

APEX

Interactive Grid API Essentials

The Stuff You Will Really Use

Great Lakes Oracle Conference

May 15th - 16th, 2019

Cleveland Public Auditorium

Cleveland, Ohio



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TH TECHNOLOGY
@thtechnology

About Me ...

- TH Technology – Oracle Consulting Services, APEX Focus
- Mechanical/SW Engineer - Analyzed, designed, developed, converted, upgraded, enhanced legacy & database applications for 30+ years
- Building Web/APEX applications for government, medical, engineering industries since HTMLDB beginnings
- Leveraging Oracle 10g, 11g, 12c, 18c suite of tools
- ODTUG Director, Editor Emeritus, ODTUG Technical Journal
- Oracle Ace
- APress Author



LARGEST GATHERING OF APEX PROFESSIONALISTS



2018
HIGHLIGHT

3 DAY



JAVASCRIPT COURSE

BY DAN MCGHAN & JUERGEN SCHUSTER

75+ APEX TECHNICAL SESSIONS

3 DAYS OF APEX HANDS-ON TRAINING

“
This year was my first ODTUG Kscope conference in Orlando and my expectations were definitely exceeded! I had the opportunity to meet and share information with my colleagues from around the world. My highlights were the excellent sessions and the business networking. I'm looking forward to ODTUG Kscope19 in Seattle. – *Martin Vallejo, Insum Solutions*
”



OVER 65
ORACLE
ACE EXPERTS
IN ATTENDANCE



LEARN

- **Attend** a full-day Sunday Symposium by the Oracle APEX Development Team
- **Choose** from more than 75 APEX technical sessions
- **#LetsWreckThisTogether** APEX Lightning Talks



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- **Give back** to the local community with Community Service Day
- **Participate** in the first-rate Hands-On Training sessions
- **Volunteer** to be an ODTUG Kscope19 Ambassador



NETWORK

- **Mix and mingle** with the world's leading Oracle experts
- **Lunch & Learn** with ACE Directors, ACEs, and ACE Associates
- **Enjoy** fun and fellowship at Community Night



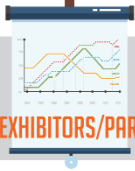
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PRICIPANTS FROM OVER 50 COUNTRIES!



OVER 40 EXHIBITORS/PARTNERS



80+ DATABASE TECHNICAL SESSIONS

2 DAYS OF HANDS-ON TRAINING

“
I loved attending ODTUG Kscope18. It's the only conference I've been to that includes hands-on training sessions to learn tasks that may be associated with your everyday job duties. I participated in a few of the hands-on sessions and I learned things in those sessions that helped me do my job better. – Antonio Hardeman, Tampa International Airport
”



OVER 65 ORACLE ACE EXPERTS IN ATTENDANCE



LEARN

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- **Choose** from more than 80 Database technical sessions
- **Discover** the Thursday Deep Dive Sessions



PARTICIPATE

- **Give back** to the local community with Community Service Day
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- **Enjoy** fun and fellowship at Community Night



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REGISTER TODAY!

About You ...

- Oracle Technology ?
- Years w APEX ?
- APEX Versions ?
- Interactive Grid Experience?
- Customizations ?

Biggest Gripes?

Goal

- Interactive Grid JavaScript APIs
- Understand Using JS APIs for
 - Validations
 - Customizations
- You Actually Use These APIs

Agenda

- Quick Grid Review
- 19.1 (or 2) Declarative Enhancements
- Documented Grid APIs
- Examples
 - Validations – Always Edit - Customizations
- Standardizing
- Best Practices / Recommendations





4/30/2019



APEX Interactive Grid APIs: Quick Grid Review

| | ID | Name | Job | Manager | Hire D... | Salary | Comm... |
|--|------|--------|-----------|---------|-----------|--------|---------|
| | 7934 | MILLER | Clerk | CLARK | 23-JA... | 1300 | - |
| | 7900 | JAMES | Clerk | BLAKE | 03-DE... | 950 | - |
| | 7876 | ADAMS | Clerk | 7788 | 12-JA... | 1100 | - |
| | 7844 | TURNER | Sales... | BLAKE | 08-SE... | 1500 | 0 |
| | 7654 | MARTIN | Sales... | BLAKE | 28-SE... | 1250 | 1400 |
| | 7521 | WARD | Sales... | BLAKE | 22-FE... | 1250 | 500 |
| | 7499 | ALLEN | Sales... | BLAKE | 20-FE... | 1600 | 300 |
| | 7369 | SMITH | Clerk | 7902 | 17-DE... | 800 | - |
| | 7902 | FORD | Analyst | JONES | 03-DE... | 3000 | - |
| | 7788 | SCOTT | Analyst | JONES | 09-DE... | 3000 | - |
| | 7566 | JONES | Manager | KING | 02-AP... | 2975 | - |
| | 7782 | CLARK | Manager | KING | 09-JU... | 2450 | - |
| | 7698 | BLAKE | Manager | KING | 01-MA... | 2850 | - |
| | 7839 | KING | Presid... | | 17-NO... | 5000 | - |

rows selected

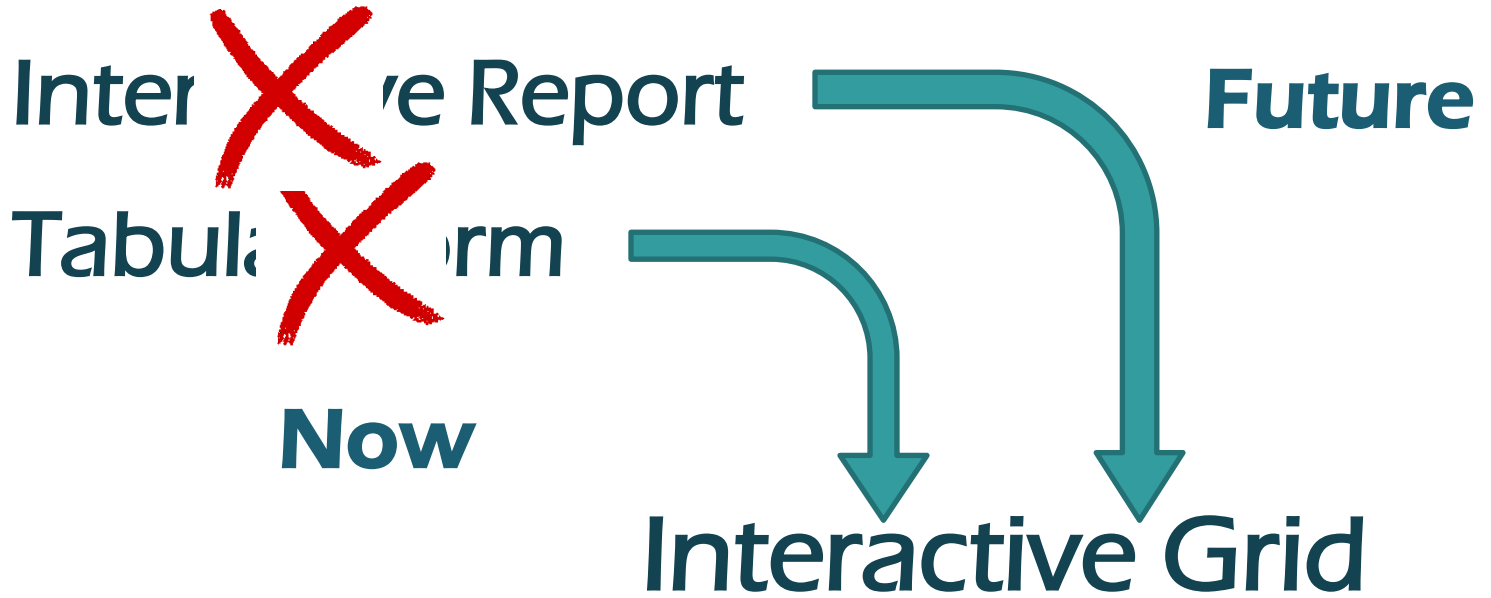
Interactive Grid

(Interactive Report or Tabular Form)

+ <All the Features You Ever Wanted>
(Thank You APEX Team!)

