GHC development flow

walking guide for new contributors

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NOTE
- This is not an official document by the ghc development team.
- Please refer to the official documents in detail.
- This information is current as of Feb, 2017.
Overall relationship
Development layers

Haskell packages

- vector
- parsec
- parallel
- network
- GLUT
- lens
- ...

GHC compiler

- Compiler + Runtime system

Main ML: ghc-devs at haskell.org [1]
Steering by GHC Committee [2]

Haskell Core Libraries

- base, array, process, ...

Main ML: libraries at haskell.org [3]
Steering by Core Libraries Committee [4]

GHC compiler + Core Libraries

Haskell Language

- Haskell 98, Haskell 2010, Haskell 2020

Main ML: haskell-prime at haskell.org [5]
Steering by Haskell 2020 Committee [6]

Language Report
GHC compiler development flow
GHC compiler development flow (overview)

- **report the bug**
  - **report**
  - committer

- **fix the bug**
  - **proposal**
  - **code development**

- **add the feature**
  - **create and update pages**
  - **infrastructure tools**

- **release management**
  - **wiki pages**
GHC compiler code development flow

- report the bug
- fix the bug
- add the feature

- direct commit
- patch flow

- release management

- committer

- report [8]
- proposal [10][11]
Report flow

create the ticket

Please consult ghc-devs ML if you worry.
Various ticket states of trac

**New**
- The ticket is waiting for someone to look at it and/or discussion is underway on how to fix the issue.
- acquire ownership (set "Owner" field")

**Assigned**
- Someone has said they are working on fixing the issue.
- create a patch and request review (set "Differential Rev(s)" field")

**Patch**
- There is a patch to fix the issue that is awaiting review.
- merge the patch to target branches

**Merge**
- A patch fixing the issue is present in the `master` branch and we are considering backporting it to the stable branch.
- resolved (set "Milestone" field")

**Closed**
- As of the release listed in the "Milestone" field the bug is considered resolved.
Proposal flow

traditional process on trac
- write the proposal
- create the ticket
- discussion
- update the ticket
- wait for approval

ghc-proposals process on github
- write the proposal
- pull request
- discussion
- revise proposal
- request review by steering committee
- wait for approval
- create the ticket

Please refer to the documentation in details.

code development
Document development flow
Various documents

Haskell wiki
- wiki.haskell.org

Hackage documents
- hackage.haskell.org

Trac wiki (GHC wiki)
- ghc.haskell.org/trac/ghc/wiki

The GHC users guide
- downloads.haskell.org/~ghc/latest/docs/html/users_guide

Core Libraries documents
- downloads.haskell.org/~ghc/latest/docs/html/libraries

about GHC's implementation
  * how GHC works
  * how to modify it
Document development of GHC

Haskell wiki

- wiki markup
- HTML

Trac wiki (GHC wiki)

- Trac wiki markup
- HTML

Hackage documents

- haddock format in source code
- HTML

The GHC users guide

- .rst format
- PDF

Core Libraries documents

- haddock format in source code
- PDF

Haskell

- Core Libraries documents

- GHC
There are no formal process to discuss or review. Please consult ghc-devs ML if you worry.
Infrastructure tools
Tool relation

communication

discussion

ghc-devs ML

information

Trac (wiki)

issue tracking, discussion and PR

Github

issue tracking and discussion

Trac (ticket)

code review

Phabricator

code repository

Git

performance regression

Perf

automated build

Harbormaster

phabricator cli

Arcanist

automated build

Travis

various builds

GHC builder
References
References

[1] ghc-devs -- GHC development discussion
    https://mail.haskell.org/mailman/listinfo/ghc-devs

[2] The GHC Steering Committee
    https://github.com/ghc-proposals/ghc-proposals/blob/master/steering-committee.rst

[3] Libraries -- Discussion about libraries for Haskell
    https://mail.haskell.org/cgi-bin/mailman/listinfo/libraries

[4] Core Libraries Committee
    https://wiki.haskell.org/Core_Libraries_Committee

    https://mail.haskell.org/cgi-bin/mailman/listinfo/haskell-prime

    https://prime.haskell.org

[7] The Glasgow Haskell Team
    https://ghc.haskell.org/trac/ghc/wiki/TeamGHC

[8] Reporting bugs in GHC

[9] How to contribute a patch to GHC
    https://ghc.haskell.org/trac/ghc/wiki/WorkingConventions/FixingBugs

[10] How to contribute a new feature to GHC
    https://ghc.haskell.org/trac/ghc/wiki/WorkingConventions/AddingFeatures
References

https://github.com/ghc-proposals/ghc-proposals

[12] Release management and branches  
https://ghc.haskell.org/trac/ghc/wiki/WorkingConventions/Releases

[13] Welcome to the GHC Developer Wiki  
https://ghc.haskell.org/trac/ghc/wiki

[14] Developer’s Infrastructure  
https://ghc.haskell.org/trac/ghc/wiki/Infrastructure

https://ghc.haskell.org/trac/ghc/wiki/WorkingConventions/BugTracker

[16] Adding new test cases  
https://ghc.haskell.org/trac/ghc/wiki/Building/RunningTests/Adding

[17] Using git with GHC  
https://ghc.haskell.org/trac/ghc/wiki/WorkingConventions/Git

[18] Using Phabricator for GHC development  
https://ghc.haskell.org/trac/ghc/wiki/Phabricator

[19] Harbormaster: continuous integration & patch building for GHC  
https://ghc.haskell.org/trac/ghc/wiki/Phabricator/Harbormaster

[20] Travis  
https://ghc.haskell.org/trac/ghc/wiki/Travis
References

[21] The GHC Builder
    https://ghc.haskell.org/trac/ghc/wiki/Builder

[22] perf
    https://perf.haskell.org/ghc

[23] Accept PRs on GitHub
    https://github.com/ghc-proposals/ghc-proposals/pull/11
References

[24] Notes on Trac Wiki formatting
    https://ghc.haskell.org/trac/ghc/wiki/TracWikiMisc

[25] WikiFormatting
    https://ghc.haskell.org/trac/ghc/wiki/WikiFormatting

[26] Steps to Add a New Wiki Page
    https://ghc.haskell.org/trac/ghc/wiki/WikiNewPage

[27] The Trac Wiki System
    https://ghc.haskell.org/trac/ghc/wiki/TracWiki

[28] source:ghc/docs/users_guide
    https://ghc.haskell.org/trac/ghc/browser/ghc/docs/users_guide

[29] Glasgow Haskell Compiler Users Guide
    https://downloads.haskell.org/~ghc/latest/docs/html/users_guide

[30] source:ghc/libraries
    https://ghc.haskell.org/trac/ghc/browser/ghc/libraries

[31] Haskell Hierarchical Libraries
    https://downloads.haskell.org/~ghc/latest/docs/html/libraries

[32] How to contribute a patch to GHC
    https://ghc.haskell.org/trac/ghc/wiki/WorkingConventions/FixingBugs
See also

[33] Working on GHC
https://ghc.haskell.org/trac/ghc/wiki/WorkingConventions

[34] Resources for newcomers to GHC
https://ghc.haskell.org/trac/ghc/wiki/Newcomers

[35] Haskell :: Reddit
https://www.reddit.com/r/haskell

[36] IRC Channels
https://www.haskell.org/irc
http://ircbrowse.net/ghc