

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-test



Gitlet Repository

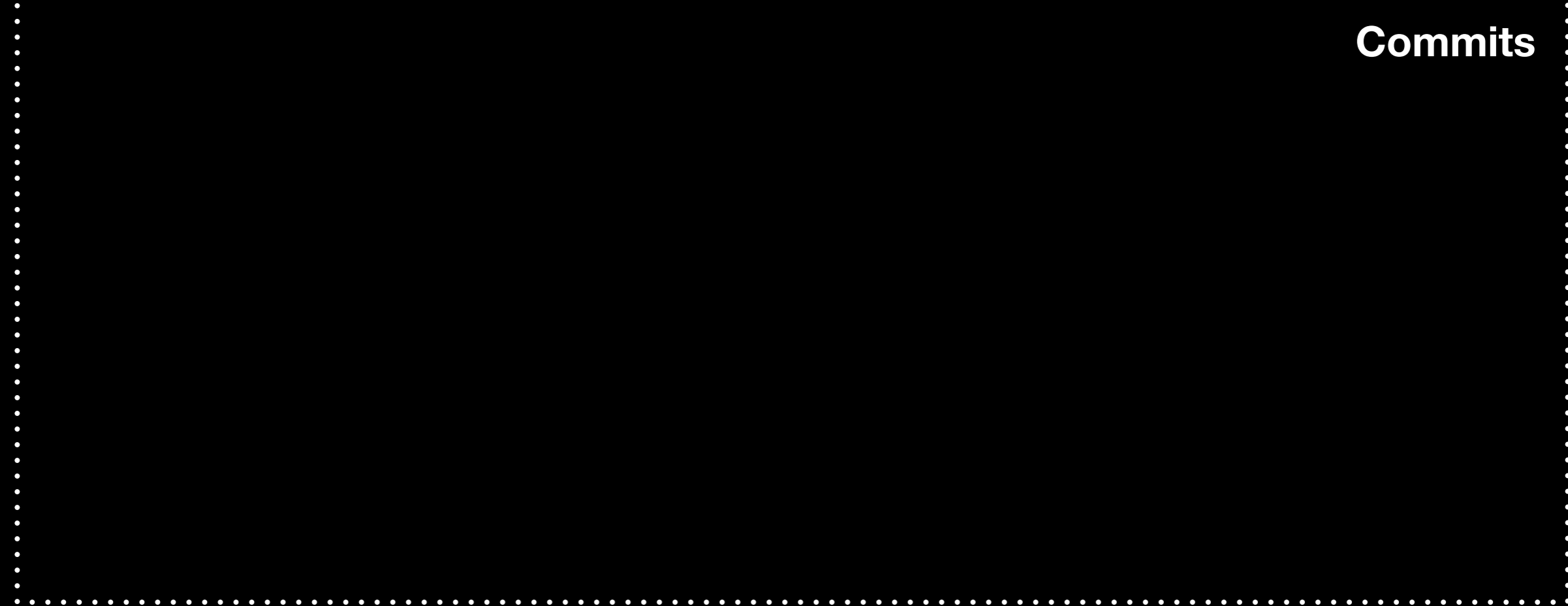


Staging Area

.gitlet



Commits





Working Directory

gitlet-test

Gitlet Repository



.gitlet

Staged for addition

Staged for removal

Staging Area

Commits



Working Directory

gitlet-test



Gitlet Repository



.gitlet

Staged for addition

Staged for removal

Staging Area



Commits

Commit 0

| |
|----------|
| Metadata |
| null |



Working Directory

gitlet-test

Gitlet Repository



.gitlet

Staged for addition

Staged for removal

Staging Area

Commits

Commit 0

| |
|----------|
| Metadata |
| null |

message = "initial commit"

timestamp = 00:00:00 UTC, Thursday, 1 January 1970



Working Directory

gitlet-test



Gitlet Repository

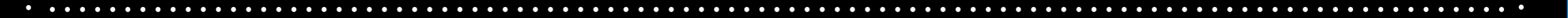


.gitlet

Staged for addition

Staged for removal

Staging Area



Commits

Commit 0

| |
|----------|
| Metadata |
| null |



Working Directory

gitlet-test

Gitlet Repository



.gitlet

Staged for addition

Staged for removal

Staging Area

Master HEAD

Commits

Commit 0

| |
|----------|
| Metadata |
| null |

```
nano Hello.txt
```



gitlet-test



Hello.txt

Working Directory

Gitlet Repository



.gitlet

Staged for addition

Staged for removal

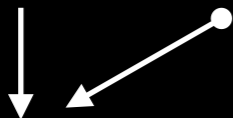
Staging Area

Master HEAD

Commits

Commit 0

| |
|----------|
| Metadata |
| null |



```
java gitlet.Main add Hello.txt
```

```
git add Hello.txt
```



