

CF Pest Control Debugging ColdFusion applications

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Agenda

- Types of bugs
- Approach to debugging
- Debugging in ColdFusion
- Q&A

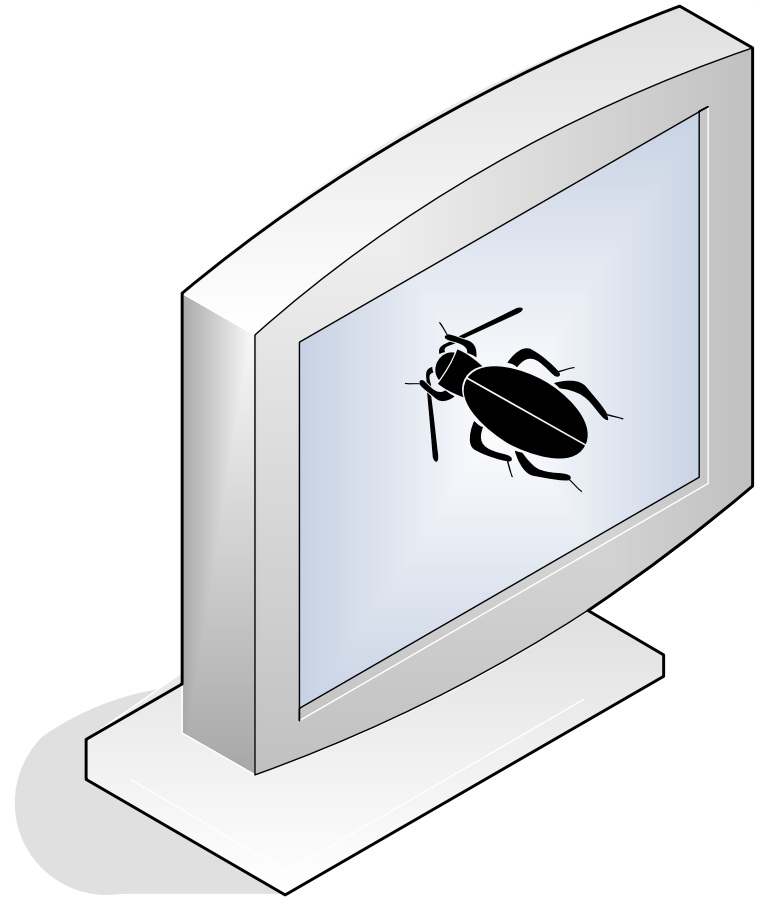
- Code, Code, Code and more Code



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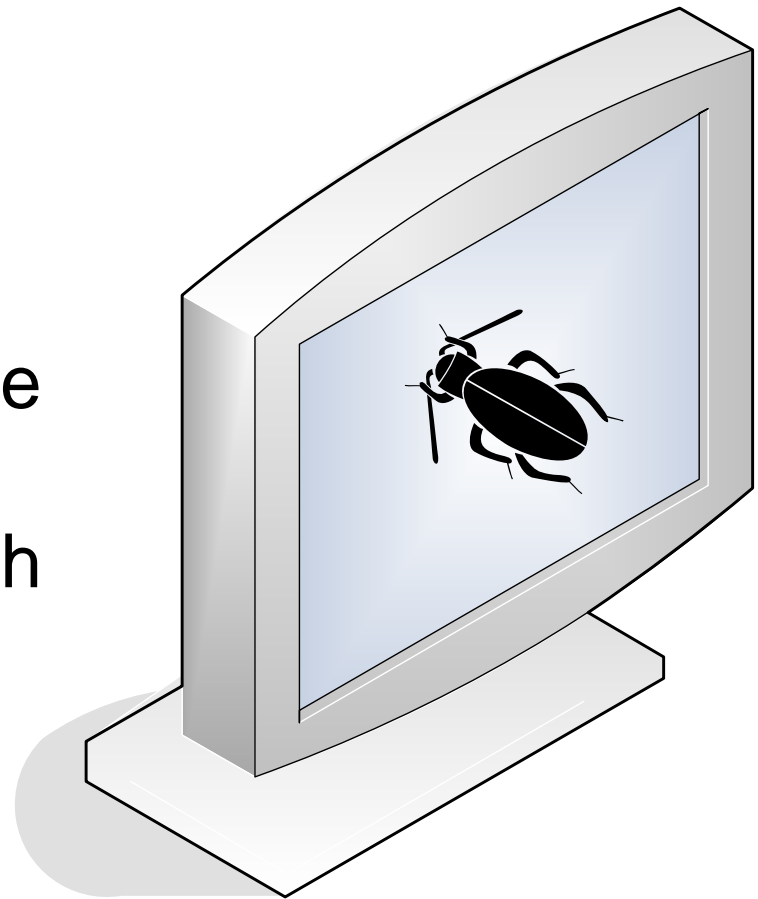
What is a bug

