Gitlet Introduction
Some Advice

• Gitlet is the best
• Start early!
• Complete lab 12
• Read the spec
Gitlet Introduction
java gitlet.Main init

git init
Working Directory

Gitlet Repository

Staging Area

Commits

- gitlet-test
  - gitlet
    - Staged for addition
    - Staged for removal
Working Directory

Gitlet Repository

Staging Area

Commits

Commit 0

Metadata
null

Staged for addition

Staged for removal
Commit 0

message = “initial commit”
timestamp = 00:00:00 UTC, Thursday, 1 January 1970
Working Directory

Gitlet Repository

Staging Area

Commits

Commit 0

Metadata
null

Staged for addition

Staged for removal
nano Hello.txt
java gitlet.Main add Hello.txt

git add Hello.txt
Working Directory

Gitlet Repository

Staging Area

Commits

Blobs

- Working Directory
  - gitlet-test
    - Hello.txt

- Gitlet Repository
  - .gitlet
    - Staged for addition
    - Staged for removal
  - Master
  - HEAD
  - Commit 0
    - Metadata
      - null
Working Directory

Gitlet Repository

Staging Area

Commits

Blobs

commit 0

metadata

null

blob 0

"Hello"
java gitlet.Main commit "Created Hello.txt"

git commit -m "Created Hello.txt"
Working Directory

Staging Area

Gitlet Repository

Commits

Blobs

Staged for addition

Hello.txt → Blob 0

Staged for removal

Master

HEAD

Commit 0

Metadata

null

Blob 0

“Hello”
Working Directory

Staging Area

Staged for addition
Hello.txt → Blob 0

Staged for removal

Gitlet Repository

Commits

Commit 0
Metadata
null

Commit 1
Metadata
null

Blobs

Blob 0
“Hello”
A Git project consists of a working directory containing files and a Gitlet repository containing metadata about those files. The working directory contains a file named `Hello.txt`. The Gitlet repository has a staging area with entries for files marked as staged for addition and removal. The repository has two commits: Commit 0 and Commit 1. Commit 0 has metadata with a null value, and Commit 1 has a message of "Created Hello.txt" and a timestamp of 17:10:00 PST, Monday, 13 April 2020. The repository also contains a blob named Blob 0 with the contents "Hello".
Working Directory

Gitlet Repository

Staging Area

Commits

Blobs

```
Hello.txt
```

```
null
```

```
null
Hello.txt
```

```
“Hello”
```

Symbolic Reference:

```
commit 1 (HEAD -> master)
  2495b15... Commit 1
  5e2d05c... Commit 0
  4c3fd7b... Blob 0
```

Sequence:

1. Commit 0
2. Commit 1

Metadata:

```
null
Hello.txt
```

Blob 0:

```
“Hello”
```
- Working Directory
  - gitlet-test
    - Hello.txt

- Gitlet Repository
  - Staged for addition
  - Staged for removal
  - .gitlet
    - Staged for addition
    - Staged for removal
    - Metadata
      - null
    - Commit 0
      - Metadata
        - null
      - Blob 0
        - "Hello"
    - Commit 1
      - Metadata
        - Hello.txt
      - Blob 0
        - "Hello"

- Staging Area
- Commits
- Blobs
Working Directory

Staging Area

Gitlet Repository

Commits

Blobs

null

Hello.txt

“Hello”
nano World.txt

java gitlet.Main add World.txt

java gitlet.Main add Hello.txt

java gitlet.Main commit “Created World.txt and tried to add Hello.txt”
Working Directory

Staging Area

Gitlet Repository

Commits

Blobs

---

Working Directory

- gitlet-test
  - Hello.txt
  - World.txt

Gitlet Repository

- Staged for addition
- Staged for removal

Commits

- Master
  - HEAD
  - Commit 0
    - Metadata
    - null
  - Commit 1
    - Metadata
    - Hello.txt

Blobs

- Blob 0
  - “Hello”
Working Directory

- Hello.txt
- World.txt

Gitlet Repository

- Staged for addition
  - World.txt → Blob 1
- Staged for removal

Staging Area

- Master
- HEAD

Commits

- Commit 0
  - Metadata: null
  - Blob 0: "Hello"

