



# Taking Testing Mountain (By Strategy)

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Tests are good...


Tests are good...  
...and more tests are better


Tests are good...  
**BUT**  
...and more tests are better


# We have a problem

[add description](#)


















 No changes.

 Triggered by Gerrit: <https://gerrit.libreoffice.org/60160>

 Started by user [Stephan Bergmann](#)

 Started by upstream project [Gerrit for master](#) build number [13908](#)  
originally caused by:

- Triggered by Gerrit: <https://gerrit.libreoffice.org/60160>

S	R	Job	Build #	Duration	Console
		<i>buildstep</i>			
		<a href="#">gerrit_linux_clang_dbgutil</a>	<a href="#">build #14527</a> ( 31 min )		
		<a href="#">gerrit_linux_gcc_release</a>	<a href="#">build #14307</a> ( 21 min )		
		<a href="#">gerrit_mac</a>	<a href="#">build #14598</a> ( 28 min )		
		<a href="#">gerrit_windows</a>	<a href="#">build #15399</a> ( 1 hr 13 min )		
		<a href="#">gerrit_windows</a>	<a href="#">build #15410</a> ( 1 hr 28 min )		
		<a href="#">gerrit_windows</a>	<a href="#">build #15420</a> ( 1 hr 17 min )		
		<a href="#">gerrit_windows</a>	<a href="#">build #15425</a> ( 1 hr 40 min )		

Page generated: Sep 8, 2018 9:13:16 AM CEST [REST API](#) [Jenkins ver. 2.138](#)

# We have a problem

The screenshot shows a Stack Overflow question page. At the top, the LibreOffice logo and 'The Document Foundation' are visible. Navigation links for 'tags', 'users', and 'badges' are present, along with a greeting 'Hi there! Please sign in help'. A search bar contains the text 'Search or ask your question' and a green 'ASK YOUR QUESTION' button. The question title is 'Unit test fails while building LibreOffice', with a '0' vote count and a '0' answer count. Below the title are tags: 'unittest', 'sw\_ooxmlexport3.test', 'error', 'build', and 'common'. The question body starts with 'I can't build LibreOffice, because sw\_ooxmlexport3.test fails. Using MBP retina, macOS 10.11.' and is marked as 'asked Nov 2 '17' by user 'loveserjcs'. The main content is a terminal log showing a series of warnings and an assertion failure: 'assertion failed - Expression: sal\_Int32( 40470 ) < aGraphicCropStruct.Right - 39400'. The log path is '/Users/markvecsernyes/lode/dev/core/sw/qa/extras/ooxmlexport/ooxmlexport3.cxx:588: Assertion Test name: testTdf106974\_int32Crop::Import Export Import'. On the right side, there are 'Question Tools' including a 'Follow' button (1 follower) and a 'subscribe to rss feed' button. Below that is a 'Stats' section with 'Asked: Nov 2 '17', 'Seen: 298 times', and 'Last updated: Apr 08'. A 'Related questions' section lists several related issues with brief descriptions and '[closed]' status.

So lets go fix those failures

# We have a problem

```
[CUT] filter_tiff_test
Testing file:///data/lo/core/filter/qa/cppunit/data/tiff/pass/CVE-2005-1544-1.tiff:
Tested file:///data/lo/core/filter/qa/cppunit/data/tiff/pass/CVE-2005-1544-1.tiff:
Fail (1ms)
/data/lo/core/unotest/source/cpp/filters-test.cxx:145:TiffFilterTest::testCVEs
equality assertion failed
- Expected: 1
- Actual   : 0
- file:///data/lo/core/filter/qa/cppunit/data/tiff/pass/CVE-2005-1544-1.tiff

TiffFilterTest::testCVEs finished in: 1ms
filters-test.cxx:145:Assertion
Test name: TiffFilterTest::testCVEs
equality assertion failed
- Expected: 1
- Actual   : 0
- file:///data/lo/core/filter/qa/cppunit/data/tiff/pass/CVE-2005-1544-1.tiff

Failures !!!
```



# We have a problem

```
bool bRes;
if (!bExport)
    bRes = load(rFilter, realUrl, rUserData, nFilterFlags,
               nClipboardID, nFilterVersion);
else
    bRes = save(rFilter, realUrl, rUserData, nFilterFlags,
               nClipboardID, nFilterVersion);
sal_uInt32 nEndTime = osl_getGlobalTimer();

if (bEncrypted)
    CPPUNIT_ASSERT_EQUAL(osl::FileBase::E_None, osl::File::remove(sTmpFile));

fprintf(stderr, "Tested %s: %s (%" SAL_PRIuUINT32 "ms)\n",
        aRes.getStr(), bRes?"Pass":"Fail", nEndTime-nStartTime);
if (nExpected == test::indeterminate)
    continue;
filterStatus nResult = bRes ? test::pass : test::fail;
CPPUNIT_ASSERT_EQUAL_MESSAGE(aRes.getStr(), nExpected, nResult);
```

