

GNU Code Quality Project ?

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Background

- I maintain GnuTLS, GNU SASL, GNU Libidn, GNU Shishi, GNU GSS and several non-GNU projects
- I contribute to Gnulib, GNU InetUtils, GNU MailUtils and other projects
- Code quality efforts are to a large extent not very project-specific
 - Assuming “normal” projects, i.e., autoconf ./configure script and automake self-tests

Idea

Start a GNU-wide project to
facilitate code quality improvement
to interested projects

Essential services

- Build bot from version controlled source
 - Current solution is just a script
 - Could be more complex and require a number of installed developer packages on build machine
 - Use Nix?

Essential services

- Daily snapshot upload/download service
 - Currently SSH authenticated uploads of PGP signed sources (use anonymous ftp instead?)
 - Download via <http://daily.josefsson.org/>
- Build on different platforms for wider testing
 - Simpler: download daily snapshot, ./configure, make check, pipe output to email to PROJECT@autobuild.josefsson.org
- Web interface to view build status
 - <http://autobuild.josefsson.org/>

Index of /

Name	Last modified	Size	Description
 README.html	08-May-2009 11:22	711	
 gnulib/	11-Nov-2009 04:45	-	
 gnupdf/	19-Sep-2009 07:15	-	
 gnutls-2.4/	11-Nov-2009 04:45	-	
 gnutls-2.6/	11-Nov-2009 04:45	-	
 gnutls-2.8/	11-Nov-2009 04:45	-	
 gnutls/	11-Nov-2009 04:45	-	
 gsasl/	11-Nov-2009 04:45	-	
 gss/	11-Nov-2009 04:45	-	
 inetutils/	11-Nov-2009 04:45	-	
 libgcrypt/	11-Nov-2009 04:45	-	
 libgpg-error/	11-Nov-2009 04:45	-	
 libidn/	11-Nov-2009 04:45	-	
 libntlm/	11-Nov-2009 04:45	-	
 libssh2/	11-Nov-2009 04:45	-	
 libtasn1-1/	11-Nov-2009 04:45	-	
 libtasn1/	11-Nov-2009 04:45	-	
 robots.txt	18-Dec-2008 08:18	26	
 shishi/	11-Nov-2009 04:45	-	

This server is sponsored by [Simon Josefsson Datakonsult AB](#) and contains daily snapshots for various projects.

The majority of snapshots were created by this script:

<http://git.josefsson.org/cgi-bin/gitweb.cgi?p=tools.git;a=blob;f=scripts/daily-bootstrap-vc;hb=HEAD>

Index of /

Name	Last modified	Size	Description
README.html	15-Apr-2009 08:19	3.1K	
gnulib/	11-Nov-2009 04:00	-	
gnupdf/	11-Nov-2009 04:00	-	
gnutls/	11-Nov-2009 04:01	-	
gsasl/	11-Nov-2009 04:02	-	
guile/	11-Nov-2009 04:02	-	
inetutils/	11-Nov-2009 04:02	-	
libidn/	11-Nov-2009 04:02	-	
libntlm/	11-Nov-2009 04:00	-	
libssh2/	11-Nov-2009 04:02	-	
robots.txt	15-Apr-2009 08:19	26	
shishi/	11-Nov-2009 04:02	-	

This server contains build logs for projects that send their build logs via e-mail to [PROJECTNAME]@autobuild.josefsson.org.

For more information, see <http://josefsson.org/autobuild/>.

What are the requirements?

The system works best with projects that use Autoconf, and in particular those that run the AB_INIT macro in autobuild.m4 from Autobuild. The macro makes your configure script output strings such as:

```
configure: autobuild project... libtasn1
configure: autobuild revision... 0.3.8
configure: autobuild hostname... dopio
configure: autobuild timestamp... 20061202-123851
```