- Commit 1
  - Metadata: Hello.txt
  - Blob 1: "World"
Working Directory

Gitlet Repository

Staging Area

Commits

Blobs

Commit 0
  - Metadata: null
  - Blob 0: "Hello"

Commit 1
  - Metadata: Hello.txt
  - Blob 1: "World"

Commit 2
  - Metadata: Hello.txt, World.txt
nano Hello.txt

nano World.txt

java gitlet.Main add World.txt

java gitlet.Main add Hello.txt

java gitlet.Main commit "Modified World.txt and Hello.txt"
Working Directory

Staging Area

Gitlet Repository

Commits

Blobs

Commit 0
- Metadata: null
- Blob 0: “Hello”

Commit 1
- Metadata: Hello.txt
- Blob 1: “World”

Commit 2
- Metadata: Hello.txt, World.txt

Staged for addition

Staged for removal
Working Directory

- gitlet-test
  - Hello.txt
  - World.txt

Gitlet Repository

- .git
  - commit-0
    - Metadata
      - null
    - Blob 0
      - “Hello”
  - commit-1
    - Metadata
      - Hello.txt
    - Blob 1
      - “World”
  - commit-2
    - Metadata
      - Hello.txt
      - World.txt
    - Blob 2
      - “Hello there”
    - Blob 3
      - “World!!!!!!”

Staging Area

- Staged for addition
  - Hello.txt → Blob 2
  - World.txt → Blob 3
- Staged for removal

Commits

- Head
  - Master

Blobs

- Blob 0
  - “Hello”
- Blob 1
  - “World”
- Blob 2
  - “Hello there”
- Blob 3
  - “World!!!!!!”
Working Directory

Staging Area

Gitlet Repository

Commit 0
- Metadata
  - null
- Blob 0
  - "Hello"

Commit 1
- Metadata
  - Hello.txt
- Blob 1
  - "World"

Commit 2
- Metadata
  - Hello.txt
  - World.txt
- Blob 2
  - "Hello there"

Commit 3
- Metadata
  - Hello.txt
  - World.txt
- Blob 3
  - "World!!!!!!"
java  gitlet.Main init
java gitlet.Main log

//Read from.gitlet all the files you need to run

....

//Write onto disk (.gitlet folder) all the new objects you created / modified
Diving Into the Technical Details
null

Commit 0
Blob 0
"Hello"

Commit 1
Blob 1
"World"

Commit 2
Blob 2
"Hello there"

Commit 3
Blob 3
"World!!!!!!"
Working Directory

Staging Area

Gitlet Repository

Commit 0
- Metadata: null
- Blob 0: "Hello"

Commit 1
- Metadata: Hello.txt
- Blob 1: "World"

Commit 2
- Metadata: Hello.txt, World.txt
- Blob 2: "Hello there"
- Blob 3: "World!!!!!

Commit 3
- Metadata: Hello.txt, World.txt
Commits

- Commit 0
  - Metadata
    - null

- Commit 1
  - Metadata
    - Hello.txt

- Commit 2
  - Metadata
    - Hello.txt
    - World.txt

- Commit 3
  - Metadata
    - Hello.txt
    - World.txt

Blobs

- Blob 0
  - "Hello"

- Blob 1
  - "World"

- Blob 2
  - "Hello there"

- Blob 3
  - "World!!!!"
Commit 0
- null

Commit 1
- Hello.txt
- Blob 0

Commit 2
- Hello.txt
- World.txt
- Blob 0
- Blob 1

Commit 3
- Hello.txt
- World.txt
- Blob 0
- Blob 1

Blobs
- Blob 0: “Hello”
- Blob 1: “World”
- Blob 2: “Hello there”
- Blob 3: “World!!!!!”

Commits
- Master: Commit 3
- HEAD: Commit 3
SHA1( ) = 8e95382d558549303e6
Commits

Metadata
null

f3af0eb43

9639c673b

71b40c70

5e6194cbf

Master
5e6194cbf

HEAD
5e6194cbf

Commits

Blobs

"Hello"

"World"

"Hello there"

"World!!!!!

Metadata

Hello.txt

World.txt

Metadata

Hello.txt

World.txt

Metadata

Hello.txt

World.txt

Metadata

Hello.txt

World.txt

Blobs

a699ba6

9639c673b

0e93cac

0e84daf

"Hello"

"World"

"Hello there"

"World!!!!!!"