

# How Git Works

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Version Check

# Version Check



**This course was created with:**

– Git 2.32

# Version Check



**This course is applicable to:**

- Any version of Git

# How Git Works

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Git Is Not What You Think



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We're going to talk about the  
internals of Git.

# “Porcelain” Commands

**git add**

**git commit**

**git push**

**git pull**

**git branch**

**git switch**

**git merge**

**git rebase**

...

# “Plumbing” Commands

**git cat-file**

**git hash-object**

**git count-objects**

...

If you want to master Git, don't worry  
about learning the commands.  
Instead, learn the model.



## More About Git's Versions

**This information should work on your Git**

**If you don't have *git switch*, then use *git checkout***

**If you see obsolete information, let me know!**

# Wrapping Your Head Around Git



# Git Is...

...a Distributed Revision Control System



# Git Is...

## ...a Revision Control System



# Git Is...

**...a Stupid Content Tracker**



# Git Is...

**...a Persistent Map**



# Values and Keys

**Any sequence of bytes**



**SHA1 hash**

# Values and Keys

“Apple Pie”



```
graph TD; A["Apple Pie"] --> B["23991897e13e47ed0adb91a0082c31c82fe0cbe5"]
```

The diagram illustrates a mapping process. At the top, an orange rectangular box contains the text "Apple Pie". A thick, dark gray arrow points vertically downwards from the center of this box to a teal rectangular box at the bottom. The teal box contains a long hexadecimal string: 23991897e13e47ed0adb91a0082c31c82fe0cbe5.

