Salvatore Rinzivillo

VISUAL ANALYTICS

Announcment

- No lesson on March 5th
- We will meet on March 6th from 11 to 13 in Aula N1

DEVELOPMENT FRAMEWORK

Objectives

- Setup a developing environment
  - Install Node.js and NPM
  - Configure and initialize a project
- Install and configure git
  - Create a repository and import project files
- IDEs
  - GitKraken, Git Desktop
  - WebStorm, Atom.io, Textmate

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/

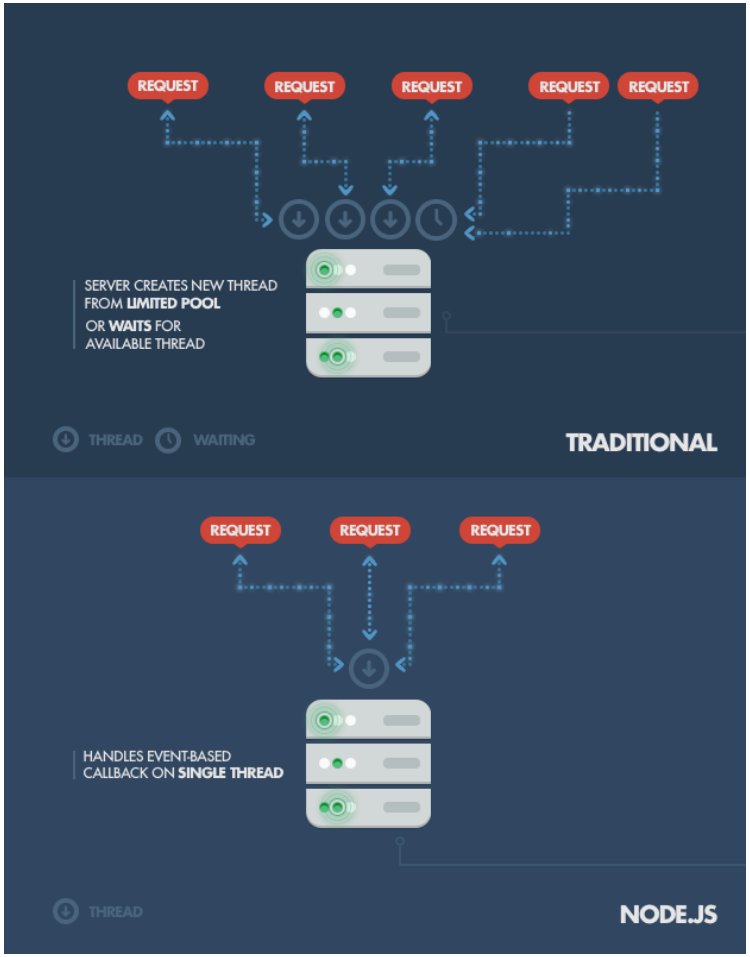


