outsystems

Debugging and Monitoring

Topics

- Debugging in Service Studio
  - During Debugging
  - Inspecting Variables
  - Debugging a Producer Module
  - Personal Area
- Monitoring in OutSystems
  - Service Center Logs

Troubleshooting applications

Code is subject to many errors during execution

Troubleshooting focuses on finding those errors so they can be fixed

Troubleshooting is generally a combination of:

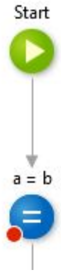
- Debugging
  - Suspends code execution at given points
  - Analyze the value of variables
  - Developer can execute the code step by step
- Monitoring
  - Analyzing and correlating system logs
  - OutSystems records events in logs
    - Errors, slow queries, web service calls, ...

Debugging

Debugging in Service Studio

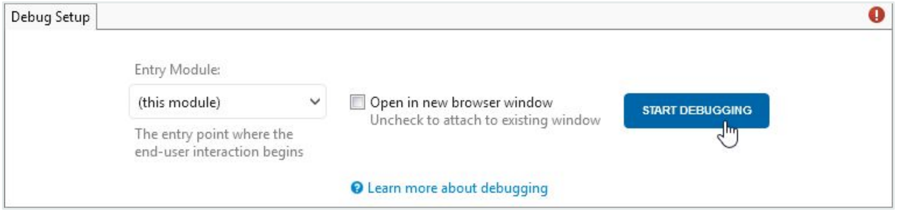
Place breakpoints on elements that generate code

- Action / Preparation statements
- Screen Widgets



Start the debugger before opening the app in the browser

- Service Studio registers the breakpoints
- Connects to server to stop execution



Debug Setup

Entry Module:

(this module)

The entry point where the end-user interaction begins

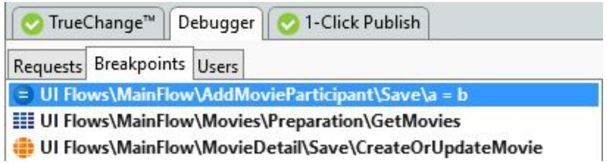
□ Open in new browser window
Uncheck to attach to existing window

START DEBUGGING

Learn more about debugging

Breakpoints are listed in the Debug panel

- Can be temporarily disabled
- Can be removed



UI Flows\MainFlow\AddMovieParticipant\Save\a = b
UI Flows\MainFlow\Movies\Preparation\GetMovies
UI Flows\MainFlow\MovieDetail\Save\CreateOrUpdateMovie

During Debugging

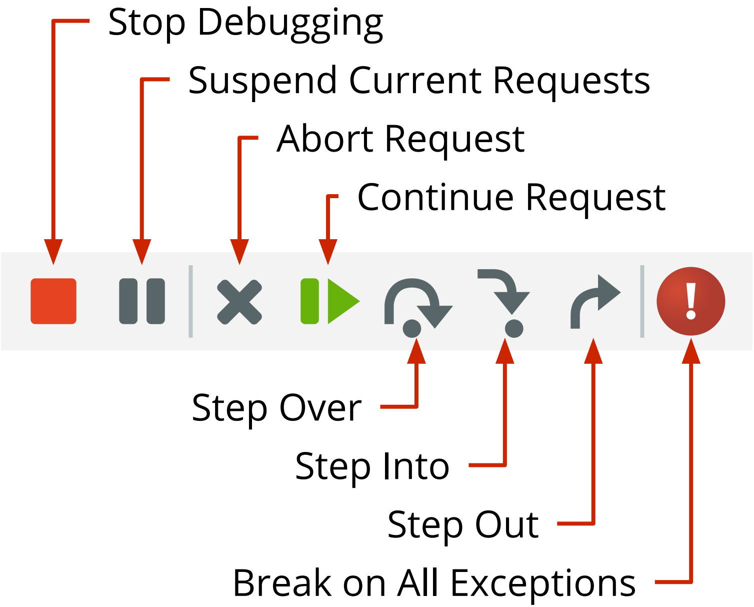
The following commands are available once code execution stops at a breakpoint

