8 DEVELOPMENT FRAMEWORK NODE.JS, NPM, GIT

Salvatore Rinzivillo

OBJECTIVES

- Setup a developing environment
  - Install Node.js and NPM
  - Install and configure Vue and @vue/cli
  - Configure and initialize a project
- Install and configure git
  - Create a repository and import project files
- IDEs
  - Fork, Git Desktop
  - WebStorm, VS Code

NODE.JS AND NPM

WHAT IS NODE.JS

- "An asynchronous event driven Javascript runtime"
  - Non-blocking, event-driven I/O operations
  - Lightweight and efficient for data-intensive applications
  - Distributed computation and load balancing
- Available for download at https://nodejs.org/

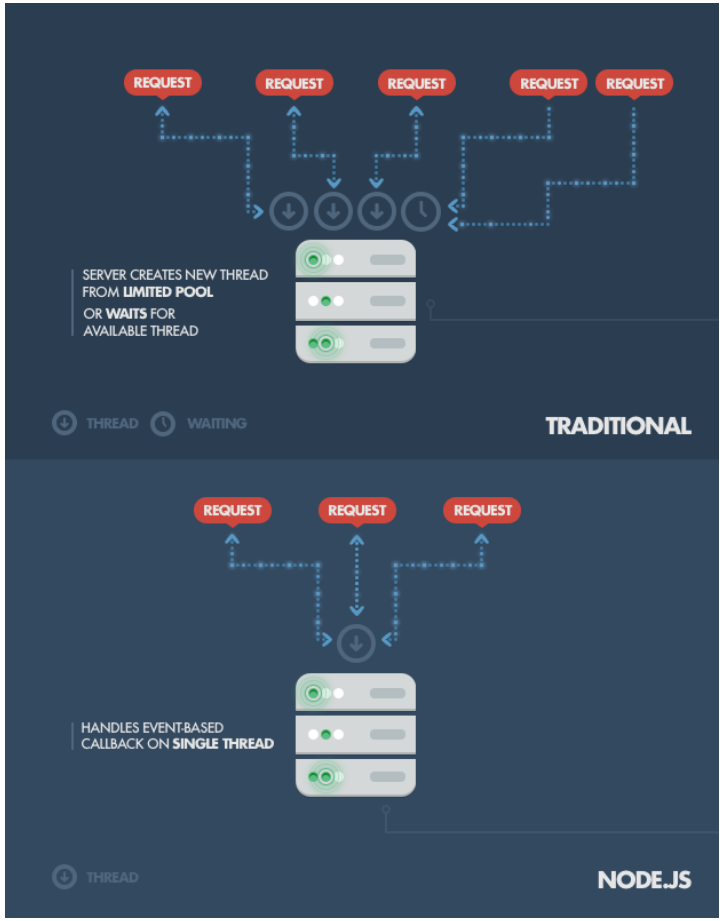


Image source: https://www.toptal.com/nodejs/why-the-hell-would-i-use-node-js

NPM – NODE PACKAGE MANAGER

- Node.js has a large library of public available, reusable components
- Components are available through a repository
- Manage libraries for global use and local projects
- Handle all dependencies

NPM - COMMANDS

- `npm init`
  - Initialize a project, creating a file `package.json`
- `npm install <module>`
  - Download and install module within the directory `node_modules`
  - ~~With the flag `--save`, add the module to the `package.json` list of dependencies~~
  - With the flag `--global` (or `-g`) the module is installed globally on the system

MOST USED PACKAGES

- Express: a web application development framework for node.js
- Lodash: general utilities for handling data structures in javascript
- http-server; webpack; babel
- Specifically for the course:
  - D3
  - Vega; Vega-lite
  - Bootstrap
  - Vue.js
  - …

