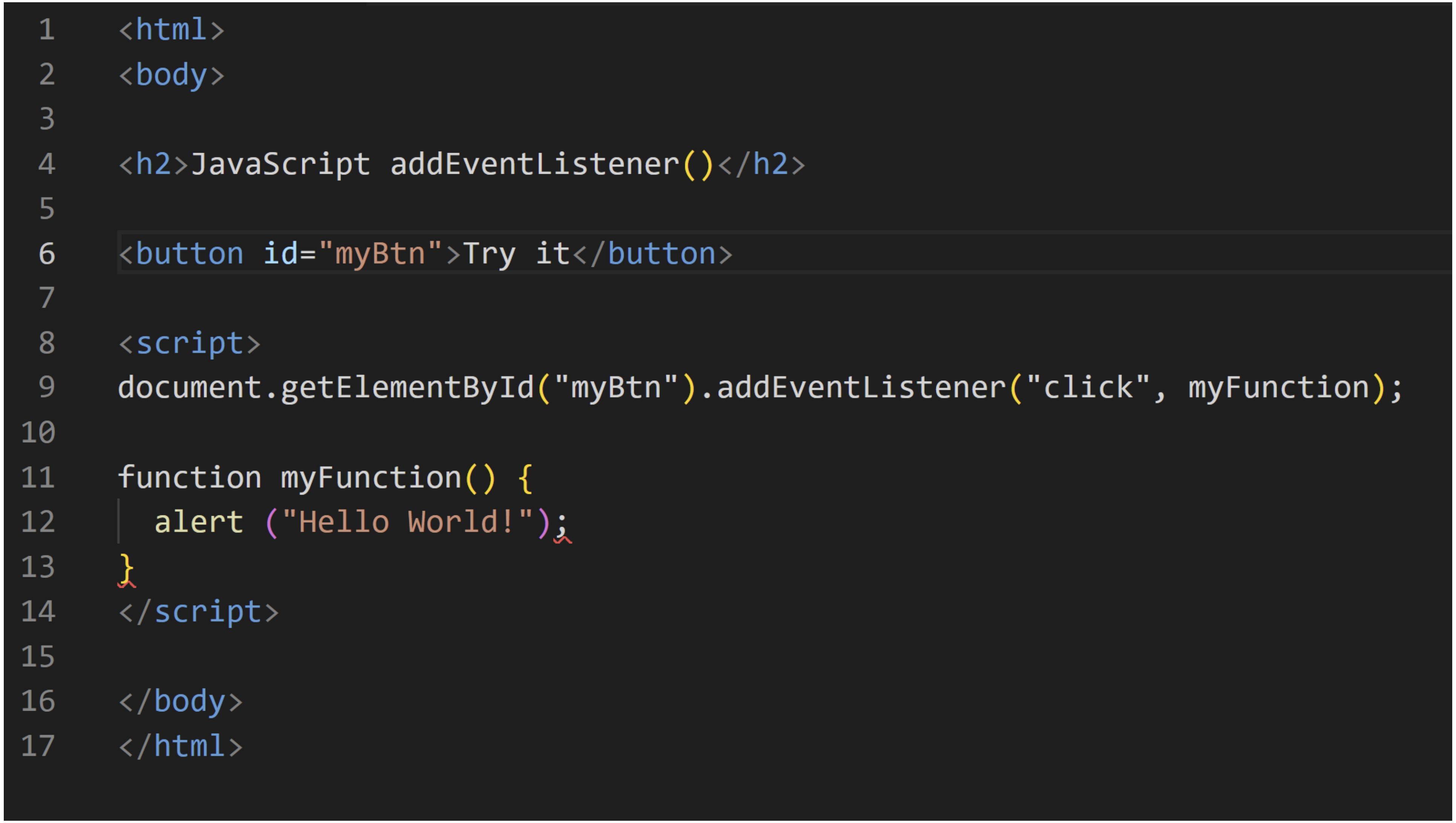
Reference: #APP_FILES#js/demo#MIN#.js

Mime Type: text/javascript

```
var value = apex.item( "P1_ITEM" ).element;

apex.message.showPageSuccess("Employee #"+ $v("P3_EMPNO")+" removed.");
```

>21.2 APEX version

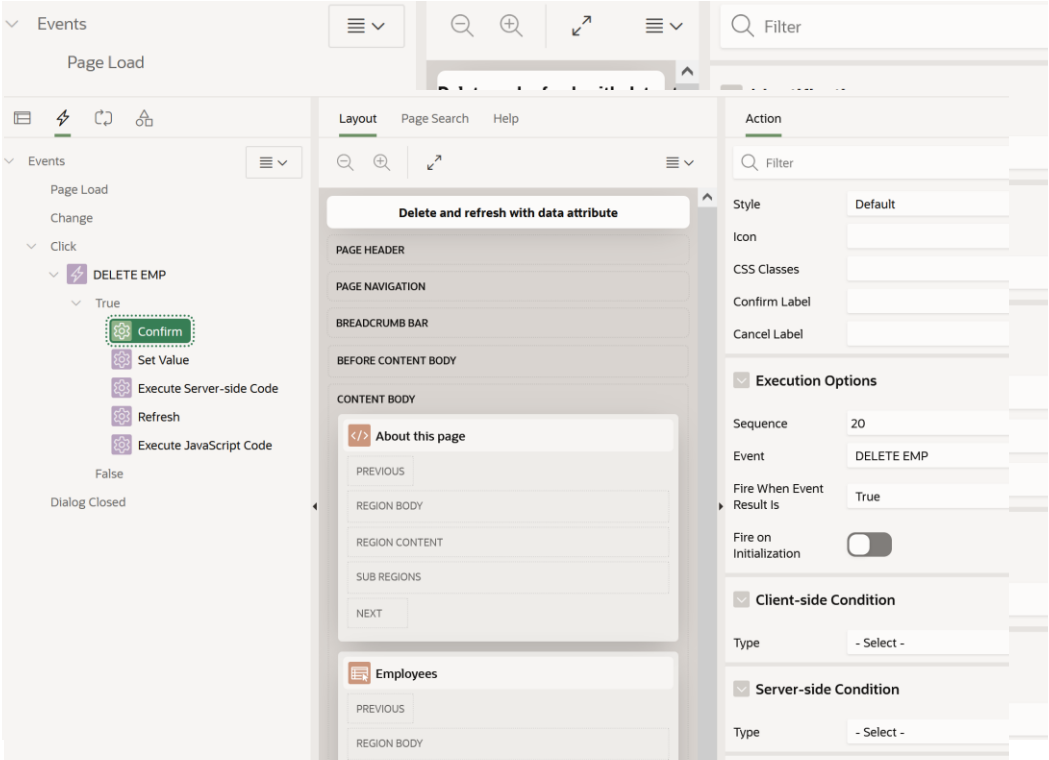
DYNAMIC ACTIONS



```html
<html>
<body>

<h2>JavaScript addEventListener()</h2>

<button id="myBtn">Try it</button>

<script>
document.getElementById("myBtn").addEventListener("click", myFunction);

function myFunction() {
  alert ("Hello World!");
}
</script>

</body>
</html>
```

DYNAMIC ACTIONS

- Easiest way to include JS in APEX
- Declarative => little coding
- **Most likely will not cover everything JavaScript** can do
- When complexity grows put it into files
- Code Sharing between pages
- We can now create and edit static JS files from APEX Builder



Style: Default
Icon:
CSS Classes:
Confirm Label:
Cancel Label:

Execution Options

Sequence: 20
Event: DELETE EMP
Fire When Event Result Is: True
Fire on Initialization: off