# The Department of Cheesy Talk Titles



By Source, Fair use, <https://en.wikipedia.org/w/index.php?curid=18764822>

## Oblique Strategies:

Over one hundred worthwhile dilemmas

- Do something boring
- Look closely at the most embarrassing details and amplify them
- Don't be afraid of things because they're easy to do
- Honor thy error as a hidden intention
- Don't break the silence
- Humanise something free of error
- Is it finished?
- Mute and continue
- What mistakes did you make last time?
- Shut the door and listen from outside

# Step 0: Write failing tests

- Test Driven Development
- Makes sure test code is actually executed
  - No forgotten `CPPUNIT_TEST(myTest)`
- Helps make sure failing test outputs useful information
  - If you care for that from the outset

# Step 1: Understand what you test

```
Subject: Test File: sc/qa/unit/data/functions/fods/chiinv.fods:
        fails with Assertion
To: libreoffice@lists.freedesktop.org
Date: Wed, 31 Aug 2016 19:30:35 +0100
```

[...]

Any suggestions on how I can resolve this problem will be appreciated.

The error is

```
> Testing
> file:///home/master/master/sc/qa/unit/data/functions/fods/chidist.fods:
> Tested
> file:///home/master/master/sc/qa/unit/data/functions/fods/chidist.fods:
> Pass (491ms)
> Testing
> file:///home/master/master/sc/qa/unit/data/functions/fods/chiinv.fods:
> [...]master/sc/qa/unit/functions_test.cxx:80:FunctionsTest::testFormulasFODS
> double equality assertion failed
> - Expected: 1
> - Actual   : 0
> - Delta    : 1e-14
```

# Step 1: Understand what you test

```
Subject: Re: Test File: sc/qa/unit/data/functions/fods/chiinv.fods:
        fails with Assertion
To: libreoffice@lists.freedesktop.org
Date: Fri, 16 Sep 2016 12:05:19 +0200
```

[...]

Turns out, the relevant GCC switches are

```
-mfpmath=sse -msse2
```

```
-mfpmath=sse (instead of the x86-32 default of -mfpmath=387)
prevents usage of the extended 80-bit precision for temporary
results. (Which caused e.g. the subtraction in
ScChiDistFunction::GetValue, sc/source/core/tool/interpr3.cxx, to
produce results different from IEEE double, causing the computation
of CHIINV(0.9999999999999999, 1.0000000000000000E+001) in
sc/qa/unit/data/functions/fods/chiinv.fods to produce unexpected
results.) <https://gcc.gnu.org/onlinedocs/gcc-6.2.0/gcc/x86-Options.html#x86-Options> also claims: "The resulting code should be
considerably faster [compared to -mfpmath=387] in the majority of
cases and avoid the numerical instability problems of 387 code
[...]"
```

# Step 2: Wet Concrete Test Code

- PragProg DRY Principle: “Don’t Repeat Yourself”
- But test code is different from code under test:
  - It shall be obvious *what* failed from *where* it failed
    - Consider all you have is: test-file+line/expected/actual
  - Test code shall be easy to debug
- Be redundant, spell it out: don’t be DRY, be **wet!**
- Avoid abstractions: be **concrete!**
- Consider CPPUNIT\_ASSERT\_MESSAGE a red flag

# Step 3: Deterministic test code

```
* mst___ finds that debugging a  
randomized test crash isn't entirely  
straightforward...
```

# Step 4: Deterministic environment

```
commit 5eb9dd46e9b3ba18afd4f6dac580c4b91e715f43
Date:   Thu Sep 13 14:49:48 2018 +0200
```

## More temp copies of test docs in Python/UI Tests

[...]

I had cancelled (ctrl-c) a `make check` midway, when it happened to be in the middle of `UITest_calc_tests2` and **left behind a `sc/qa/uitest/calc_tests/data/.~lock.stableSorting.ods` lock file** (which records, among other things, the host name). I then dropped off a VPN, which caused the host name as seen by L0 to switch from "alpha" to "alpha.fritz.box", then re-started the build as `make check screenshot` (which was the thing I'd originally intended, but forgotten the screenshot target). **The new build hung during `UITest_calc_tests2`'s `sc/qa/uitest/calc_tests2/stableSorting.py`, as loading `sc/qa/uitest/calc_tests/data/stableSorting.ods` found the lock file with non-matching host name in `SfxMedium::LockOrigFileOnDemand`, and hung in `SfxMedium::ShowLockedDocumentDialog` -> `UIInteractionHandler::handle` -> (switch to main thread...) -> `UIInteractionHelper::handleLockedDocumentRequest` -> ... -> `Dialog::Execute`, which just blocks in svp mode (which, unlike `--headless`, doesn't cause `Application::IsDialogCancelEnabled`).**



# Step 5: Feel the pain

- Subscribe to [libreoffice-ci@global.libreoffice.org](mailto:libreoffice-ci@global.libreoffice.org)
  - All failing builds from the Jenkins bots
    - Most failures are test failures
    - Most failure logs have little useful information
- Score hero points by fixing some long-standing bug that plagues the bots



“Do the washing up”

–*Eno/Schmidt, Oblique Strategies*