

Maximo Automation Scripting 7.x

Butch Berlemann 03/20/15



Unlocking potential.
Achieving results.

About Cohesive Solutions

- Cohesive Solutions operates out of Kennesaw, Georgia. Cohesive provides business process transformation and consulting services which enables organizations to achieve higher ROI from their assets and the information technology that manages and maintains those assets. Cohesive's professionals have been serving clients since 1990.
- For more information visit www.cohesivesolutions.com or contact Matt Logsdon at mlogsdon@cohesivesolutions.com

About Me – Butch Berlemann



- Senior Technical Consultant at Cohesive Solutions
- IBM Certified Advanced Deployment Professional
- IBM Certified Infrastructure Deployment Professional
- Over 13 Years of Experience Developing Maximo and GIS Systems
- Automation Scripting Nerd !

Contact:

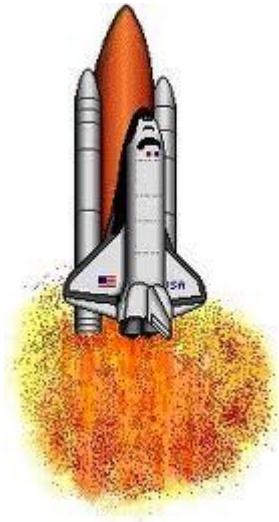
bberlemann@cohesivesolutions.com



Automation Scripting- 2 Parts

Part 1

Launch Points – Execute the Code



Part 2

Scripts – “The Code”



© Can Stock Photo - csp13625312

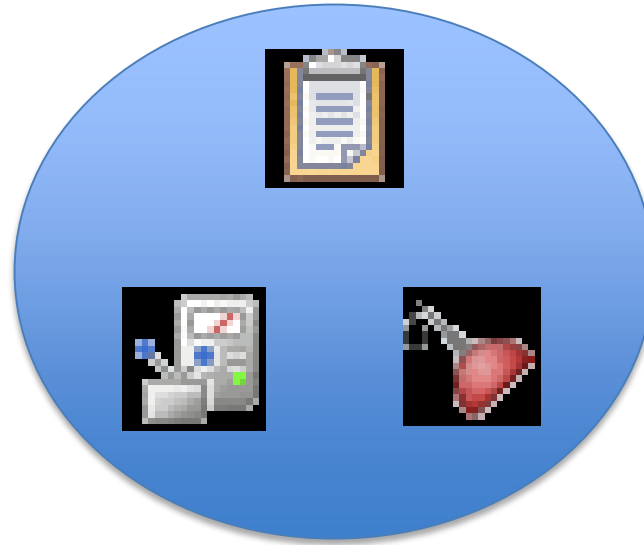
Launch Points – Types

- Object
- Attribute
- Action
- Custom



Launch Points - Objects

- Initialize
- Add
- Update
- Delete
- Condition



Examples- WORKORDER – PM - ASSET

Launch Points – Continued

- Attribute

- Script is executed when a field value changes

- Action

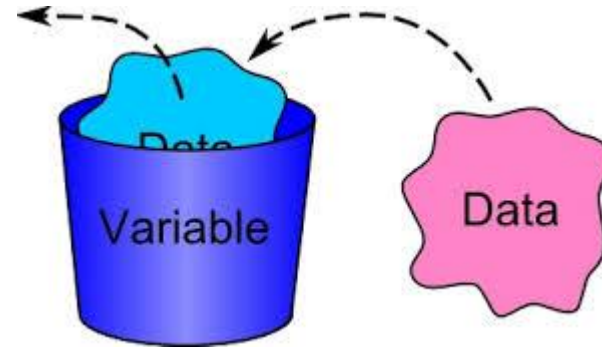
- Workflows, Escalations, UI Buttons, Select Actions drop down

- Custom

- Script is executed when the condition is evaluated

Variables

- Implicit and Explicit
- Implicit
 - IN
 - INOUT
 - OUT
- Explicit
 - app
 - user
 - mbo
 - errorkey



