



6, 7 october 2016 - ROMA

Advanced Debugging in Delphi

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Breakpoints

Basics

- F9 Run with debugging
- Shift+Ctrl+F9 Run without debugging
- Ctrl+F2 Program reset
- F4 Run to current position
- F8 Step over
- F7 Trace into
- Shift+F7 Trace to next source line
- Shift+F8 Run until return
- F5 Toggle breakpoint
- Shift+F5 Enable/disable breakpoint

Settings

- Project, Options
 - Delphi Compiler, Compiling
 - Optimization
 - Stack frames
 - Debug information
 - Use debug .dcu's
 - Tools, Options
 - Debugger Options
 - General
 - Event log

Properties

- Enabled
- Condition
 - slow
 - code
 - DebugBreak(condition)
 - GpStuff.pas, GpDelphiUnits on GitHub
- Pass count
 - slow
 - Narrowing down reproducible problems

Side effects

- Break
- Log message
 - Eval expression
 - OutputDebugString
 - Loggers (CodeSite ...)
 - Log to console
 - Log call stack
 - Stack tracers (JVCL, MadExcept, EurekaLog, FastMM ...)
 - “FastMM” session

Groups

- Group
- Enable group
- Disable group
- manual toggle

Multithreaded programs

- Properties, Thread
- Freeze all other threads
- Thaw all threads

Exceptions

- Tools, Options
 - Debugger Options
 - Embarcadero Debuggers
 - Language Exceptions
- Ignore subsequent exceptions
- Handle subsequent exceptions
- ExceptionClass

Hardware breakpoints

- Address
 - Code execution
 - Can be set on read-only memory
- Data
 - Data access
- Limited number
 - DR0 ... DR3
- Disabled on program restart

Getting out of assembler

- Return from method
- Selective Debugging Expert by Uwe Raabe
 - <http://www.uweraabe.de/Blog/2015/05/08/selective-debugging/>

Tidbits

- Moving a breakpoint
 - with mouse
 - Options, Line number
- Moving execution point
 - with mouse
 - Set next statement
 - “repeat last statement”
 - Use with care!
- Call stack breakpoints
- Disable/enable all
- Watch out for **inline!**



Evaluate & Watch

The background of the slide features abstract, overlapping circular shapes in various colors (blue, green, yellow, orange) on a light gray grid pattern. A solid black horizontal bar runs across the middle of the slide, containing the text "Evaluate & Watch".

Evaluating expressions

- Ctrl+F5 Add watch
- Ctrl+F7 Evaluate/Modify
- Alt+F5,
Ctrl+Shift+click Inspect

Evaluate / Watch

- Display format specifiers
 - http://docwiki.embarcadero.com/RADStudio/Berlin/en/Evaluate_Modify
 - x, h, d ,r
 - <repeat>
- Groups

Optimizer

- DontOptimize

```
procedure DontOptimize(var data);  
begin  
  // do nothing  
end;
```

<https://github.com/gabr42/GpDelphiUnits/blob/master/src/GpStuff.pas>



An abstract background graphic consisting of several overlapping, semi-transparent circles in various colors (blue, green, red, yellow) against a light gray grid background.

Debugging remotely

Remote Debugger

- Platform Assistant [PAServer]
- Remote Debugger [rmtdbgXXX.exe]
 - Firewall!

AsmProfiler

- André Mussche
- <https://github.com/andremussche/asmprofiler>
- AsmProfiler
- MiniDumpReader
 - Process Explorer [Mark Russinovich]
 - <http://live.sysinternals.com>



Questions?