knowledge15

Everything as a Service

Scripting 202:

Server-side JavaScript in ServiceNow

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Agenda

Introductions

JavaScript Context and Naming Collision (20 minutes)

Debugging Business Rules and Script Includes (40 minutes)

Unified Code through Script Includes (35 minutes)

Use GlideAggregate for Faster Queries (10 minutes)

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Introductions

Your Presenters

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Your Presenters

- Andy Venables
  - Principal Technical Consultant
  - Professional Services UK
  - With ServiceNow for 2+ years
  - Development Background
- Chris Terzian
  - Principal Solution Architect
  - Professional Services US
  - With ServiceNow for 4 Years
  - IT Consulting Background

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Connectivity & Lab Environment

- Ethernet: Just plug in!
- WIFI: Knowledge15 / servicenow2015

- Instance URL will be: https://script202-<###>.lab.service-now.com
- Please raise your hand if you have difficulties logging into your instance

- Lab Guide available from: http://bit.ly/1El81q9

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Server-side Scripting

JavaScript Context and Naming Collision

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Global vs. Local vs. IIFE (Immediately Invoked Function Expression)

- How do the three examples differ?
- Is one better/worse?
- Self-document with descriptive variable names

```
var c = 'my comment';
current.comments = c;

//////////////////////

setComment();

function setComment() {
    var c = 'my comment';
    current.comments = c;
}

//////////////////////

(function() {
    var c = 'my comment';
    current.comments = c;
})();
```


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Lab 1 Business Rule Scope

- Explore the impact of Business Rule scope

Lab Goal

This lab explores techniques for writing robust business rules and preventing pollution of the global scope.

Lab 1
Business
Rule Scope

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Business Rule Scope

New feature in Fuji, all business rules now automatically encased in function

Name: MyNewRule

Table: Incident [incident]

Actions | **Advanced**

Condition:

Script:

```
1 function onBefore(current, previous) {
2    //This function will be automatically called when this rule is processed.
3
4 }
```


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Server-side Scripting

Debugging Business Rules and Script Includes

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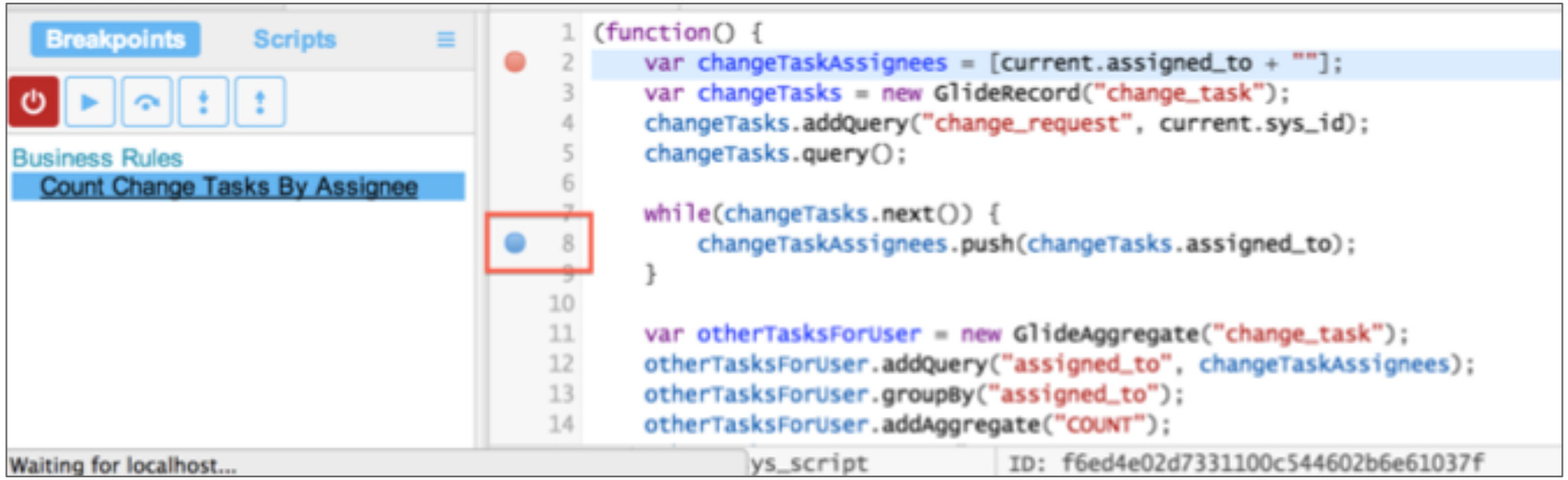
JavaScript Debugger