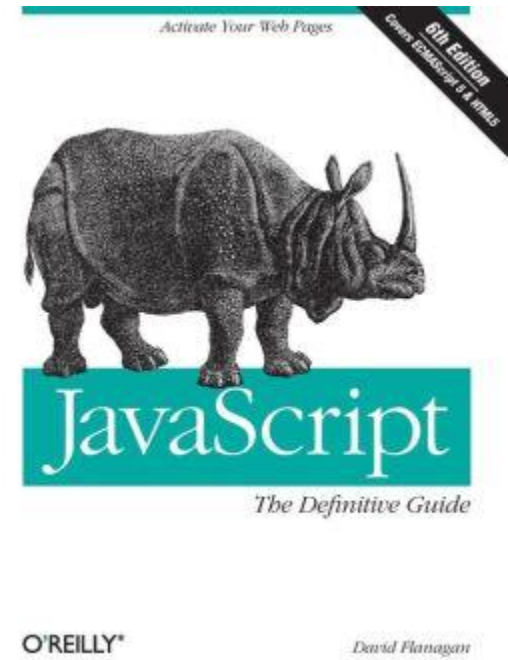
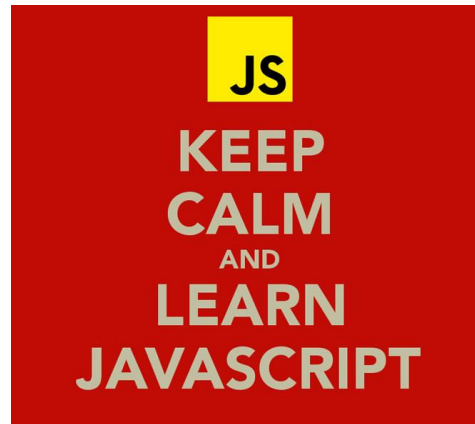
Advantages to Automation Scripts

- Alternative to Java Customizations
- NO Java skills or Maximo API knowledge required
- Stored in the database
 - Migratable
- Faster Turn Around
 - No Compiling
 - No EAR Build
 - No System Outages
- No access to UI components



JavaScript

- Simple
- Wide Knowledgebase
- Baked in Goodness
- Resources
 - <http://www.tutorialspoint.com/javascript/>
 - <http://www.w3schools.com/js/>
 - <http://stackoverflow.com/>



How to ??

- Creating a Object Based Automation Script



Opening the Automation Script Application

The screenshot displays the MAXADMIN web application interface. At the top, a dark header bar contains a home icon, a menu icon, and the text "Welcome, MAXADMIN". Below this is a navigation bar with tabs for "Administration", "Developer", and "Inventory". A search bar labeled "Find Navigation Item" is positioned on the left. The left sidebar, titled "Go To Applications", lists various system modules with expandable arrows. The main content area is divided into three sections: "Quick Insert" with links for "New Person" and "New User"; "Security, Users" with links for "Users", "Security Groups", "People", and "Person Groups"; and "Workflow Configuration" with links for "Workflow Designer", "Roles", "Actions", "Communication Template", "Workflow Administration", and "Escalations". A context menu is open over the "Automation Scripts" link in the "Workflow Configuration" section, listing options such as "System Properties", "Logging", "Domains", "Database Configuration", "Application Designer", "Communication Templates", "Actions", "Roles", "Escalations", "Workflow Designer", "Workflow Administration", "Cron Task Setup", "E-mail Listeners", "Web Services Library", "Launch in Context", and "Automation Scripts". On the right side of the interface, there are several widgets: "Bulletin" with a megaphone icon, "Inbox /" with an envelope icon, and two "KPI Graph" widgets. The top KPI Graph shows a gauge with a needle pointing to 300, labeled "Last Run: 3/11/11" and "Current User Sess". The bottom KPI Graph is partially visible. The page number "12" is located in the bottom right corner.