Client-side Condition

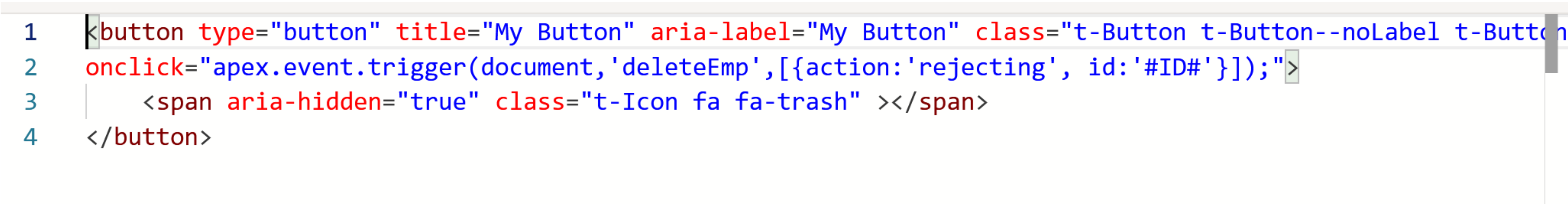
Type: - Select -

Server-side Condition

Type: - Select -

DYNAMIC ACTIONS

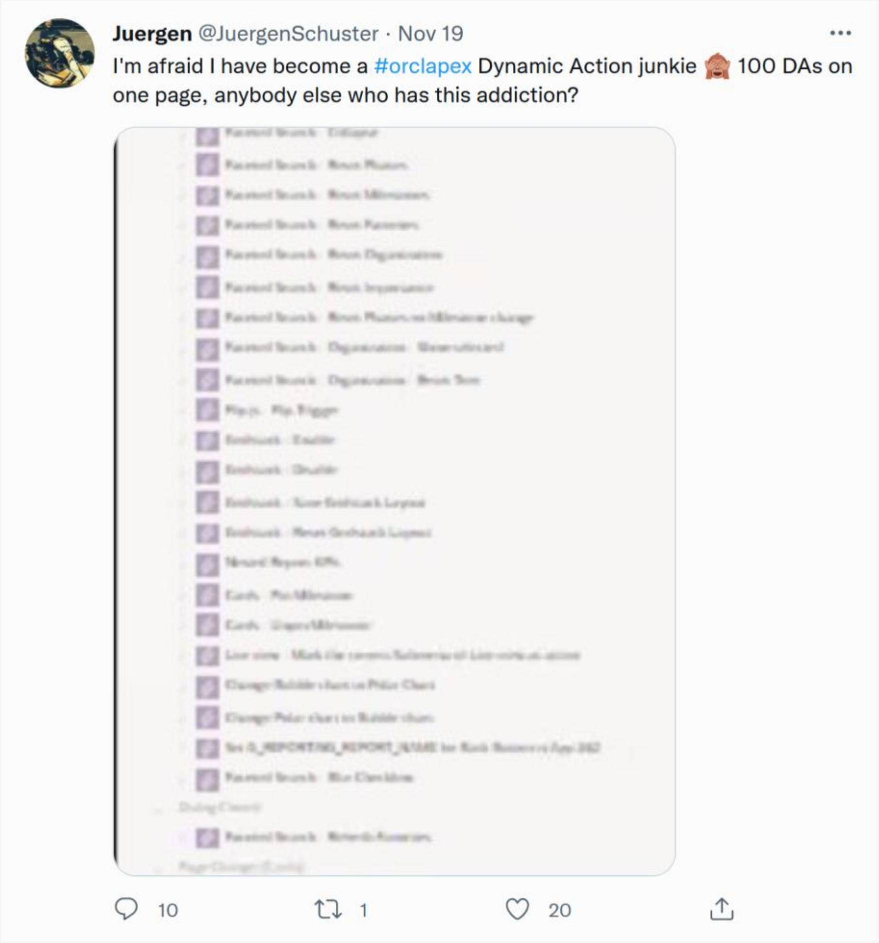
- When the event triggers
- What does it do
- **How it passes data into PLSQL**



```
<button type="button" title="My Button" aria-label="My Button" class="t-Button t-Button--noLabel t-Button
onclick="apex.event.trigger(document,'deleteEmp',[{action:'rejecting', id:'#ID#'}]);">
    <span aria-hidden="true" class="t-Icon fa fa-trash" ></span>
</button>
```

DYNAMIC ACTIONS

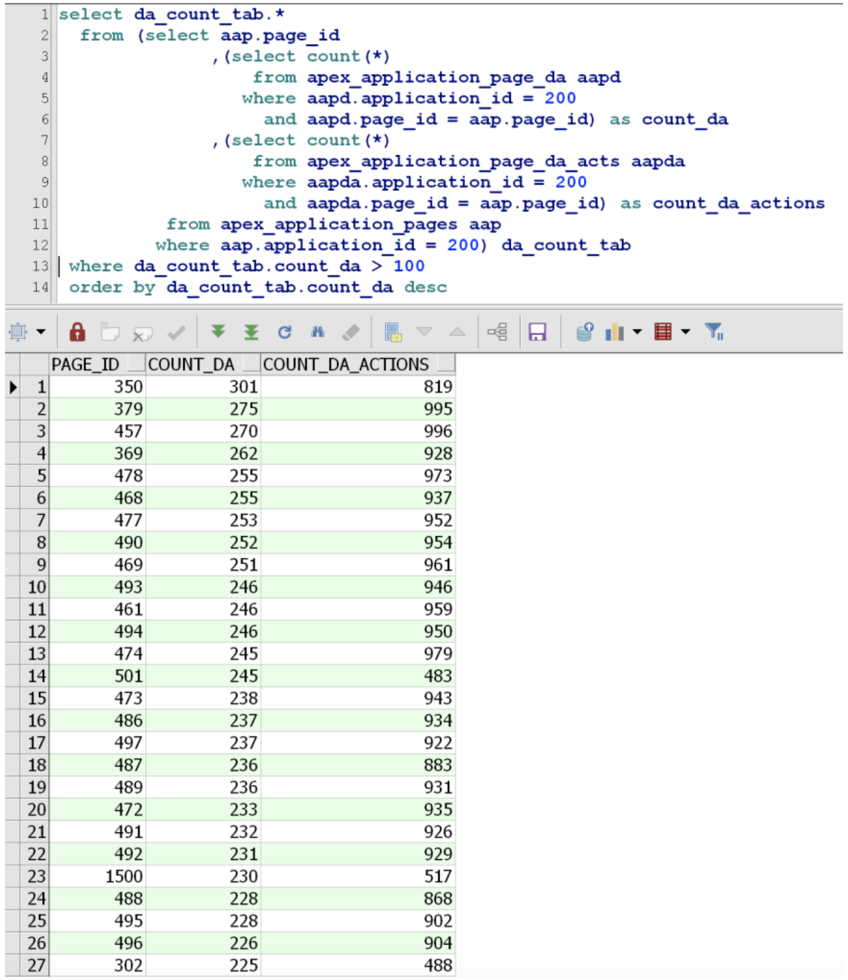
@JuergenSchuster



Juergen @JuergenSchuster · Nov 19

I'm afraid I have become a #orclapex Dynamic Action junkie 🙈 100 DAs on one page, anybody else who has this addiction?