23991897e13e47ed0adb91a0082c31c82fe0cbe5

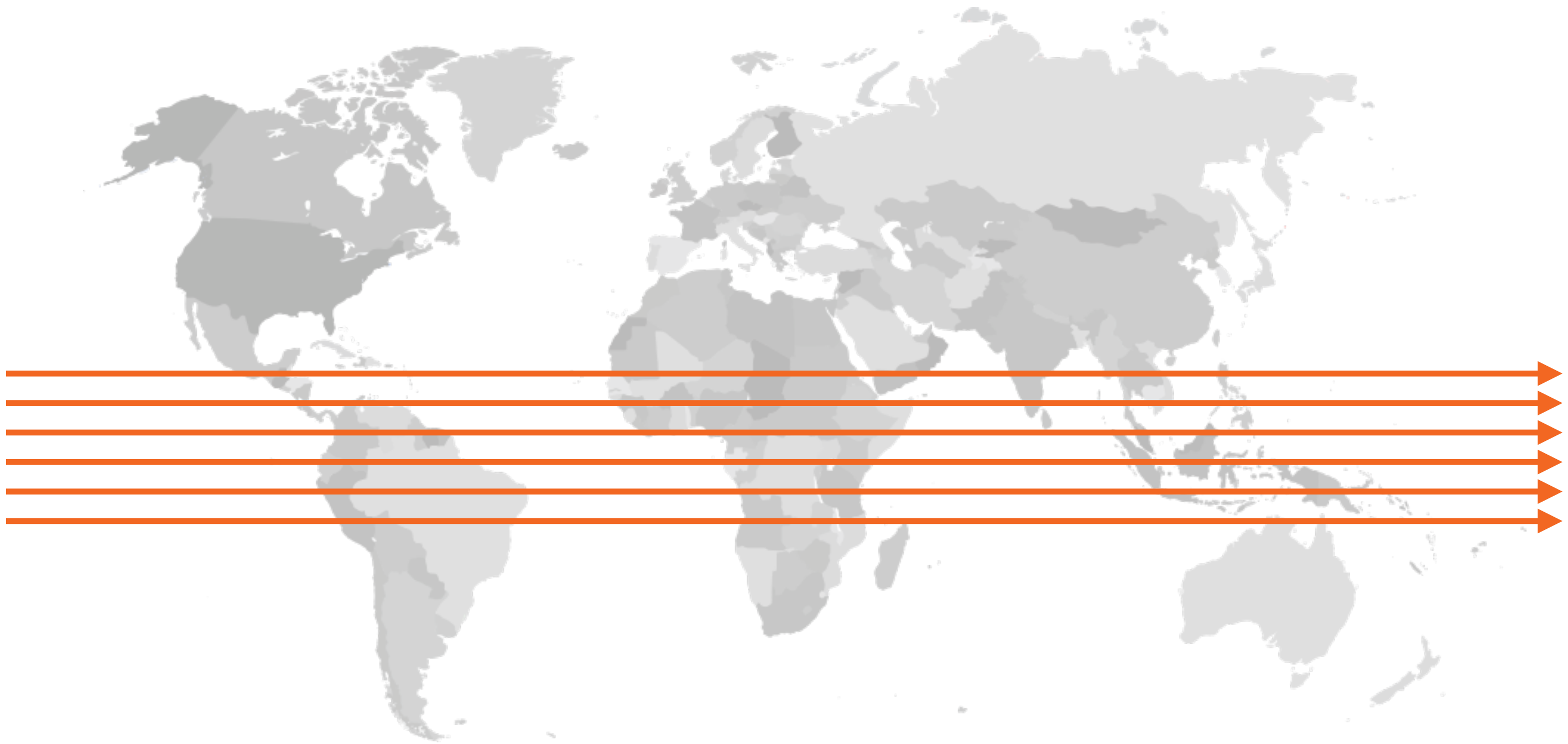


Every object in Git has its own SHA1.  
So, what if they collide?

# Winning the Jackpot

**1 chance in 175.000.000**

# Winning the Jackpot



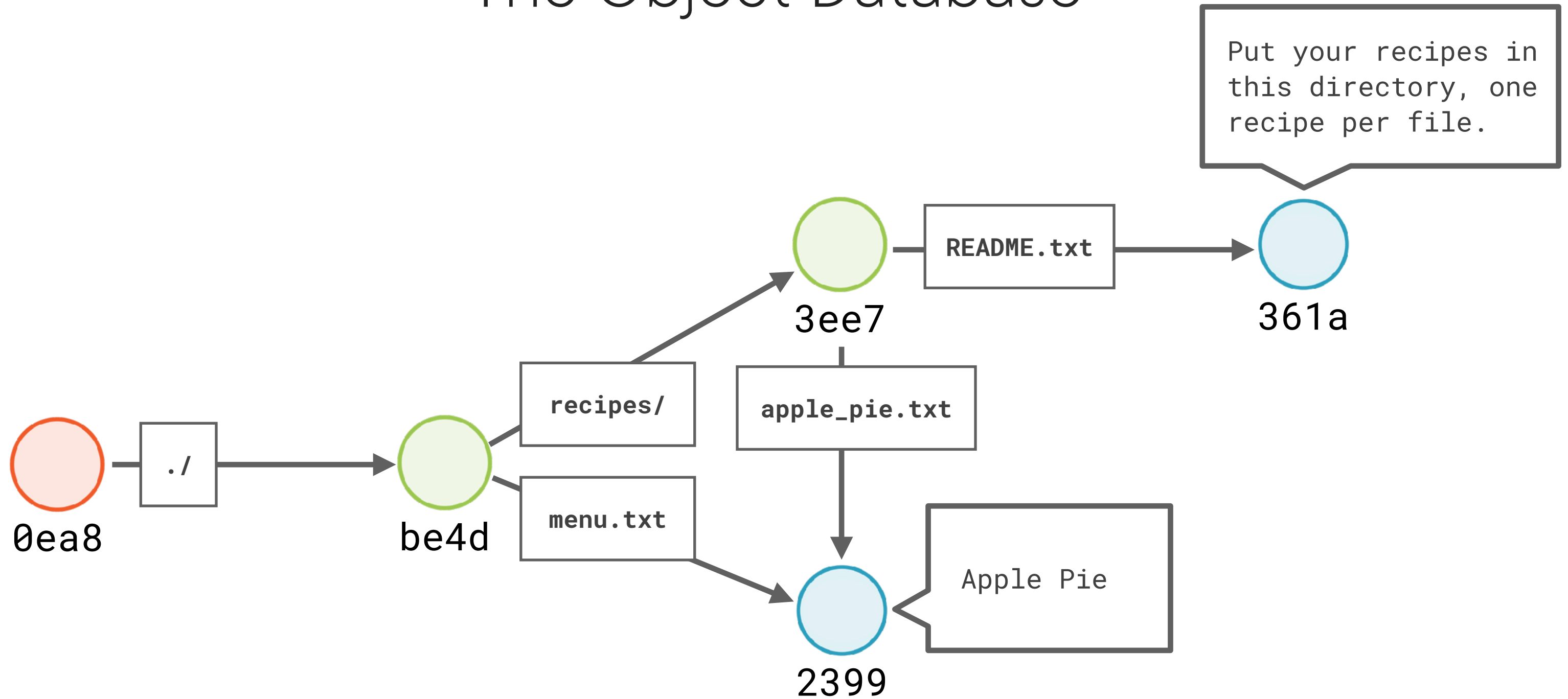
SHA1s are unique in the universe.