gitlet-test



Hello.txt

Working Directory

Gitlet Repository



.gitlet

Staged for addition

Staged for removal

Staging Area

Master

HEAD

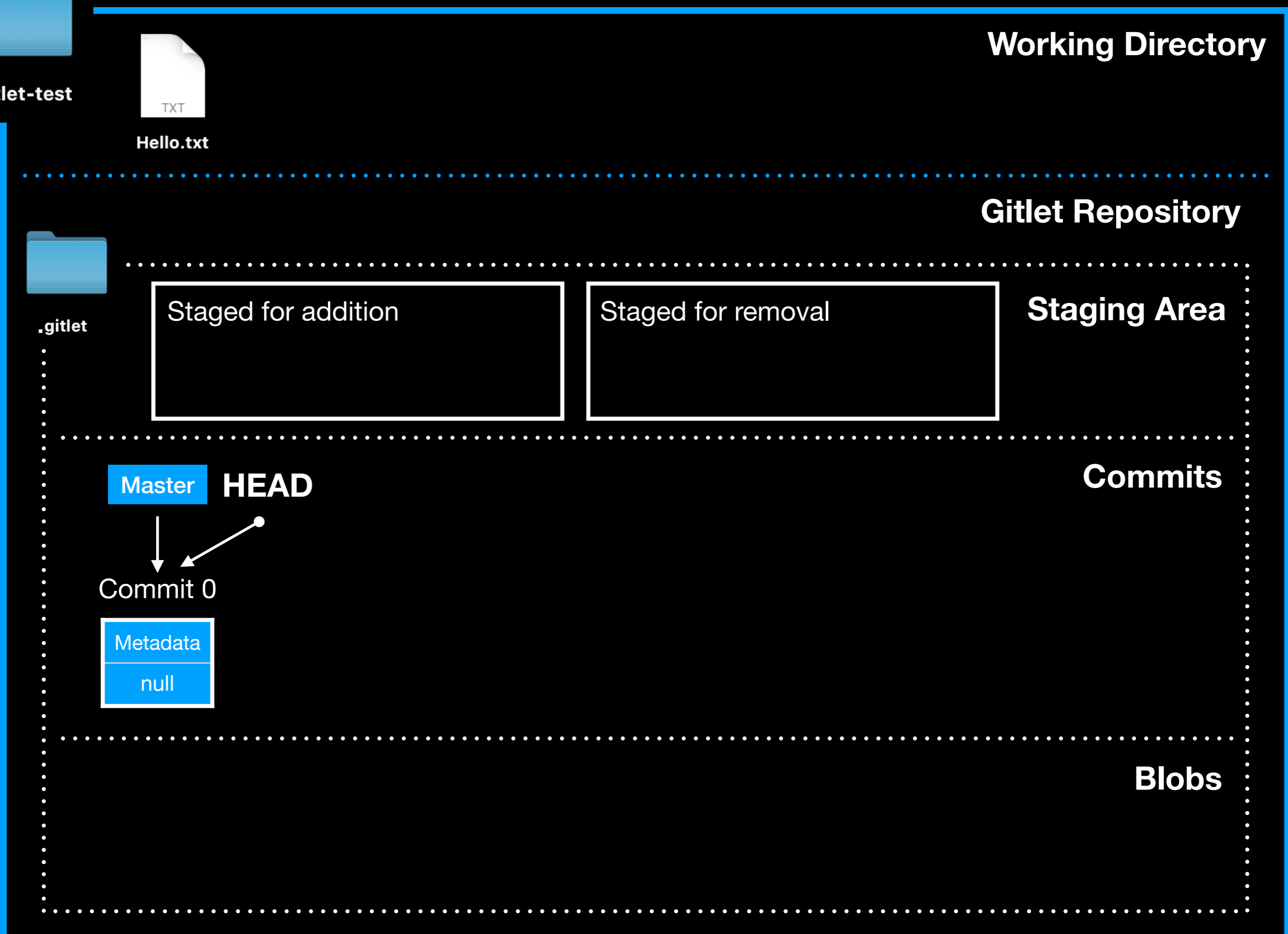
Commits

Commit 0

Metadata

null

Blobs





gitlet-test



Hello.txt

Working Directory

Gitlet Repository



.gitlet

Staged for addition

Staged for removal

Staging Area

Master

HEAD

Commits

Commit 0

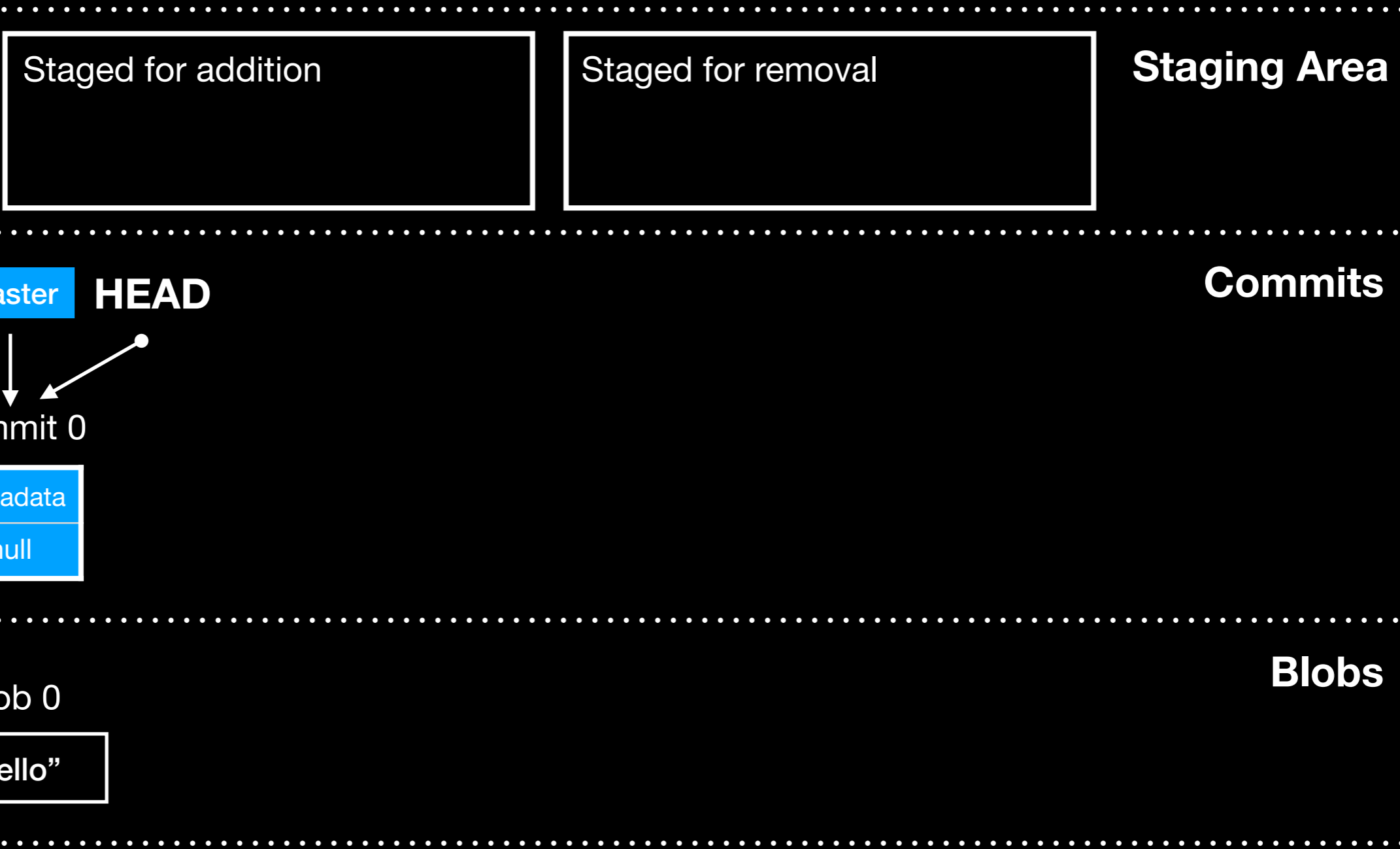
Metadata

null

Blob 0

Blobs

"Hello"





gitlet-test



Hello.txt

Working Directory

Gitlet Repository



.gitlet

Staged for addition

Hello.txt → Blob 0

Staged for removal

Staging Area

Master

HEAD

Commit 0

Metadata

null

Commits

Blob 0

"Hello"

Blobs


```
java gitlet.Main commit "Created Hello.txt"  
git commit -m "Created Hello.txt"
```



gitlet-test



Hello.txt

Working Directory

Gitlet Repository



.gitlet

Staged for addition

Hello.txt → Blob 0

Staged for removal

Staging Area

Master

HEAD

Commit 0

Metadata

null

Commits

Blob 0

“Hello”

Blobs



gitlet-test



Hello.txt