Regular debugging operations

- Stop, Continue, Suspend, Abort
- Step Over, Step Into, Step Out

Break on All Exceptions forces the debugger to suspend the execution of threads when exceptions occur

- Handled or unhandled



Stop Debugging

Suspend Current Requests

Abort Request

Continue Request

Step Over

Step Into

Step Out

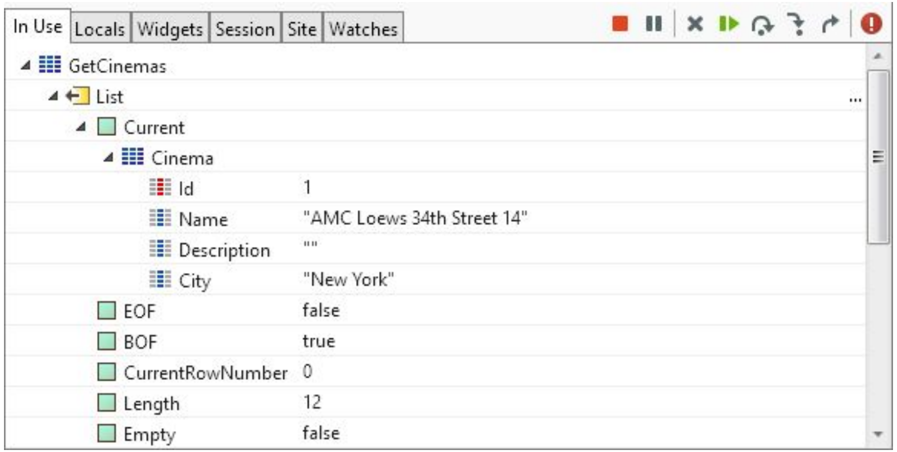
Break on All Exceptions

Inspecting Variables during Debugging

Inspect the values of variables when code execution is stopped

- **In Use** by the current code statement
- **Locals** to the current execution scope
- Stored in this Screen's **Widgets**
- Stored in-**Session** for the current user
- Global to the **Site** (i.e. application)
- Selected by the developer for quick access to always be under **Watch**

Watches are always displayed, even if out of scope



```
GetCinemas
  List
    Current
      Cinema
        Id                1
        Name              "AMC Loews 34th Street 14"
        Description       ""
        City              "New York"
    EOF                   false
    BOF                   true
    CurrentRowNumber      0
    Length                12
    Empty                 false
```

outsystems

Debugging a Producer Module

By default, breakpoints stop execution of requests made to that module *directly*

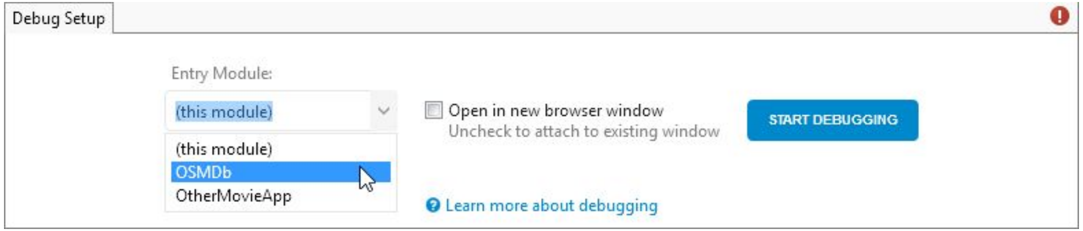
- Requests to *https://myserver.com/MyApp/* will stop on breakpoints inside MyApp

It is possible to stop the execution in another module's breakpoints

- Request to a consumer can stop in a producer
- e.g. Requests to *https://myserver.com/OSMDb/* to stop on OSMDb_Core breakpoints

To stop the execution in OSMDb_Core, OSMDb must be selected as entry module

- Requests start in the consumer module, but can stop on Core's breakpoints
- This can be done in any producer module of the application



Debug Setup

Entry Module: (this module)

(this module)
OSMDb
OtherMovieApp

☐ Open in new browser window
Uncheck to attach to existing window
START DEBUGGING
Learn more about debugging