Welcome, MAXADMIN

Find Navigation Item

Administration Developer Inventory

Go To Applications

- Administration
- Analytics
- Assets
- Change
- Contracts
- Financial
- IT Infrastructure
- Integration
- Inventory
- Planning
- Preventive Maintenance
- Purchasing
- Release
- Security
- Self Service
- Service Desk
- Service Level
- System Configuration
- Task Management

Quick Insert

- New Person
- New User

Security, Users

- Users
- Security Groups
- People
- Person Groups

Workflow Configuration

- Workflow Designer
- Roles
- Actions
- Communication Template
- Workflow Administration
- Escalations

Platform Configuration

- Automation Scripts

Bulletin

Inbox /

KPI Graph

Last Run: 3/11/11

Current User Sess

300

200

100

0

KPI Graph

12

Create Script with Object Launch Point

The screenshot displays the 'Automation Scripts' application window. The top header bar includes a home icon, a menu icon, the title 'Automation Scripts', and a user profile icon labeled 'MA'. Below the header is a search bar labeled 'Find Script' and a toolbar with icons for saving, editing, and navigating. The left sidebar contains a 'Find Navigation Item' search bar and a list of navigation items: 'Go To Applications', 'Available Queries', 'All Records', 'All Bookmarks', 'Common Actions', 'Create KPI', 'More Actions', 'Create', and 'Cognos Reporting'. The 'Create' item is highlighted, and a dropdown menu is open, showing options: 'Script', 'Script with Object Launch Point' (which is highlighted by the mouse), 'Script with Attribute Launch Point', 'Script with Action Launch Point', 'Script with Custom Condition Launch Point', and 'Script for Integration'. The main content area shows a table with columns: 'Script', 'Description', 'Script Language', 'Active?', 'Version', and 'User Defined?'. Below the table, there is a message: 'To find records, use the filter fields and then press Enter. For more search options, use the Advanced Search button. To enter a new record, select the Insert icon in the toolbar.'

Configuring the Object Launch Point

Automation Scripts

Create Script with Object Launch Point : Step 1 of 3


Specify the name of the launch point and the object that it applies to. Select the event that activates the launch point. Specify the event context, which determines when the automation script is executed. You can reuse an existing script or specify a new one. If you select a new script, the wizard guides you through the script creation process. [More information](#)

Launch Point:

Active?

☒

Object:



Object Event Condition:

Events

☒ Initialize Value

☐ Validate Application

☐ Allow Object Creation

☐ Allow Object Deletion

☐ Save

☒ New

☐ Existing: Script:

Save

Add? ☐

Update? ☐

Delete? ☐

☐ Before Save

☐ After Save

☐ After Commit

Configuring the Script

Automation Scripts

Launch Point: HW Hello World

Object: WORKORDEF

Script: HELLOWORLD Hello World

Script Language: JavaScript

Log Level: DEBUG

Import

You can import a script file that you created in another application or you can enter a script in the Source Code field in the next step.

Browse... No file selected. Import

Variables

Variable	Variable Type	Binding Type	Binding Value	Override?
There are no rows to display.				

New Row

Cancel Previous Next

Select Value


Filter > 1 - 8 of 8

Script Engine Short Name	Script Engine Name	Script Engine Version
rhino	Mozilla Rhino	1.7 release 3 PRERELEASE
python	jython	2.5.2
jython	jython	2.5.2
is	Mozilla Rhino	1.7 release 3 PRERELEASE
javascript	Mozilla Rhino	1.7 release 3 PRERELEASE
ecmascript	Mozilla Rhino	1.7 release 3 PRERELEASE
JavaScript	Mozilla Rhino	1.7 release 3 PRERELEASE
ECMAScript	Mozilla Rhino	1.7 release 3 PRERELEASE


Cancel

Configuring the Script – Continued

Automation Scripts

 You can enter a script in the Source Code field, or you can import a script file in the previous step.