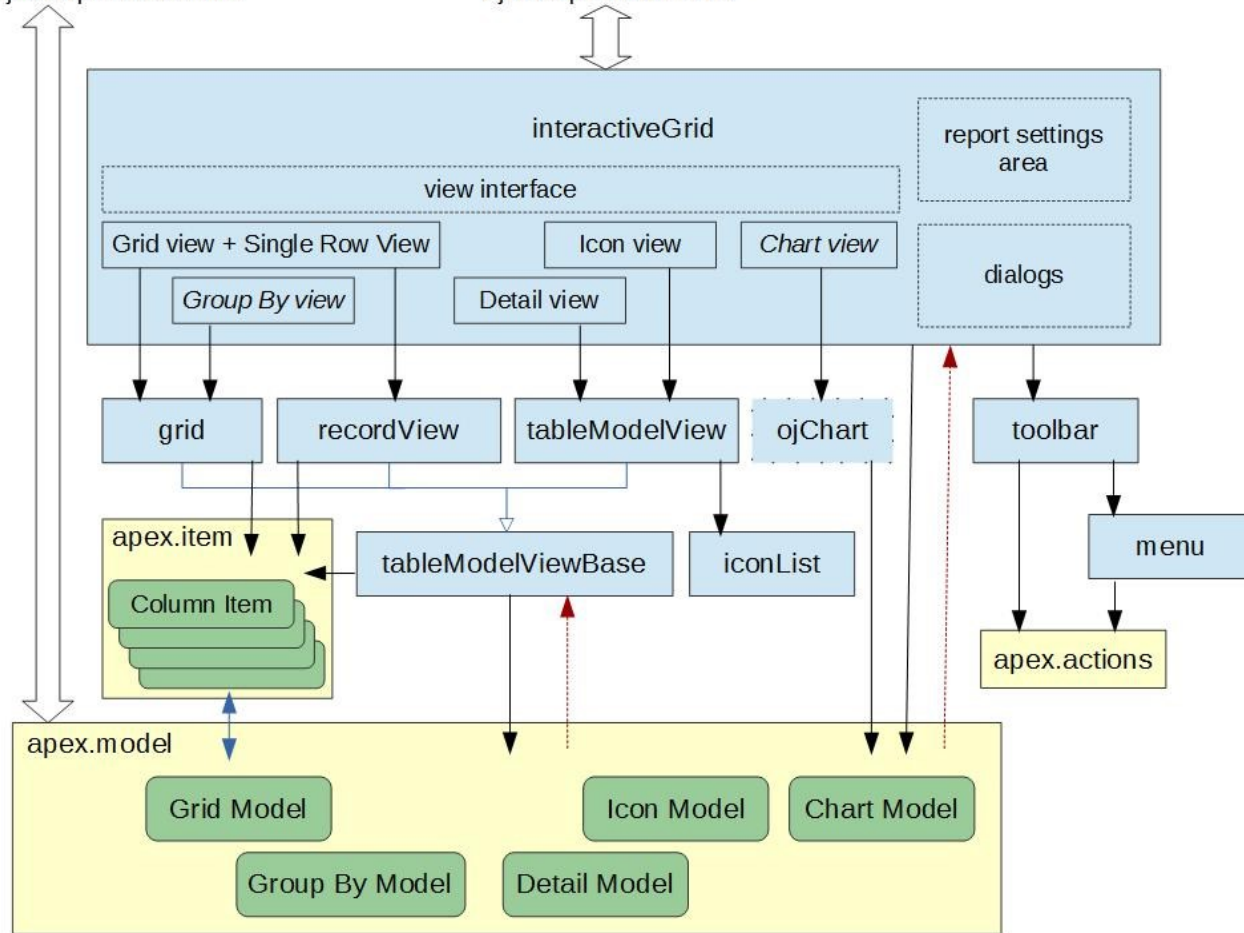
Interactive Grid

Direction



ajax requests to server

ajax requests to server



APEX Interactive Grid APIs: 19.1 Declarative Enhancements

Search: All Text Columns Go Actions Edit Save Add Row

| | ID | | Name | Job | Manager | Hire D... | Salary | Comm... |
|--|------|--|--------|-----------|---------|-----------|--------|---------|
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| | 7844 | | TURNER | Sales... | BLAKE | 08-SE... | 1500 | 0 |
| | 7654 | | MARTIN | Sales... | BLAKE | 28-SE... | 1250 | 1400 |
| | 7521 | | WARD | Sales... | BLAKE | 22-FE... | 1250 | 500 |
| | 7499 | | ALLEN | Sales... | BLAKE | 20-FE... | 1600 | 300 |
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| | 7902 | | FORD | Analyst | JONES | 03-DE... | 3000 | - |
| | 7788 | | SCOTT | Analyst | JONES | 09-DE... | 3000 | - |
| | 7566 | | JONES | Manager | KING | 02-AP... | 2975 | - |
| | 7782 | | CLARK | Manager | KING | 09-JU... | 2450 | - |
| | 7698 | | BLAKE | Manager | KING | 01-MA... | 2850 | - |
| | 7839 | | KING | Presid... | | 17-NO... | 5000 | - |

rows selected

APEX 19.1 Grid Declarative Options

- <https://blogs.oracle.com/apex/new-declarative-options-for-interactive-grid>
- First Row Select
- Buttons On/Off
- Action Menu Settings

Set Style of a Cell

- `cellCSSClasses`

```
select EMPNO,
       ENAME,
       JOB,
       SAL,
       COMM,
       RATING,
       case when RATING > 3 then 'special' else '' end as CELL_CLASS
from   EBA_DEMO_IG_EMP
```

The screenshot shows the APEX Grid configuration interface. On the left, a list of columns is displayed with checkboxes and icons. The 'ENAME' column is selected and highlighted in blue. Below the column list, there are validation rules, including one that states 'must not contain spaces'. On the right, the 'Advanced' configuration panel is open, showing fields for 'Static ID', 'CSS Classes', and 'Custom Attributes'. The 'Use As Row Header' option is set to 'No'. At the bottom, the 'JavaScript Initialization Code' field contains the following code:

```
function(options) {
  options.defaultGridColumnOptions = {
    cellCssClassesColumn: "CELL_CLASS"
  }
  return options;
}
```

Set Style of a Cell

- **a-GV-row**

is-selected, is-hover, is-active, is-focused,
is-deleted, is-inserted, is-updated,
is-error state modifier

- **a-GV-cell**

is-selected (in cell selection mode),
is-changed, is-error state modifier

- **Do It Declaratively First**

APEX Interactive Grid APIs: JavaScript APIs

| | ID | Name | Job | Manager | Hire D... | Salary | Comm... |
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| | 7900 | JAMES | Clerk | BLAKE | 03-DE... | 950 | - |
| | 7876 | ADAMS | Clerk | 7788 | 12-JA... | 1100 | - |
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| | 7698 | BLAKE | Manager | KING | 01-MA... | 2850 | - |
| | 7839 | KING | Presid... | | 17-NO... | 5000 | - |

rows selected

Documented APIs

- APEX 18.1+
- Documented == **Supported**

interactiveGrid

Widget: interactiveGrid

QuickNav

Options

- editable
- features
- initActions
- initialSelection
- reportSettingsArea
- toolbar
- toolbarData

Events

- modechange
- reportchange
- reportchange
- save
- selectionchange
- viewchange
- viewmodelcreate

Methods

- copyDefaultToolbar
 - focus
 - getActions
 - getCurrentView
 - getCurrentViewId
 - getSelectedRecords
 - getToolbar
 - getViews
 - gotoCell
 - refresh
 - resize
 - setSelectedRecords
- 4/30/2019

interactiveGrid - Customizations

```
1 // toolbarFind is a new API as of 5.1.1
2 function(config) {
3     var $ = apex.jQuery,
4     // [REDACTED]
5     // [REDACTED]
6     // [REDACTED]
7     // add a filter button after the actions menu
8     toolbarGroup.controls.push( {
9         type: "BUTTON",
10        action: "show-filter-dialog",
11        iconBeforeLabel: true
```

interactiveGrid – Save

```
1 // grid save
2 // get the IGrid widget
3
4 // old way, pre 18.1
5 var ig$ = apex.region("TRIP_WEEK_GRID").widget();
6
7 // as of 18.1 can do this way, going to the grid
8 //var ig$ = apex.region("TRIP_WEEK_GRID").call('getViews','grid');
9
10 // invoke a save action with the value you just set
11 ig$.interactiveGrid("getActions").invoke("save");
12
13
```



grid

Pre-General Availability: 2018-9-20

Widget: grid

QuickNav

Options

- aggregateLabels
- aggregateTooltips
- allowCopy
- allowDelete
- allowEditMode
- allowInsert
- autoAddRecord
- columnGroups
- columnSort
- columnSortMultiple
- columns
- contextMenu
- contextMenuAction
- contextMenuId
- editable
- footer
- hasSize
- hideDeletedRows

Events

- activateCell
- activateColumnHeader
- activateColumnHeader
- columnReorder
- columnResize
- modeChange
- pageChange
- selectionChange
- sortChange

Methods

- copyDownSelection
- debugCellEdit
- fillSelection
- firstPage
- focus
- freezeColumn
- getActiveCellFromColumnItem
- getActiveRecord
- getActiveRecordId
- getColumns
- getRecords
- getSelectedRange
- getSelectedRecords
- getSelection
- gotoCell
- gotoPage
- hideColumn
- inEditMode

grid – Checking/Manipulating Grid

- **Edit Mode On/Off in BG**
- **Refresh, Save via Dyn Actions**
- **Selections Behind the Scenes**

grid Edit Mode Check, On/Off

Initialize the grid with the editable option specified.

```
$( ".selector" ).grid( {  
    editable: true  
} );
```

Get or set option editable after initialization.

```
// get  
var value = $( ".selector" ).grid( "option", "editable" );  
// set  
$( ".selector" ).grid( "option", "editable", true );
```

apex.model

Namespace: model

QuickNav

Functions

- [addChangesToSaveRequest](#)
- [anyChanges](#)
- [anyErrors](#)
- [create](#)
- [destroy](#)
- [get](#)
- [getMaxCachedModels](#)
- [list](#)
- [release](#)
- [save](#)
- [setMaxCachedModels](#)

model

Interface: model

QuickNav

Notifications

- addData
- clearChanges
- copy
- delete
- insert
- metaChange
- move
- refresh
- refreshRecords
- revert
- set

Methods

- addChangesToSaveRequest
- allowAdd
- allowDelete
- allowDrag
- allowEdit
- canRevertRecord
- check
- child
- childCount
- clearChanges
- clearData
- clearSelection
- copyRecords
- deleteRecords
- dragOperations
- fetch
- fetchAll
- fetchChildNodes
- fetchRecords
- forEach
- forEachInPage
- getChanges
- getErrors
- getFieldKey
- getFieldMetadata
- getOption
- getRecord
- getRecordId
- getRecordMetadata
- getRecordValue
- getSelectedCount
- getSelectedRecords
- getServerTotalRecords
- getTotalRecords
- getValue
- hasChildren
- hasErrors
- indexOf

Type Definitions

- CheckCallback
- FieldMeta
- IteratorCallback
- ModelId
- Node
- Observer
- Record
- RecordFieldMetadata
- RecordMetadata

model When Accessing Model

```
function updateRecordHighlights(model, record, id) {  
    var fields,  
        meta;   
  
    fields = meta.fields;  
  
    if (!fields) {  
        fields = meta.fields = {};  
    }  
}
```


apex.item

Namespace: item

QuickNav

Functions

- [create](#)

apex.item

The `apex.item` namespace contains global functions related to Oracle Application Express items. The `apex.item.create` function defines the behavior for an item type. The `apex.item` function provides access to an `item` interface for a specific item.

