Git
Introduction to Git

Version Control Systems

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Git

Developed by Linus Torvalds in 2005

Git

Distributed version control system (not only) for tracking changes

Git – replaces archives

Main problems of archives (zip/rar/gz):

– does not protect against accidental deletion

– linear development (release when all new features are complete)

– single-user development

– difficult to find a change that introuced a bug

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Missing answers to the questions:

– what has changed between versions?

– who made the changes?

– when and why were changes made?

– which version is the latest stable release?

Git – main objectives

- recordes changes over time (*changesets*)
- recalls a specific version later (*checkout*)
- enables collaboration (*distributed*)
- allows nonlinear development (*branches*)

Git – DOs and DONTs

DONTs:

– do not use archives as a substitute for version control

– never use a centralized VCS (CVS, SVN)

– do not store automatically generated files (PDFs, binaries, etc.)

– do not store sensitive data (passwords, logins, SSH keys, etc.)

DOs:

– use a distributed VCS (Git, Mercurial)

– use proper branching model

Git – basic workflow

Remote repository

cloud

local machine

Working directory

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local machine

Local repository (.git/)

Working directory

Git – basic workflow

Remote repository

cloud

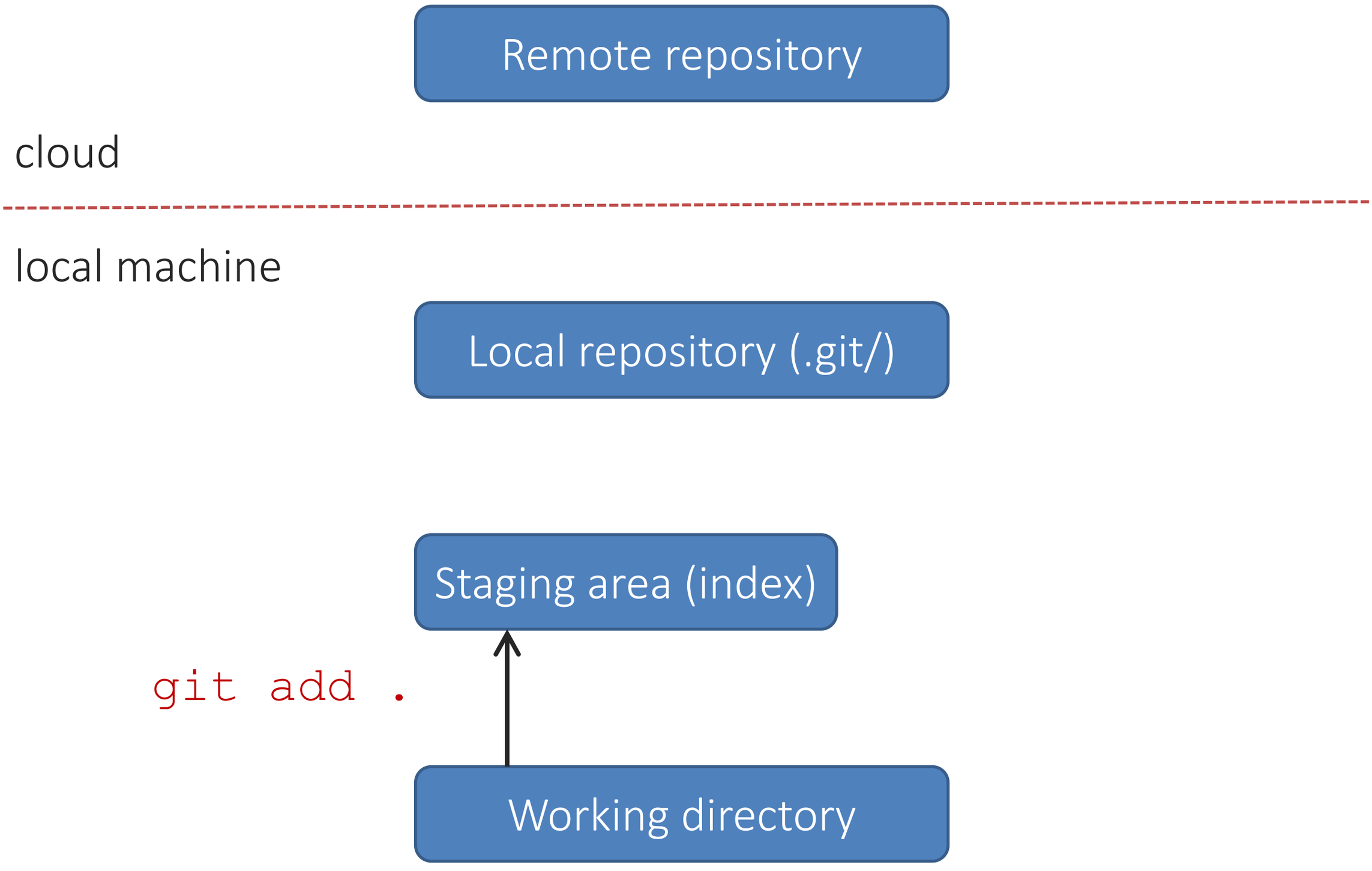
local machine

Local repository (.git/)

Staging area (index)

Working directory

Git – basic workflow



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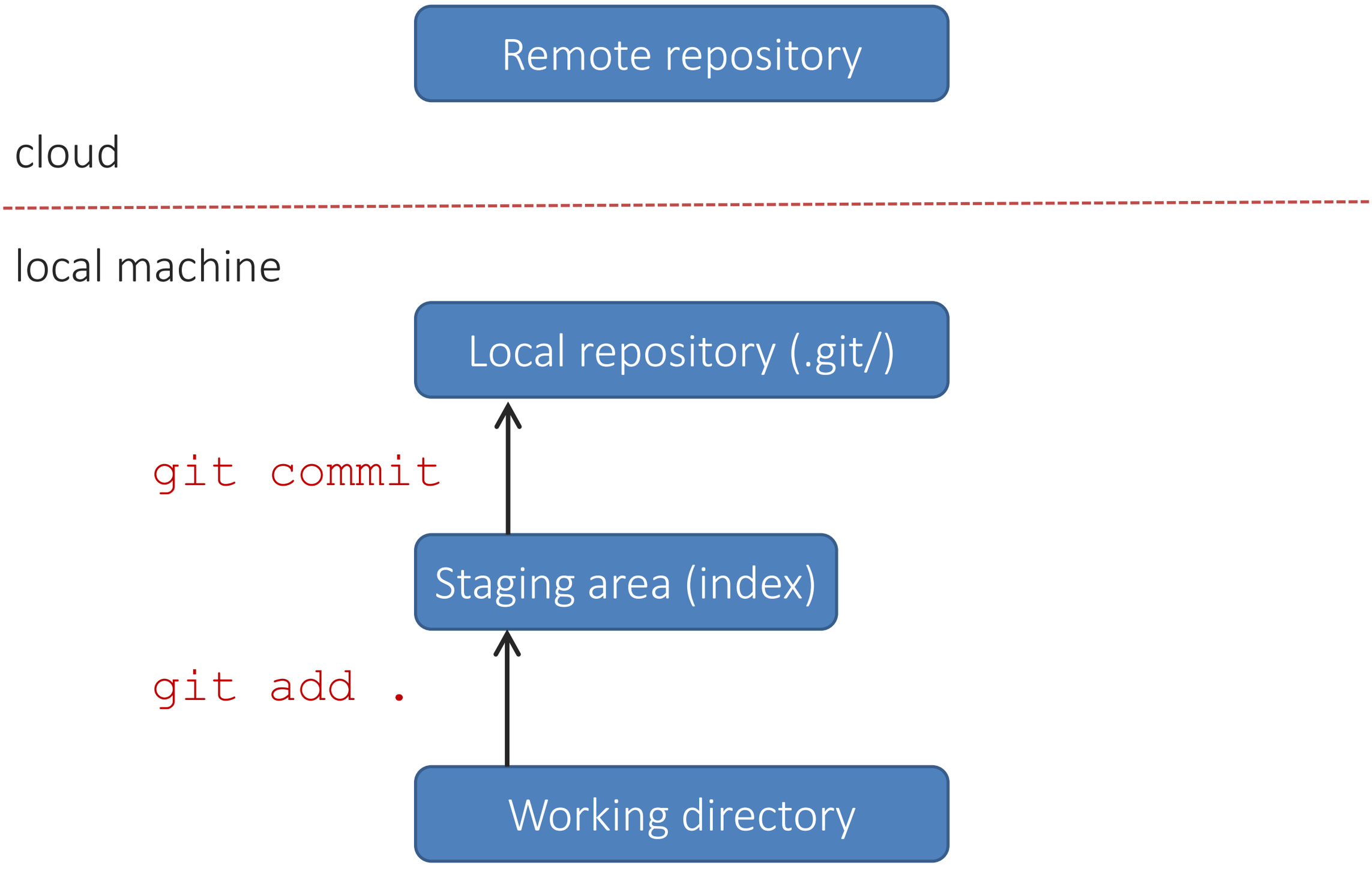