Dublin feature to observe and modify server-side code at run-time



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Lab 2 Server-Side JavaScript Debugger

- Use the server-side JavaScript debugger

Lab Goal

This lab explains how to leverage the Server-Side JavaScript Debugger to effectively debug a faulty business rule.

Lab 2
Server-Side
JavaScript
Debugger

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Referenced vs. De-referenced Values

In our previous lab, we found that our array was misbehaving.

What was happening?

```
▼ Local
▼ changeTaskAssignees: Array
    0: 5137153cc611227c000bbd1bd8cd2005
    1: f298d2d2c611227b0106c6be7f154bc8
```

```
▼ Local
▼ changeTaskAssignees: Array
    0: 5137153cc611227c000bbd1bd8cd2005
    1: 9ee1b13dc6112271007f9d0efdb69cd0
    2: 9ee1b13dc6112271007f9d0efdb69cd0
```

```
7   while(changeTasks.next()) {
8       changeTaskAssignees.push(changeTasks.assigned_to);
9   }
```

```
7   while(changeTasks.next()) {
8       changeTaskAssignees.push(changeTasks.assigned_to + "");
9   }
```


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Server-side Scripting

Unified Code through Script Includes

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Script Includes Enable Re-usable Code

Move complex or duplicated condition logic

Condition	gs.hasRole("itil") && current.caller_id.company.u_critical_account && current.caller_id.vip

into a well named Script Include!

Condition	new RelatedTaskCounts().checkConditions(current, "caller_id")

- **Could also be a function in a Script Include named "checkConditions" rather than a class.**
- **Benefits:**
  - More readable
  - Shorter condition (max length 254 characters for the field)
  - Changes to condition in one place for multiple Business Rules

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Script Includes Enable Re-usable Code

Avoid duplication of code. Similar functions can be unified to increase maintainability.

```
(function() {
      var incidentsBySameCaller = new GlideRecord("incident");
      incidentsBySameCaller.addQuery("caller_id", current.caller_id);
```

```
(function() {
      var problemsBySameUser = new GlideRecord("problem");
      problemsBySameUser.addQuery("opened_by", current.opened_by);
      problemsBySameUser.query();

      gs.addInfoMessage(current.opened_by.getDisplayValue() +
            " has " + problemsBySameUser.getRowCount() +
            " Problems(s).");
})();
```

```
(function() {
      new RelatedTaskCounts().getRecordCount(current, "opened_by");
})();
```

```
getRecordCount: function(current, field) {
      var recordsBySameUser = new GlideRecord(current.sys_class_name);
      recordsBySameUser.addQuery(field, current[field]);
      recordsBySameUser.addActiveQuery();
      recordsBySameUser.query();

      gs.addInfoMessage(current[field].getDisplayValue() +
      " has " + recordsBySameUser.getRowCount() +
      " active " + current.getClassDisplayValue() + "(s) .");
},
```


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Lab 3.1 DRY – Don’t Repeat Yourself

- Create reusable code in Script Includes

Lab Goal

This lab explains how to use Script Includes to eliminate duplicate code and centralize business rule conditions.

Lab 3.1
Do Not
Repeat
Yourself

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Lab 3.2 Code Re-usability

Lab Goal

This lab explores decomposing complex code to extract common routines. You learn to move record counting code into its own script include so that it can be re-used for incident reassignment.