Functions ▾

(static) `create(pNd, pItemImpl) → {object}` ▾

This function is only for item plug-in developers. It provides a plug-in specific implementation for the item. This is necessary to seamlessly integrate a plug-in item type with the built-in item related client-side functionality of Oracle Application Express.

Parameters:

| Name | Type | Description |
|------|------|-------------|
|------|------|-------------|

apex.item in Dyn Action Validations

Code Editor - Code

↶ ↷ 🔍 ↔ A*

```
1 var sal = [REDACTED]
2   num [REDACTED]
3 if ( num != "" && (parseFloat(num) != num || num < 100 || num > 2000)) {
4   // this msg only used if there is no data-valid-message attribute on the column
5   sal.node.setCustomValidity("Salary must be between 100 and 2000");
6 } else {
7   sal.node.setCustomValidity(""); // clear the error
8 }
```

I

apex.item in Dyn Action Validations

```
var item [REDACTED]
if ( [REDACTED]
    alert( "Error: " + item.getValidationMessage() );
}
```

[REDACTED]

Dynamic Action Events

The screenshot displays the Oracle APEX Dynamic Action Editor interface. The 'When' section is expanded, showing a dropdown menu for 'Event Type'. The menu is currently open, displaying a list of events. The 'Dialog Closed' event is highlighted in blue, and the 'View Change [Interactive Grid]' event is highlighted in green. A mouse cursor is pointing at the bottom of the dropdown menu.

When

Event

Selection Type

Client-side Condition

Type

Advanced

Event Scope

Server-side Condition

Save [Interactive Grid]

Before Page Submit

Before Refresh

Dialog Closed

Component Events

Date selected [Calendar]

Event selected [Calendar]

View changed [Calendar]

Mode Change [Interactive Grid]

Page Change [Interactive Grid]

Report Change [Interactive Grid]

Row Initialization [Interactive Grid]

Save [Interactive Grid]

Selection Change [Interactive Grid]

View Change [Interactive Grid]

Selection Change [Tree]

Update [Text Field with autocomplete]

Change Order [Shuttle]

Custom Event

Custom

Show Legacy/Unsupported...

Examples ...

- Mode Change – Edit/No Edit
- Page Change – Pagination
- Report Change – Public to Private, etc
- Row initialization
- Selection Change
- View Change – Grid to Chart to Group By

APEX Interactive Grid APIs: Validations, Processing

| | ID | Name | Job | Manager | Hire D... | Salary | Comm... |
|--|------|--------|-----------|---------|-----------|--------|---------|
| | 7934 | MILLER | Clerk | CLARK | 23-JA... | 1300 | - |
| | 7900 | JAMES | Clerk | BLAKE | 03-DE... | 950 | - |
| | 7876 | ADAMS | Clerk | 7788 | 12-JA... | 1100 | - |
| | 7844 | TURNER | Sales... | BLAKE | 08-SE... | 1500 | 0 |
| | 7654 | MARTIN | Sales... | BLAKE | 28-SE... | 1250 | 1400 |
| | 7521 | WARD | Sales... | BLAKE | 22-FE... | 1250 | 500 |
| | 7499 | ALLEN | Sales... | BLAKE | 20-FE... | 1600 | 300 |
| | 7369 | SMITH | Clerk | 7902 | 17-DE... | 800 | - |
| | 7902 | FORD | Analyst | JONES | 03-DE... | 3000 | - |
| | 7788 | SCOTT | Analyst | JONES | 09-DE... | 3000 | - |
| | 7566 | JONES | Manager | KING | 02-AP... | 2975 | - |
| | 7782 | CLARK | Manager | KING | 09-JU... | 2450 | - |
| | 7698 | BLAKE | Manager | KING | 01-MA... | 2850 | - |
| | 7839 | KING | Presid... | | 17-NO... | 5000 | - |

rows selected

APEX\$ROW_SELECTOR – PL/SQL

- Same as Tab Form:

```
BEGIN
```

```
IF :APEX$ROW_SELECTOR = 'X' THEN
```

```
-- your processing goes here
```

```
    DELETE FROM EMP WHERE EMPNO = :ID;
```

```
END IF;
```

```
END;
```

Working w the Row Selector

- JavaScript

```
menu$.menu("option").items.push({  
  type:"action",  
  label:"Total Salary",  
  action: function(menu_element) {  
    alert("Total Salary for selected employees is " + total);  
  }  
});
```

Validations (Review!)

- **:COLUMN_NAME References**
 - Similar to 4.2 Tab Form
 - On Submit
- **Dynamic Actions**
 - Column Option
- **HTML5 Form Validation**
 - Required
 - Pattern – Min, Max (Numbers)
 - In Custom Attributes

Dynamic Action

- Just Like On a Page Item
- Conditions/Action Reference
Any Column In Row
- Cannot Reference Element in
Other Rows

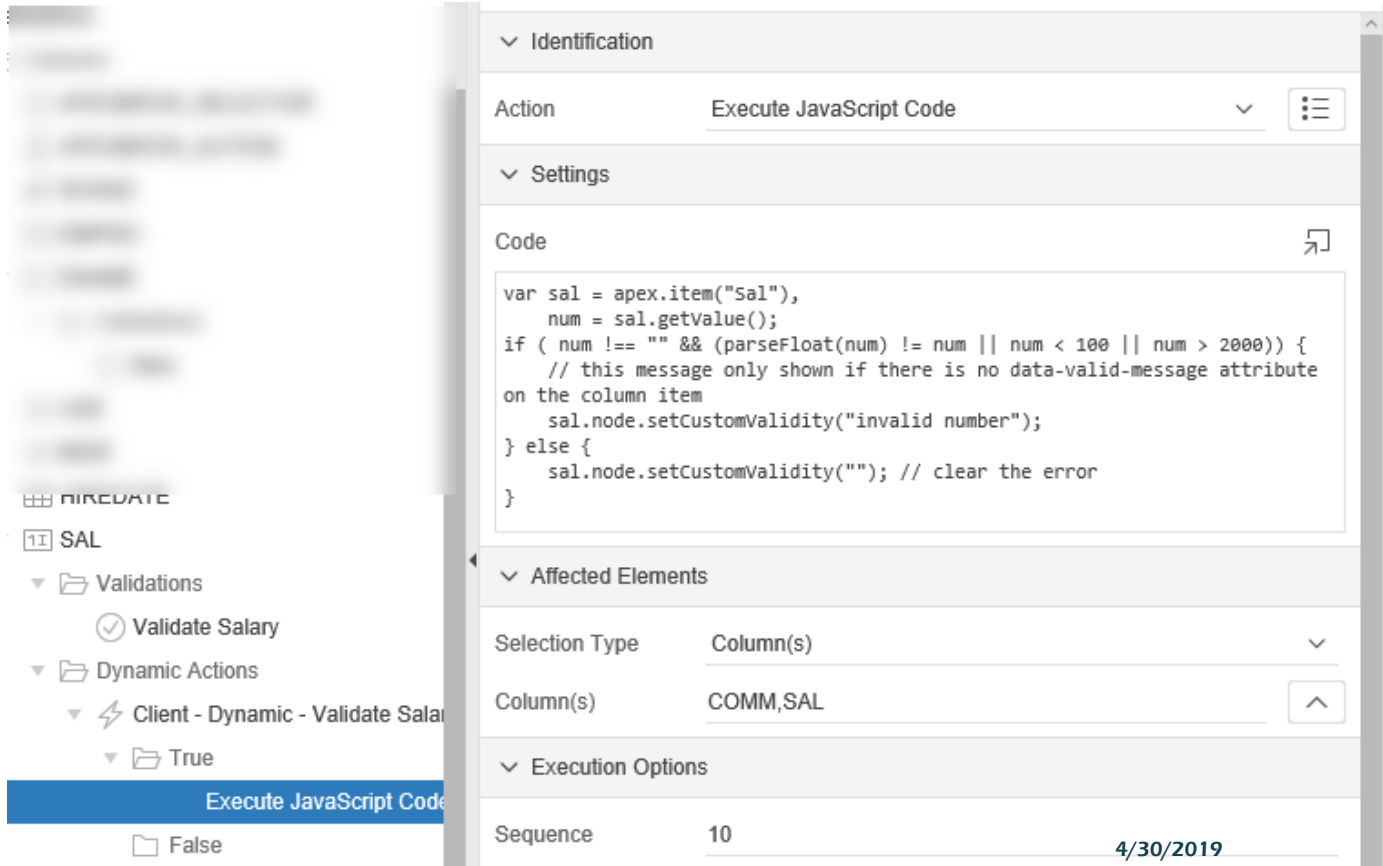
Validation - PL/SQL (On Submit)

- Validating
 - Validations
 - No Special Char in EName
 - Validate Salary**
 - Validate Commission
 - Processing
 - Processes
 - Save Interactive Grid Data
 - After Processing
 - Ajax Callback

| | |
|--|---|
| Name | Validate Salary |
| Execution Options | |
| Sequence | 20 |
| Validation | |
| Editable Region | Validations |
| Type | PL/SQL Expression |
| PL/SQL Expression | |
| :SAL BETWEEN 100 AND 2000 | |
| Always Execute | Yes <input type="radio"/> No <input checked="" type="radio"/> |
| Error | |
| Error Message | |
| ORA-00904: "USERID" must be between 1 and 30 characters long | |

4/30/2019

Validation – Dyn Action JS



The screenshot displays the configuration for a dynamic action in an Oracle APEX application. The left sidebar shows the page structure with a tree view containing 'Validations' (with 'Validate Salary' checked) and 'Dynamic Actions' (with 'Client - Dynamic - Validate Salary' selected). The main configuration area is titled 'Execute JavaScript Code' and includes the following sections:

- Identification:** Action is set to 'Execute JavaScript Code'.
- Settings:** The 'Code' section contains the following JavaScript code:

```
var sal = apex.item("Sal"),
    num = sal.getValue();
if ( num !== "" && (parseFloat(num) != num || num < 100 || num > 2000)) {
    // this message only shown if there is no data-valid-message attribute
    // on the column item
    sal.node.setCustomValidity("invalid number");
} else {
    sal.node.setCustomValidity(""); // clear the error
}
```
- Affected Elements:** The 'Selection Type' is 'Column(s)' and the 'Column(s)' field is populated with 'COMM,SAL'.
- Execution Options:** The 'Sequence' is set to '10'.