Working Directory

Gitlet Repository



.gitlet

Staged for addition

Hello.txt → Blob 0

Staged for removal

Staging Area

Master

HEAD

Commits

Commit 0

Commit 1

Metadata

null

Metadata

null

Blob 0

“Hello”

Blobs



gitlet-test



Hello.txt

Working Directory

Gitlet Repository



.gitlet

Staged for addition

Hello.txt → Blob 0

Staged for removal

Staging Area

Master

HEAD

Commits

Commit 0

Commit 1

Metadata

null

Metadata

null

message = "Created Hello.txt"

timestamp = 17:10:00 PST, Monday, 13 April 2020

Blob 0

Blobs

"Hello"



gitlet-test



Hello.txt

Working Directory

Gitlet Repository



.gitlet

Staged for addition

Staged for removal

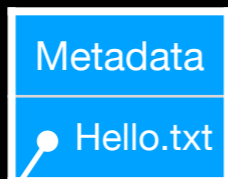
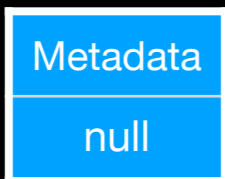
Staging Area

Master HEAD

Commits

Commit 0

Commit 1



Blob 0



Blobs





gitlet-test



Hello.txt

Working Directory

Gitlet Repository



.gitlet

Staged for addition

Staged for removal

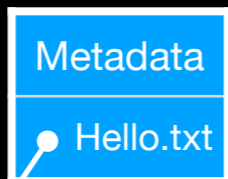
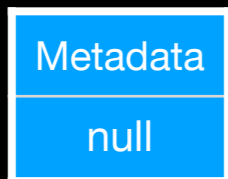
Staging Area