Summary

Project	Build type	Revision	System	Build date	Results
GNU Libtasn1	i586-pc-mingw32msvc from i686-pc-linux-gnu	2.4	gaggia	20091111T084455Z	Success
	ia64-unknown-linux-gnu	2.4	Babe	20091110T080031Z	Success
	powerpc-apple-darwin8.11.0	2.4	espresso.lan	20091110T200021Z	Success
	x86_64-unknown-linux-gnu	2.4	gaggia	20091111T074945Z	Success
GnuTLS	x86_64-unknown-linux-gnu	2.4.4	gaggia	20091111-081902	Success
gnutls	unknown	latest	unknown	unknown	Failure
gnutls-2.6	unknown	2.6-latest	unknown	unknown	Failure
libgcrypt	unknown	latest	unknown	unknown	Failure
	x86_64-unknown-linux-gnu	0	unknown	unknown	Success
libgpg-error	unknown	latest	unknown	unknown	Failure
	x86_64-unknown-linux-gnu	1.8-svn225	gaggia	20091111-074603	Success
libtasn1	i586-pc-mingw32msvc from i686-pc-linux-gnu	1.8	gaggia	20091111T084529Z	Success
	ia64-unknown-linux-gnu	1.8	Babe	20091110T090014Z	Success
	x86_64-unknown-linux-gnu	1.8	gaggia	20091111T075052Z	Success

Project 'GNU Libtasn1'

Revisions (1): [2.4](#),

Hosttypes (4): [i586-pc-mingw32msvc](#), [ia64-unknown-linux-gnu](#), [powerpc-apple-darwin8.11.0](#), [x86_64-unknown-linux-gnu](#),

Build hosts (3): [Babe](#), [espresso.lan](#), [gaggia](#),

Summary for GNU Libtasn1 2.4

System	Build host	Build date	Results
powerpc-apple-darwin8.11.0	espresso.lan	20091107T200019Z	Success
x86_64-unknown-linux-gnu	gaggia	20091107T201737Z	Success
powerpc-apple-darwin8.11.0	espresso.lan	20091108T200019Z	Success

Other services

- Code coverage charts
 - Using GCOV/LCOV on 'make check'
 - Useful to identify what code needs more testing

LCOV - code coverage report

Current view: **directory**

Test: **GNU SASL**

Date: **2009-10-08**

	Found	Hit	Coverage
Lines:	10342	7416	71.7 %
Functions:	532	441	82.9 %

Colors: Line coverage: 0% to 15% 15% to 50% 50% to 100% Function coverage: 0% to 75% 75% to 90% 90% to 100%

Directory	Line Coverage	Functions
gl	49.0 % 556 / 1135	66.7 % 50 / 75
gltests	90.5 % 2413 / 2667	96.7 % 87 / 90
lib/anonymous	77.8 % 14 / 18	100.0 % 2 / 2
lib/cram-md5	78.3 % 72 / 92	100.0 % 6 / 6
lib/digest-md5	70.1 % 850 / 1213	90.0 % 36 / 40
lib/external	85.0 % 17 / 20	100.0 % 2 / 2
lib/gl	55.0 % 683 / 1242	78.3 % 47 / 60
lib/gltests	81.9 % 463 / 565	100.0 % 31 / 31
lib/gssapi	14.8 % 39 / 263	50.0 % 4 / 8
lib/login	83.3 % 80 / 96	100.0 % 6 / 6
lib/ntlm	76.7 % 46 / 60	100.0 % 3 / 3
lib/plain	81.7 % 67 / 82	100.0 % 2 / 2
lib/scram	71.6 % 479 / 669	85.2 % 23 / 27
lib/securid	82.8 % 106 / 128	100.0 % 4 / 4
lib/src	74.7 % 633 / 847	75.8 % 97 / 128
lib/tests	66.7 % 4 / 6	100.0 % 1 / 1
tests	72.2 % 894 / 1239	85.1 % 40 / 47

Generated by: [LCOV version 1.7](#)

Other services

- Cyclomatic code complexity charts to help find complex code
 - Useful to identify complex and thus likely buggy code
 - Rationale: most of GnuTLS's security bugs have been in functions which are at the top cyclo list

[Back to GNU SASL Homepage](#)

GNU SASL Cyclomatic Complexity Report

Report generated at: **Fri Nov 06 16:20:09 CET 2009**

Resume

Total number of functions **265**
 Number of low risk functions **223**
 Number of moderate risk functions **21**
 Number of high risk functions **19**
 Number of untestable functions **2**

Details for all functions

Used ranges:

Cyclomatic Complexity	Risk Evaluation
0 - 10	Simple module, without much risk
11 - 20	More complex module, moderate risk
21 - 50	Complex module, high risk
greater than 50	Untestable module, very high risk