EXERCISE – CREATE A PROJECT WITH NODE.JS

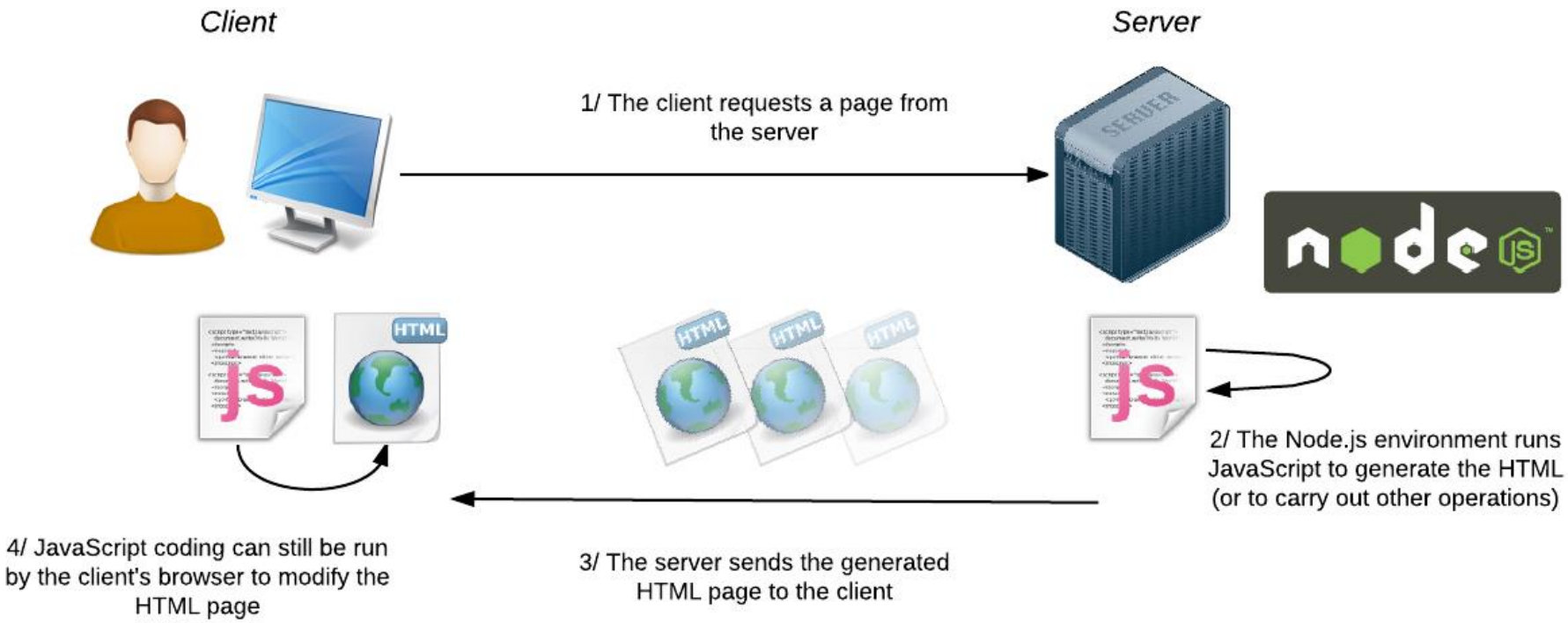
- Demo

CONFIGURING VUE.JS AND @VUE/CLI

- `npm install -g @vue/cli`
  - Create a command to manage Vue.js projects
- `npm init vue@latest`
- `cd my-project`
- `npm install`
- `npm run dev`
- These commands create a skeleton project configured with Vue.js

WEB SERVER

WEB SERVER FOR NODE.JS



WEB SERVER IN NODE.JS

- There are several modules available for running a web server
- A very simple http server:
  - `npm install -g http-server`
- A more sophisticated application server:
  - `npm install -g express`

EXERCISE – USE HTTP-SERVER TO ACCESS OUR PROJECT

- Demo

VERSION CONTROL WITH GIT

WHAT IS VERSION CONTROL?