Master HEAD

Commits

Commit 0

Commit 1



Blob 0



Blobs





gitlet-test



Hello.txt

Working Directory

Gitlet Repository



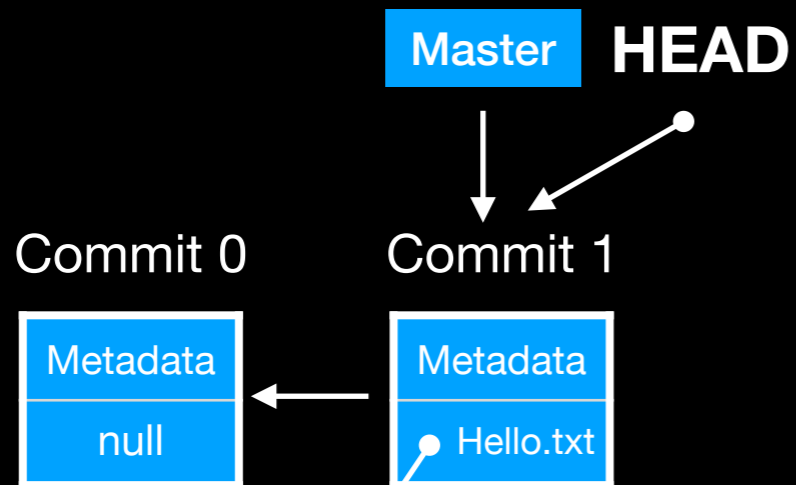
.gitlet

Staged for addition

Staged for removal

Staging Area

Commits



Blobs



```
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"
```




gitlet-test



Hello.txt

Working Directory

Gitlet Repository



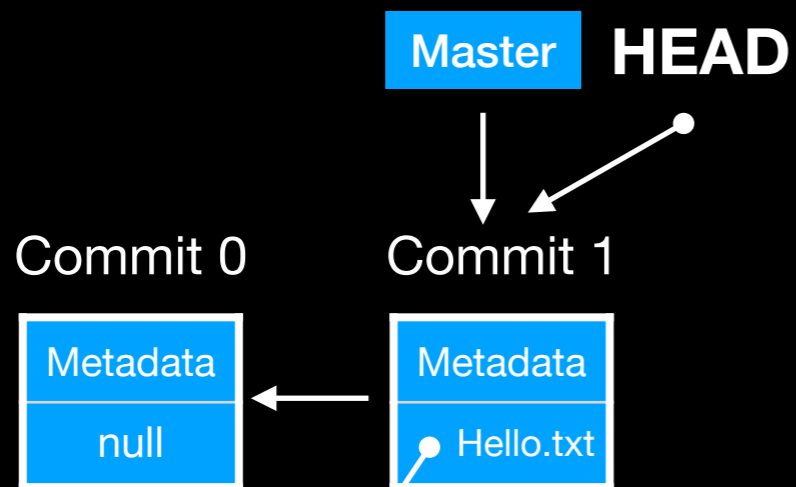
.gitlet

Staged for addition

Staged for removal

Staging Area

Commits



Blobs





gitlet-test



Hello.txt



World.txt

Working Directory

Gitlet Repository



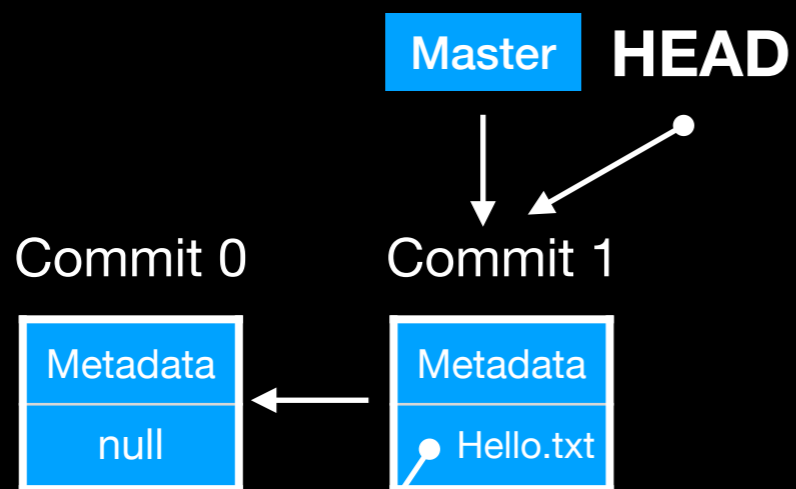
.gitlet

Staged for addition

Staged for removal

Staging Area

Commits



Blobs





gitlet-test



Hello.txt



World.txt

Working Directory

Gitlet Repository



.gitlet

Staged for addition

World.txt → Blob 1

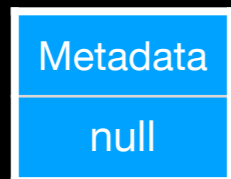
Staged for removal

Staging Area

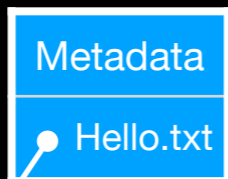
Commits

Master HEAD

Commit 0



Commit 1



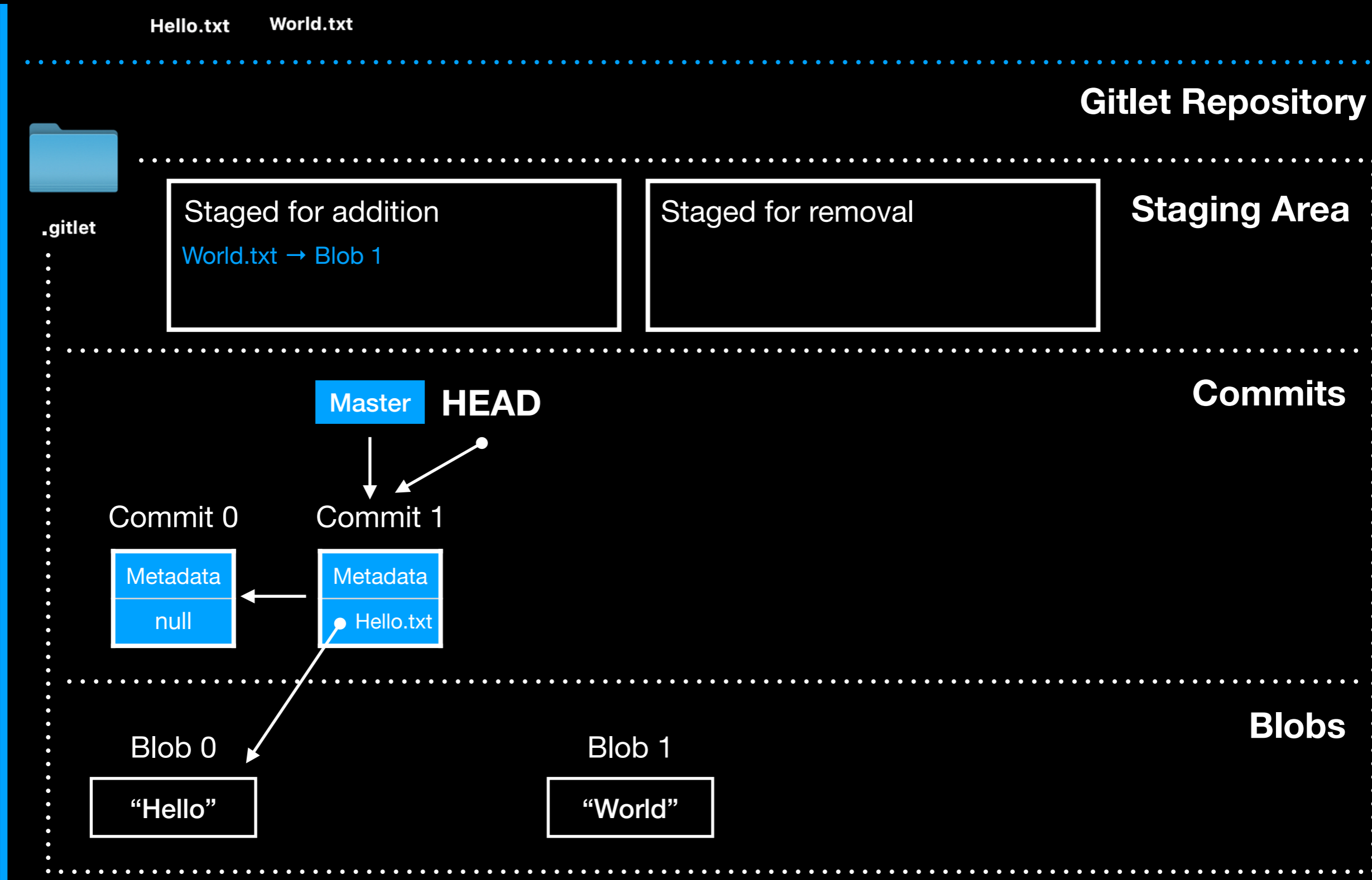
Blob 0



Blob 1



Blobs





gitlet-test



Hello.txt



World.txt

Working Directory



.gitlet

Staged for addition

Staged for removal

Staging Area

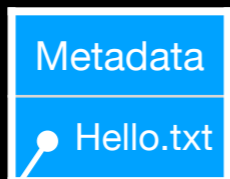
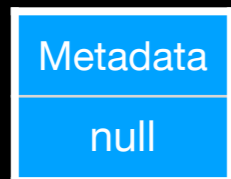
Master HEAD