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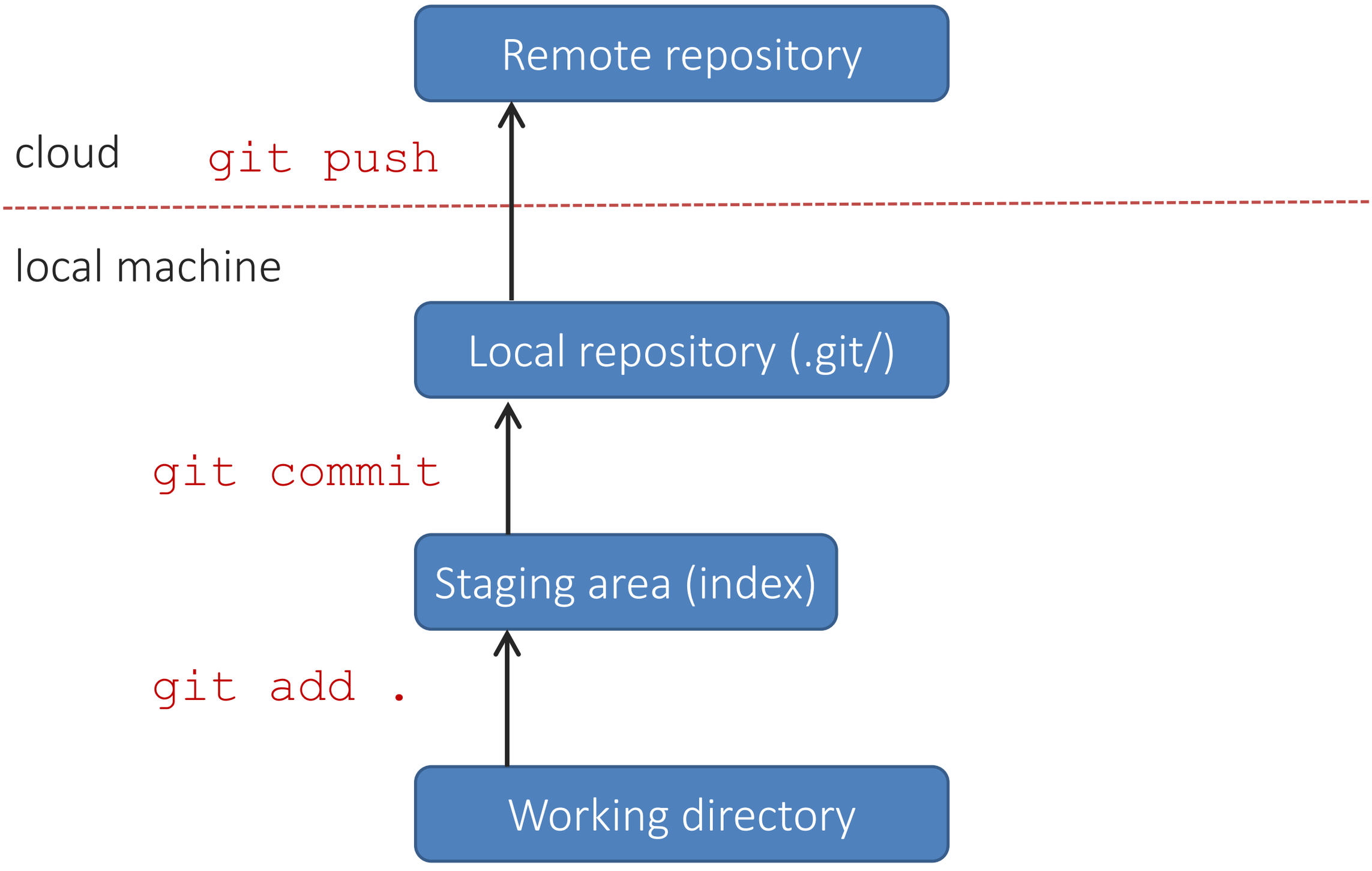