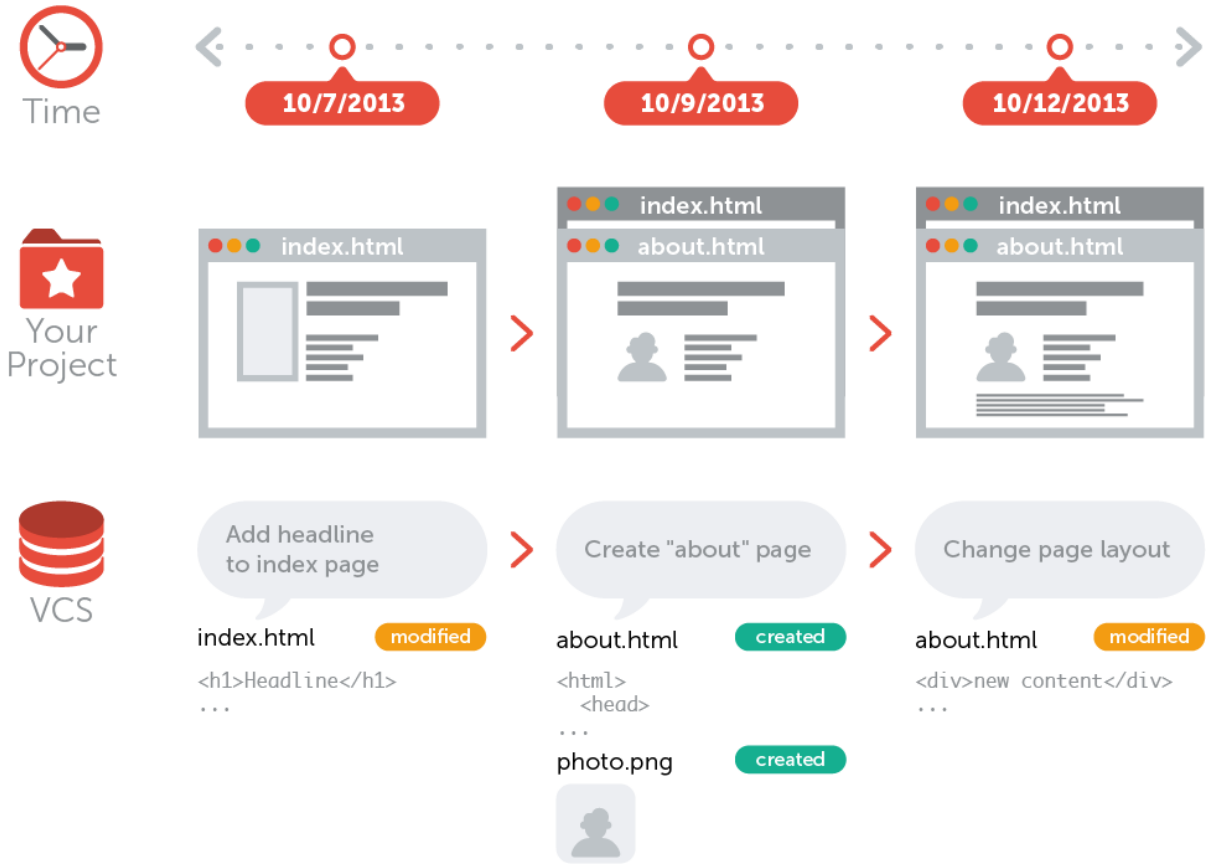


Image Source: https://www.git-tower.com/learn/git/ebook/en/command-line/basics/what-is-version-control

WHY USE A VERSION CONTROL SYSTEM?

- Collaboration
  - Any member of a team can work on any file at any time
  - Merge of contribution is handle by the VCS
- Storing versions
  - Tracking of changes through periodic saves of snapshots
  - Only one version of a project at any time
    - Other versions are packed within the VCS
- Restore previous versions
- Follow the development of the project
- Backup, when using external repositories

WHICH VCS? INTRODUCING GIT

- Download a client from public repositories
  - For example: GITHub, BitBucket
- Use clients specific for your OS
  - For example: `brew install git` (for MacOsX)
- Initial configuration
  - `git config --global user.name “rinziv”`
  - `git config --global user.email “rinzivillo@isti.cnr.it”`
  - `git config --global`

GIT – CREATING A REPOSITORY

- GIT handles two kinds of repositories
  - Local repository
    - Contained within a folder `.git` in the root of the project folder
    - Only on person access this repo
  - Remote repository
    - Located into a remote server
    - Locally stored within the `.git` folder
    - Team members work concurrently on remote repository

GIT – CREATE A LOCAL REPOSITORY

- Move within the project root directory
- Use `git init` to start versioning tracking
- The root of the project is called working copy
  - There is only one working copy at any moment
  - It is possible to update the current working copy with previous versions from the repository
- Some files (usually related to the OS) can be ignored for the versioning
  - Create a file called `.gitignore` in the root of the project folder
  - List the files to ignore within the file

GIT – CLONE A REMOTE REPOSITORY

- A remote repository have a URL of the form:
  - ssh://user@server/git-repo.git
  - user@server:git-repo.git
  - http://example.com/git-repo.git
  - https://example.com/git-repo.git
  - git://example.com/git-repo.git