Commits

Commit 0

Commit 1

Commit 2



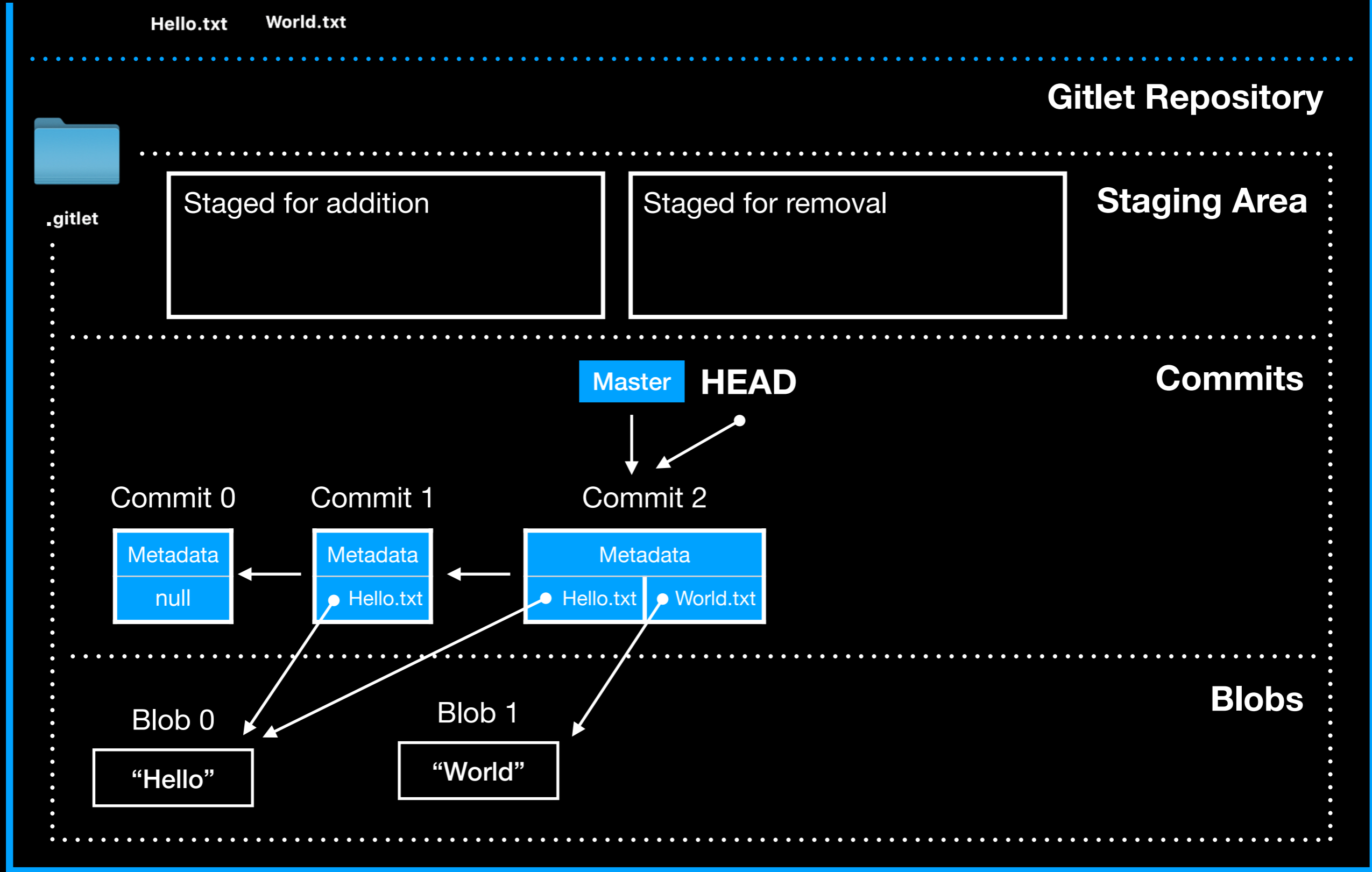
Blob 0



Blob 1



Blobs



```
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"
```



gitlet-test



Hello.txt



World.txt

Working Directory



.gitlet

Staged for addition

Staged for removal

Staging Area

Gitlet Repository

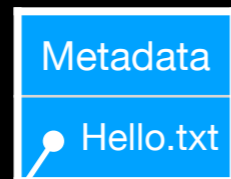
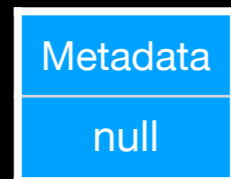
Master HEAD