Function Name	Cyclomatic Complexity	Number of Statements	Number of Lines	Source File
_gsasl_kerberos_v5_server_step	59	214	381	lib/kerberos_v5/kerberos_v5.c
_gsasl_kerberos_v5_server_step	59	214	381	lib/kerberos_v5/server.c
_gsasl_kerberos_v5_client_step	44	153	277	lib/kerberos_v5/client.c
_gsasl_kerberos_v5_client_step	44	153	277	lib/kerberos_v5/kerberos_v5.c
_gsasl_scram_sha1_server_step	39	138	267	lib/scram/server.c
digest_md5_print_response	38	86	146	lib/digest-md5/printer.c

Other services

- Version controlled source statistics
 - StatCVS/GitStat
 - Helps visualize trends

Development Statistics for gnus

Generated:
2009-10-17 03:47

Report Period:
1997-03-03 to 2009-10-16

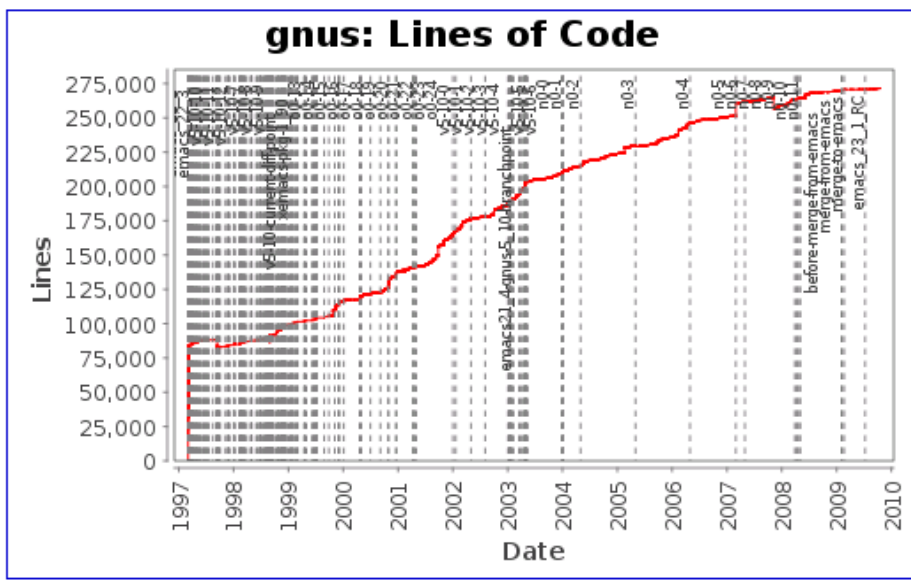
Total Files:
628

Total Lines of Code:
271634

Developers:
26

- [Developers](#)
- [Commit Logs](#)
- [Lines of Code](#)
- [File Statistics](#)
- [Directory Sizes](#)
- [Repo Heatmap](#)
- [LOC and Churn](#)
- [Cloud Commit](#)

Lines of Code

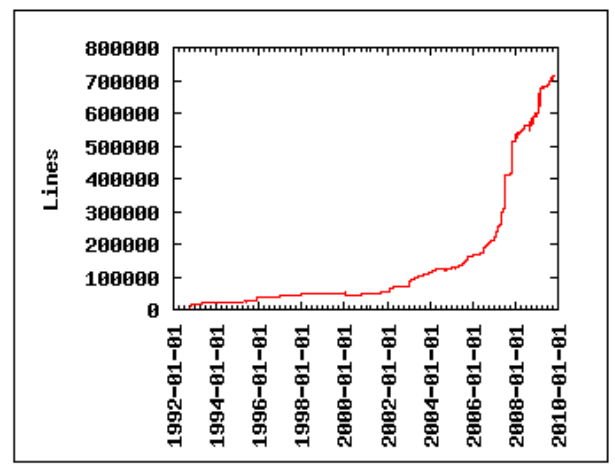


Lines

- General
- Activity
- Authors
- Files
- Lines
- Tags

Total lines:
714901

Lines of Code



Side effects

- More interaction and cooperation between GNU projects
- Improved understanding of maturity and stability of difference projects