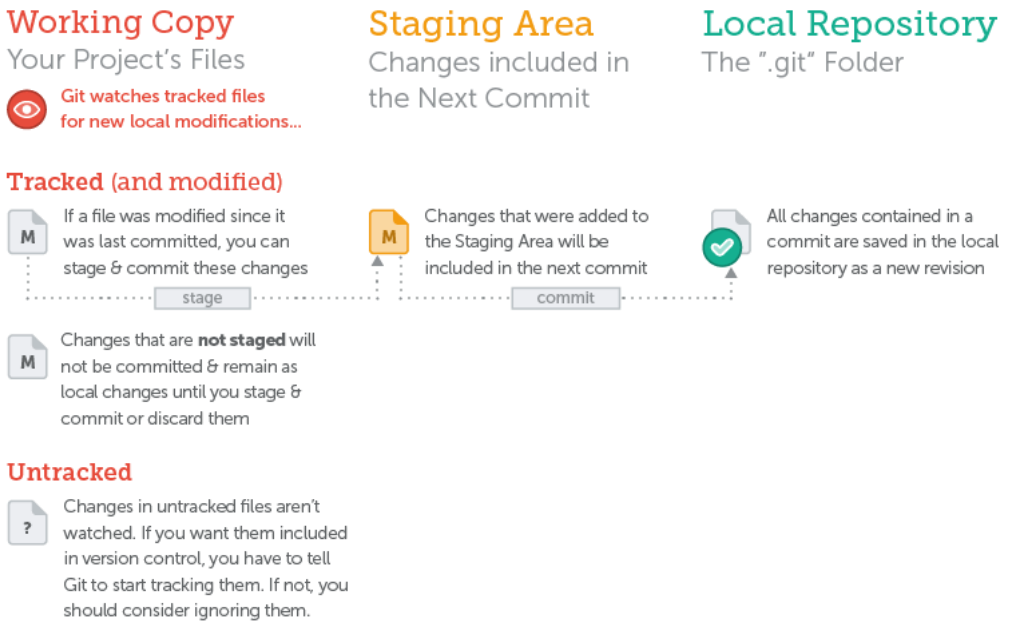
GIT - COMMIT

- Commit operation save the snapshot of the working copy on the repository
  - `git add -A`
  - `git commit -m “Initial commit”`

GIT – STATUS OF THE PROJECT

- Each file within the project have one of the following state
  - Untracked: the file is not under version control. GIT do not track any change on this file
  - Tracked: GIT reports changes on these files
- `git status` reports the list of files within the project that have changed and those that are not tracked

GIT – STAGING AREA



Source: https://www.git-tower.com/learn/git/ebook/en/command-line/basics/working-on-your-project#start

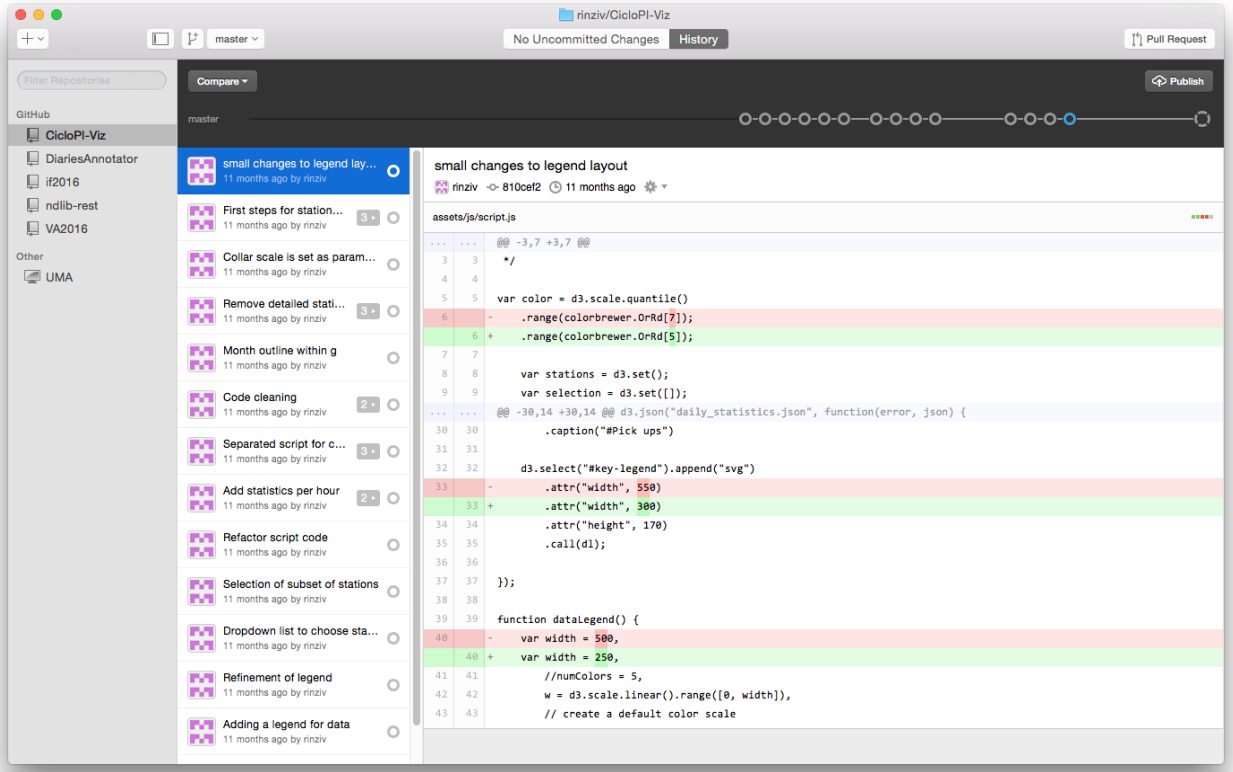
GIT – PREPARING THE STAGING AREA AND COMMIT