At the bottom of the configuration, there is a checkbox for 'False' and a blue bar with the text 'Execute JavaScript Code'.

Code Editor - Code



```
1 var sal = apex.item('salary'),
2     num = sal.getValue();
3 if ( num !== "" && (parseFloat(num) !== num || num < 100 || num > 2000)) {
4     // this msg only used if there is no data-valid-message attribute on the column
5     sal.node.setCustomValidity("Salary must be between 100 and 2000");
6 } else {
7     sal.node.setCustomValidity(""); // clear the error
8 }
```

id

validity
attribute

Code Editor - Code



```
1 var comm = apex.item("commission"),
2   sal = apex.item("salary"),
3   numComm = comm.getValue(),
4   numSal = sal.getValue();
5 if ( numComm !== "" && (parseFloat(numComm) != numComm ||
6   numComm < (0.1*numSal) ||
7   numComm > numSal)) {
8   // this message only shown if there is no data-valid-msg
9   comm.node.setCustomValidity("Commission must be at least 10% of salary, and not > salary");
10 } else {
11   comm.node.setCustomValidity(""); // clear the error
12 }
```

ids

validity
attribute

JS: Access Grid, Model, Record...

```

|--Get the link element that was clicked
var $te = $(this.triggeringElement);

|--Get the ID of the row
var rowId = $te.closest('tr').data('id');

|--Identify the particular interactive grid
var ig$ = apex.region("emp_igrid").widget();

|--Fetch the model for the interactive grid
var model = ig$.interactiveGrid("getViews","grid").model;

|--Fetch the record for the particular rowId
var record = model.getRecord(rowId);

|-- access the cell values via the column name static id NAME
var comm = model.getValue(record,"COMM");

IF comm < 100 {
  |--Set the values for the RIFF cell
  model.setValue(record,"RIFF","Y");
}
```

```
//get value of a select list element  
var riff = model.getValue( record, "RIFF").v
```

```
//get display value of a select list element  
var riff = model.getValue( record, "RIFF").d
```

APEX Interactive Grid APIs: Invoke Actions

| | ID | Name | Job | Manager | Hire D... | Salary | Comm... |
|--|------|--------|-----------|---------|-----------|--------|---------|
| | 7934 | MILLER | Clerk | CLARK | 23-JA... | 1300 | - |
| | 7900 | JAMES | Clerk | BLAKE | 03-DE... | 950 | - |
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| | 7782 | CLARK | Manager | KING | 09-JU... | 2450 | - |
| | 7698 | BLAKE | Manager | KING | 01-MA... | 2850 | - |
| | 7839 | KING | Presid... | | 17-NO... | 5000 | - |

rows selected


```
apex.region("igrid").call("getActions").invoke("save");
```

```
apex.region("igrid").call("getActions").invoke("show-sort-dialog");
```

```
apex.region("igrid").call("getActions").invoke("show-filter-dialog");
```

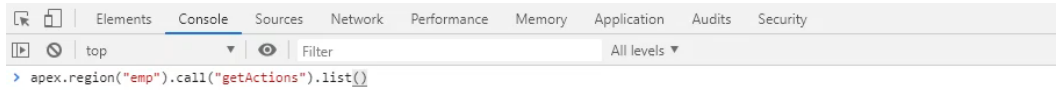
Cancel?

Cancel .. Have to Clear The Model

- Set Edit Mode Off
- Clear Changes
- Refresh

```
1 var ig$ = apex.region("emp").widget(),
2     view = ig$.interactiveGrid("getCurrentView"); // this is new in 5.1.1
3
4 if ( view.supports.edit ) { // or could use view.internalIdentifier === "gr
5     // leave edit mode so that the column items will be reinitialized
6     ig$.interactiveGrid("getActions").set("edit", false);
7     view.model.clearChanges();
8 }
9 apex.region("emp").refresh(); // could use the Refresh action but since we
```

What Else ?



apex.

list());

APEX Interactive Grid APIs: Always Edit, Default Config, Disable Columns

| | ID | Name | Job | Manager | Hire D... | Salary | Comm... |
|--|------|--------|-----------|---------|-----------|--------|---------|
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| | 7900 | JAMES | Clerk | BLAKE | 03-DE... | 950 | - |
| | 7876 | ADAMS | Clerk | 7788 | 12-JA... | 1100 | - |
| | 7844 | TURNER | Sales... | BLAKE | 08-SE... | 1500 | 0 |
| | 7654 | MARTIN | Sales... | BLAKE | 28-SE... | 1250 | 1400 |
| | 7521 | WARD | Sales... | BLAKE | 22-FE... | 1250 | 500 |
| | 7499 | ALLEN | Sales... | BLAKE | 20-FE... | 1600 | 300 |
| | 7369 | SMITH | Clerk | 7902 | 17-DE... | 800 | - |
| | 7902 | FORD | Analyst | JONES | 03-DE... | 3000 | - |
| | 7788 | SCOTT | Analyst | JONES | 09-DE... | 3000 | - |
| | 7566 | JONES | Manager | KING | 02-AP... | 2975 | - |
| | 7782 | CLARK | Manager | KING | 09-JU... | 2450 | - |
| | 7698 | BLAKE | Manager | KING | 01-MA... | 2850 | - |
| | 7839 | KING | Presid... | | 17-NO... | 5000 | - |

rows selected

Always Edit

▶ Notes on Gid in Always Edit Mode

Save

Refresh

| | Onleave | Empno ↑ | Ename | Job | Mgr | Hire... | Sal | Comm | Notes | |
|--|---------|---------|---------|----------|------|----------|------|------|---------|--|
| | No | 7369 | SMITH | CLERK | 7902 | 17-DE... | 800 | - | - | |
| | No | 7499 | ALLEN | SALES... | 7698 | 20-FE... | 1600 | 300 | - | |
| | No | 7521 | WARD | SALES... | 7698 | 22-FE... | 1250 | 500 | - | |
| | No | 7566 | JONES | MAN... | 7839 | 02-AP... | 2975 | - | - | |
| | No | 7654 | MART... | SALES... | 7698 | 28-SE... | 1250 | 1400 | - | |
| | No | 7698 | BLAKE | MAN... | 7839 | 01-M... | 2850 | - | Lore... | |
| | No | 7782 | CLARK | MAN... | 7839 | 09-JU... | 2450 | - | - | |
| | No | 7788 | SCOTT | ANAL... | 7566 | 09-DE... | 3000 | - | - | |

Always Edit

- **Grid Always in Edit Mode**
- **Saves a Double-Click to Activate Edit Mode**

Default Grid Options

- Advanced → JavaScript

```
function(config) {  
    config.defaultGridViewOptions = {  
        multiple: true,  
        selectAll: true  
    }  
    return config; // don't forget to return this!  
}
```


Disable a Row

Search: All Text Columns Go

| <input type="checkbox"/> | | Onleave | Empno | Ename | Job | Mgr | Hire... | Sal | Comm | Notes |
|-------------------------------------|--|---------|-------|-------|----------|------|----------|------|------|---------|
| <input type="checkbox"/> | | Yes | 7839 | KING | PRESI... | - | 17-N... | 5000 | - | - |
| <input checked="" type="checkbox"/> | | No | 7698 | BLAKE | MAN... | 7839 | 01-M... | 2850 | - | Lore... |
| <input type="checkbox"/> | | No | 7782 | CLARK | MAN... | 7839 | 09-JU... | 2450 | - | - |
| <input type="checkbox"/> | | No | 7566 | JONES | MAN... | 7839 | 02-A... | 2975 | - | - |
| <input type="checkbox"/> | | No | 7788 | SCOTT | ANAL... | 7566 | 09-D... | 3000 | - | - |
| <input type="checkbox"/> | | No | 7902 | FORD | ANAL... | 7566 | 03-D... | 3000 | - | - |
| <input type="checkbox"/> | | No | 7369 | SMITH | CLERK | 7902 | 17-D... | 800 | - | - |

Complicated Checkbox??

