CSE306 Software Quality in Practice

Dr. Carl Alphonce
alphonce@buffalo.edu
343 Davis Hall
git

- distributed version control system
A first repo to show students how to interact with repo on GitHub

ClassExercise-00

A first repo to show students how to interact with repo on GitHub
git clone
A first repo to show students how to interact with repo on GitHub

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A first repo to show students how to interact with repo on GitHub
As a public repo:
Serenity:CSE306 alphonce$ git clone https://github.com/UB-CSE306-SP2020/ClassExercise-00.git
Cloning into 'ClassExercise-00'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), done.
Serenity:CSE306 alphonce$ ls -la
total 0
```
drwxr-xr-x  3 alphonce staff  96 Feb 4 22:16 .
drwx------  156 alphonce staff 4992 Feb 4 22:16 ..
drwxr-xr-x  4 alphonce staff 128 Feb 4 22:16 ClassExercise-00
```

As a private repo:
Serenity:CSE306 alphonce$ git clone https://github.com/UB-CSE306-SP2020/ClassExercise-00.git
Cloning into 'ClassExercise-00'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), done.
Serenity:CSE306 alphonce$ ls -la
```
drwxr-xr-x  3 alphonce staff  96 Feb 4 22:24 .
drwx------  156 alphonce staff 4992 Feb 4 22:16 ..
drwxr-xr-x  4 alphonce staff 128 Feb 4 22:25 ClassExercise-00
```

As a private repo using keychain to supply credentials:
Serenity:CSE306 alphonce$ git clone https://github.com/UB-CSE306-SP2020/ClassExercise-00.git
Cloning into 'ClassExercise-00'...
Username for 'https://github.com': alphonce@buffalo.edu
Password for 'https://alphonce@buffalo.edu@github.com':
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), done.
Serenity:CSE306 alphonce$ ls -la
```
drwxr-xr-x  3 alphonce staff  96 Feb 4 22:24 .
drwx------  156 alphonce staff 4992 Feb 4 22:16 ..
drwxr-xr-x  4 alphonce staff 128 Feb 4 22:25 ClassExercise-00
```
dhcp020-209-034:git alphonce$ cd classexercise/
dhcp020-209-034:classexercise alphonce$ ls -la
dhcp020-209-034:git alphonce$ cd classexercise/
dhcp020-209-034:classexercise alphonce$ ls -la

total 8
-dw×r—xr—x 4 alphonce staff 136 Apr 13 09:59 .
dw×r—xr—x 29 alphonce staff 986 Apr 13 09:59 ..
dw×r—xr—x 13 alphonce staff 442 Apr 13 09:59 .git
-rw—r—r—r— 1 alphonce staff 565 Apr 13 09:59 README.md
pointer to the current branch
$ more head
ref: refs/heads/master
staging area
$ git ls-files
README.md
The `git man page` seems to be surprisingly bereft of an official definition, other than this (emphasis mine):

The **object database** contains objects of three main types: **blobs**, which hold file data; trees, which point to blobs and other trees to build up directory hierarchies; and commits, which each reference a single tree and some number of parent commits.

The repeated use of the term "object database" across git documentation suggests a borrowing of "blob" specifically from DBMSs.

In its article on **Binary large objects** Wikipedia defines the term as "a collection of binary data stored as a single entity in a database management system", further offering the following:

Blobs were originally just amorphous chunks of data invented by Jim Starkey at DEC, who describes them as "the thing that ate Cincinnati, Cleveland, or whatever" from "the 1958 Steve McQueen movie", referring to The Blob. Later, Terry McKiever, a marketing person for Apollo, felt that it needed to be an acronym and invented the backronym Basic Large Object. Then Informix invented an alternative backronym, Binary Large Object.

So, though it's not a definitive answer, the term "blob" has a conventional and well-defined usage across computer science as an opaque string of binary data, and git adheres to that definition without further specifying it.
$ ls -l objects

```
total 0
  drwxr-xr-x  3 alphonce staff  102 Apr 17 13:26 25
  drwxr-xr-x  3 alphonce staff  102 Apr 17 13:26 39
  drwxr-xr-x  3 alphonce staff  102 Apr 17 13:26 9c
  drwxr-xr-x  2 alphonce staff  68 Apr 17 13:26 info
  drwxr-xr-x  2 alphonce staff  68 Apr 17 13:26 pack
```
$ git cat-file -t 25b4
commit
$ git cat-file -t 9ce9
tree
$ git cat-file -t 39af
blob
$ git cat-file -p 25b4
   tree 9ce959348ab4c2e3eb61549393b4b1acc0504a649
author Carl Alphonce <alphonce@buffalo.edu> 1492449992 +0000
commiter Carl Alphonce <alphonce@buffalo.edu> 1492449992 +0000

README.md created online with Bitbucket
$ git cat-file -p 9ce9
100644 blob 39af52c077c0d4c3bc7730b362592e0bf7f635db README.md
$ git cat-file -p 39af
# README #

This README would normally document whatever steps are necessary to get your application up and running.

### What is this repository for? ###
* Quick summary
* Version
* [Learn Markdown](https://bitbucket.org/tutorials/markdowndemo)

### How do I get set up? ###
* Summary of set up
* Configuration
* Dependencies
* Database configuration
* How to run tests
* Deployment instructions

### Contribution guidelines ###
* Writing tests
* Code review
* Other guidelines

### Who do I talk to? ###
* Repo owner or admin
* Other community or team contact
pointers to commits
```bash
$ ls -l refs
```

```
total 0
-rw-r--r-- 1 alphonce staff  107 Apr 17 13:26 index
```

```
wxr-xr-x 3 alphonce staff  102 Apr 17 13:26 heads
```

```
wxr-xr-x 3 alphonce staff  102 Apr 17 13:26 remotes
```

```
wxr-xr-x 2 alphonce staff   68 Apr 17 13:26 tags
```

```
wxr-xr-x 3 alphonce staff  102 Apr 17 13:26 info
```

```
wxr-xr-x 4 alphonce staff  136 Apr 17 13:26 logs
```

```
wxr-xr-x 7 alphonce staff  238 Apr 17 13:26 objects
```

```
wxr-xr-x 5 alphonce staff  170 Apr 17 13:26 refs
```

```
wxr-xr-x 4 alphonce staff  136 Apr 17 13:26 hooks
```

```
wxr-xr-x 7 alphonce staff  238 Apr 17 13:26 objects
```

```
wxr-xr-x 5 alphonce staff  170 Apr 17 13:26 refs
```

```
wxr-xr-x 4 alphonce staff  136 Apr 17 13:26 hooks
```

```
wxr-xr-x 7 alphonce staff  238 Apr 17 13:26 objects
```

```
wxr-xr-x 5 alphonce staff  170 Apr 17 13:26 refs
```
Possible states of a file

- **unmodified**
  - edit
- **modified**
  - add
- **untracked**
  - add
- **staged**
  - commit
commit preserves contents
(accidental removals can be recovered from)

- unmodified
  - edit
  - add
  - staged
- modified
- untracked

add

commit
git add
create a file
add to index
(staging area)

* git add <filename>
stash
workspace
index staging
local repository
remote repository

```
git commit
```
commit to local repo

```bash
  git commit -m "message"
```