Launch Point:
TEST

Script:
HELLO_WORLD 

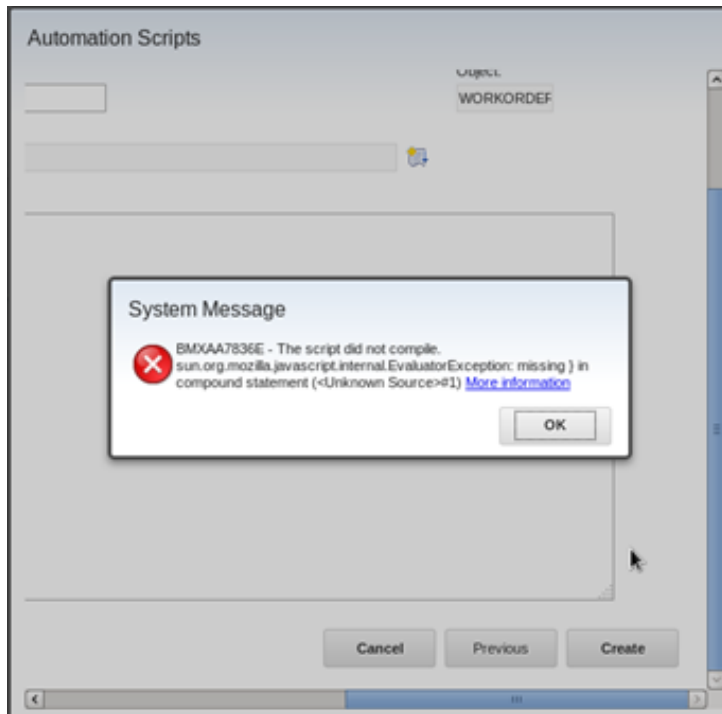
Source Code:

Object:
WORKORDEF

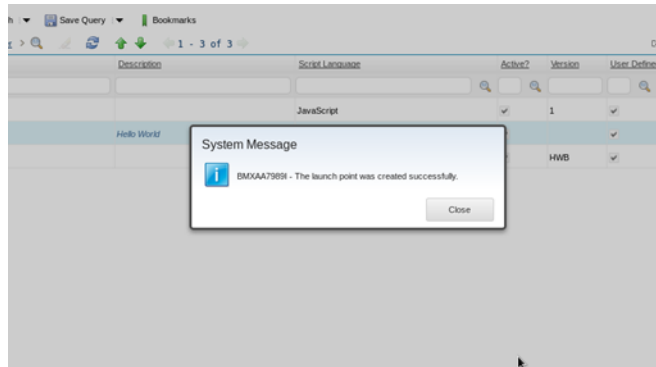
The Star of the Show !!! The Script !

```
/*  
=====   
Hello World - Object launch point.   
=====   
  
Launch Points:  
  
Launch Point:   Hello World  
Description:    Say Hello World with the work order number  
                we loaded into the app  
Object:         WORKORDER  
  
Source:  
  
HW  Script that says Hello World with the work order number.  
*/  
  
println("\n***** Hello World Start *****");  
var myDate = new Date();  
println("Process Time : " +  
        myDate.getHours() + ":" +  
        myDate.getMinutes() + ":" +  
        myDate.getSeconds() + ":" +  
        myDate.getMilliseconds() + "\n");  
  
importPackage(Packages.java.util);  
importPackage(Packages.psd.mbo);  
  
println("Hello World ! WONUM = " + mbo.getString("WONUM"));  
  
println("\n***** Hello World End *****");
```

Error !



Success !



Logging

The screenshot displays the MAXADMIN web application interface. The top navigation bar includes a home icon, a menu icon, the text 'Welcome, MAXADMIN', the user name 'MAXADMIN', and several utility icons. A left-hand navigation pane lists various application categories, with 'System Configuration' currently selected. A secondary menu is open, showing options like 'Workflow Designer', 'Roles', 'Actions', etc., with 'Logging' highlighted. The main content area features three KPI dashboards. The top dashboard, 'Current User Sessions', shows a gauge chart with a needle at approximately 450. The middle dashboard, 'Current Number of Logged In Users', also shows a gauge chart with a needle at approximately 450. The bottom dashboard, 'Registered User - Type 1', shows a table with two rows of data.

Status	KPI	Actual
—	Registered User - Type 1	67
—	Registered User - Type 2	0

The Logging Application

The screenshot displays the Maximo Logging Application interface. The top navigation bar includes a home icon, a menu icon, the title "Logging", and the user name "MAXADMIN". Below the navigation bar is a sidebar with various actions: "Go To Applications", "Common Actions" (Save Logger, Clear Changes), and "More Actions" (Manage Maximo Root Logger, In session logs, Manage Appenders, List Logging Properties, Apply Settings, Set Logging Root Folder, Configure Custom Logging, Enable Custom Log Messages in Applic..., Monitor Environment Information). The main content area is titled "Root Loggers" and features a table with columns: Logger, Log Level, Key, and Active?. The table lists several loggers, including "crontaskmgr", "report", "security", "sql", and "service", all with a log level of "ERROR". Below the table is a "Details" section for the selected "crontaskmgr" logger, showing its key, log level, and active status. A "New Row" button is located at the bottom right of the table.