- An undesirable behavior of a system



What is a bug

- ~~An undesirable behavior of a system~~
- An perfectly reasonable behavior cause by an inexperienced user with malicious intentions



Types of bugs

- Syntax Error
- Run-Time Errors
- Logical Errors



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Types of bugs - Syntax Errors

- Syntax Error Example

```
<CFSET ClientName = "Shlomy Gantz">
```

```
<CFSET URLstr = URLstr & urlencodedformat(ClientName) >
```

Types of bugs - Run-Time Errors

- Run-Time Error Example

```
<CFQUERY NAME="GetOverPaidEmp" Datasource="Payroll">
```

```
SELECT
```

```
SUM(Salary) AS TotalSalary,
```

```
COUNT(Emp_ID) as NumOfEmployees
```

```
FROM AnnualSalary
```

```
WHERE SALARY > 100000
```

```
</CFQUERY>
```

```
<CFSET AVGSalary = GetOverPaidEmp.TotalSalary / GetOverPaidEmp.NumOfEmployees >
```

```
<CFOUTPUT>#AVGSalary#</CFOUTPUT>
```



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Types of bugs - Logical Errors

- Logical Error example

```
<CFSET MyList="Shlomy,Michael,Emily,Abraham">  
<CFSET ShlomyExists_YN = listfind(MyList,"shlomy")>  
<CFOUTPUT>#YesNoFormat(ShlomyExists_YN)#</CFOUTPUT>
```

Bug escalation

- Code
- Database
- ColdFusion / Jrun
- Web Server
- OS
- Hardware



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A user's approach to debugging

- Keep hitting the refresh button until the page works...
- Bang on the keyboard until it's fixed....
- Scream at the monitor ...



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A developer's approach to debugging

- Plan
- Backup/ Check-in
- Isolate
- Find The error
- Fix - Don't patch
- Look for similar

■ Document



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Code Debugging steps

- Reproduce the bug
- Show your variables (not only once)
- Create breakpoints and Follow the flow
- Use Exception handling
- Look at your application logs



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ColdFusion Tags and Functions

- `<cfdump>`
- `<cferror>`
- `<cftrace>`
- `<cftimer>`
- `isDebugMode()`
- `onError()`



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<cfdump>

```
<cfdump
```

```
  var = "#variable#"
```

```
  expand = "yes" or "no"
```

```
  label = "text"
```

```
  top = "number of rows or  
  levels">
```



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<cferror>

<cferror

type = "a type"

template = "template_path"

mailto = "email_address"

exception = "exception_type">



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<cferror type="">

- Exception - Can handle specific exception types or display general information for exceptions.
- Request - Used as a backup error handler to other error handling methods, including exception type
- Validation - Handles hidden form-field or onSubmit() format validation errors only.

<cftrace>

```
<cftrace
```

```
  abort = "Yes" or "No"
```

```
  category = "string"
```

```
  inline = "Yes" or "No"
```

```
  text = "string"
```

```
  type = "format"
```

```
  var = "variable_name"
```

```
>
```



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<cftimer>

<cftimer

label= "text"

**type = "inline" or "outline" or
"comment" or "debug" >**

CFML statement(s)

</cftimer>



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isDebugMode()

- Returns True, if debugging mode is set in the ColdFusion Administrator
- Returns False, if debugging mode is disabled.