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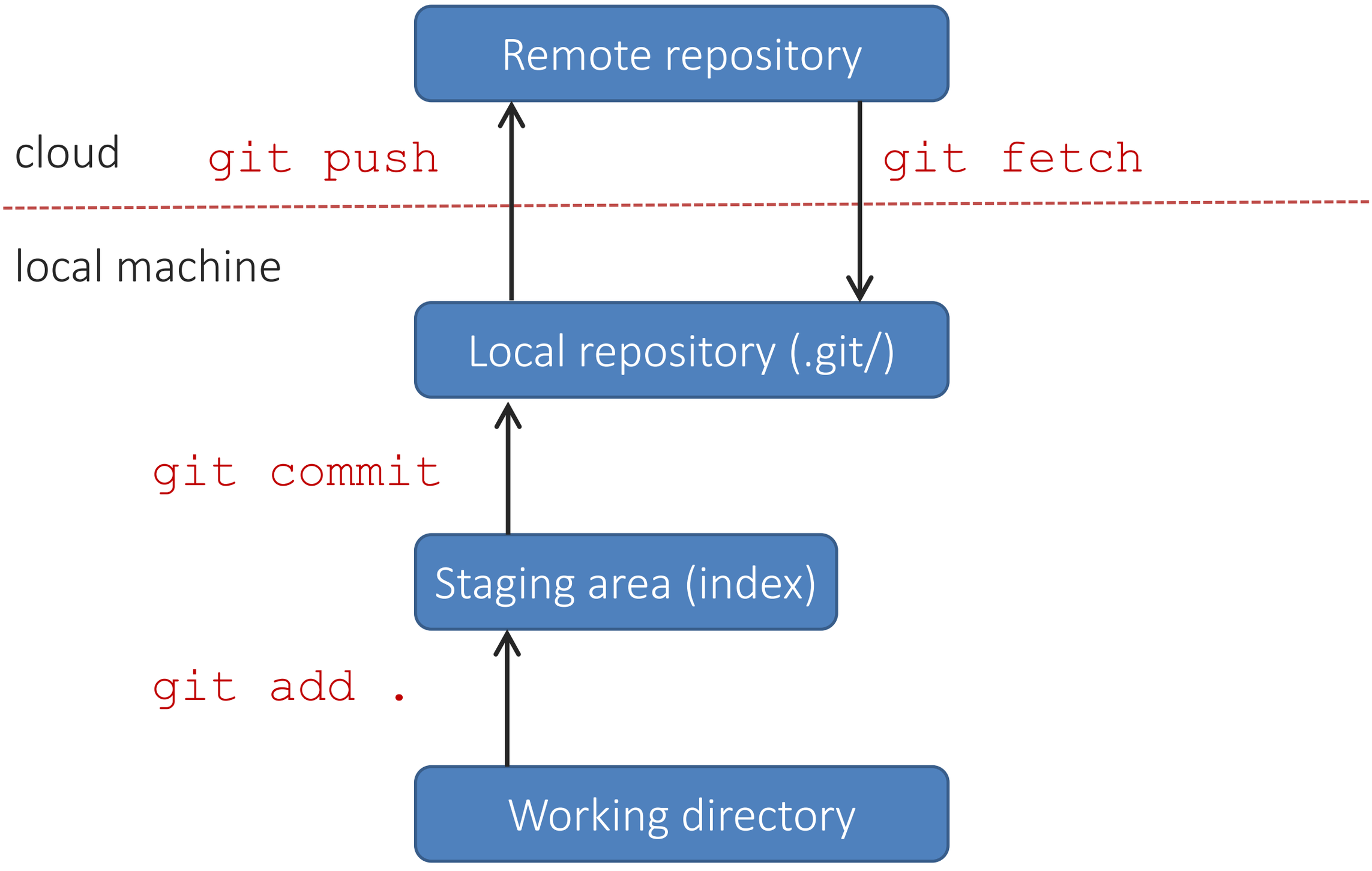