Commits

Commit 0

Commit 1

Commit 2

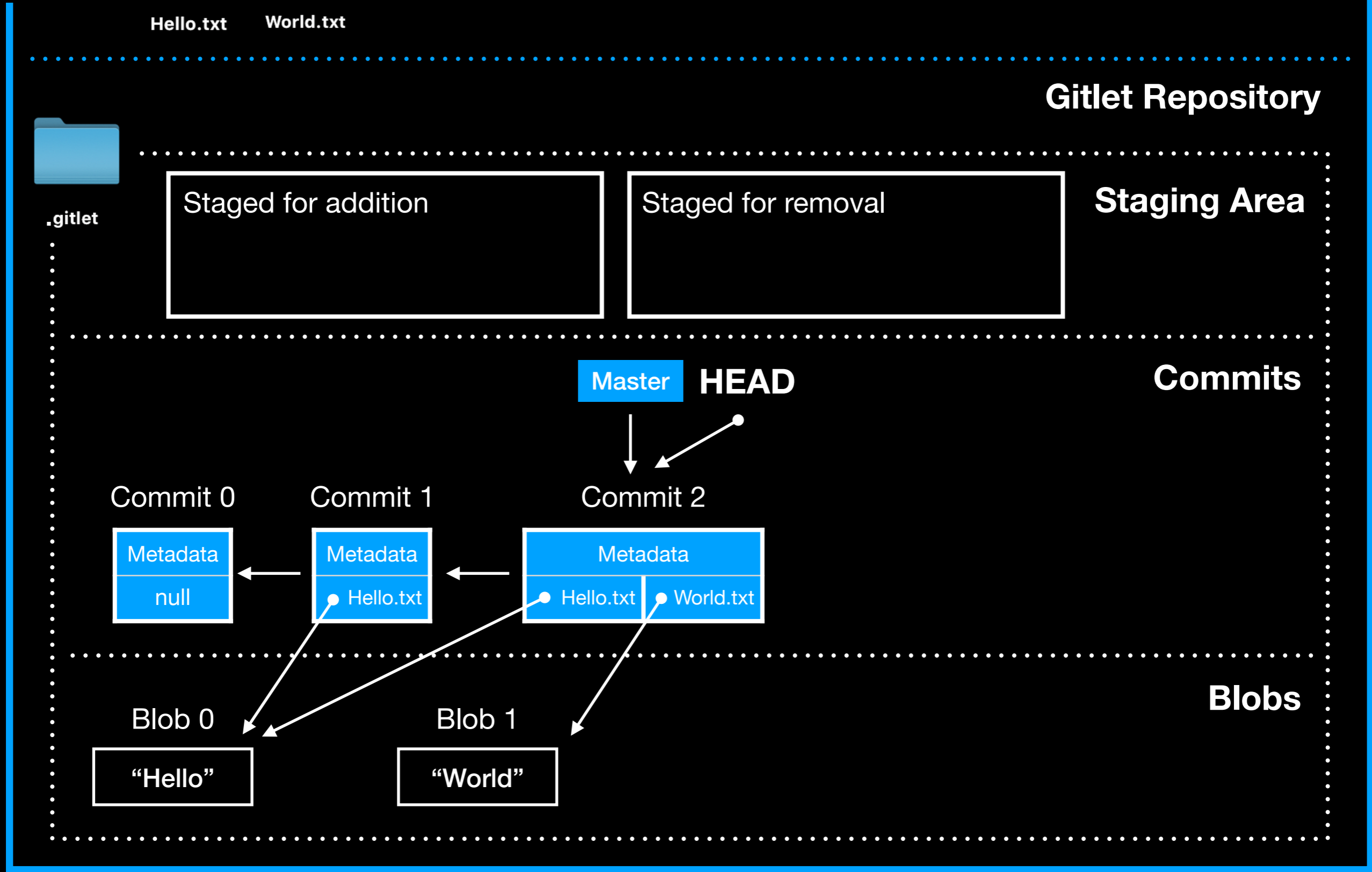


Blob 0

Blob 1



Blobs





gitlet-test



Hello.txt



World.txt

Working Directory



.gitlet

Staged for addition

Hello.txt → Blob 2

World.txt → Blob 3

Staged for removal

Staging Area

Gitlet Repository

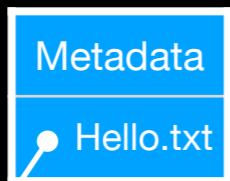
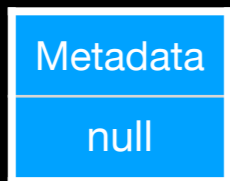
Master HEAD

Commits

Commit 0

Commit 1

Commit 2



Blob 0

Blob 1

Blob 2

Blob 3

Blobs





gitlet-test



Hello.txt



World.txt

Working Directory



.gitlet

Staged for addition

Staged for removal

Staging Area

Gitlet Repository

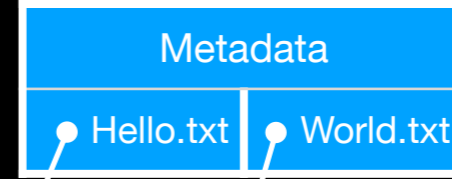
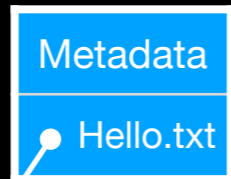
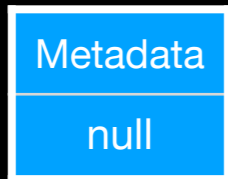
Master HEAD Commits