@Matt_FOEX

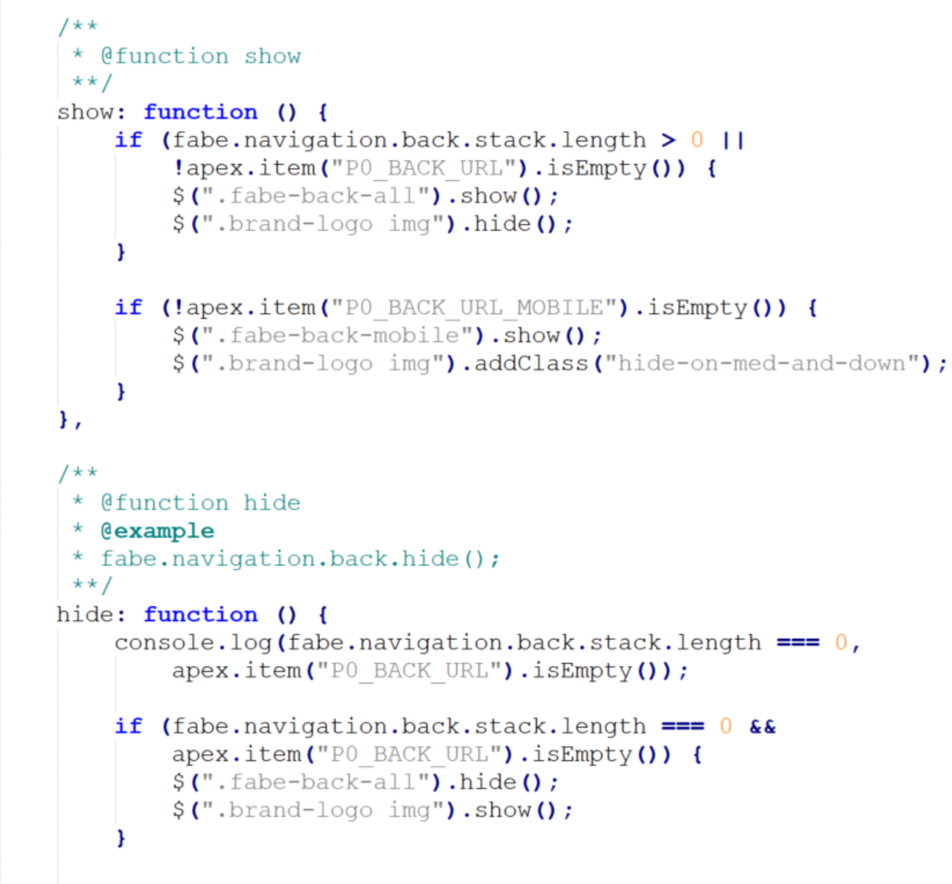


```
select da_count_tab.*
  from (select aap.page_id
              ,(select count(*)
                  from apex_application_page_da aapd
                 where aapd.application_id = 200
                   and aapd.page_id = aap.page_id) as count_da
              ,(select count(*)
                  from apex_application_page_da_acts aapda
                 where aapda.application_id = 200
                   and aapda.page_id = aap.page_id) as count_da_actions
          from apex_application_pages aap
         where aap.application_id = 200) da_count_tab
 where da_count_tab.count_da > 100
 order by da_count_tab.count_da desc
```

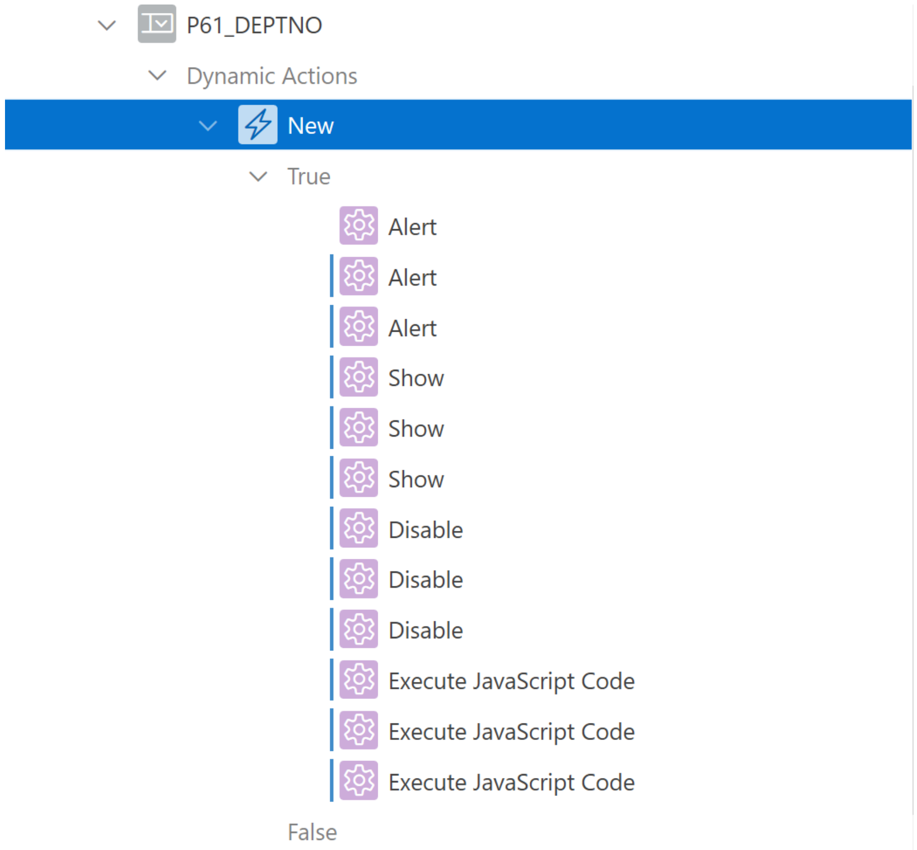
	PAGE_ID	COUNT_DA	COUNT_DA_ACTIONS
1	350	301	819
2	379	275	995
3	457	270	996
4	369	262	928
5	478	255	973
6	468	255	937
7	477	253	952
8	490	252	954
9	469	251	961
10	493	246	946
11	461	246	959
12	494	246	950
13	474	245	979
14	501	245	483
15	473	238	943
16	486	237	934
17	497	237	922
18	487	236	883
19	489	236	931
20	472	233	935
21	491	232	926
22	492	231	929
23	1500	230	517
24	488	228	868
25	495	228	902
26	496	226	904
27	302	225	488

DYNAMIC ACTIONS

- Consolidate
- Do not be afraid to use manual code

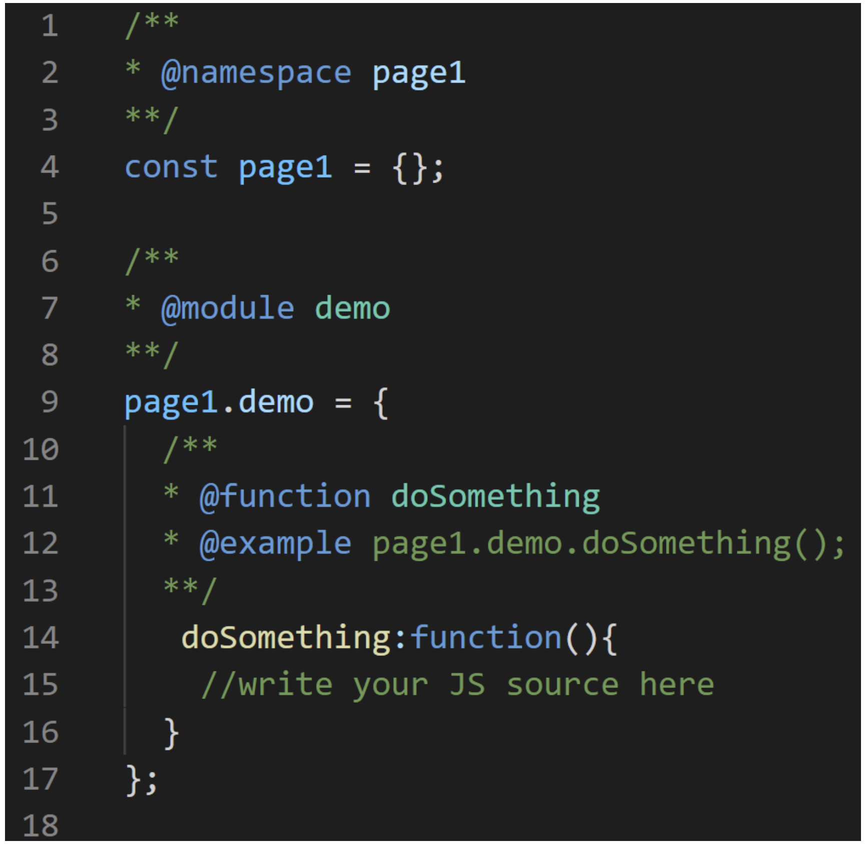


```
/**
 * @function show
 **/
show: function () {
    if (fabe.navigation.back.stack.length > 0 ||
        !apex.item("P0_BACK_URL").isEmpty()) {
        $(".fabe-back-all").show();
        $(".brand-logo img").hide();
    }

    if (!apex.item("P0_BACK_URL_MOBILE").isEmpty()) {
        $(".fabe-back-mobile").show();
        $(".brand-logo img").addClass("hide-on-med-and-down");
    }
},

/**
 * @function hide
 * @example
 * fabe.navigation.back.hide();
 **/
hide: function () {
    console.log(fabe.navigation.back.stack.length === 0,
        apex.item("P0_BACK_URL").isEmpty());

    if (fabe.navigation.back.stack.length === 0 &&
        apex.item("P0_BACK_URL").isEmpty()) {
        $(".fabe-back-all").hide();
        $(".brand-logo img").show();
    }
```