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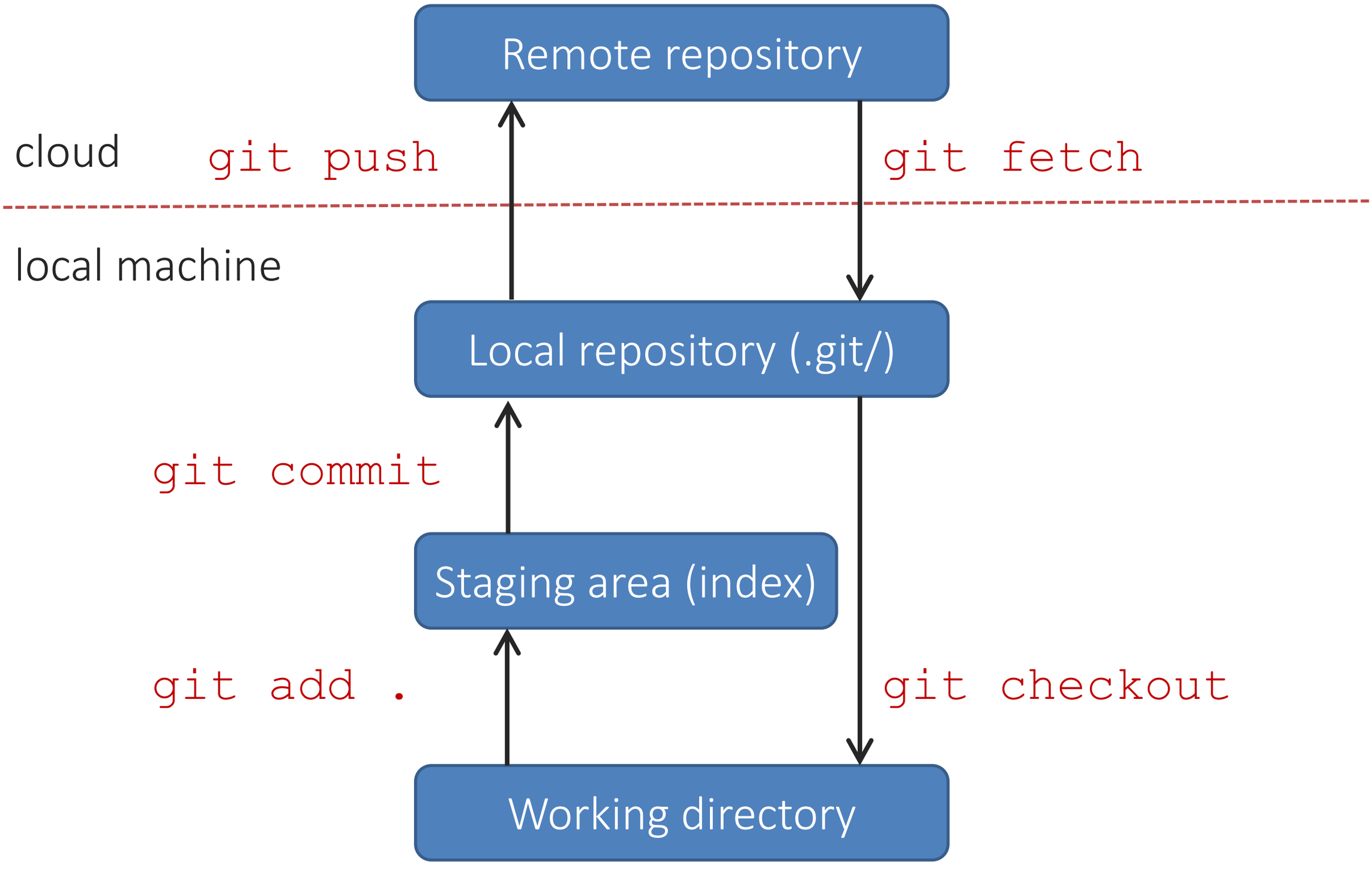