Image source: https://www.toptal.com/nodejs/why-the-hell-would-i-use-node-js

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

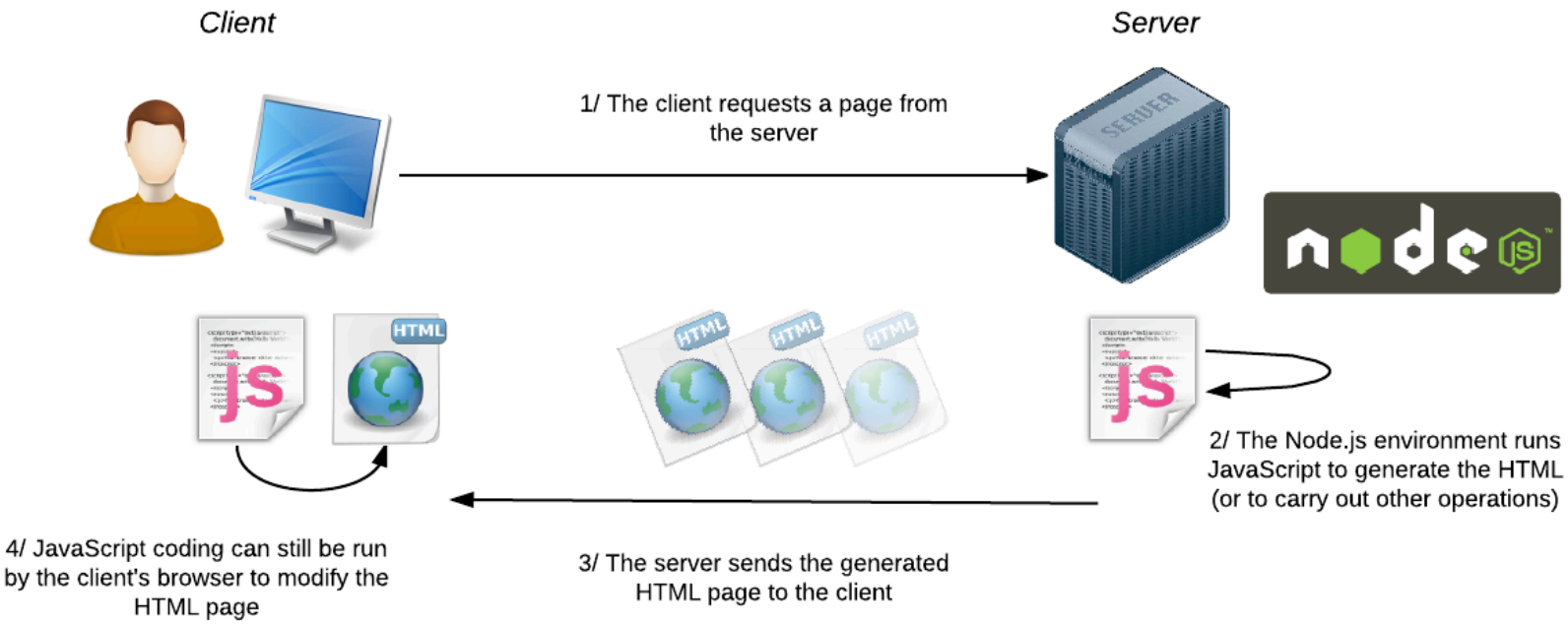
- Express: a web application development framework for node.js
- Lodash: general utilities for handling data structures in javascript
- http-server
- Specifically for the course:
  - D3
  - Nvd3
  - Bootstrap
  - Jquery
  - …

Exercise – Create a project with Node.js

- Demo

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?

