



Tools and Tips for KDE Development

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About Me

- Student at University of Siegen
- KDAB employee
- KDE developer since 2007
- KMail maintainer





Topics

- GDB
- Valgrind
- Build speed
- Git
- ~~KDE-related websites~~
- ~~Misc~~
- ~~KDevelop~~





GDB

- **Manual - Worth a Read**
<http://sourceware.org/gdb/current/onlinedocs/gdb/index.html>
- **KDE/Qt Scripts**
<http://websvn.kde.org/trunk/KDE/kdesdk/scripts/kde-devel-gdb>
- **Pretty Printers**
<http://gitorious.org/kdevelop/kdevelop/trees/master/debuggers/gdb/printers>
- **CGDB**
<http://cgdb.sourceforge.net/>





GDB Commands

- Advanced Breakpoints

- Break Commands

- commands 1*

- print bar*

- cont*

- end*

- Conditional Breakpoints

- condition 1 x == 42*

- Watchpoints

- watch foo*

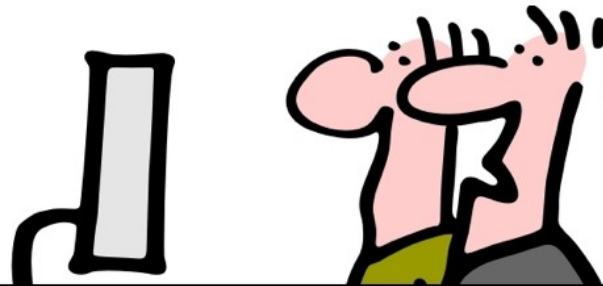
- watch *((int *) 0x9828cc) or p foo; watch *((int *) \$1)*