Logging MAXADMIN

Find Navigation Item

Go To Applications

Common Actions

Save Logger

Clear Changes

More Actions

Manage Maximo Root Logger

In session logs

Manage Appenders

List Logging Properties

Apply Settings

Set Logging Root Folder

Configure Custom Logging

Enable Custom Log Messages in Applic...

Monitor Environment Information

Root Loggers

Filter

1 - 5 of 30

Logger	Log Level	Key	Active?
auto			
crontaskmgr	ERROR	log4j.logger.maximo.crontaskmgr	✓
report	ERROR	log4j.logger.maximo.report	✓
security	ERROR	log4j.logger.maximo.security	✓
sql	ERROR	log4j.logger.maximo.sql	✓
service	ERROR	log4j.logger.maximo.service	✓

Details

Logger: crontaskmgr

Log Level: ERROR

Key: log4j.logger.maximo.crontaskmgr

Active? ✓

Inherited Appenders: Console

Appenders:

New Row

Automation Scripting Root Logger

The screenshot displays a web-based configuration interface for logging. The top navigation bar includes a home icon, a menu icon, the title "Logging", and the user name "MAXADMIN".

On the left side, there is a sidebar with a search bar "Find Navigation Item" and several menu items: "Go To Applications", "Common Actions", "Save Logger", "Clear Changes", "More Actions", "Manage Maximo Root Logger", "In session logs", "Manage Appenders", "List Logging Properties", "Apply Settings", "Set Logging Root Folder", "Configure Custom Logging", "Enable Custom Log Messages in Applicat...", and "Monitor Environment Information".

The main content area is divided into two sections. The top section, titled "Root Loggers", contains a table with the following data:

Logger	Log Level	Key	Active?
auto			
autoscript	DEBUG	log4j.logger.maximo.script	<input checked="" type="checkbox"/>

Below the table is a "Details" section for the selected "autoscript" logger. It includes the following fields:

- Logger: autoscript
- Log Level: DEBUG
- Key: log4j.logger.maximo.script
- Active?: ☒
- Inherited Appenders: Console
- Appenders: (empty field with a plus icon)

A "New Row" button is located at the bottom right of the details section.

The bottom section, titled "Loggers", contains an empty table with the following headers:

Logger	Log Level	Key	Active?
--------	-----------	-----	---------

Below the table, it states "There are no rows to display." and a "New Row" button is at the bottom right.