Modularize JS code

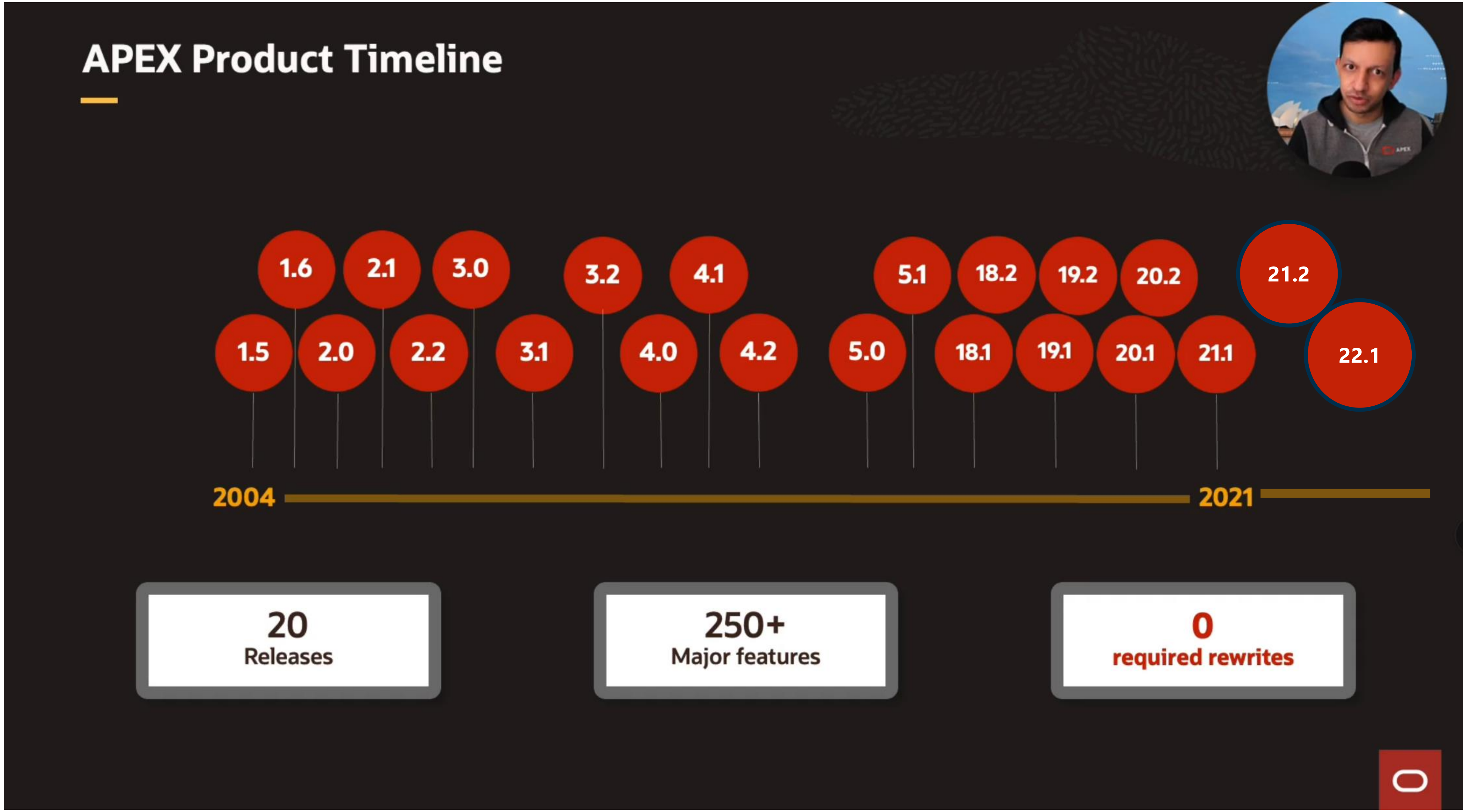
- Gives context to JavaScript functions
- Example one JavaScript module per APEX page



```
/**
* @namespace page1
**/
const page1 = {};

/**
* @module demo
**/
page1.demo = {
  /**
  * @function doSomething
  * @example page1.demo.doSomething();
  **/
   doSomething:function(){
    //write your JS source here
  }
};

```

```
page1.demo.doSomething();
```

APEX versions – new APIs



APEX Product Timeline

20
Releases

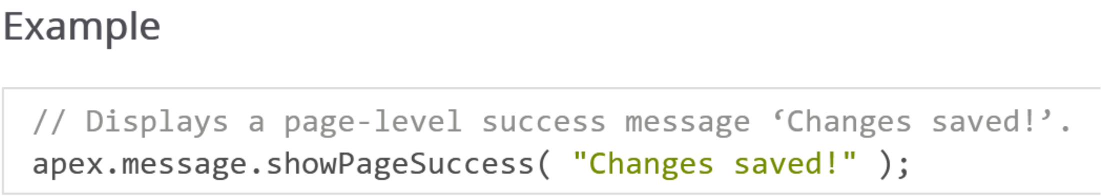
250+
Major features

0
required rewrites

APEX JS APIs

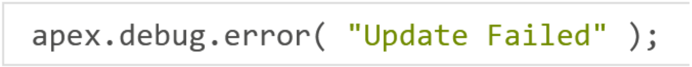
Shortcut to documentation

- apex.oracle.com/jsapi
- Namespaces
- Interfaces
- Widgets

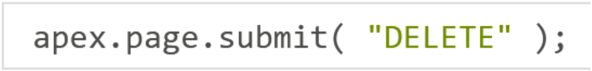


Example

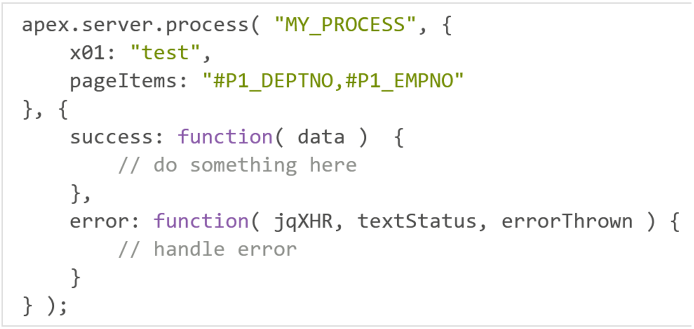
```
// Displays a page-level success message 'Changes saved!'.
apex.message.showPageSuccess( "Changes saved!" );
```



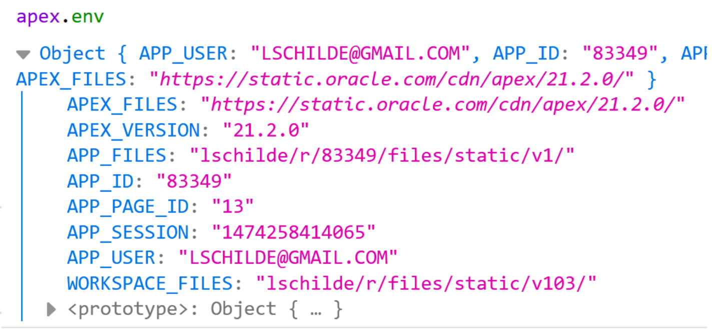
```
apex.debug.error( "Update Failed" );
```



```
apex.page.submit( "DELETE" );
```