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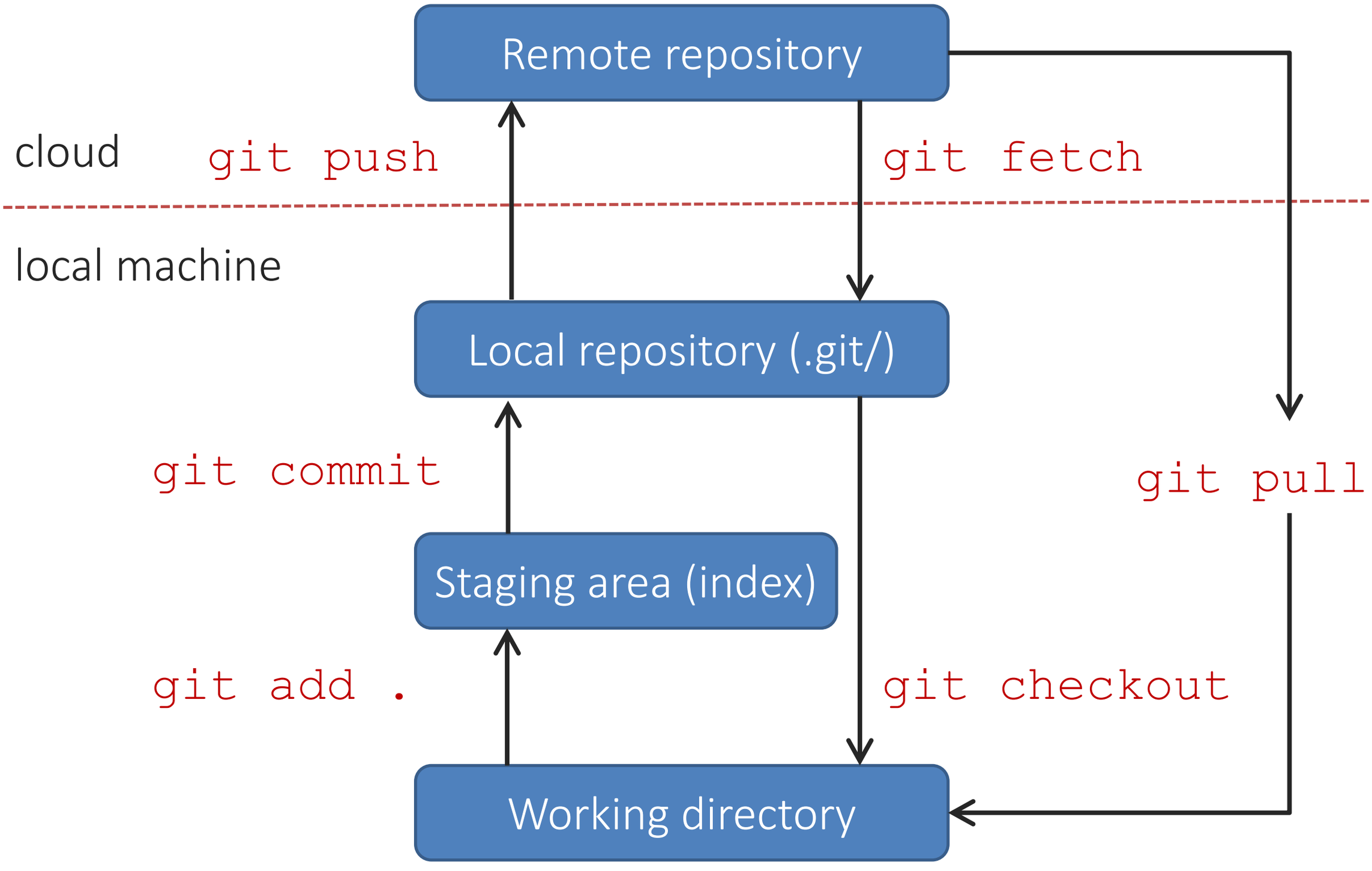