- 19.1 Grid Checkbox
- CSS Slight of Hand
- Not Ideal but OK

Custom Popup Plugin

- Popup Out of Grid Columns
- Source: IG Cookbook

APEX Interactive Grid APIs: Customizations for Menus, Toolbars and More

| | ID | Name | Job | Manager | Hire D... | Salary | Comm... |
|--|------|--------|-----------|---------|-----------|--------|---------|
| | 7934 | MILLER | Clerk | CLARK | 23-JA... | 1300 | - |
| | 7900 | JAMES | Clerk | BLAKE | 03-DE... | 950 | - |
| | 7876 | ADAMS | Clerk | 7788 | 12-JA... | 1100 | - |
| | 7844 | TURNER | Sales... | BLAKE | 08-SE... | 1500 | 0 |
| | 7654 | MARTIN | Sales... | BLAKE | 28-SE... | 1250 | 1400 |
| | 7521 | WARD | Sales... | BLAKE | 22-FE... | 1250 | 500 |
| | 7499 | ALLEN | Sales... | BLAKE | 20-FE... | 1600 | 300 |
| | 7369 | SMITH | Clerk | 7902 | 17-DE... | 800 | - |
| | 7902 | FORD | Analyst | JONES | 03-DE... | 3000 | - |
| | 7788 | SCOTT | Analyst | JONES | 09-DE... | 3000 | - |
| | 7566 | JONES | Manager | KING | 02-AP... | 2975 | - |
| | 7782 | CLARK | Manager | KING | 09-JU... | 2450 | - |
| | 7698 | BLAKE | Manager | KING | 01-MA... | 2850 | - |
| | 7839 | KING | Presid... | | 17-NO... | 5000 | - |

rows selected

Customizations

- **Advanced → JavaScript Code**
 - Grid → Grid Menus
 - Column → Column Menu
(Most of the Time...)
- Read Widget JS Files to Learn What is Possible
- Read Hardlikesoftware.com
- Study IG Cookbook App

**No Longer PL/SQL Collections ~
Now JavaScript**

Customization Examples

- Change Toolbar
- Change Column Heading Menu
- Change RowAction Menu
- Change Toolbar Actions Menu
- “Global” Settings

There's A Plugin for That ...

- Extend IG Toolbar

<https://apex.oracle.com/pls/apex/f?p=apexbyg:extendigtoolbar>

- Region Buttons
 - PREV
 - Next
- Content Body
 - Overview: Add Toolbar Button
 - Attributes
 - hidden
 - Attributes
 - Region Buttons
 - dummy1
 - Add Toolbar Button
 - Columns
 - Attributes**
 - Column Groups
 - Printing
- Post-Rendering

Detail View

Show

Yes

No

Advanced

Oracle Text
Index Column

- Select -

Email From
Address

JavaScript Code



```
function(config) {  
    var $ = apex.jquery,  
        toolbarData = $.apex.interactiveGrid.copyDefaultToolbar(),  
        lastToolbarGroup = toolbarData[toolbarData.length - 1],  
        createButton = {  
            type: "BUTTON",  
            hot: true,  
            action: "create-employee"  
        };  
    lastToolbarGroup.controls.push( createButton );  
    config.toolbarData = toolbarData;  
}
```

Help

Customized Row Actions, Action Menu

Advanced \

Advanced Delete

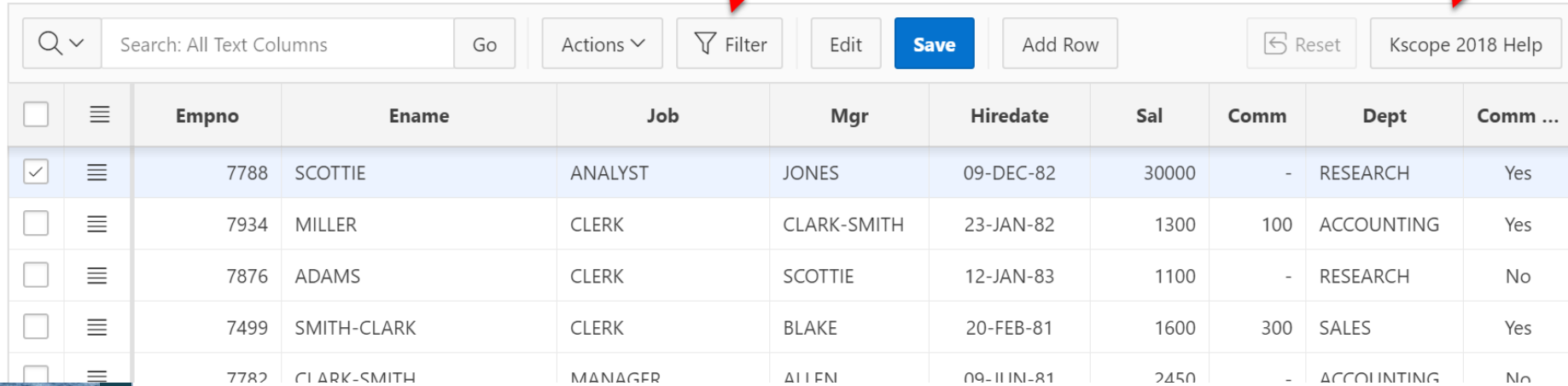
Overview: Advanced Delete

This example is an extension of the [Delete Only](#) example. It has been streamlined to focus on editing. The chart view is removed using JavaScript Code. The row Actions menu is replaced with just a delete button. The Download feature is turned off.

| <input type="checkbox"/> | | Name | Job | Manager | Hire Date | Salary | Commission | On Leave | Notes | |
|-------------------------------------|---|--------|-------|---------|-----------|--------|------------|----------|-------|---|
| <input checked="" type="checkbox"/> |  | JAMES | Clerk | BLAKE | 03-DEC-81 | 950 | - | No | - | S |
| <input type="checkbox"/> |  | SMITH | Clerk | FORD | 17-DEC-80 | 800 | - | No | - | F |
| <input type="checkbox"/> |  | MILLER | Clerk | CLARK | 23-JAN-82 | 1300 | | No | - | A |

Change Toolbar

Custom Toolbar - Added Filter, Help Buttons



| <input type="checkbox"/> | ☰ | Empno | Ename | Job | Mgr | Hiredate | Sal | Comm | Dept | Comm ... |
|-------------------------------------|---|-------|-------------|---------|-------------|-----------|-------|------|------------|----------|
| <input checked="" type="checkbox"/> | ☰ | 7788 | SCOTTIE | ANALYST | JONES | 09-DEC-82 | 30000 | - | RESEARCH | Yes |
| <input type="checkbox"/> | ☰ | 7934 | MILLER | CLERK | CLARK-SMITH | 23-JAN-82 | 1300 | 100 | ACCOUNTING | Yes |
| <input type="checkbox"/> | ☰ | 7876 | ADAMS | CLERK | SCOTTIE | 12-JAN-83 | 1100 | - | RESEARCH | No |
| <input type="checkbox"/> | ☰ | 7499 | SMITH-CLARK | CLERK | BLAKE | 20-FEB-81 | 1600 | 300 | SALES | Yes |
| <input type="checkbox"/> | ☰ | 7782 | CLARK-SMITH | MANAGER | ALLEN | 09-JUN-81 | 2450 | - | ACCOUNTING | No |

Change Toolbar

Goes in Grid
Advanced →
JavaScript

```
// toolbarFind is a new API as of 5.1.1
function(config) {
    var $ = apex.jQuery,
        toolbarData = $.apex.interactiveGrid.copyDefaultToolbar(),
        // this is the toolbar group w the Actions menu
        toolbarGroup = toolbarData.toolbarFind("actions1");

    // add a filter button after the actions menu
    toolbarGroup.controls.push( {
        type: "BUTTON",
        action: "show-filter-dialog",
        iconBeforeLabel: true
    });
    config.toolbarData = toolbarData;
    return config;
}
```

```
// Note toolbarFind - will use that a lot
function(config) {
    var $ = apex.jQuery,
        toolbarData = $.apex.interactiveGrid.copyDefaultToolbar(),
        toolbarGroup = toolbarData.toolbarFind("actions1"); // this is the group with the actions menu

    // add a filter button after the actions menu
    toolbarGroup.controls.push( {
        type: "BUTTON",
        action: "show-filter-dialog",
        iconBeforeLabel: true
    });

    toolbarGroup2 = toolbarData[toolbarData.length - 1]; // this is the last group with reset bt
    // add our own button
    toolbarGroup2.controls.push( {
        type: "BUTTON",
        action: "thtech-action"
    });

    config.toolbarData = toolbarData;

    config.initActions = function( actions ) {
        // can modify state of existing actions or add your own
        // can also pass in an array of actions to add
        // this adds our own Help button, but could be anything
        actions.add( {
            name: "thtech-action",
            label: "AUSOUG Connect 2018 Help",
            action: function(event, focusElement) {
                alert("Hello Connect 2018 Attendees! You could add any existing or custom Action here, not just an alert.");
            }
        });
    }
    return config;
}
}
```

Change Toolbar

Custom Toolbar - Added Filter, Help Buttons

| Empno | Ename | Job | Mgr | Hiredate | Sal | Comm | Dept | Comm... | Raise E |
|-------|-------------|---------|------------|-----------|------|------|------------|---------|---------|
| 7788 | SCOTTIE | ANALYST | JONES | 09-DEC-82 | 3000 | - | RESEARCH | Yes | Y |
| 7499 | SMITH-CLARK | CLERK | BLAKE | 20-FEB-81 | 1600 | 300 | SALES | Yes | Y |
| 7876 | ADAMS | CLERK | SCOTTIE | 12-JAN-83 | 1100 | - | RESEARCH | No | Y |
| 7369 | SMITH | CLERK | TURNER | 17-DEC-80 | 800 | 5 | OPERATIONS | No | Y |
| 7934 | MILLER | CLERK | CLARK-SMIT | 23-JAN-82 | 1300 | 100 | ACCOUNTING | No | Y |
| 7698 | BLAKE | MANAGER | ALLEN | 01-MAY-81 | 2850 | - | SALES | No | Y |