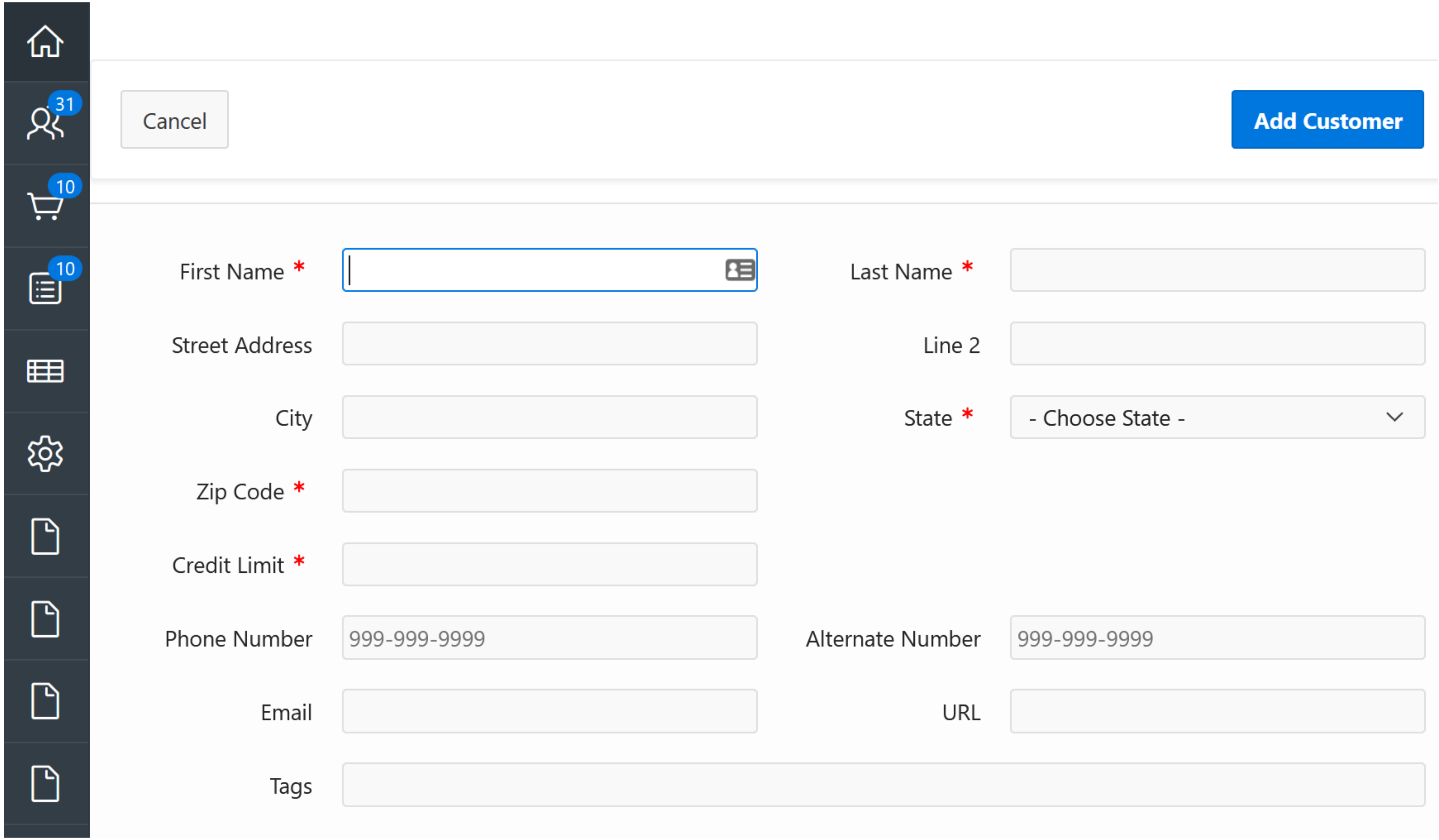


```
apex.server.process( "MY_PROCESS", {
    x01: "test",
    pageItems: "#P1_DEPTNO,#P1_EMPNO"
}, {
    success: function( data )  {
        // do something here
    },
    error: function( jqXHR, textStatus, errorThrown ) {
        // handle error
    }
} );
```



```
apex.env
▼ Object { APP_USER: "LSCHILDE@GMAIL.COM", APP_ID: "83349", API
APEX_FILES: "https://static.oracle.com/cdn/apex/21.2.0/" }
    APEX_FILES: "https://static.oracle.com/cdn/apex/21.2.0/"
    APEX_VERSION: "21.2.0"
    APP_FILES: "lschilde/r/83349/files/static/v1/"
    APP_ID: "83349"
    APP_PAGE_ID: "13"
    APP_SESSION: "1474258414065"
    APP_USER: "LSCHILDE@GMAIL.COM"
    WORKSPACE_FILES: "lschilde/r/files/static/v103/"
  ▶ <prototype>: Object { … }
```

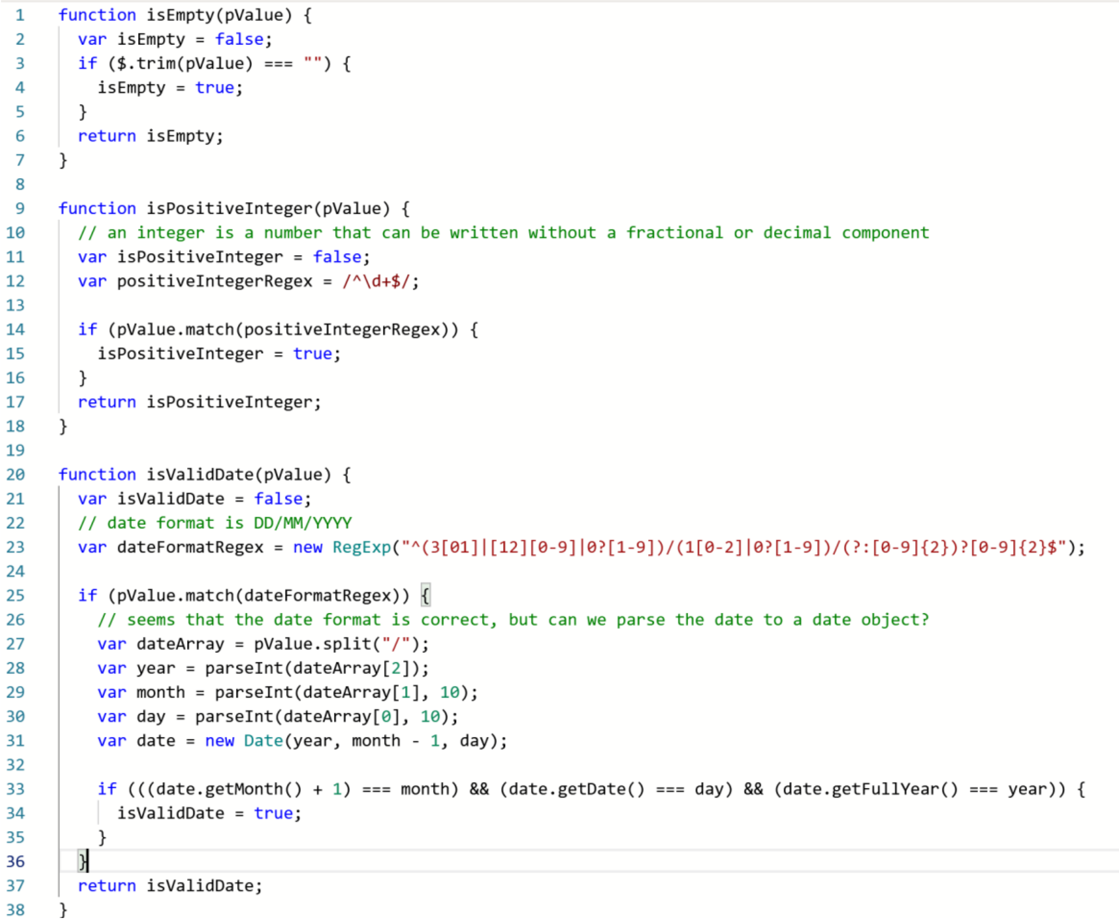
VALIDATIONs - Client side



First Name *		Last Name *	
Street Address		Line 2	
City		State *	- Choose State -
Zip Code *			
Credit Limit *			
Phone Number	999-999-9999	Alternate Number	999-999-9999
Email		URL	
Tags			

VALIDATIONs - Client side

- Better user experience
- Data quality
- Only notified after submitting the page
- **Important to give the users immediate feedback**
- Validate items, forms, IGs
- We should do it also on server side