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Order of error handling

- `<cfcatch>`, if present and if an error happens within a `<cftry>`
- `onError()` in `Application.cfc`
- `<cferror>` if exception type is not "request"
- Site-wide Error Handler defined in ColdFusion Administrator
- `<cferror>` with exception type of "request"
- Display standard error



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ColdFusion Administrator

■ Debugging & Logging > Debugging Settings

Enable Robust Exception Information

Allow visitors to see the following information in the exceptions page:

- Physical path of template
- URI of template
- Line number and line snippet
- SQL statement used (if any)
- Data source name (if any)
- Java stack trace

Enable Debugging

Select this check box to enable the debugging service. When this check box is clear, the setting overrides all of the settings below. Note: Debugging information is appended to the end of each request.



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ColdFusion Administrator

Select Debugging Output Format

classic.cfm ▼

ColdFusion MX offers several debugging output formats:

classic.cfm - The format available in ColdFusion 5 and earlier. It provides a basic view and few browser restrictions.

dockable.cfm - A dockable tree-based debugging panel. For details about the panel and browser restrictions, see the online Help.

Report Execution Times

Highlight templates taking longer than the following (ms) Using the following output mode ▼

Execution times for templates, includes, modules, custom tags, and component method calls. Template execution times over this minimum highlight time will be displayed in red. The default is 250 ms. ColdFusion MX offers the following template modes:

summary - A summary of each page called. Columns include Total Time, Avg Time, Count, and Template. Sorted by highest total time.

tree - Hierarchical tree view of individual page executions. *Note: Processing time and output will be longer than summary.*

General Debug Information

Select this check box to show general information about this request. General items are ColdFusion Server Version, Template, Time Stamp, User Locale, User Agent, User IP, and Host Name.



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ColdFusion Administrator

Database Activity

Select this check box to show the database activity for the SQL Query events and Stored Procedure events in the debugging output.

Exception Information

Select this check box to collect all ColdFusion exceptions raised for the request in the debugging output.

Tracing Information

Select this check box to show trace event information in the debugging output. Tracing lets a developer track program flow and efficiency through the use of the CFTRACE tag.

Timer Information

Select this check box to show timer event information in the debugging output. Timers let a developer track the execution time of the code between the start and end tags of the CFTIMER tag.

Flash Form Compile Errors and Messages

(Development use only) Selecting this option causes ColdFusion to display ActionScript errors in the browser when compiling Flash forms, and affects the display time of the page.

Variables

Select this check box to enable variable reporting. Select the following variables:

- | | | |
|--|--|---|
| <input type="checkbox"/> Application | <input checked="" type="checkbox"/> Cookie | <input type="checkbox"/> Server |
| <input checked="" type="checkbox"/> CGI | <input checked="" type="checkbox"/> Form | <input checked="" type="checkbox"/> Session |
| <input checked="" type="checkbox"/> Client | <input type="checkbox"/> Request | <input checked="" type="checkbox"/> URL |



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ColdFusion Administrator

- Debugging & Logging > Debugging IP List

Specify the IP addresses that should receive debugging messages. To include an IP address in the list, enter the address and click Add. To delete an IP address from the list, select the address and click Remove Selected. When no IP addresses are selected, all users receive debugging information.

Select IP Addresses for Debug Output

IP Address

Add

Add Current

View / Remove Selected IP Addresses for Debug Output

127.0.0.1

Remove Selected



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Don't forget about data validation & exception handling

- <CFTRY>
- <CFCATCH>
- <CFTHROW>
- <CFRETHROW>



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Testing, CFCUNIT ...

- CFCUNIT

- ✓ <http://www.cfcunit.org/cfcunit/>

- ...and many more

- ✓ SeeFusion

- ✓ Fusion-Reactor



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Other techniques

- Auto email error information
- Debug switch
- Bug tracking systems



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Bug tracking systems

- Bugzilla
- FogBugz
- Lighthouse



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Q&A

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