Replace Toolbar

- Sometimes do not want all the buttons, only a fw.
- Create Your Own Toolbar
- Ex: Filter Only Grid

Replace Toolbar Code

Change Column Heading Menu

Custom Column Actions - EName No Sort, No Aggregate

| <input type="checkbox"/> | ☰ | Empno | Ename | Job | Mgr | Hiredate |
|-------------------------------------|---|-------|--|-------|------|-----------|
| <input checked="" type="checkbox"/> | ☰ | 7788 | <div style="background-color: black; color: white; padding: 5px;"> ☰ </div> | CLERK | FORD | 09-DEC-82 |
| <input type="checkbox"/> | ☰ | 7934 | <div style="background-color: black; color: white; padding: 5px;"> ☰ </div> | | | 23-JAN-82 |
| <input type="checkbox"/> | ☰ | 7369 | <div style="background-color: black; color: white; padding: 5px;"> 🔍 Filter... </div> | | | 17-DEC-80 |
| <input type="checkbox"/> | ☰ | 7076 | <div style="background-color: black; color: white; padding: 5px;"> ADAMS </div> | | | 17 JAN 80 |

Change Column Heading Menu

**Goes in Column
Advanced →
JavaScript**

```
function(config) {  
    config.features.sort = false;  
    config.features.aggregate = false;  
    config.features.controlBreak = false;  
    config.features.canHide = false;  
    config.features.groupBy = false;  
    // config.filter.isRequired=true;  
    return config;  
}
```

Change Column Heading Menu

Custom Column Actions - EName No Sort, No Aggregate

| <input type="checkbox"/> | ☰ | Empno | Ename | Job | Mgr | Hiredate |
|-------------------------------------|---|-------|---|-------|------|-----------|
| <input checked="" type="checkbox"/> | ☰ | 7788 | <div style="background-color: black; color: white; padding: 5px;"> ☞ ❄ </div> | | | 09-DEC-82 |
| <input type="checkbox"/> | ☰ | 7934 | | | | 23-JAN-82 |
| <input type="checkbox"/> | ☰ | 7369 | | CLERK | FORD | 17-DEC-80 |
| <input type="checkbox"/> | ☰ | 7076 | ADAMS | | | 17 JAN 82 |

Change RowAction Menu

| <input type="checkbox"/> | ☰ | Empno | Ename | Job | |
|-------------------------------------|---|-------|-------------|-----------|------|
| <input checked="" type="checkbox"/> | ☰ | 7788 | SCOTTIE | ANALYST | |
| <input checked="" type="checkbox"/> | ☰ | 7499 | SMITH-CLARK | CLERK | |
| <input type="checkbox"/> | ☰ | | DAMS | CLERK | |
| <input type="checkbox"/> | ☰ | 7369 | SMITH | CLERK | |
| <input type="checkbox"/> | ☰ | 7934 | MILLER | CLERK | CLAI |
| <input type="checkbox"/> | ☰ | 7698 | BLAKE | MANAGER | |
| <input type="checkbox"/> | ☰ | 7566 | JONES | MANAGER | |
| <input type="checkbox"/> | ☰ | 7782 | CLARK-SMITH | MANAGER | |
| <input type="checkbox"/> | ☰ | 7634 | KING | PRESIDENT | |
| <input type="checkbox"/> | ☰ | 7900 | JAMESON | SALESMAN | |
| <input type="checkbox"/> | ☰ | | TURNER | SALESMAN | |

- Single Row View
- + Add Row
- ☐ Duplicate Row
- 🗑 Delete Row
- 🔄 Refresh Row
- ↶ Revert Changes
- Hi
- Total Salary

Change RowAction Menu

Goes in Page
JavaScript

```

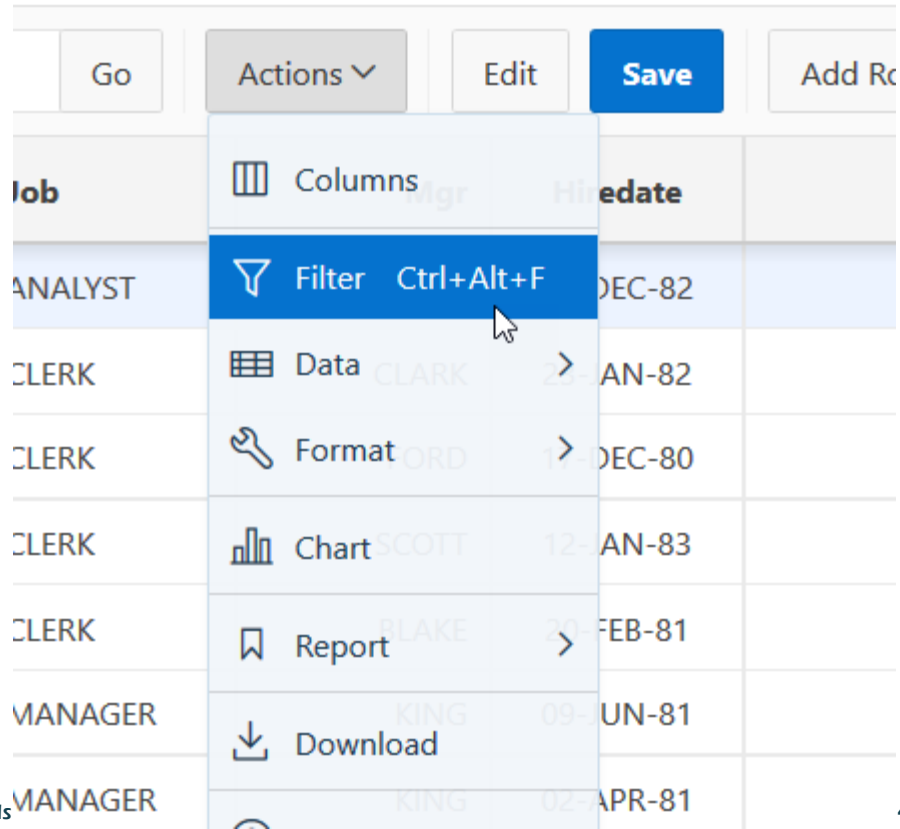
1 // This executes after page load,
2 // before the IGrid is initialized
3 // to catch the initial events
4 $(function() {
5     // listen for grid views (not chart or groupby views)
6     $("#emp_igrd").on("interactivegridviewchange", function(event, data) {
7         if ( data.view === "grid" && data.created ) {
8             var view = apex.region("emp_igrd").widget().interactiveGrid("getViews", "grid"),
9                 menu$ = view.rowActionMenu$;
10
11             menu$.menu("option").items.push({
12                 type:"action",
13                 label:"Hello",
14                 action: function(menu, element) {
15                     var record = view.getContextRecord( element )[0];
16                     alert("Welcome to KSCOPE| 2018, " + view.model.getValue(record, "ENAME") );
17                 }
18             });
19
20             menu$.menu("option").items.push({
21                 type:"action",
22                 label:"Total Salary",
23                 action: function(menu, element) {
24                     var i, records = view.getSelectedRecords(),
25                         total = 0;
26                     for ( i = 0; i < records.length; i++) {
27                         total += parseInt(view.model.getValue(records[i], "SAL"), 10);
28                     }
29                     alert("Total Salary for selected employees is " + total);
30                 }
31             });
32         }
33     });
34 });

```

Access the Model ...

```
menu$.menu("option").items.push({
  type:"action",
  action: function(menu, element) {
    var i, records = view.getSelectedRecords(),
        total = 0;
    for ( i = 0; i < records.length; i++) {
      total += parseInt(view.model.getValue(records[i], "SAL"), 10);
    }
    alert("Total Salary for selected employees is " + total);
  }
});
```


Change Toolbar Actions Menu



The image shows a screenshot of an APEX Grid toolbar with the 'Actions' menu open. The menu items are: Columns, Filter (highlighted), Data, Format, Chart, Report, and Download. The grid data is as follows:

| Job | Mgr | Hiredate |
|---------|-------|-----------|
| ANALYST | | DEC-82 |
| CLERK | CLARK | 29-AN-82 |
| CLERK | FORD | 17-DEC-80 |
| CLERK | SCOTT | 12-AN-83 |
| CLERK | BLAKE | 29-FEB-81 |
| MANAGER | KING | 09-JUN-81 |
| MANAGER | KING | 02-APR-81 |

Change Toolbar Actions Menu

```
function(config) {  
  config.initActions = function( actions ) {  
    actions.hide("show-aggregate-dialog");  
    actions.lookup("show-filter-dialog").shortcut = "Ctrl+Alt+F";  
    actions.update("show-filter-dialog");  
    actions.lookup("save").shortcut = "Ctrl+Alt+S";  
    actions.update("save");  
  }  
  return config;  
}
```