- Add the files to include in the staging area
  - git add new-page.html index.html css/*
  - git rm error.html
  - Check the status with: git status
- Commit changes
  - git commit -m "Implement the new login box”

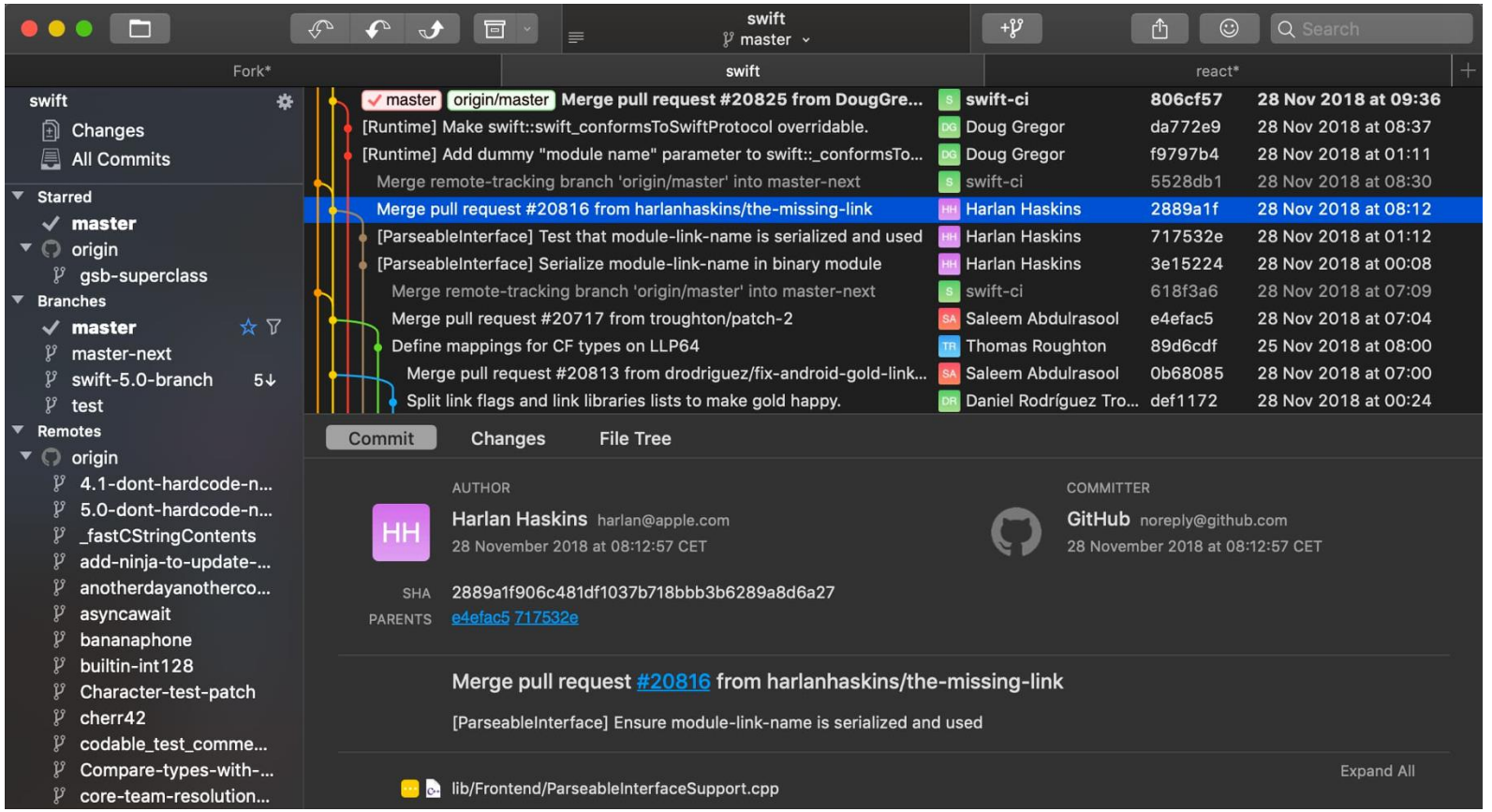
WHEN TO COMMIT?