Lab 3.2
Code
Reusability

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Server-side Scripting

Use GlideAggregate for Faster Queries

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GlideAggregate

- Uses SQL “group by” and “having” clauses to calculate the aggregate data at the database rather than in the JVM
- Improves calculation time over GlideRecord
- Reduces data sent to the JVM
- Much more efficient than getRowCount(); scales better as row count increases

```
var count = new GlideAggregate('incident');
count.addAggregate('MIN', 'sys_mod_count');
count.addAggregate('MAX', 'sys_mod_count');
count.addAggregate('AVG', 'sys_mod_count');
count.groupBy('category');
count.query();
while (count.next()) {
   var min = count.getAggregate('MIN', 'sys_mod_count');
   var max = count.getAggregate('MAX', 'sys_mod_count');
   var avg = count.getAggregate('AVG', 'sys_mod_count');
   var category = count.category.getDisplayValue();
   gs.log(category + " Update counts: MIN = " + min + " MAX = " + max + " AVG = " + avg);
}
```


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getRowCount is evil

- **Instead of using:**

```
if (gr.getRowCount() < 1) {
    // do something
}
```

- **Use simply:**

```
if (gr.hasNext()) {
    // do something
}
```

- **Ever been asked to write a report that finds duplicates in the CMDB?**

```
var ciGA = new GlideAggregate('cmdb_ci');
ciGA.addNotNullQuery('name');
ciGA.groupBy('name');
ciGA.groupBy('sys_class_name');
ciGA.addAggregate('COUNT');
ciGA.addHaving('COUNT', '>', 1);
ciGA.query();
while (ciGA.next()) {
  gs.print(ciGA.getAggregate('COUNT')+'x '+ciGA.name+' ['+ciGA.sys_class_name+']');
}
```


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Lab 3.3 Glide Aggregate

Lab Goal

This lab illlustrates the benefits of modular code by swapping the **RecordCounter** implementation with another that uses **GlideAggregate**.

Lab 3.3
Glide
Aggregate

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Challenge!

- **How would you run a Server-side script on your instance right now?**
  - Scheduled Job?
  - Business Rule?
  - Script Include?

- **Use a Background script!**
  - Scripts are added to the log after being run
  - gs.log is printed to the screen (and saved to the log)
- **Add your own custom scripts!**
  - Upload js file and appears in the list
  - http://bit.ly/1P6MyD8

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Scope!

- In Fuji everything now has a scope!

- Background scripts can be run against any scope, but make sure you have the correct scope!