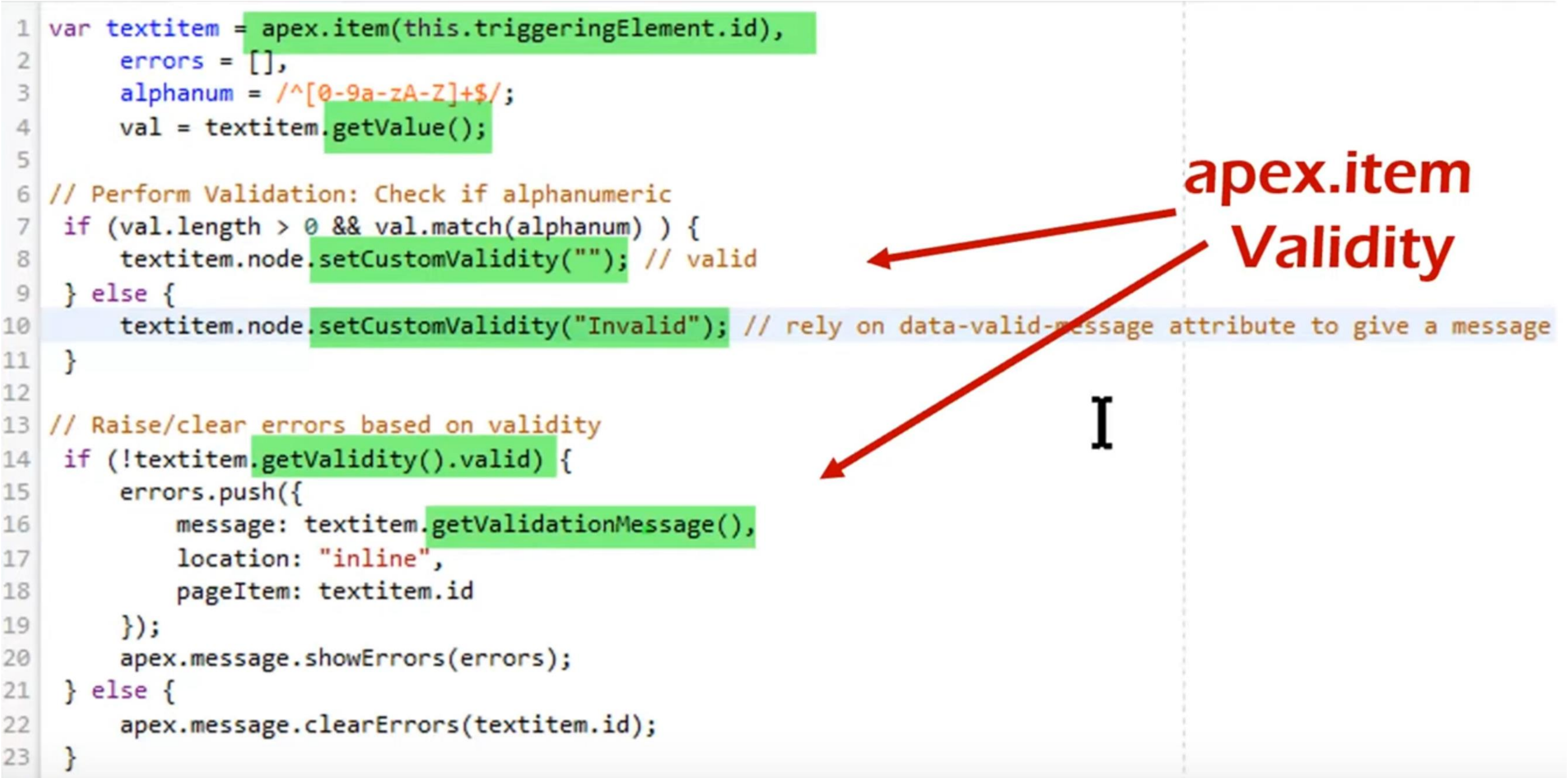


```
function isEmpty(pValue) {
  var isEmpty = false;
  if ($.trim(pValue) === "") {
    isEmpty = true;
  }
  return isEmpty;
}

function isPositiveInteger(pValue) {
  // an integer is a number that can be written without a fractional or decimal component
  var isPositiveInteger = false;
  var positiveIntegerRegex = /^\d+$/;

  if (pValue.match(positiveIntegerRegex)) {
    isPositiveInteger = true;
  }
  return isPositiveInteger;
}

function isValidDate(pValue) {
  var isValidDate = false;
  // date format is DD/MM/YYYY
  var dateFormatRegex = new RegExp("^(3[01]|[12][0-9]|0?[1-9])/(1[0-2]|0?[1-9])/(?:[0-9]{2})?[0-9]{2}$");

  if (pValue.match(dateFormatRegex)) {
    // seems that the date format is correct, but can we parse the date to a date object?
    var dateArray = pValue.split("/");
    var year = parseInt(dateArray[2]);
    var month = parseInt(dateArray[1], 10);
    var day = parseInt(dateArray[0], 10);
    var date = new Date(year, month - 1, day);

    if (((date.getMonth() + 1) === month) && (date.getDate() === day) && (date.getFullYear() === year)) {
      isValidDate = true;
    }
  }
  return isValidDate;
}
```

Prevent invalid user inputs
Email addresses
Number
Password complexity
Phone numbers

https://www.youtube.com/watch?v=-fn4mHZC-AA

VALIDATIONs - Client side



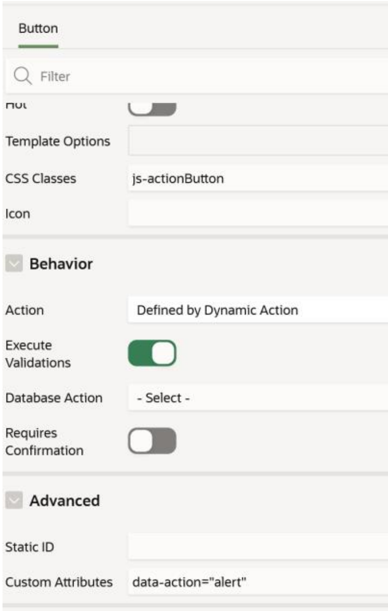
```
var textitem = apex.item(this.triggeringElement.id),
    errors = [],
    alphanum = /^[0-9a-zA-Z]+$/;
    val = textitem.getValue();

// Perform Validation: Check if alphanumeric
 if (val.length > 0 && val.match(alphanum) ) {
    textitem.node.setCustomValidity(""); // valid
 } else {
    textitem.node.setCustomValidity("Invalid"); // rely on data-valid-message attribute to give a message
 }

// Raise/clear errors based on validity
 if (!textitem.getValidity().valid) {
    errors.push({
        message: textitem.getValidationMessage(),
        location: "inline",
        pageItem: textitem.id
    });
    apex.message.showErrors(errors);
 } else {
    apex.message.clearErrors(textitem.id);
 }
```

apex.item
Validity

https://www.youtube.com/watch?v=-fn4mHZC-AA

ACTIONS interface

- Declarative way to improve your apps with built in APEX JS capability
- Reduce number of DAs
- Reduce number of buttons
- **Less replication of your code**
- Define action shortcuts



Button

Filter

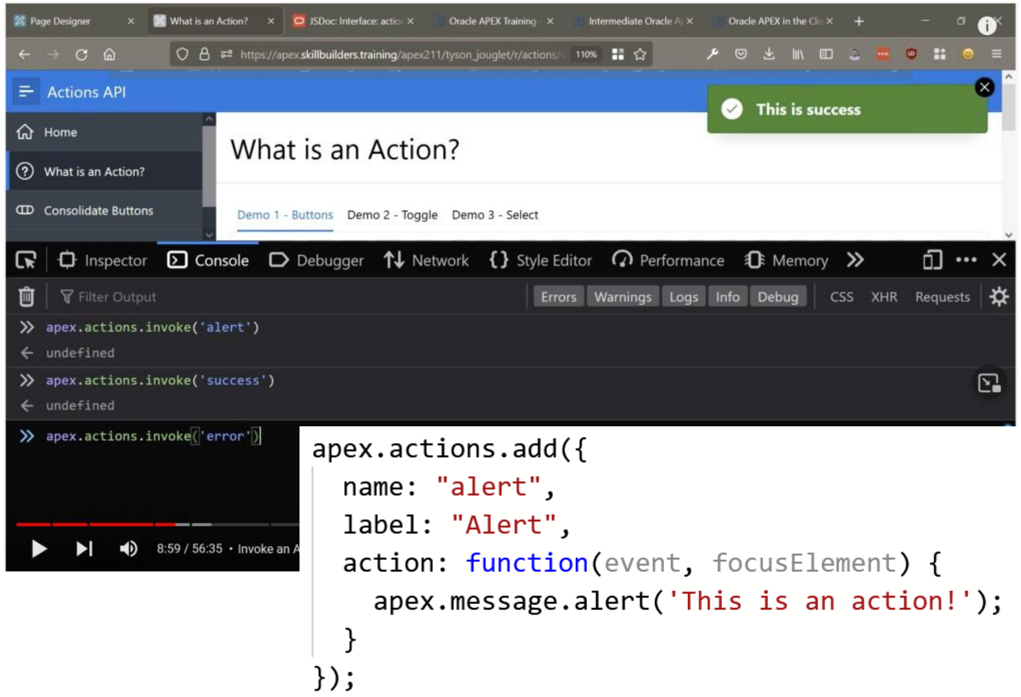
Template Options	
CSS Classes	js-actionButton
Icon	