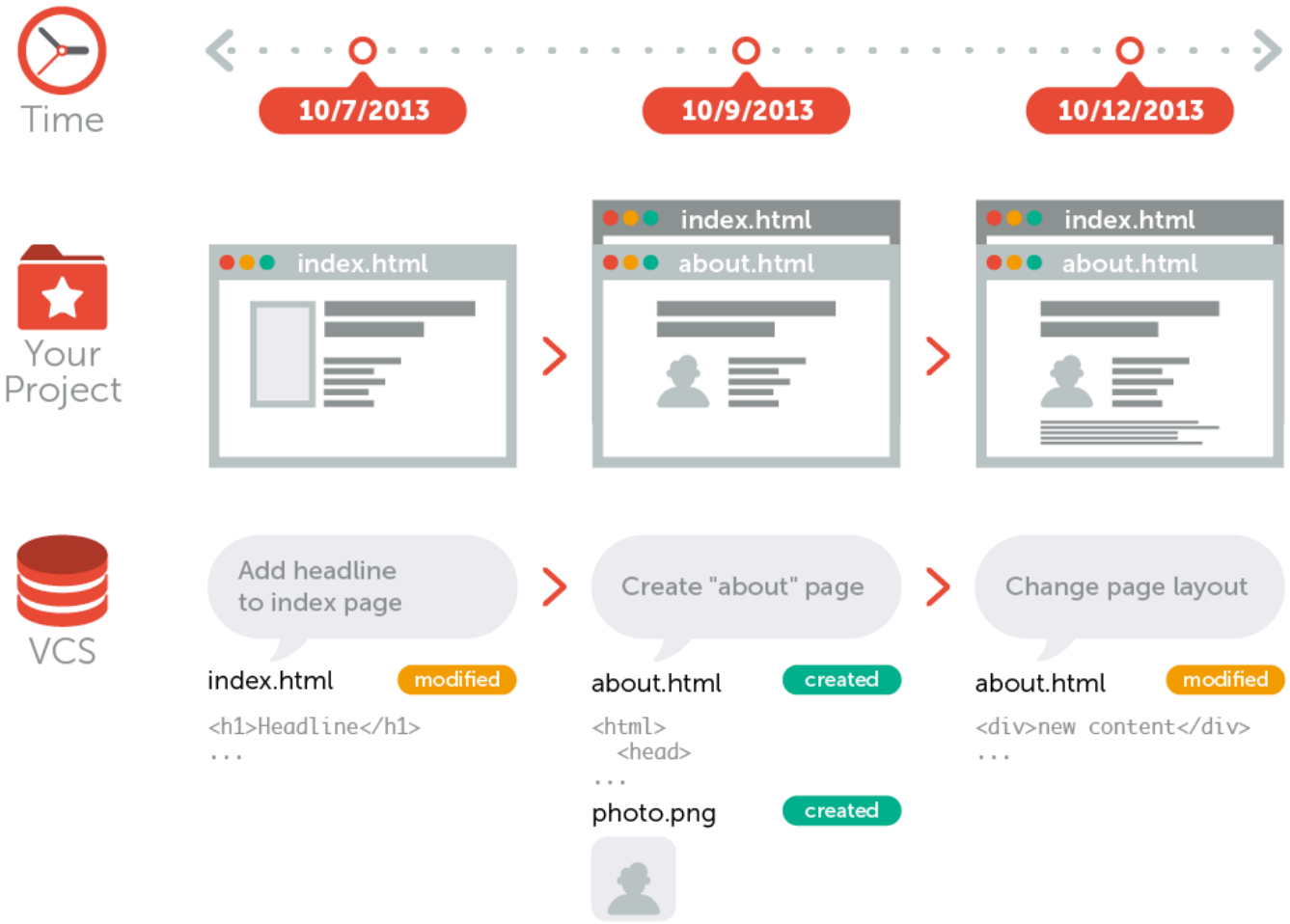


Image Source: https://www.git-tower.com/learn/git/ebook/en/command-line/basics/what-is-version-control