- Each commit should contains changes related to a single topic
- Save only completed work (for temporary saving use Stash)
- Test the project before committing
- Add descriptive message
- Commit often

DESKTOP GUI VERSION



FORK


swift
master
Search
Fork*
swift
react*
swift
Changes
All Commits
Starred
master
origin
gsb-superclass
Branches
master
master-next
swift-5.0-branch 5↓
test
Remotes
origin
4.1-dont-hardcode-n...
5.0-dont-hardcode-n...
_fastCStringContents
add-ninja-to-update-...
anotherdayanotherco...
asyncawait
bananaphone
builtin-int128
Character-test-patch
cherr42
codable_test_comme...
Compare-types-with-...
core-team-resolution...
master origin/master Merge pull request #20825 from DougGre... swift-ci 806cf57 28 Nov 2018 at 09:36
[Runtime] Make swift::swift_conformsToSwiftProtocol overridable. Doug Gregor da772e9 28 Nov 2018 at 08:37
[Runtime] Add dummy "module name" parameter to swift::_conformsTo... Doug Gregor f9797b4 28 Nov 2018 at 01:11
Merge remote-tracking branch 'origin/master' into master-next swift-ci 5528db1 28 Nov 2018 at 08:30
Merge pull request #20816 from harlanhaskins/the-missing-link Harlan Haskins 2889a1f 28 Nov 2018 at 08:12
[ParseableInterface] Test that module-link-name is serialized and used Harlan Haskins 717532e 28 Nov 2018 at 01:12
[ParseableInterface] Serialize module-link-name in binary module Harlan Haskins 3e15224 28 Nov 2018 at 00:08
Merge remote-tracking branch 'origin/master' into master-next swift-ci 618f3a6 28 Nov 2018 at 07:09
Merge pull request #20717 from troughton/patch-2 Saleem Abdulrasool e4efac5 28 Nov 2018 at 07:04
Define mappings for CF types on LLP64 Thomas Roughton 89d6cdf 25 Nov 2018 at 08:00
Merge pull request #20813 from drodriguez/fix-android-gold-link... Saleem Abdulrasool 0b68085 28 Nov 2018 at 07:00
Split link flags and link libraries lists to make gold happy. Daniel Rodríguez Tro... def1172 28 Nov 2018 at 00:24
Commit
Changes
File Tree
AUTHOR
HH
Harlan Haskins harlan@apple.com
28 November 2018 at 08:12:57 CET
COMMITTER
GitHub noreply@github.com
28 November 2018 at 08:12:57 CET
SHA 2889a1f906c481df1037b718bbb3b6289a8d6a27
PARENTS e4efac5 717532e
Merge pull request #20816 from harlanhaskins/the-missing-link
[ParseableInterface] Ensure module-link-name is serialized and used
lib/Frontend/ParseableInterfaceSupport.cpp
Expand All

EXERCISE – CREATE A REPOSITORY FOR OUR PROJECT

- Demo

CLASSROOM REPOSITORY

https://github.com/va602aa-master