Log file output

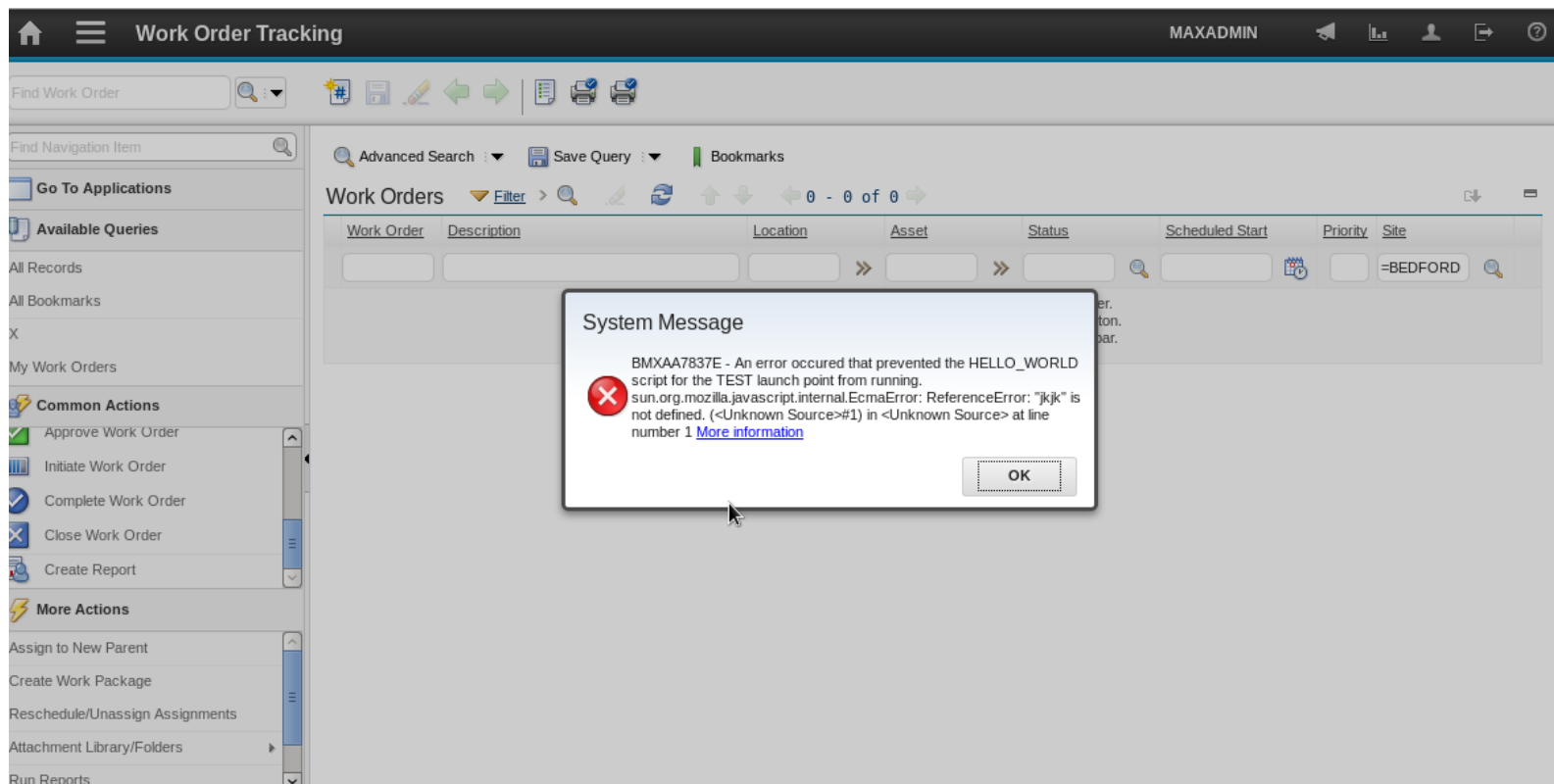
```
[2/26/15 12:21:33:708 EST] 000000fe SystemOut 0 26 Feb 2015 12:21:33:708 [DEBUG] [MAXIMO] [CID-MXSCRIPT-270]
[2/26/15 12:21:33:708 EST] 000000fe SystemOut 0 26 Feb 2015 12:21:33:708 [DEBUG] [MAXIMO] [CID-MXSCRIPT-270]
[2/26/15 12:21:33:708 EST] 000000fe SystemOut 0 26 Feb 2015 12:21:33:708 [DEBUG] [MAXIMO] [CID-MXSCRIPT-270]
[2/26/15 12:21:33:708 EST] 000000fe SystemOut 0 26 Feb 2015 12:21:33:708 [DEBUG] [MAXIMO] [CID-MXSCRIPT-270]
[2/26/15 12:21:33:708 EST] 000000fe SystemOut 0 26 Feb 2015 12:21:33:708 [DEBUG] [MAXIMO] [CID-MXSCRIPT-270]
[2/26/15 12:21:33:708 EST] 000000fe SystemOut 0 26 Feb 2015 12:21:33:708 [DEBUG] [MAXIMO] [CID-MXSCRIPT-270]
[2/26/15 12:21:33:708 EST] 000000fe SystemOut 0 26 Feb 2015 12:21:33:708 [DEBUG] [MAXIMO] [CID-MXSCRIPT-270]
compiled script HELLOWORLD for launch point HW
[2/26/15 12:21:33:708 EST] 000000fe SystemOut 0 26 Feb 2015 12:21:33:708 [DEBUG] [MAXIMO] [CID-MXSCRIPT-270]
***** Hello World Start *****
Process Time : 12:21:33:707

Hello World ! WONUM = 1005

***** Hello World End *****

[2/26/15 12:21:33:708 EST] 000000fe SystemOut 0 26 Feb 2015 12:21:33:708 [DEBUG] [MAXIMO] [CID-MXSCRIPT-270]
HELLOWORLD script for the HW launch point is +3 ms.
[2/26/15 12:21:33:708 EST] 000000fe SystemOut 0 26 Feb 2015 12:21:33:708 [INFO] [MAXIMO] [CID-MXSCRIPT-270]
app:WOTRACK Script:HELLOWORLD MboId:72 MboName:WORKORDER LaunchPoint:HW evalINParamsTime:0 UserName:MAXADMIN eva
[2/26/15 12:21:33:709 EST] 000000fe SystemOut 0 26 Feb 2015 12:21:33:709 [DEBUG] [MAXIMO] [ ] WORKORDERScript
for script HELLO_WORLD launch point TEST
```