**Goes in Grid
Advanced →
JavaScript**

APEX Interactive Grid APIs: Standardize Customizations Across Applications

| | ID | Name | Job | Manager | Hire D... | Salary | Comm... |
|--|------|--------|-----------|---------|-----------|--------|---------|
| | 7934 | MILLER | Clerk | CLARK | 23-JA... | 1300 | - |
| | 7900 | JAMES | Clerk | BLAKE | 03-DE... | 950 | - |
| | 7876 | ADAMS | Clerk | 7788 | 12-JA... | 1100 | - |
| | 7844 | TURNER | Sales... | BLAKE | 08-SE... | 1500 | 0 |
| | 7654 | MARTIN | Sales... | BLAKE | 28-SE... | 1250 | 1400 |
| | 7521 | WARD | Sales... | BLAKE | 22-FE... | 1250 | 500 |
| | 7499 | ALLEN | Sales... | BLAKE | 20-FE... | 1600 | 300 |
| | 7369 | SMITH | Clerk | 7902 | 17-DE... | 800 | - |
| | 7902 | FORD | Analyst | JONES | 03-DE... | 3000 | - |
| | 7788 | SCOTT | Analyst | JONES | 09-DE... | 3000 | - |
| | 7566 | JONES | Manager | KING | 02-AP... | 2975 | - |
| | 7782 | CLARK | Manager | KING | 09-JU... | 2450 | - |
| | 7698 | BLAKE | Manager | KING | 01-MA... | 2850 | - |
| | 7839 | KING | Presid... | | 17-NO... | 5000 | - |

rows selected

“Global” Settings

- JS Function in JS File
- Include File
- Reference JS Function in Advanced → JavaScript Code
- Add Classes on Grids

```
((function($){  
window.thtechIGridApp = {  
  commonIGConfig: function(config) {  
    config.defaultGridViewOptions = {  
      stickyFooter: false  
    };  
    if ($("#" + config.regionStaticId ).hasClass("seqNbr")) {  
      config.defaultGridViewOptions.rowHeader = "sequence";  
    }  
    if ( config.pagination.type === "set" ) {  
      config.defaultGridViewOptions.pagination = {  
        firstAndLastButtons: false,  
        maxLinks: 12  
      };  
    }  
    if ( config.pagination.type === "scroll" ) {  
      config.defaultGridViewOptions.pagination = {  
        showtotalRowCount: false  
      };  
    }  
  
    if ($("#" + config.regionStaticId ).hasClass("filterOnlyGrid")) {  
      config.toolbarData = [
```

```
((function($){
window.thtechIGridApp = {
  commonIGConfig: function(config) {
    config.defaultGridViewOptions = {
      stickyFooter: false
    };
    if ($("#" + config.regionStaticId ).hasClass("seqNbr")) {
      config.defaultGridViewOptions.rowHeader = "sequence";
    }
    if ( config.pagination.type === "set" ) {
      config.defaultGridViewOptions.pagination = {
        firstAndLastButtons: false,
        maxLinks: 12
      };
    }
    if ( config.pagination.type === "scroll" ) {
      config.defaultGridViewOptions.pagination = {
        showtotalRowCount: false
      };
    }
  }
}
```

```
if ($("#" + config.regionStaticId ).hasClass("filterOnlyGrid")){
    config.toolbarData = [
        {
            groupTogether: true,
            controls: [
                {
                    type: "TEXT",
                    id: "search_field",
                    enterAction: "search"
                },
                {
                    type: "BUTTON",
                    action: "search"
                }
            ]
        },
        {
            controls: [
                {
                    type: "BUTTON",
                    action: "show-filter-dialog",
```

I

User Interface Details

Show All

Identification

Attributes

Navigation Menu

Navigation Bar

JavaScript

JavaScript

Content Delivery Network

None (use Web Server) ▼



File URLs

`/i/thtech/js/THTech_Common_IGConfig_wk2.js`

Include Legacy Javascript

Yes

No

Include jQuery Migrate

Yes

No

gReport.search Equivalent

```
// get the IGrid widget
var ig$ = apex.region("emp_igrid").widget();

// get the toolbar widget, the Search Field, pass a value
ig$.interactiveGrid("getToolbar")
    .toolbar("findElement", "search_field").val("BLAKE");

// invoke a search with the value you just set
ig$.interactiveGrid("getActions").invoke("search");
```

Custom: Edit via Dialog

- IG Cookbook Application
- Edits in Dialog
- Changed Row Actions
- Advanced, Possibilities!

Notes

Edit in Dialog



Search: All Text Columns

| Actions | Name ↑ | Job |
|----------------------------------|--------|-----------|
| <input type="radio"/> | ADAMS | Clerk |
| <input checked="" type="radio"/> | ALLEN | Sales |
| <input type="radio"/> | BLAKE | Manager |
| <input type="radio"/> | CLARK | Manager |
| <input type="radio"/> | FORD | Analyst |
| <input type="radio"/> | JAMES | Clerk |
| <input type="radio"/> | JONES | Manager |
| <input type="radio"/> | KING | President |

Employee



Name

Job

Manager

Hire Date

Salary

Commission

On Leave Yes No

Rating

Notes

Department

Save

So What (Else) Can I Do ?

From the JavaScript console type:

```
apex.region("igrid_id").widget().interactiveGrid("option","config")
```

Window > Object

| | | |
|---|----------------|--|
| + | ajaxColumns | "tcf00s9L1Y0i7d8yNoC1_RcHz...IQXu-wAEBW0WghffLWThCes" |
| | ajaxIdentifier | "Rjxh0ZBLS_nEXOKNtpzdgNhNhFbiLys_fRPXWCZegB4" |
| + | appearance | Object { showNullValue="-", useFixedRowHeight=true } |
| | columnGroups | [] |
| - | columns | [Object { id="63921276245062101", name="APEX\$ROW_ACTION", staticId="C63921276245062101", more... }, Object { id="64112665497602308", staticId="C64112665497602308", more... }, Object { id="64113193931602312", name="EMPNO", staticId="C64113193931602312", more... }] |
| + | 0 | Object { id="63921276245062101", name="APEX\$ROW_ACTION", staticId="C63921276245062101", more... } |
| - | 1 | Object { id="64112665497602308", name="ROWID", staticId="C64112665497602308", more... } |
| + | accessibility | Object { usedAsRowHeader=false } |
| + | appearance | Object { columnCssClasses="", formatExample="" } |
| | dataType | "ROWID" |
| + | default | Object { duplicate=true, value="" } |
| | escape | true |
| - | features | Object { canHide=true, highlight=true, compute=true, more... } |
| | aggregate | true |
| | cantHide | true |
| | compute | true |
| | controlBreak | true |
| | groupBy | true |
| | highlight | true |
| | sort | true |
| + | filter | Object { operators=[2], dateRanges="all", isRequired=false, more... } |
| + | heading | Object { alignment="center", heading="", label="" } |
| | helpid | "" |



4/30/2019

APEX Interactive Grid APIs: Best Practices

Recommendations for
Adding JavaScript to APEX
Applications

| | ID | Name | Job | Manager | Hire D... | Salary | Comm... |
|--|------|--------|-----------|---------|-----------|--------|---------|
| | 7934 | MILLER | Clerk | CLARK | 23-JA... | 1300 | - |
| | 7900 | JAMES | Clerk | BLAKE | 03-DE... | 950 | - |
| | 7876 | ADAMS | Clerk | 7788 | 12-JA... | 1100 | - |
| | 7844 | TURNER | Sales... | BLAKE | 08-SE... | 1500 | 0 |
| | 7654 | MARTIN | Sales... | BLAKE | 28-SE... | 1250 | 1400 |
| | 7521 | WARD | Sales... | BLAKE | 22-FE... | 1250 | 500 |
| | 7499 | ALLEN | Sales... | BLAKE | 20-FE... | 1600 | 300 |
| | 7369 | SMITH | Clerk | 7902 | 17-DE... | 800 | - |
| | 7902 | FORD | Analyst | JONES | 03-DE... | 3000 | - |
| | 7788 | SCOTT | Analyst | JONES | 09-DE... | 3000 | - |
| | 7566 | JONES | Manager | KING | 02-AP... | 2975 | - |
| | 7782 | CLARK | Manager | KING | 09-JU... | 2450 | - |
| | 7698 | BLAKE | Manager | KING | 01-MA... | 2850 | - |
| | 7839 | KING | Presid... | | 17-NO... | 5000 | - |

rows selected

Adding JS to APEX

- Follow the Usual Best Practices:
 - Put Bulk of Code in JS Files
 - Minify
 - Read More in the Introduction of the JS API doc:

Adding JavaScript to an Application
Express application

[https://docs.oracle.com/en/database/oracle/applicationh
ere!-express/18.2/aexjs/toc.html](https://docs.oracle.com/en/database/oracle/applicationh
ere!-express/18.2/aexjs/toc.html)

grid
 iconList
 interactiveGrid
 menu
 menuItem
 recordView
 tableModelView
 tableModelViewBase
 treeView

apex
 apex.actions
 apex.da
 apex.debug
 apex.event
 apex.item
 apex.lang
 apex.message
 apex.model
 apex.navigation
 apex.navigation.dialog
 apex.navigation.popup
 apex.page
 apex.region
 apex.server

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Oracle APEX handles the details of rendering a page so compared to authoring your own HTML file it may not be initially clear where you should add your JavaScript code. APEX provides a number of specific places for you to add JavaScript code. You should avoid entering your own `<script>` tags in places where markup is allowed. Also avoid entering JavaScript code using the `javascript:` pseudo-protocol in places where URLs are allowed.

Various components may have specific attributes for JavaScript code snippets. For example some regions and items have an Advanced: JavaScript Initialization Code attribute that is used for advanced configuration of the region or item. This code is applied in a specific context for a specific purpose. See the associated attribute help in Page Designer for details.

Dynamic Actions provide a way to respond to events. There are a number of declarative actions that can be run in response to an event. In addition you can use the Execute JavaScript Code action to execute your own JavaScript. This code is added to the page and run when the specified event occurs. Dynamic Actions added to the Global Page can apply to all pages subject to any Server-Side Condition.