# Git Is...

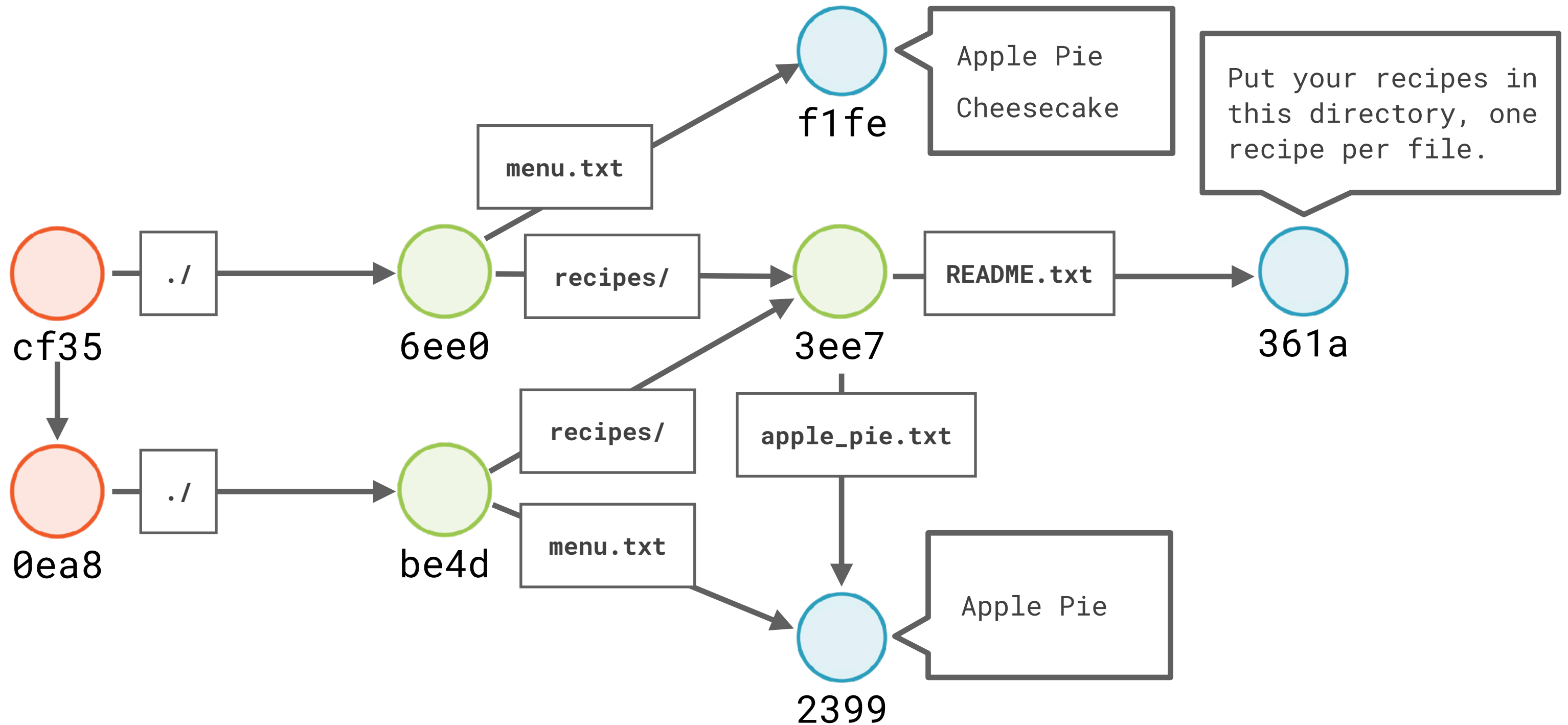
**...a Persistent Map**



# The Object Database



# The Object Database



# Git Objects



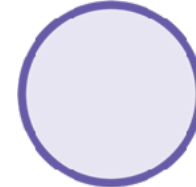
**Blobs**



**Trees**



**Commits**



**Annotated Tags**



# Git Is...

**...a Stupid Content Tracker**

