Unleash the power of Delphi debugger

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About me

- Pascal programmer since 1984 (HiSoft pascal on ZX Spectrum)
- First contact with Borland: Turbo Pascal 3 (on CP/M)
- Programming highly responsive 24/7 applications since 1997
- Writer: The Delphi Magazine, Blaise Pascal, Monitor (Slovenia)
- Blogger: http://thedelphigEEK.com
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Debugging
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

- Project, Options, Delphi Compiler, Compiling
  - Optimization
  - Debug information
  - Use debug .dcu’s
  - Selective Debugging Expert by Uwe Raabe
    http://www.uweraabe.de/Blog/2015/05/08/selective-debugging/

- Delphi Compiler, Linking
  - Debug information
  - Include Remote Debug symbols
Settings / IDE Options

- Tools, Options, Debugger Options
  - General
  - Event log

- F1!
Breakpoints
Properties: Enabled

- Enabled
  - Shift-F5
Properties: Condition

- Condition
  - slow
  - code
  - DebugBreak(condition)
    - https://github.com/gabr42/GpDelphiUnits
Properties: Pass count

- Pass count
  - slow
  - Narrowing down reproducible problems
Side effects: Break

- Break
Side effects: Log message

- Log message
Side effects: Eval expression

- Eval expression
  - OutputDebugString
  - Loggers (CodeSite ...)
  - Log to console
    - GpConsole
Side effects: Log call stack

- Log call stack
  - Full
  - Partial
Groups

- Group
- Enable group
- Disable group
- Manual toggle
Threads

- 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**
Tips and tricks [1]

- Run until return
- Moving a breakpoint
  - with mouse
  - Options, Line number
- Moving execution point
  - with mouse
  - Set next statement
  - “repeat last statement”
Tips and tricks [2]

- Call stack breakpoints
- DLL import breakpoints
- Disable/enable all
Debugging remotely
Remote debugger

- Platform Assistant [PAServer]
- Remote Debugger [rmtDBGXXX.exe]
  - Firewall!
Evaluating expressions

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

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

- DontOptimize

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

- GpStuff
Q & A