Debugging in the Personal Area

Code is compiled and debugged in the **Public Area** of the application in the server

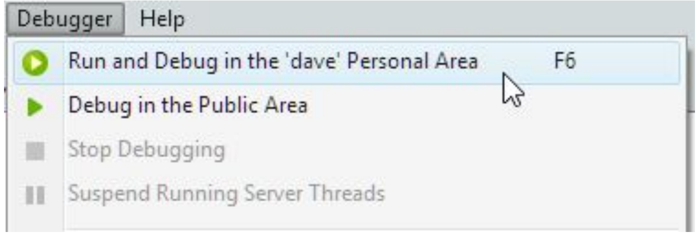
- e.g. the Public Area of MyApp is at *https://myserver.com/MyApp/*

It is possible to debug in a **Personal Area** specific to the developer

- e.g. Personal Areas of MyApp are at *https://myserver.com/MyApp/<developer_login>/*

This has advantages during development

- No impact in the main version of the application
- Faster re-publication after changes
- Does not create a new version of the module with every publish


Debugger
Help
Run and Debug in the 'dave' Personal Area
F6
Debug in the Public Area
Stop Debugging
Suspend Running Server Threads

Changes to the data model require publishing in the Public Area

Monitoring

Monitoring in OutSystems

OutSystems tracks the occurrence of many events in distinct **Logs**

Logged events include situations for which diagnostics may be required:

- Errors
- Screen rendering
- Database query durations
- Web Service calls

Monitoring is the act of analyzing and correlating these logs

Service Center Logs

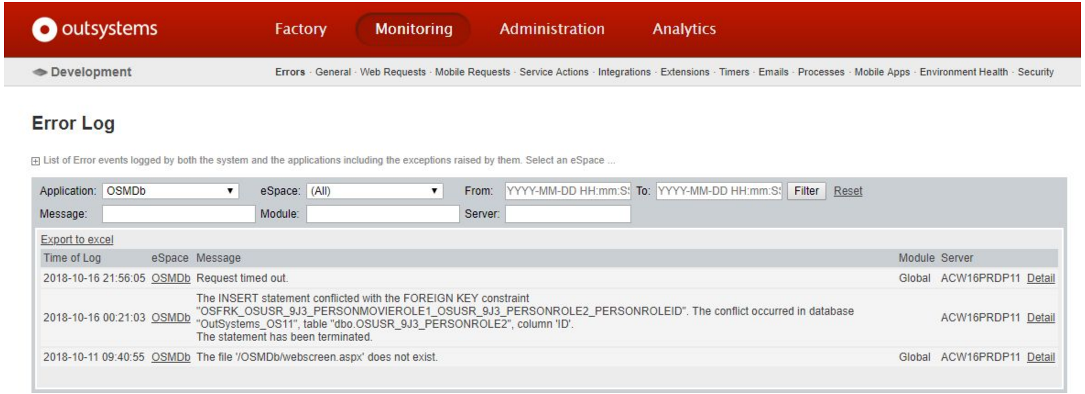
Service Center provides log reports

- **Errors**
- **General** audits
- **Screen** accesses
- **Integration** calls
- **Extension** calls
- Overall **Environment Health**
- ... and more

Reports can be filtered by:

- application
- time window
- message content

and can be exported to Excel


outsystems
Factory
Monitoring
Administration
Analytics
Development
Errors · General · Web Requests · Mobile Requests · Service Actions · Integrations · Extensions · Timers · Emails · Processes · Mobile Apps · Environment Health · Security
Filter
Reset
Export to excel

Error Log

⊞ List of Error events logged by both the system and the applications including the exceptions raised by them. Select an eSpace ...