- Catchpoints: *catch throw*



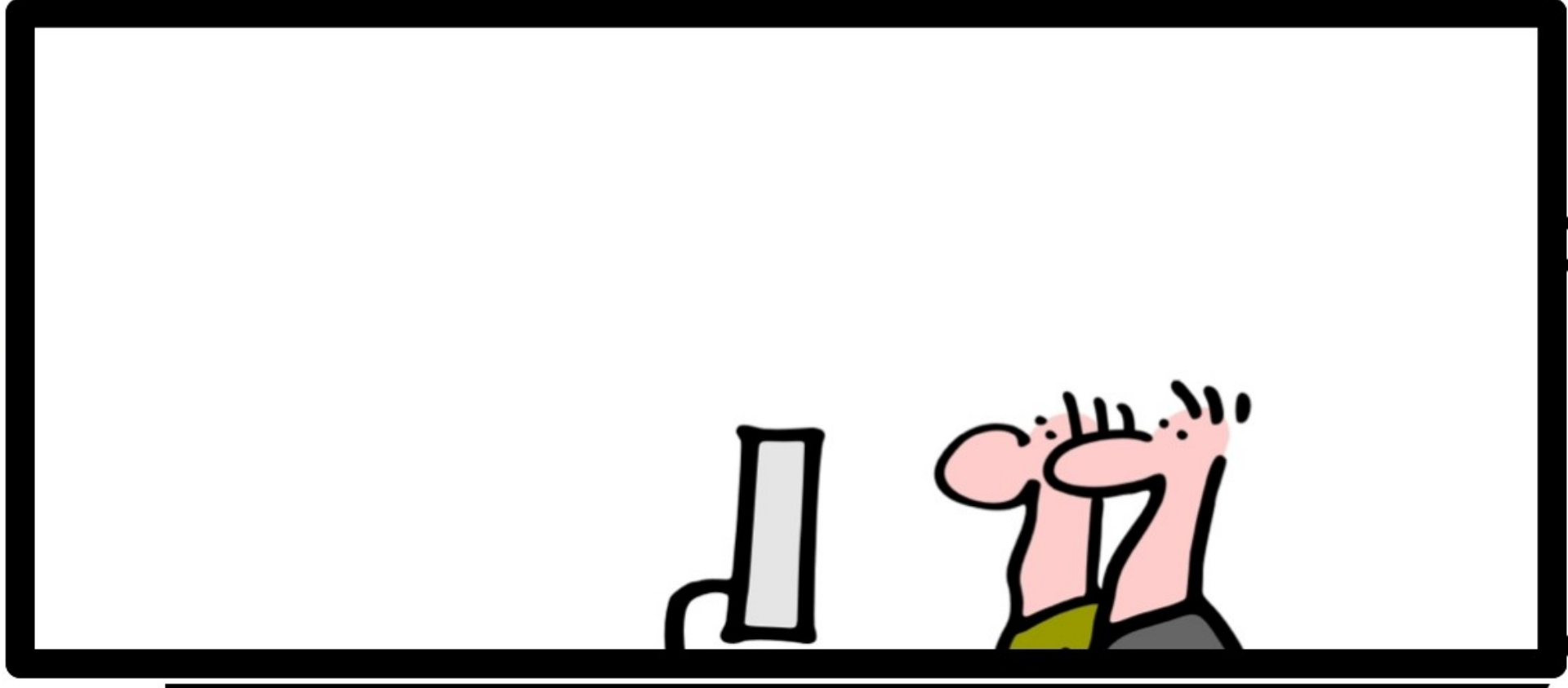
ONE DAY IN THE LIFE OF A CODER

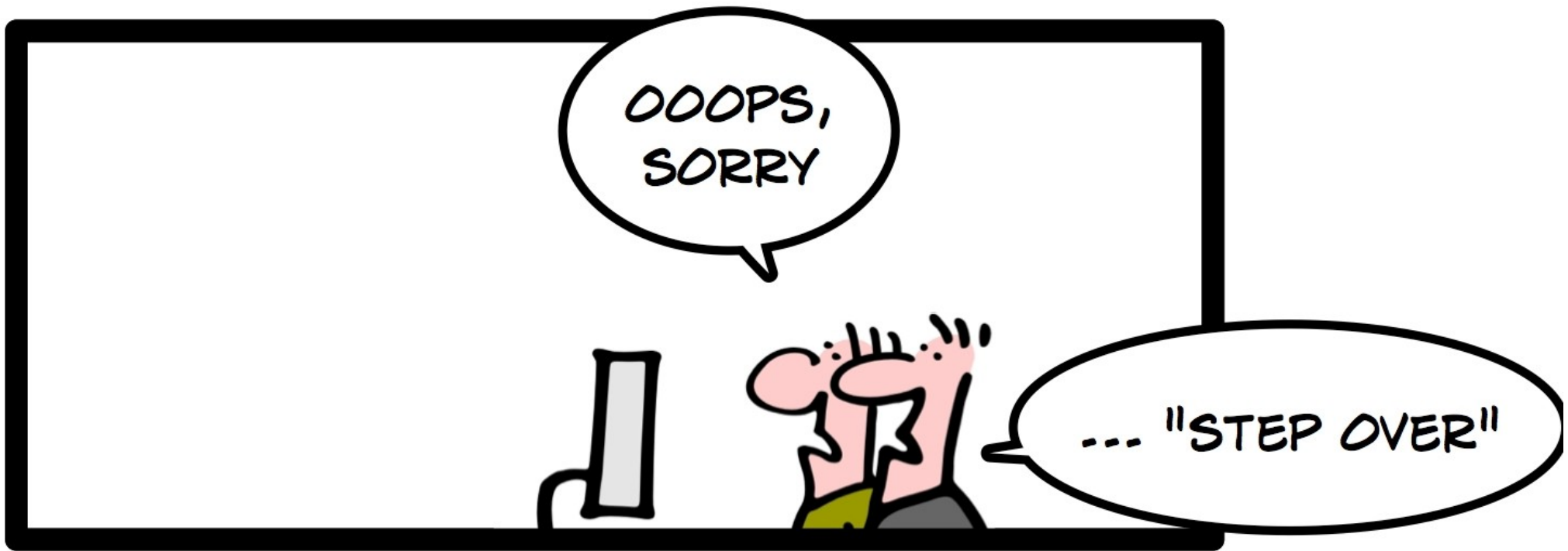
PART 6



FINALLY!
WE'VE NEEDED
NEARLY 30
MINUTES TO GET
TO THAT POINT.
SO BE CAREFUL
AND PLEASE DO
NOT
PRESS ON ...