Behavior

Action	Defined by Dynamic Action
Execute Validations	●
Database Action	- Select -
Requires Confirmation	○

Advanced

Static ID	
Custom Attributes	data-action="alert"



```
» apex.actions.invoke('alert')
← undefined
» apex.actions.invoke('success')
← undefined
» apex.actions.invoke('error')
```

```
apex.actions.add({
  name: "alert",
  label: "Alert",
  action: function(event, focusElement) {
    apex.message.alert('This is an action!');
  }
});
```

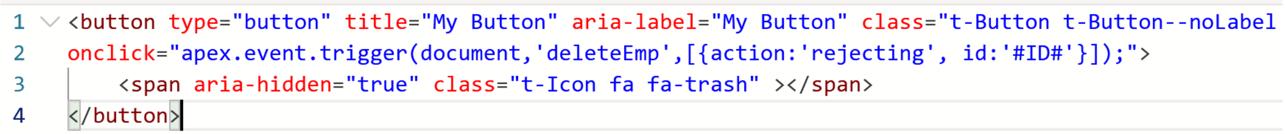
https://skillbuilders.com/course/how-the-oracle-apex-actions-interface-make-apps-better-free-tutorial/

PL/SQL and passing values

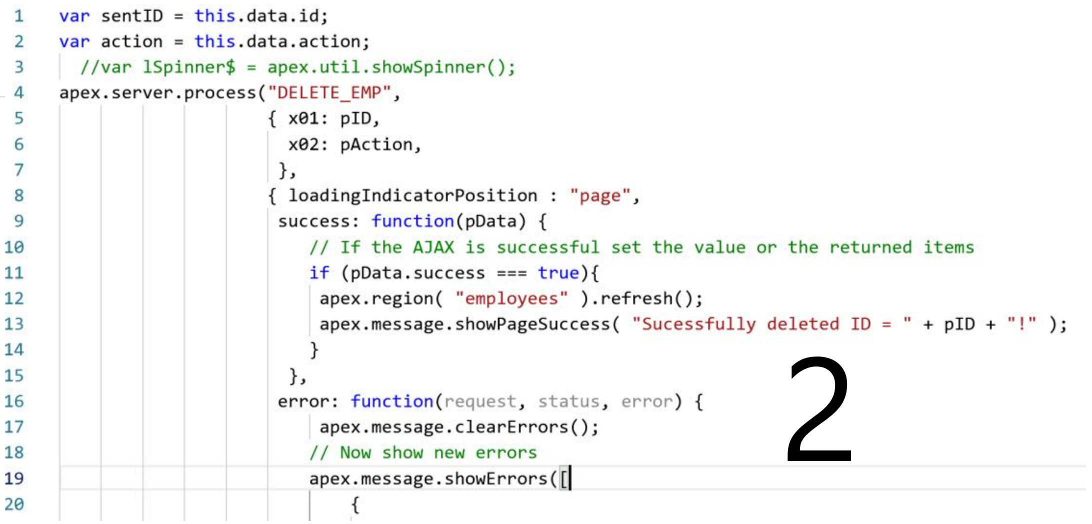
Establish communication between client and server side

- React to an event
- Pass required data in
- Execute PL/SQL code
- Return the result
- Notify the user

1

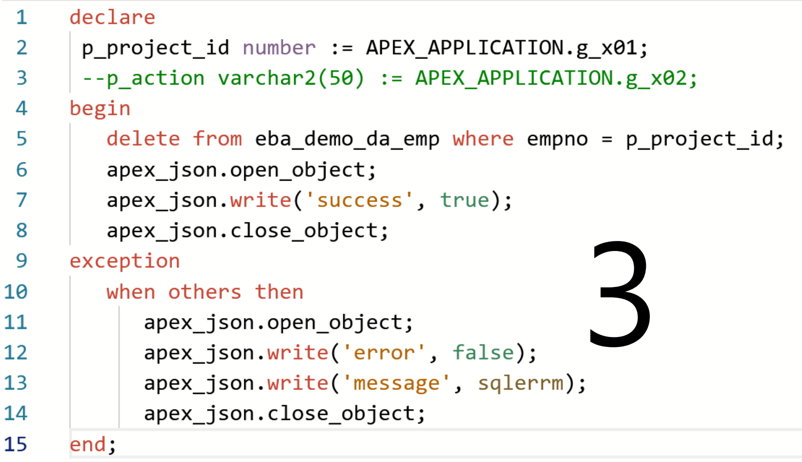


```
<button type="button" title="My Button" aria-label="My Button" class="t-Button t-Button--noLabel
onclick="apex.event.trigger(document,'deleteEmp',[{action:'rejecting', id:'#ID#'}]);">
    <span aria-hidden="true" class="t-Icon fa fa-trash" ></span>
</button>
```



```
var sentID = this.data.id;
var action = this.data.action;
  //var lSpinner$ = apex.util.showSpinner();
apex.server.process("DELETE_EMP",
                    { x01: pID,
                      x02: pAction,
                     },
                    { loadingIndicatorPosition : "page",
                     success: function(pData) {
                        // If the AJAX is successful set the value or the returned items
                        if (pData.success === true){
                         apex.region( "employees" ).refresh();
                         apex.message.showPageSuccess( "Sucessfully deleted ID = " + pID + "!" );
                        }
                      },
                     error: function(request, status, error) {
                         apex.message.clearErrors();
                        // Now show new errors
                        apex.message.showErrors([
                            {
```

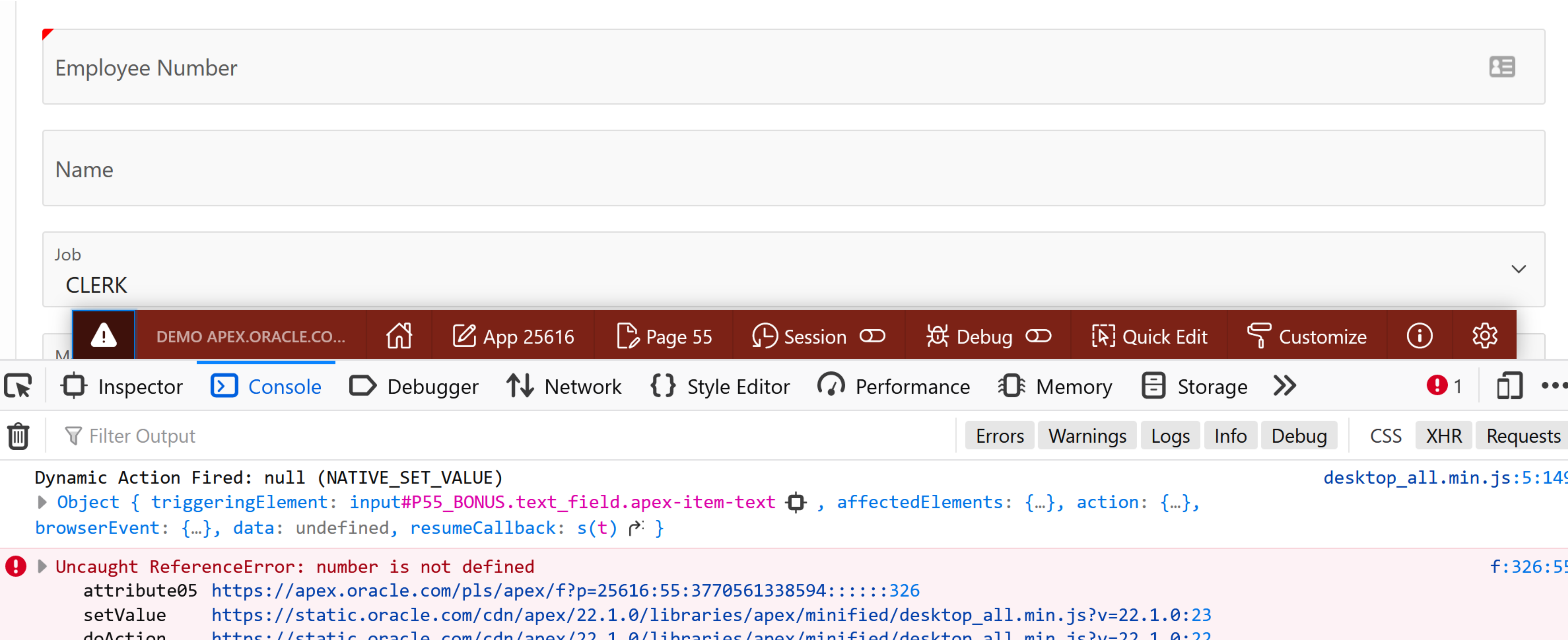
2



```
declare
 p_project_id number := APEX_APPLICATION.g_x01;
 --p_action varchar2(50) := APEX_APPLICATION.g_x02;
begin
   delete from eba_demo_da_emp where empno = p_project_id;
   apex_json.open_object;
   apex_json.write('success', true);
   apex_json.close_object;
exception
   when others then
      apex_json.open_object;
      apex_json.write('error', false);
      apex_json.write('message', sqlerrm);
      apex_json.close_object;
end;
```