Application: OSMDb ▾ eSpace: (All) ▾ From: YYYY-MM-DD HH:mm:S: To: YYYY-MM-DD HH:mm:S:

Message: Module: Server:

Time of Log	eSpace	Message	Module	Server	
2018-10-16 21:56:05	OSMDb	Request timed out.	Global	ACW16PRDP11	Detail
2018-10-16 00:21:03	OSMDb	The INSERT statement conflicted with the FOREIGN KEY constraint "OSFRK_OSUSR_9J3_PERSONMOVIEROLE1_OSUSR_9J3_PERSONROLE2_PERSONROLEID". The conflict occurred in database "OutSystems_OS11", table "dbo.OSUSR_9J3_PERSONROLE2", column 'ID'. The statement has been terminated.		ACW16PRDP11	Detail
2018-10-11 09:40:55	OSMDb	The file '/OSMDb/webscreen.aspx' does not exist.	Global	ACW16PRDP11	Detail

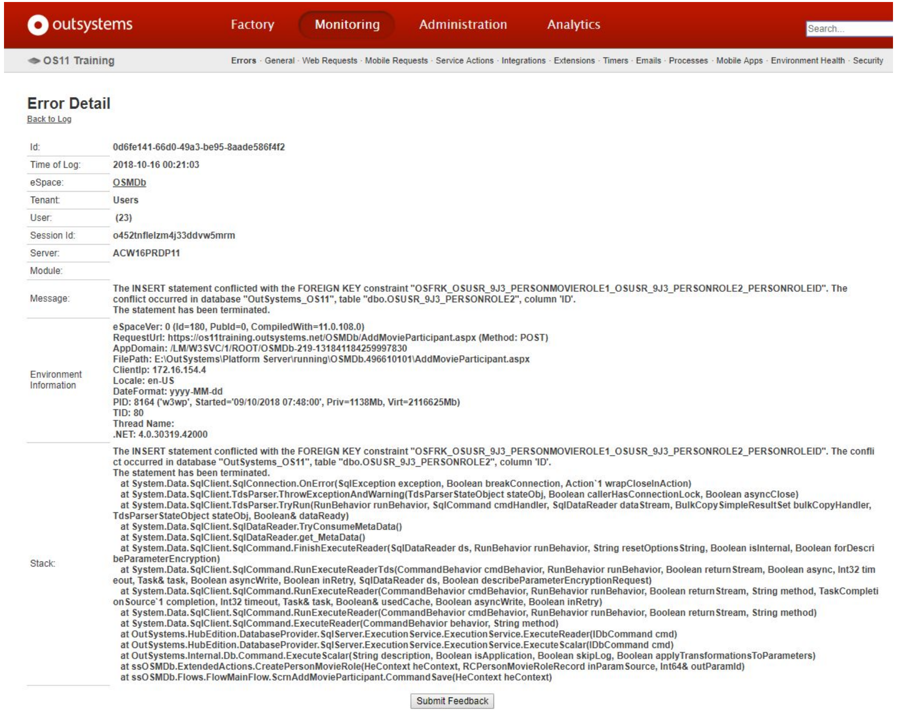
Log Detail

Clicking on the ‘Detail’ of an Error log shows extensive information on the logged event

Shows details like

- Message text
- Call Stack

Important for debugging an application during development


outsystems
Factory
Monitoring
Administration
Analytics
Search...
OS11 Training
Errors · General · Web Requests · Mobile Requests · Service Actions · Integrations · Extensions · Timers · Emails · Processes · Mobile Apps · Environment Health · Security
Submit Feedback

Error Detail

Back to Log

Id:	0d6fe141-66d0-49a3-be95-8aade586f4f2
Time of Log:	2018-10-16 00:21:03
eSpace:	OSMDb
Tenant:	Users
User:	(23)
Session Id:	o452tnflelzm4j33ddvw5mrm
Server:	ACW16PRDP11
Module:	
Message:	The INSERT statement conflicted with the FOREIGN KEY constraint "OSFRK_OSUSR_9J3_PERSONMOVIEROLE1_OSUSR_9J3_PERSONROLE2_PERSONROLEID". The conflict occurred in database "OutSystems_OS11", table "dbo.OSUSR_9J3_PERSONROLE2", column 'ID'. The statement has been terminated.