Git – basic objects

`hash`

object identifier – each object has its (hexadecimal) *hash*

`blob`

contains *pure* file content (without file names)

`tree`

directory listings – path entries paired with other objects

`commit`

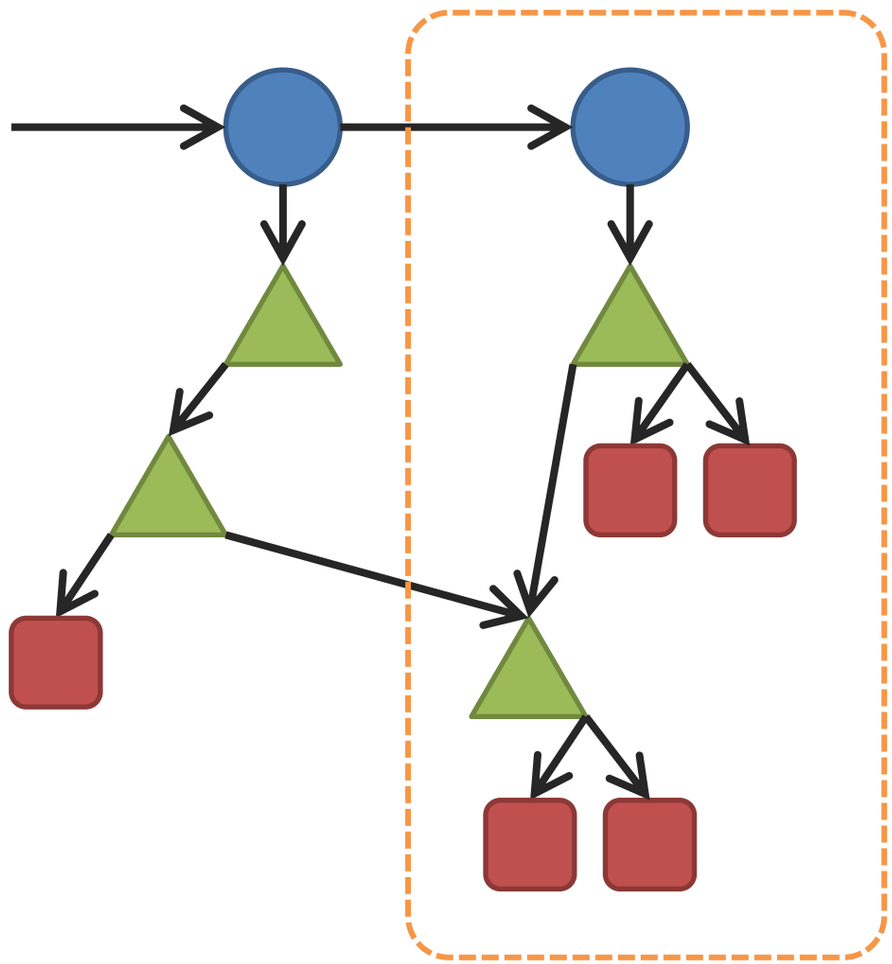
snapshots (*changeset*) of repository in time; each commit has its root tree