Commit 0

Commit 1

Commit 2

Commit 3



Blob 0



Blob 1



Blob 2



Blob 3



Blobs


```
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



gitlet-test



Hello.txt



World.txt

Working Directory



.gitlet

Staged for addition

Staged for removal

Staging Area

Gitlet Repository

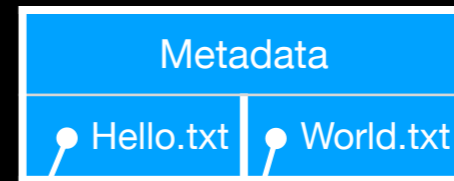
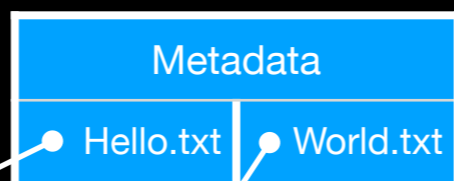
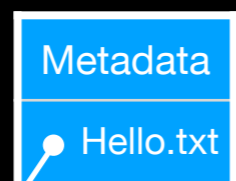
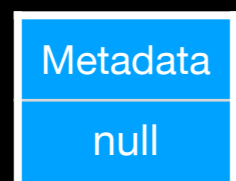
Master HEAD Commits

Commit 0

Commit 1

Commit 2

Commit 3



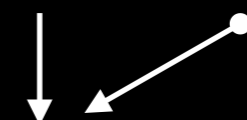
Blob 0

Blob 1

Blob 2

Blob 3

Blobs





gitlet-test



Hello.txt



World.txt

Working Directory

Gitlet Repository



.gitlet

Staged for addition

Staged for removal

Staging Area

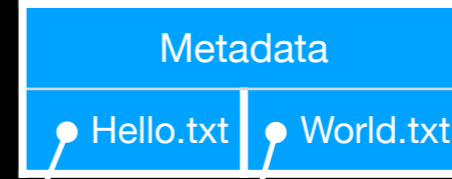
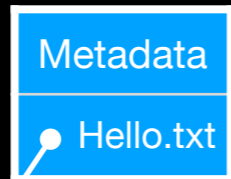
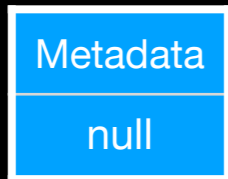
Master HEAD Commits

Commit 0

Commit 1

Commit 2

Commit 3



Blob 0



Blob 1



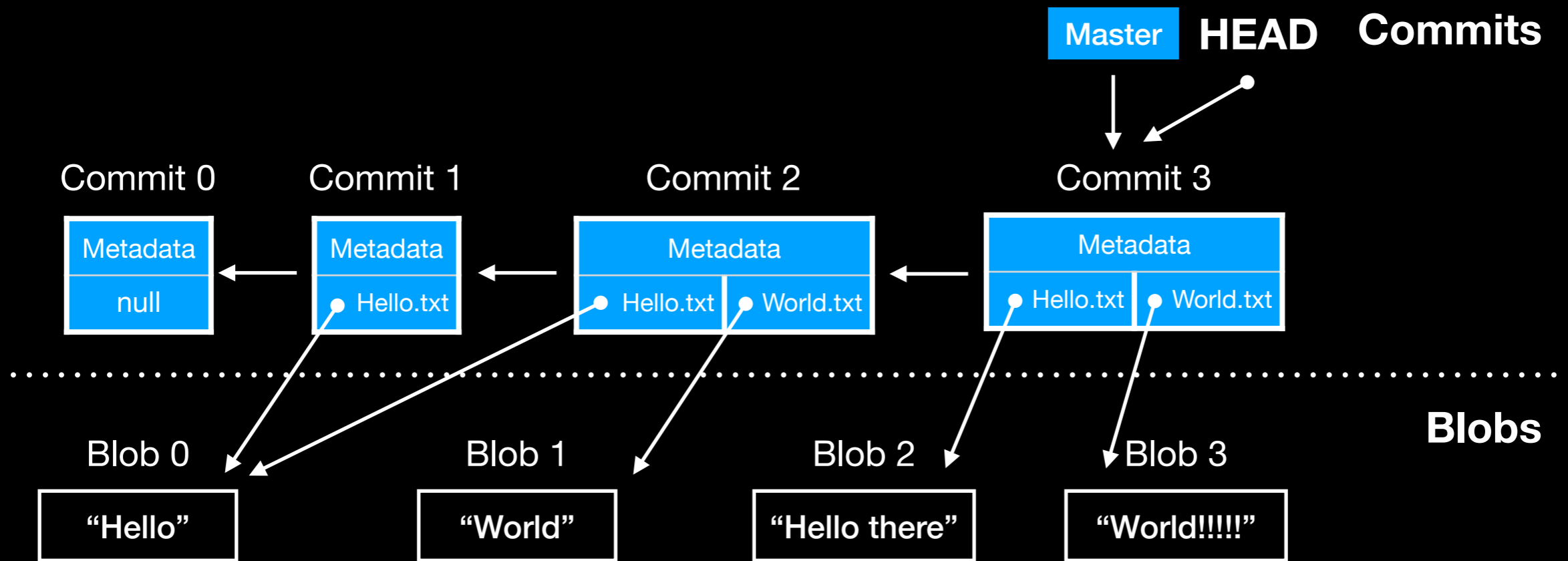
Blob 2



Blob 3

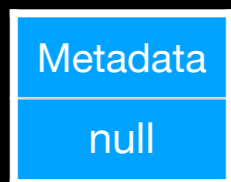


Blobs

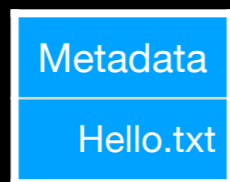


Master HEAD Commits

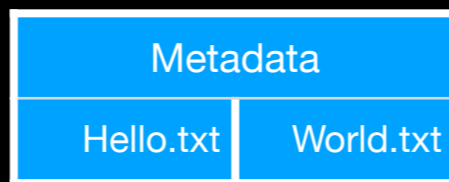
Commit 0



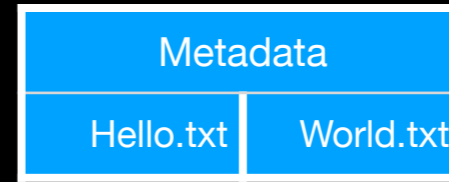
Commit 1



Commit 2



Commit 3



Blobs

Blob 0



Blob 1



Blob 2



Blob 3



Master **HEAD** **Commits**
Commit 3 Commit 3

Commit 0

| |
|----------|
| Metadata |
| null |

Commit 1

| | |
|----------|-----------|
| Commit 0 | Metadata |
| | Hello.txt |
| | Blob 0 |

Commit 2

| | | |
|----------|-----------|-----------|
| Commit 1 | Metadata | |