3

DEBUGGING?

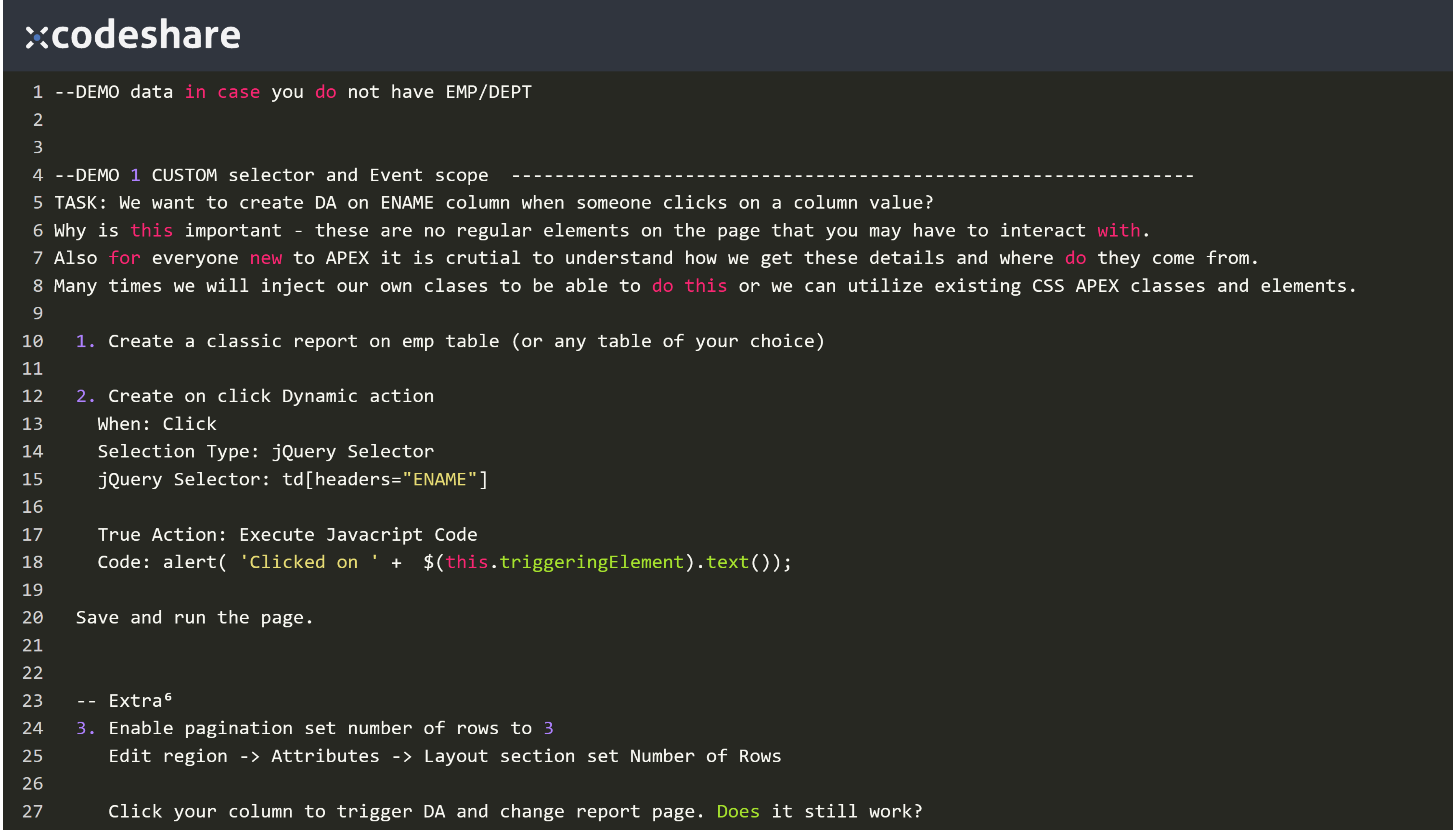


Job: CLERK

```
Dynamic Action Fired: null (NATIVE_SET_VALUE)                                   desktop_all.min.js:5:149
▶ Object { triggeringElement: input#P55_BONUS.text_field.apex-item-text , affectedElements: {…}, action: {…},
browserEvent: {…}, data: undefined, resumeCallback: s(t) }

▶ Uncaught ReferenceError: number is not defined                                                    f:326:55
    attribute05 https://apex.oracle.com/pls/apex/f?p=25616:55:3770561338594:::::326
    setValue    https://static.oracle.com/cdn/apex/22.1.0/libraries/apex/minified/desktop_all.min.js?v=22.1.0:23
    doAction    https://static.oracle.com/cdn/apex/22.1.0/libraries/apex/minified/desktop_all.min.js?v=22.1.0:22
```

Workshop

codeshare.io/WdK9vd



```
--DEMO data in case you do not have EMP/DEPT


--DEMO 1 CUSTOM selector and Event scope  ---------------------------------------------------------------
TASK: We want to create DA on ENAME column when someone clicks on a column value?
Why is this important - these are no regular elements on the page that you may have to interact with.
Also for everyone new to APEX it is crutial to understand how we get these details and where do they come from.
Many times we will inject our own clases to be able to do this or we can utilize existing CSS APEX classes and elements.

  1. Create a classic report on emp table (or any table of your choice)

  2. Create on click Dynamic action
    When: Click
    Selection Type: jQuery Selector
    jQuery Selector: td[headers="ENAME"]

    True Action: Execute Javacript Code
    Code: alert( 'Clicked on ' +  $(this.triggeringElement).text());

  Save and run the page.


  -- Extra⁶
  3. Enable pagination set number of rows to 3
     Edit region -> Attributes -> Layout section set Number of Rows

     Click your column to trigger DA and change report page. Does it still work?
```

apex.oracle.com

Summary

JavaScript is here to stay

- Little we know is enough to get us through
- Familiarize your self with JS and available built in features

Consolidate

- if it can trigger on same event or global page
- using actions interface

Minimize custom code

- But don’t be afraid to use it
- Structure it well

Think security

- Apply server side security too
- Don’t trust user inputs

Q&A

Thank you for attending

Resources

- https://www.youtube.com/watch?v=_lzurjl5Vm0
- https://www.youtube.com/watch?v=02thxqv-m_c
- https://www.youtube.com/watch?v=-l6E5LuNU3U
- https://www.youtube.com/watch?v=uK7vCqfXxNs
- https://skillbuilders.com/course/learning-javascript/
- https://www.youtube.com/watch?v=phydnTdH81Y