Each page can have its own specific JavaScript code added to it using the following page attributes in the JavaScript section:

- File URLs - Specify one JavaScript file URL per line. These files could be third party libraries or your own JavaScript code.
- Function and Global Variable Declaration - This code runs after the core APEX libraries and above File URLs have been loaded and before the document is ready (DOMContentLoaded event or jQuery ready).
- Execute when Page Loads - This code runs after the document is ready and after all APEX generated JavaScript code.

See the Page Designer help for details on each of the above attributes.

It is a best practice to put the bulk of your code into one or more files. These files can be served by a web server that you have access to or served by APEX by adding the file to Shared Components: Static Application Files or, to share the file among multiple apps, Static Workspace Files.

Using third party tools you can minify your JavaScript files to make them smaller, which makes them load faster. The minified files should be put in a sub folder named `minified/` relative to the original source file or the file name should include `.min`. This allows using substitution token `#MIN#` to include `.min` or `#MIN_DIRECTORY#` to include `minified/` as part of the File URL. You can use `#MIN#` or `#MIN_DIRECTORY#` or both. This allows the minified file to be loaded normally but in debug mode the non-minified (original source) file will be used for easier debugging.

For example if you have a file called `appUtils.js` added to Static Application Files you can create a minified version of that file called `appUtils.min.js` that is also added to Static Application Files. You would then reference the file as:

```
#APP_IMAGES#appUtils#MIN#.js
```

If you have a file that you want loaded on all pages you can enter that file in one place rather than on each page. Shared Components > User Interface Attributes > User Interface Details has an attribute where you can enter any number of JavaScript File URLs (one per line).

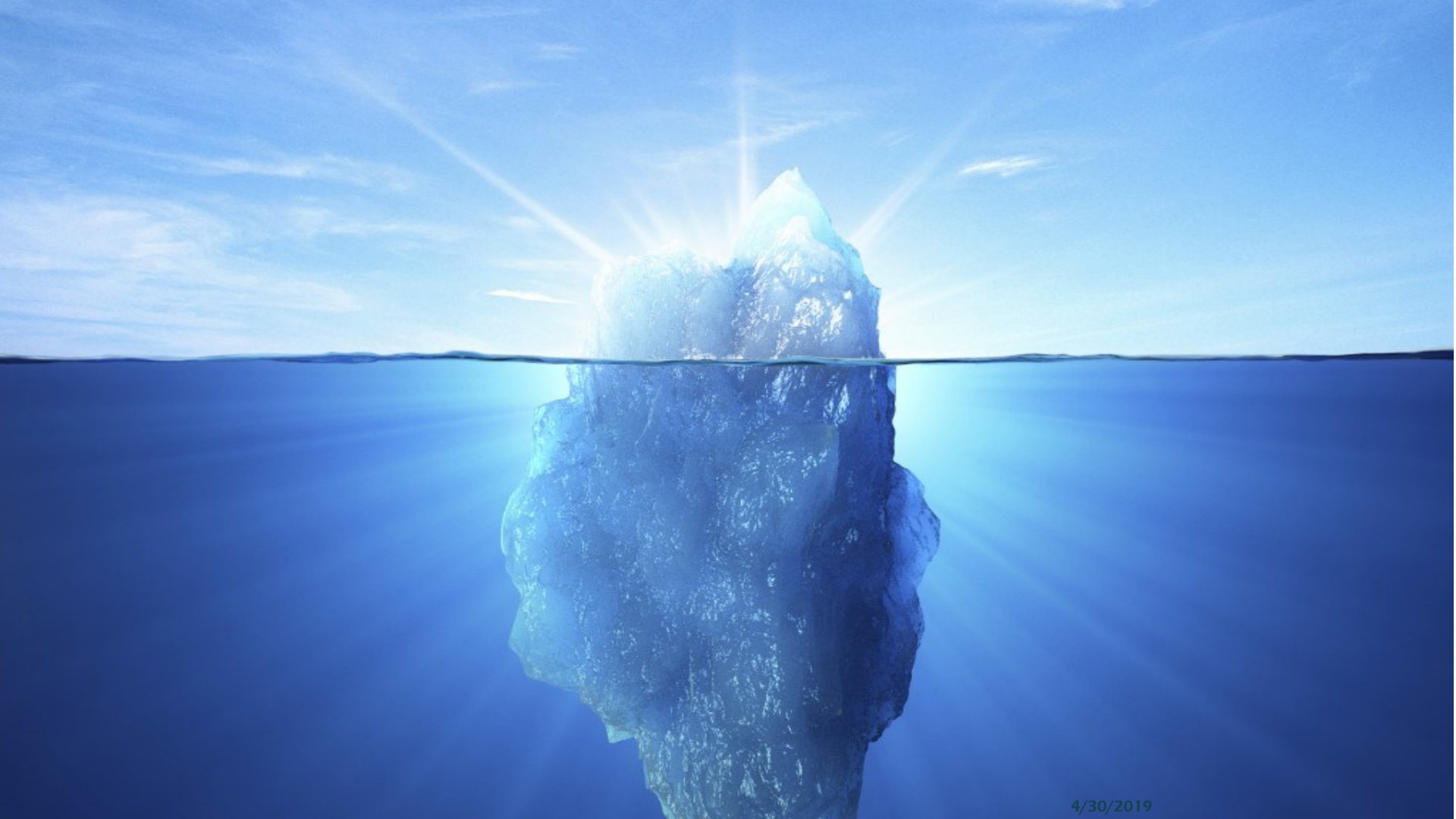
APEX Interactive Grid APIs: Wrapup

| | ID | Name | Job | Manager | Hire D... | Salary | Comm... |
|--|------|--------|-----------|---------|-----------|--------|---------|
| | 7934 | MILLER | Clerk | CLARK | 23-JA... | 1300 | - |
| | 7900 | JAMES | Clerk | BLAKE | 03-DE... | 950 | - |
| | 7876 | ADAMS | Clerk | 7788 | 12-JA... | 1100 | - |
| | 7844 | TURNER | Sales... | BLAKE | 08-SE... | 1500 | 0 |
| | 7654 | MARTIN | Sales... | BLAKE | 28-SE... | 1250 | 1400 |
| | 7521 | WARD | Sales... | BLAKE | 22-FE... | 1250 | 500 |
| | 7499 | ALLEN | Sales... | BLAKE | 20-FE... | 1600 | 300 |
| | 7369 | SMITH | Clerk | 7902 | 17-DE... | 800 | - |
| | 7902 | FORD | Analyst | JONES | 03-DE... | 3000 | - |
| | 7788 | SCOTT | Analyst | JONES | 09-DE... | 3000 | - |
| | 7566 | JONES | Manager | KING | 02-AP... | 2975 | - |
| | 7782 | CLARK | Manager | KING | 09-JU... | 2450 | - |
| | 7698 | BLAKE | Manager | KING | 01-MA... | 2850 | - |
| | 7839 | KING | Presid... | | 17-NO... | 5000 | - |

rows selected

Interactive Grid APIs - Recap

- **Essential Grid JavaScript APIs**
InteractiveGrid grid apex.model apex.item
- **Dynamic Actions, Validations**
grid apex.model apex.item
- **Customizations**
All of the above



Challenge

- Sample Interactive Grid App
- IG Cookbook
<http://www.hardlikesoftware.com>
- Read the JS Widget Code
`<apex_install_dir>/images/libraries/apex`

PLAY

**Comments?
Questions?
Thank You!**

Great Lakes Oracle Conference

May 15th - 16th, 2019

Cleveland Public Auditorium

Cleveland, Ohio



Resources

- **APEX JavaScript Reference**
<https://docs.oracle.com/en/database/oracle/application-express/18.2/aexjs/toc.html>
- **Sample Interactive Grids**
APEX 18.2+ Sample Application, Editing section
- **Interactive Grid Cookbook, 18.2**
<http://hardlikesoftware.com/weblog/2018/10/10/apex-ig-cookbook-update-for-18-2/>
- **Architecture: Interactive Grids Under the Hood**
<http://hardlikesoftware.com/weblog/2016/06/08/interactive-grid-under-the-hood/>
- **More on Grids: How to Hack Interactive Grids, Parts I thru IV**
<http://hardlikesoftware.com/weblog/2017/01/18/how-to-hack-apex-interactive-grid-part-1/>

Resources, cont'd

- APEX Client-Side Validation

<http://hardlikesoftware.com/weblog/2017/05/10/apex-client-side-validation/#more-615>

- Interactive Grid Extend Toolbar Plugin

<https://github.com/mgoricki/apex-plugin-extend-ig-toolbar>

Dyn Action on the Grid

```
var i, selectedIds = ":",  
    model = this.data.model;  
  
for ( i = 0; i < this.data.selectedRecords.length; i++ ) {  
    selectedIds += model.getValue( this.data.selectedRecords[i], "EMPNO" ) + ":";  
}  
$s("P6_SELECTED", selectedIds);  
  
select ename, sal from eba_demo_ig_emp where instr( :P6_SELECTED, ':' || empno |
```

instead of using alert i will use console.log(model.getValue(record, "Status")) and open the Browser console and look Object Result in the Console.

By the way

- to get the return the value of the Select list it is something like model.getValue(record, "STATUS").v
- To get the display value is model.getValue(record, "STATUS").d

```

▶ {v: "N", d: "No"}
▶ {v: "N", d: "No"}
▶ {v: "N", d: "No"}
▶ {v: "N", d: "No"}
▶ {v: "N", d: "No"}
▶ {v: "N", d: "No"}
▶ {v: "N", d: "No"}
▶ {v: "N", d: "No"}

```

<https://community.oracle.com/thread/4186485?start=0&tstart=0>

ME');

ME').d;

ME').v;