| | Hello.txt | World.txt |
| | Blob 0 | Blob 1 |

Commit 3

| | | |
|----------|-----------|-----------|
| Commit 2 | Metadata | |
| | Hello.txt | World.txt |
| | Blob 2 | Blob 3 |

Blobs

Blob 0

“Hello”

Blob 1

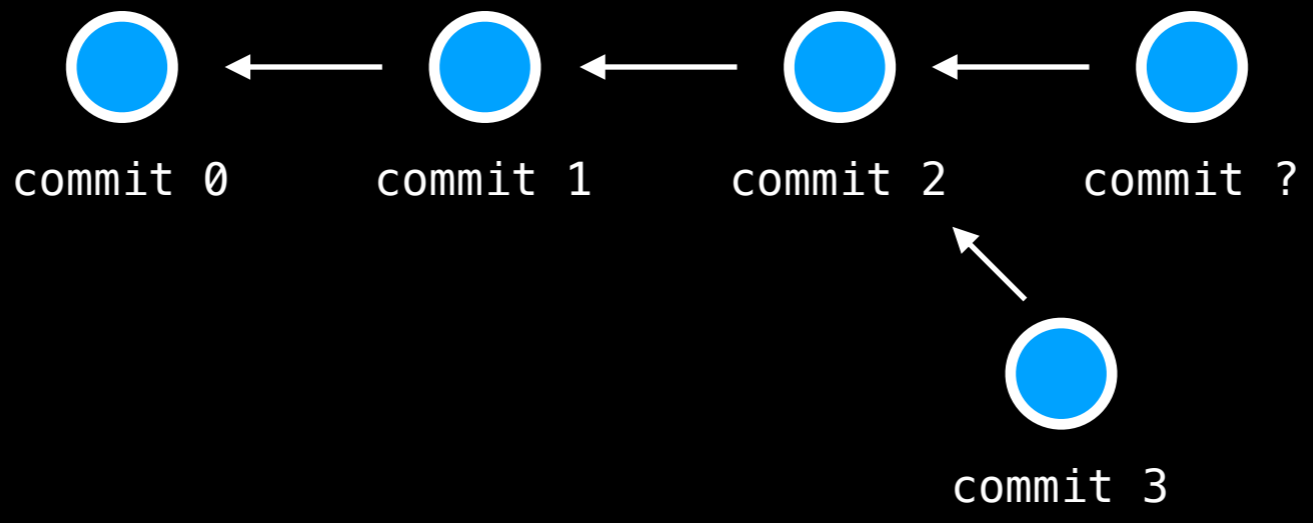
“World”

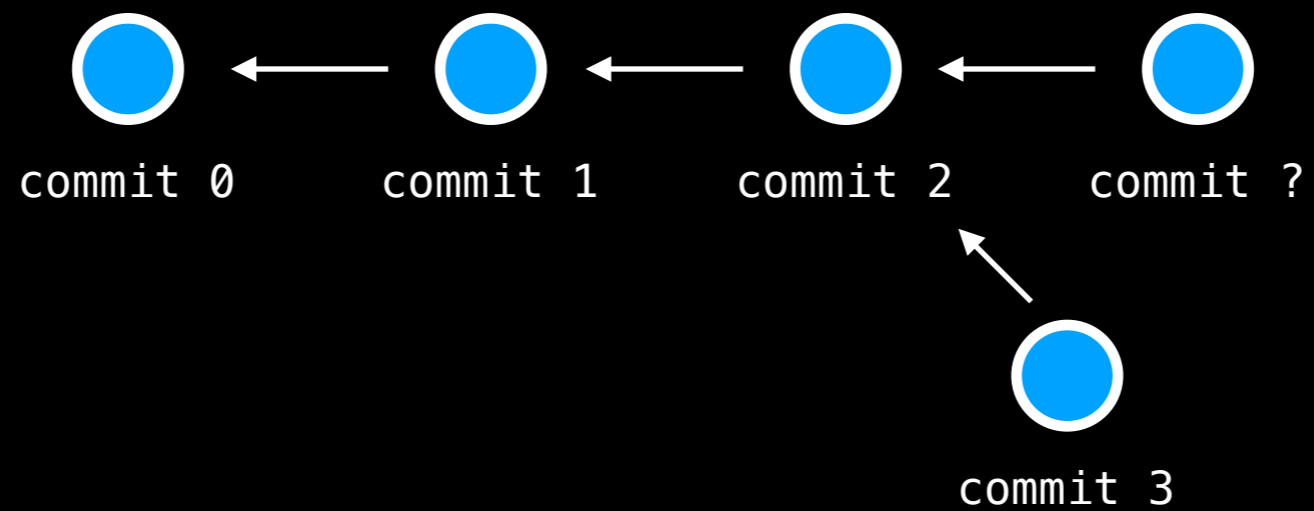
Blob 2

“Hello there”

Blob 3

“World!!!!!!”





$\text{SHA1}(\text{●}) = 8e95382d558549303e6$

Master **HEAD** **Commits**
5e6194cbf 5e6194cbf

f3af0eb43

| |
|----------|
| Metadata |
| null |

9639c673b

| | |
|-----------|-----------|
| f3af0eb43 | Metadata |
| | Hello.txt |
| | a699ba6 |

71b40c70

| | | |
|-----------|-----------|-----------|
| 9639c673b | Metadata | |
| | Hello.txt | World.txt |
| | a699ba6 | 9639c673b |

5e6194cbf

| | | |
|----------|-----------|-----------|
| 71b40c70 | Metadata | |
| | Hello.txt | World.txt |
| | 0e93cac | 0e84daf |

a699ba6

“Hello”

9639c673b

“World”

0e93cac

“Hello there”

0e84daf

“World!!!!!!”

Blobs

Master **HEAD** **Commits**
5e6194cbf 5e6194cbf

f3af0eb43

| |
|----------|
| Metadata |
| null |

9639c673b

| | |
|-----------|-----------|
| f3af0eb43 | Metadata |
| | Hello.txt |
| | a699ba6 |

71b40c70

| | | |
|-----------|-----------|-----------|
| 9639c673b | Metadata | |
| | Hello.txt | World.txt |
| | a699ba6 | 9639c673b |

5e6194cbf

| | | |
|----------|-----------|-----------|
| 71b40c70 | Metadata | |
| | Hello.txt | World.txt |
| | 0e93cac | 0e84daf |



Blobs

a699ba6

001001010
byte[]

9639c673b

111001010
byte[]

0e93cac

111011010
byte[]

0e84daf

111001111
byte[]