http://wiki.servicenow.com/index.php?title=Scripting_in_Scoped_Applications

Check out the Application Creator course / lab

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Top Takeaways

1 Wrap scripts in functions to protect against variable name collision.

2 The JavaScript debugger allows you to hook in to server-side code at run-time to observe variables and process flow.

3 Use Script Includes to de-duplicate code.

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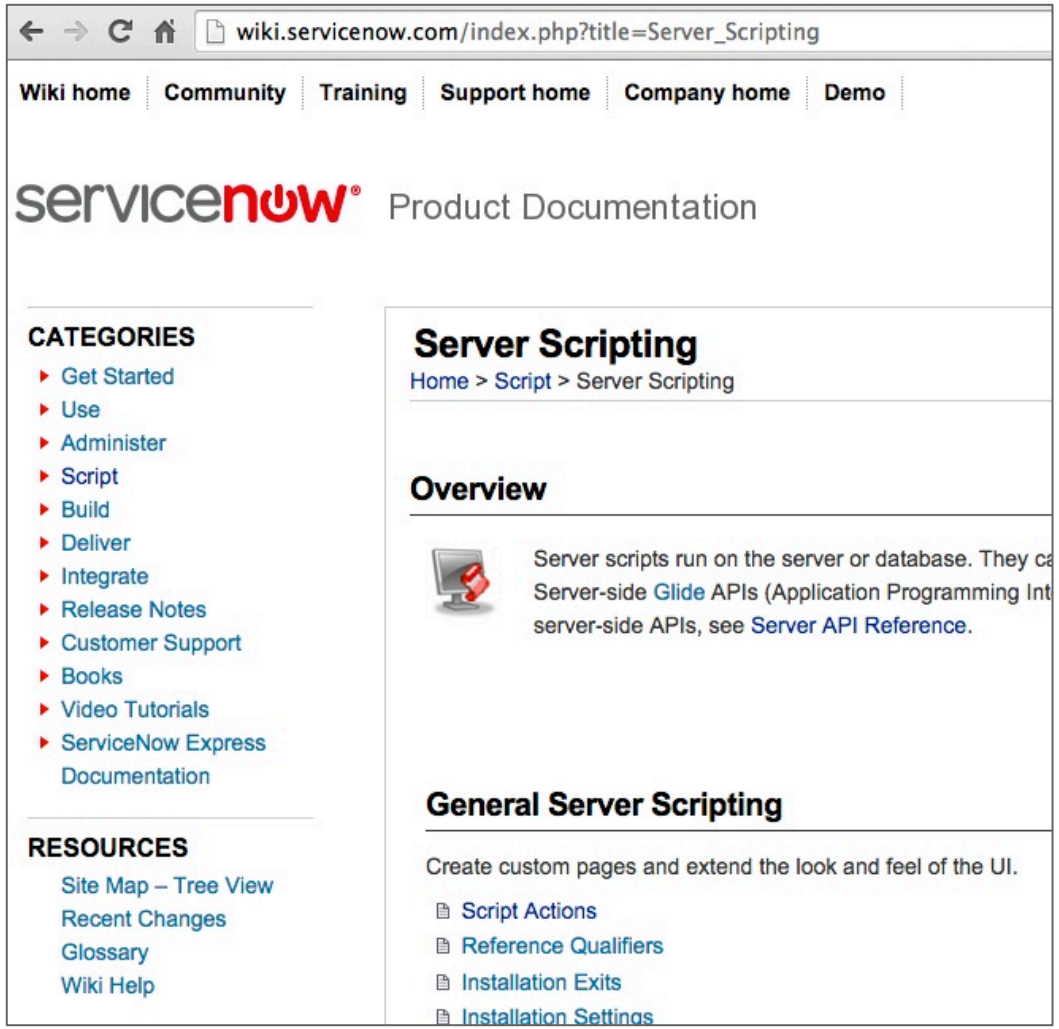
Additional Resources

- http://wiki.servicenow.com/index.php?title=JavaScript_Debugger
- http://lmsnwtfy.com/?q=script includes



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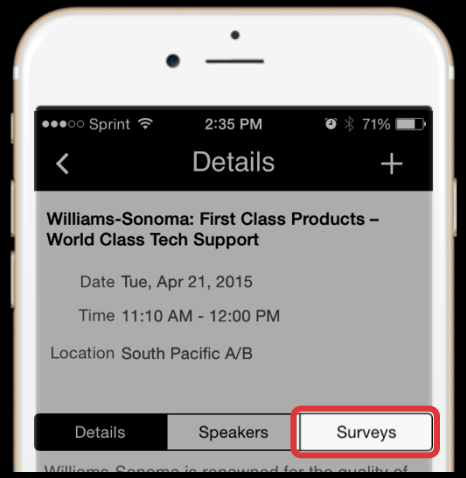

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Thank You

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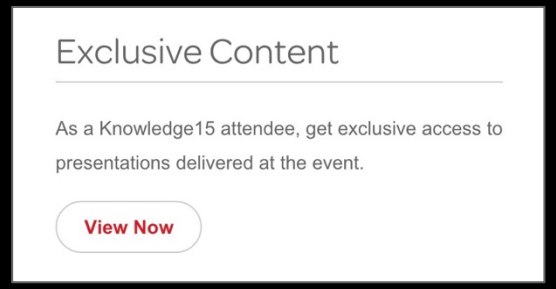

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