geek & poke





0230 PM: DEBUGGING



GDB Reverse Debugging

- Controlling Recording
record, record-stop, record-delete and more
- Stepping Backwards
reverse-step, reverse-next, reverse-finish, reverse-continue (or: *set exec-direction reverse*)





Valgrind

- Suppression files
 - websvn.kde.org/trunk/KDE/kdesdk/scripts/kde.sup
 - For upstream bugs
- Research Papers
 - <http://valgrind.org/docs/pubs.html>





Valgrind

- Check invalid memory access: **Memcheck**
- Leak check: *--leak-check=full*
- Thread check: **Helgrind**
- Memory usage: **Massif**
- Profiling: **Callgrind**
 - Start without instrumenting: *--instr-atstart=no*
 - Start/Stop: *callgrind_control --instr=<on|off>*
 - Dump: *callgrind_control --dump*





Valgrind Visualizers

- **Massif**
<http://gitorious.org/massif-visualizer>
- **Callgrind**
<http://kcachegrind.sourceforge.net/html>, KDESDK





Build Speed

- `make -j3` (or higher)
export MAKEFLAGS=-j3
- *make <target>/fast* and *make install/fast*
- Gold Linker: www.gnu.org/software/binutils/
- Icecream!
trunk/icecream in KDE SVN
- Turn off unneeded bits with *ccmake* (doc, ...)





Git

- Git Prompt: Google it
- CLI Frontend: *Tig* <<http://jonas.nitro.dk/tig/>>
- Partial Commits: *git add -p / git checkout -p*
- Find commit for piece of code: *git log -s*
- Use aliases (in `.gitconfig`)
 - `unstage = reset HEAD --`
 - `up = pull --rebase`
 - `ci = commit`





Git

- Use commit template
 - .gitconfig
 - Wrap at 72 columns
 - Separate summary line
 - Example: Template in kde-qt repo
- Use git-svn
- Use colors (again: .gitconfig)





KDE Websites

- Code search: lxr.kde.org
- Krazy: www.englishbreakfastnetwork.org/krazy
- API docs: api.kde.org
 - Offline in KDevelop/QtCreator:
techbase.kde.org/Development/Tools/apidox
- Commits: commitfilter.kde.org
- Wiki: techbase.kde.org
- Mailing list archives: gmane.org
- Blogs: planet.kde.org





Misc

- Directory Navigation
 - autojump (wiki.github.com/joelthelion/autojump)
 - cs/cb (See techbase)
- Add CIA and bugbot to your IRC channel
<http://cia.vc/>, *apokryphos* on IRC
- Yakuake
- Filter commit mails by X-COMMIT-DIR header
- Check Signals/Slots: gitorious.org/kdevcpptools/verktyg





Misc

- KDE web shortcuts
 - Qt documentation: *qt:<classname>*
 - KDE documentation: *kde:<classname>*
 - KDE bugs: *bug:<bugnumber>*
 - KDE web SVN: *websvn:<svn path>*
 - Define your own:
 - URI: *http://websvn.kde.org/?view=rev&revision={@}*
 - Shortcuts: *rev*





KDevelop

- Quick Open
- Code Navigation
- Rename variables and types
- Find Uses
- C++ Completion, including signal/slot
- CMake
- and much more





The End

- Thanks to:
 - KDAB for sponsoring me
 - Thomas Thym for the slide templates
 - You for listening
- Share *your* development tips!