Environment Information

```
eSpaceVer: 0 (Id=180, PubId=0, CompiledWith=11.0.108.0)
RequestUrl: https://os11training.outsystems.net/OSMDb/AddMovieParticipant.aspx (Method: POST)
AppDomain: /LM/W3SVC/1/ROOT/OSMDb-219-131841184259997830
FilePath: E:\OutSystems\Platform Server\running\OSMDb.496610101\AddMovieParticipant.aspx
ClientIp: 172.16.154.4
Locale: en-US
DateFormat: yyyy-MM-dd
PID: 8164 ('w3wp', Started='09/10/2018 07:48:00', Priv=1138Mb, Virt=2116625Mb)
TID: 80
Thread Name:
.NET: 4.0.30319.42000
```

Stack:

```
The INSERT statement conflicted with the FOREIGN KEY constraint "OSFRK_OSUSR_9J3_PERSONMOVIEROLE1_OSUSR_9J3_PERSONROLE2_PERSONROLEID". The conflict occurred in database "OutSystems_OS11", table "dbo.OSUSR_9J3_PERSONROLE2", column 'ID'.
The statement has been terminated.
   at System.Data.SqlClient.SqlConnection.OnError(SqlException exception, Boolean breakConnection, Action`1 wrapCloseInAction)
   at System.Data.SqlClient.TdsParser.ThrowExceptionAndWarning(TdsParserStateObject stateObj, Boolean callerHasConnectionLock, Boolean asyncClose)
   at System.Data.SqlClient.TdsParser.TryRun(RunBehavior runBehavior, SqlCommand cmdHandler, SqlDataReader dataStream, BulkCopySimpleResultSet bulkCopyHandler, TdsParserStateObject stateObj, Boolean& dataReady)
   at System.Data.SqlClient.SqlDataReader.TryConsumeMetaData()
   at System.Data.SqlClient.SqlDataReader.get_MetaData()
   at System.Data.SqlClient.SqlCommand.FinishExecuteReader(SqlDataReader ds, RunBehavior runBehavior, String resetOptionsString, Boolean isInternal, Boolean forDescribeParameterEncryption)
   at System.Data.SqlClient.SqlCommand.RunExecuteReaderTds(CommandBehavior cmdBehavior, RunBehavior runBehavior, Boolean returnStream, Boolean async, Int32 timeout, Task& task, Boolean asyncWrite, Boolean inRetry, SqlDataReader ds, Boolean describeParameterEncryptionRequest)
   at System.Data.SqlClient.SqlCommand.RunExecuteReader(CommandBehavior cmdBehavior, RunBehavior runBehavior, Boolean returnStream, String method, TaskCompletionSource`1 completion, Int32 timeout, Task& task, Boolean& usedCache, Boolean asyncWrite, Boolean inRetry)
   at System.Data.SqlClient.SqlCommand.RunExecuteReader(CommandBehavior cmdBehavior, RunBehavior runBehavior, Boolean returnStream, String method)
   at System.Data.SqlClient.SqlCommand.ExecuteReader(CommandBehavior behavior, String method)
   at OutSystems.HubEdition.DatabaseProvider.SqlServer.ExecutionService.ExecutionService.ExecuteReader(IDbCommand cmd)
   at OutSystems.HubEdition.DatabaseProvider.SqlServer.ExecutionService.ExecutionService.ExecuteScalar(IDbCommand cmd)
   at OutSystems.Internal.Db.Command.ExecuteScalar(String description, Boolean isApplication, Boolean skipLog, Boolean applyTransformationsToParameters)
   at ssOSMDb.ExtendedActions.CreatePersonMovieRole(HeContext heContext, RCPersonMovieRoleRecord inParamSource, Int64& outParamId)
   at ssOSMDb.Flows.FlowMainFlow.ScrnAddMovieParticipant.CommandSave(HeContext heContext)
```

Summary

- Debugging in Service Studio
  - During Debugging
  - Inspecting Variables
  - Debugging a Producer Module
  - Personal Area
- Monitoring in OutSystems
  - Service Center Logs

Debugging and Monitoring

Thank You!