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

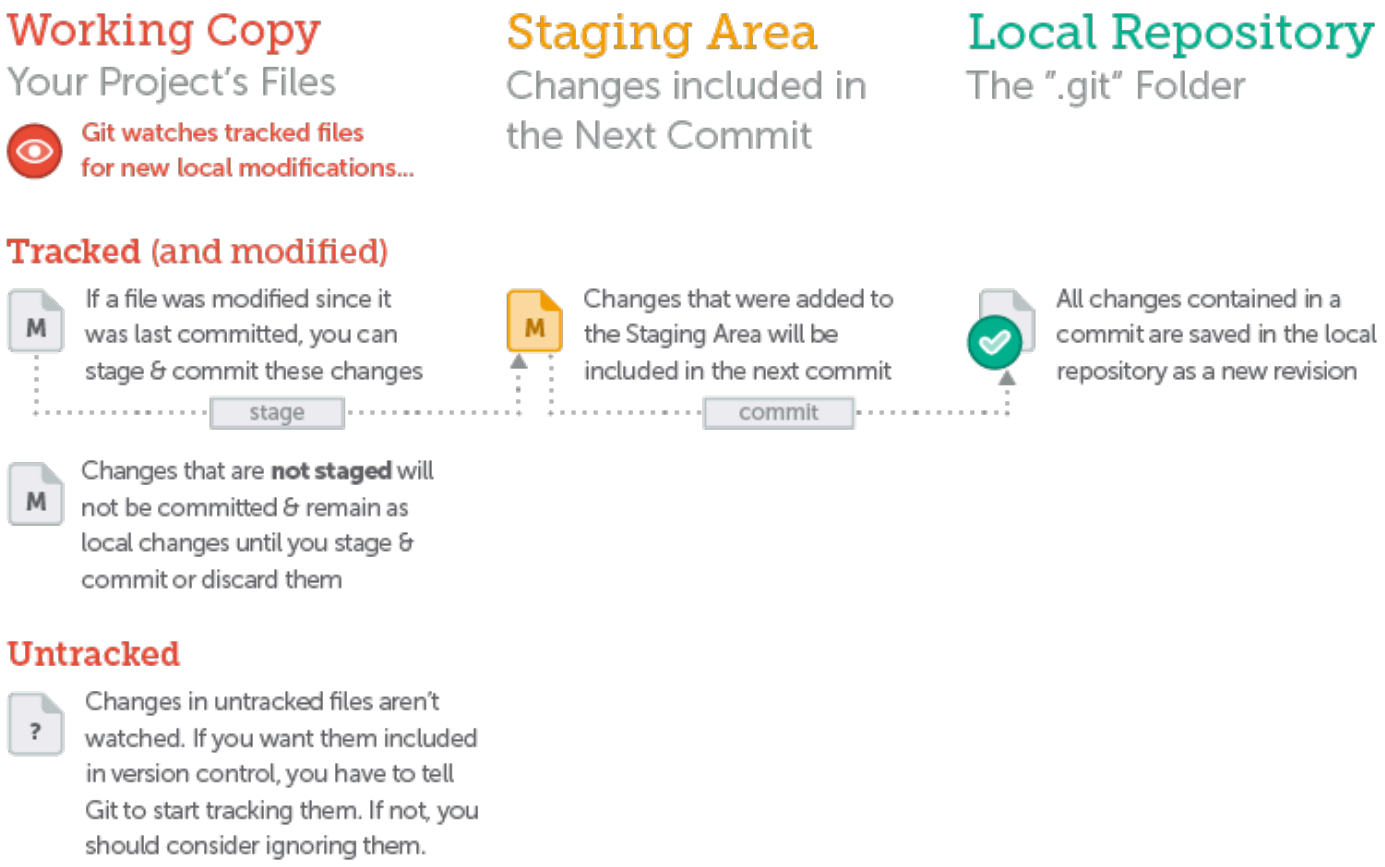


Image Source: https://www.git-tower.com/learn/git/ebook/en/command-line/basics/working-on-your-project#start