Runtime Errors



Enhancements at 7.6 - Attribute Launch Point

- Initialize
 - Access level
 - Set Value
- Retrieve
 - List of valid Values



Enhancements at 7.6 – Object Launch Point

- Creation
- Deletion
- Save
 - Before Save
 - After Save
 - After Commit



Enhancements at 7.6 – Library Script

```
1 service.log("I want to multiply 2 numbers and log the result")
2 from java.util import HashMap
3 a=3
4 b=2
5 ctx = HashMap()
6 ctx.put("x",a)
7 ctx.put("y",b)
8 service.invokeScript("MULTIPLY",ctx)
9 service.log("the result is "+str(ctx.get("z")))
```

Enhancements at 7.6 - Cron

- Configuring
 - Class = `com.ibm.tivoli.maximo.script.ScriptCrontask`
 - Parameter
 - SCRIPTARG = argument
 - SCRIPTNAME = Script you want to run
- Run As User

Enhancements at 7.6 - MIF

- Inbound
- Outbound



Enhancements at 7.6 – Dialog Boxes

- OK
- Close
- Cancel
- Yes
- No.



Enhancements at 7.6

■ Saving Time with Automation Scripts

- https://www.ibm.com/developerworks/community/blogs/a9ba1efe-b731-4317-9724-a181d6155e3a/entry/saving_time_with_automation_scripts?lang=en



The screenshot shows the IBM DeveloperWorks website. The top navigation bar includes links for 'Technical topics', 'Evaluation software', 'Community', and 'Events'. Below this, a secondary bar has 'My home', 'Forums', 'Blogs' (selected), 'Communities', 'Profiles', 'Podcasts', 'Wikis', 'Activities', and 'IBM'. A large banner for 'IBM Bluemix' is visible, with the tagline 'A CLOUD PLATFORM FOR THE WORLD'S IDEAS'. Below the banner, there are tabs for 'My Blogs', 'Public Blogs', and 'My Updates'. The main content area features a section titled 'Asset Management' with the subtitle 'Connect, learn, and share with the experts' and an icon of a hand pointing to a lightbulb. The blog post 'Saving time with automation scripts' by AnnScanlan, dated Dec 17 2014, is displayed. It has 919 visits and 1 comment. The post text begins with: 'Sometimes, it feels like the day doesn't have enough hours to get everything done. Time is always at a premium. Finding ways to save time has become something of an art form. Automation scripts can reduce the time that you spend on automating tasks because you do not need to recompile Java™ files or restart the server. And now, in version 7.6, automation scripts are expanded and enhanced to provide even more opportunities to save time. You can now do the following:'. Social sharing buttons for Google+, Facebook, LinkedIn, and Twitter are located at the bottom right of the post content.

Automation Scripting Limitations

- Admin Mode
- UI
- NOVALIDATION



Lessons from the Trenches

- JavaScript
- DEBUG
- Standards
- Performance



Questions



Want More !!!!

- Contact- Sean Clark-McCarthy
 - Operations Manager
 - smccarthy@cohesivesolutions.com