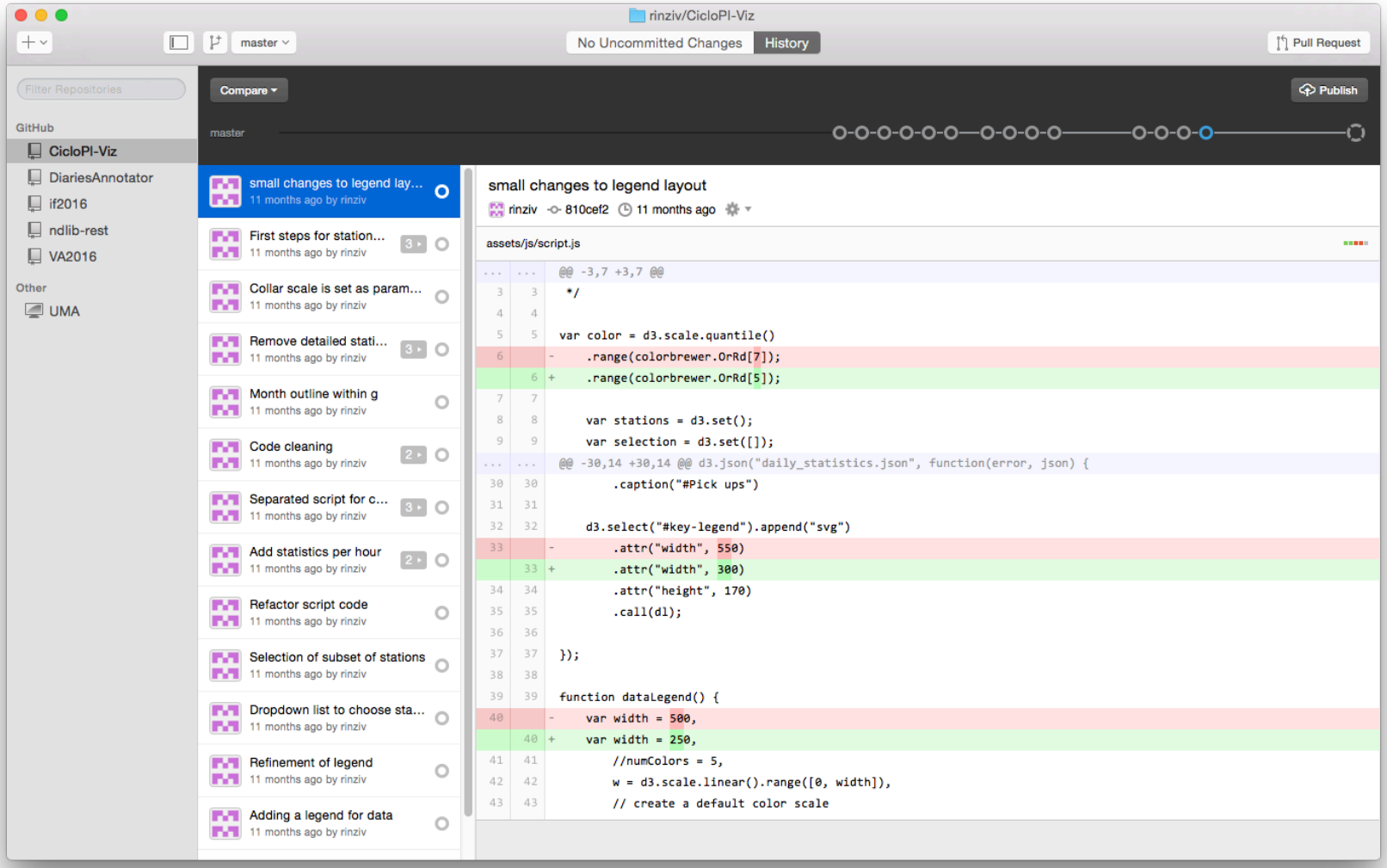
GIT – Preparing the staging area and commit

- 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”

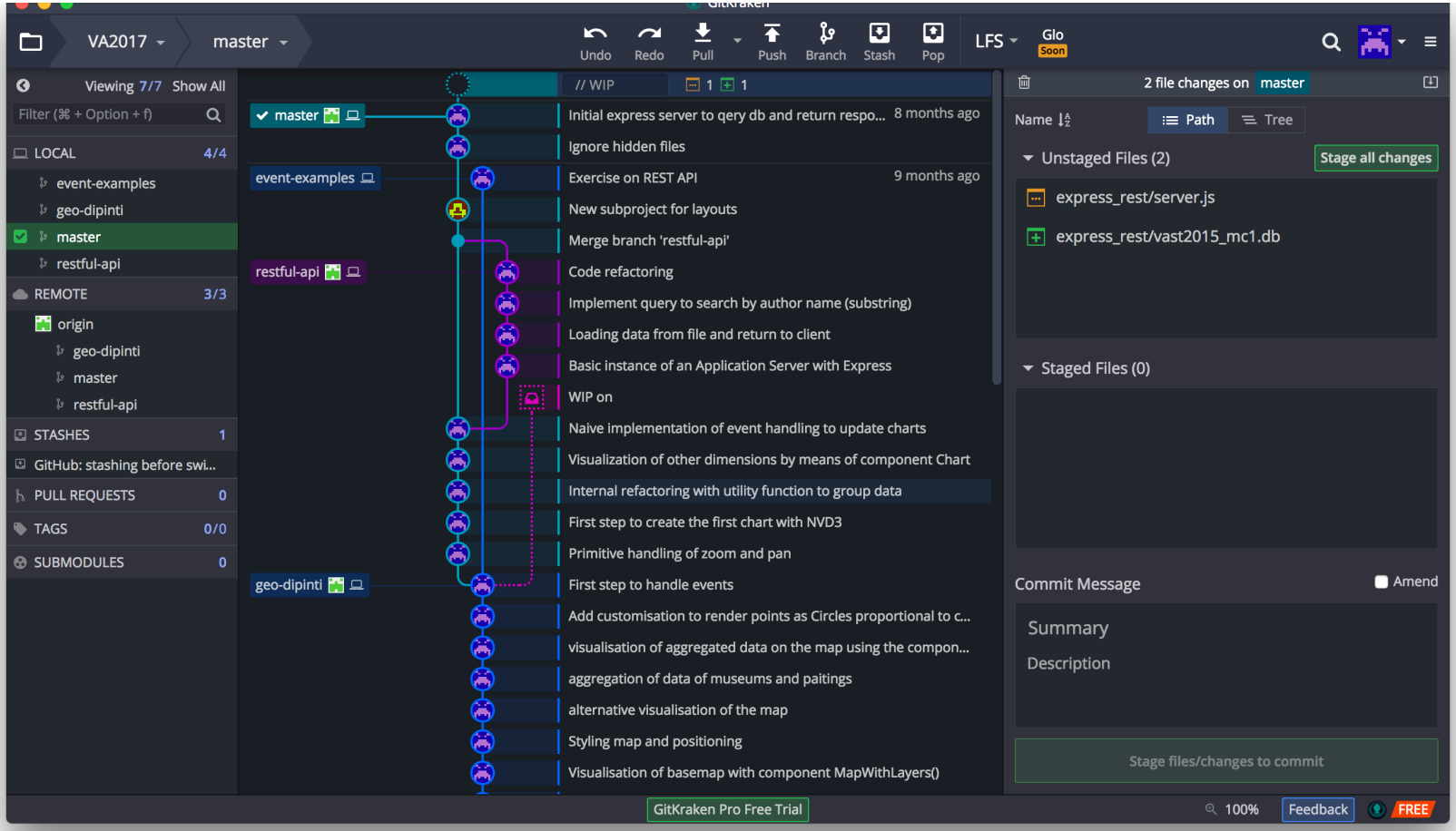
When to commit?

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

Desktop GUI Version



GitKraken


VA2017
master
Undo
Redo
Pull
Push
Branch
Stash
Pop
LFS
Glo
Soon
Viewing 7/7 Show All
Filter (⌘ + Option + f)
LOCAL 4/4
event-examples
geo-dipinti
master
restful-api
REMOTE 3/3
origin
geo-dipinti
master
restful-api
STASHES 1
GitHub: stashing before swi...
PULL REQUESTS 0
TAGS 0/0
SUBMODULES 0
// WIP 1 1
master
Initial express server to qery db and return respo... 8 months ago
Ignore hidden files
event-examples
Exercise on REST API 9 months ago
New subproject for layouts
Merge branch 'restful-api'
restful-api
Code refactoring
Implement query to search by author name (substring)
Loading data from file and return to client
Basic instance of an Application Server with Express
WIP on
Naive implementation of event handling to update charts
Visualization of other dimensions by means of component Chart
Internal refactoring with utility function to group data
First step to create the first chart with NVD3
Primitive handling of zoom and pan
geo-dipinti
First step to handle events
Add customisation to render points as Circles proportional to c...
visualisation of aggregated data on the map using the compon...
aggregation of data of museums and paitings
alternative visualisation of the map
Styling map and positioning
Visualisation of basemap with component MapWithLayers()
2 file changes on master
Name
Path
Tree
Unstaged Files (2)
Stage all changes
express_rest/server.js
express_rest/vast2015_mc1.db
Staged Files (0)
Commit Message
Amend
Summary
Description
Stage files/changes to commit
GitKraken Pro Free Trial
100%
Feedback
FREE

Exercise – Create a repository for our project

- Demo

Classroom Spring 2018 repository

https://github.com/VA602AA-master

https://goo.gl/yVcwYt