Git – basic objects

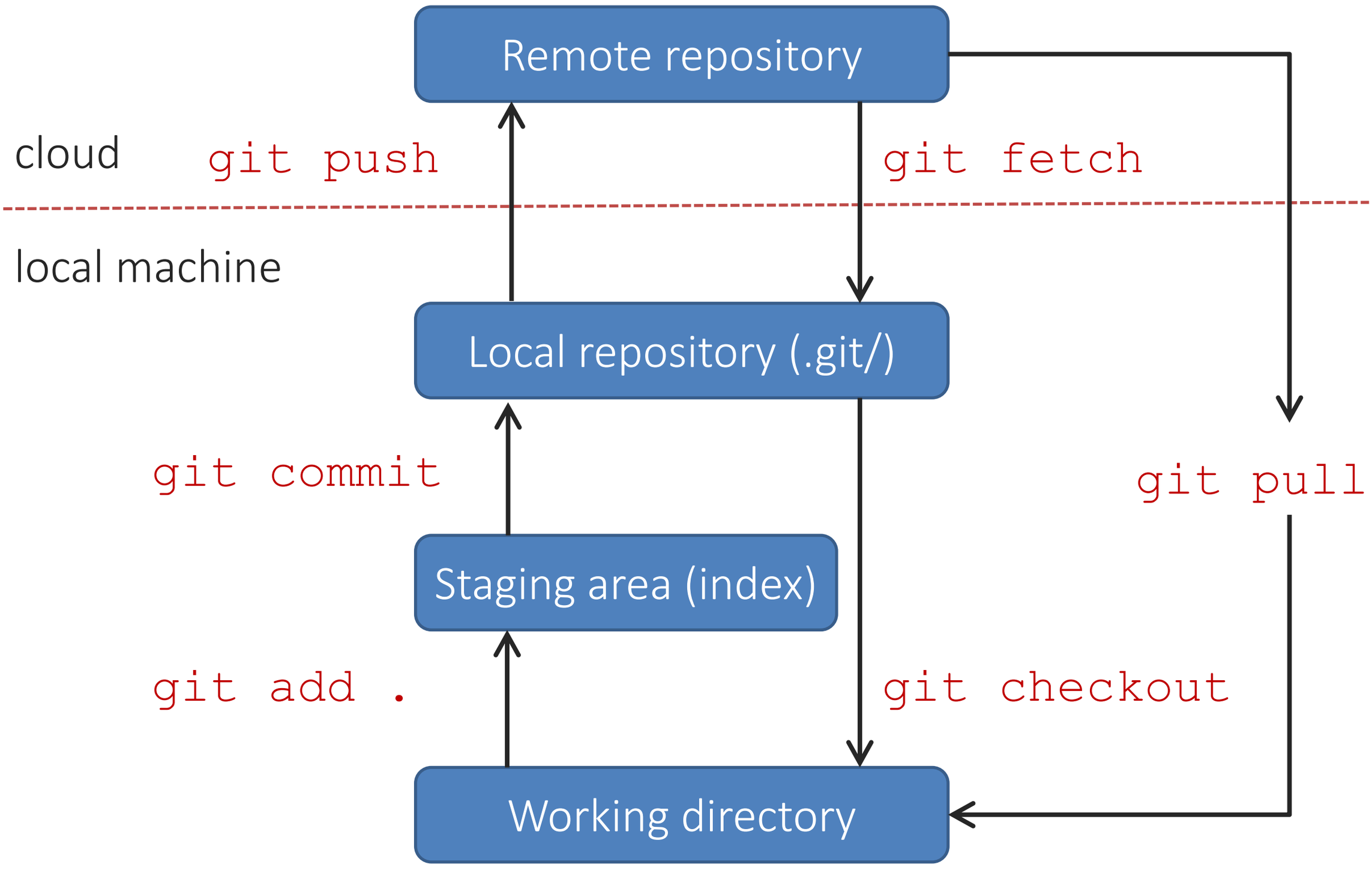
`commit` (circle)

`tree` (triangle)

`blob` (box)



Git – summary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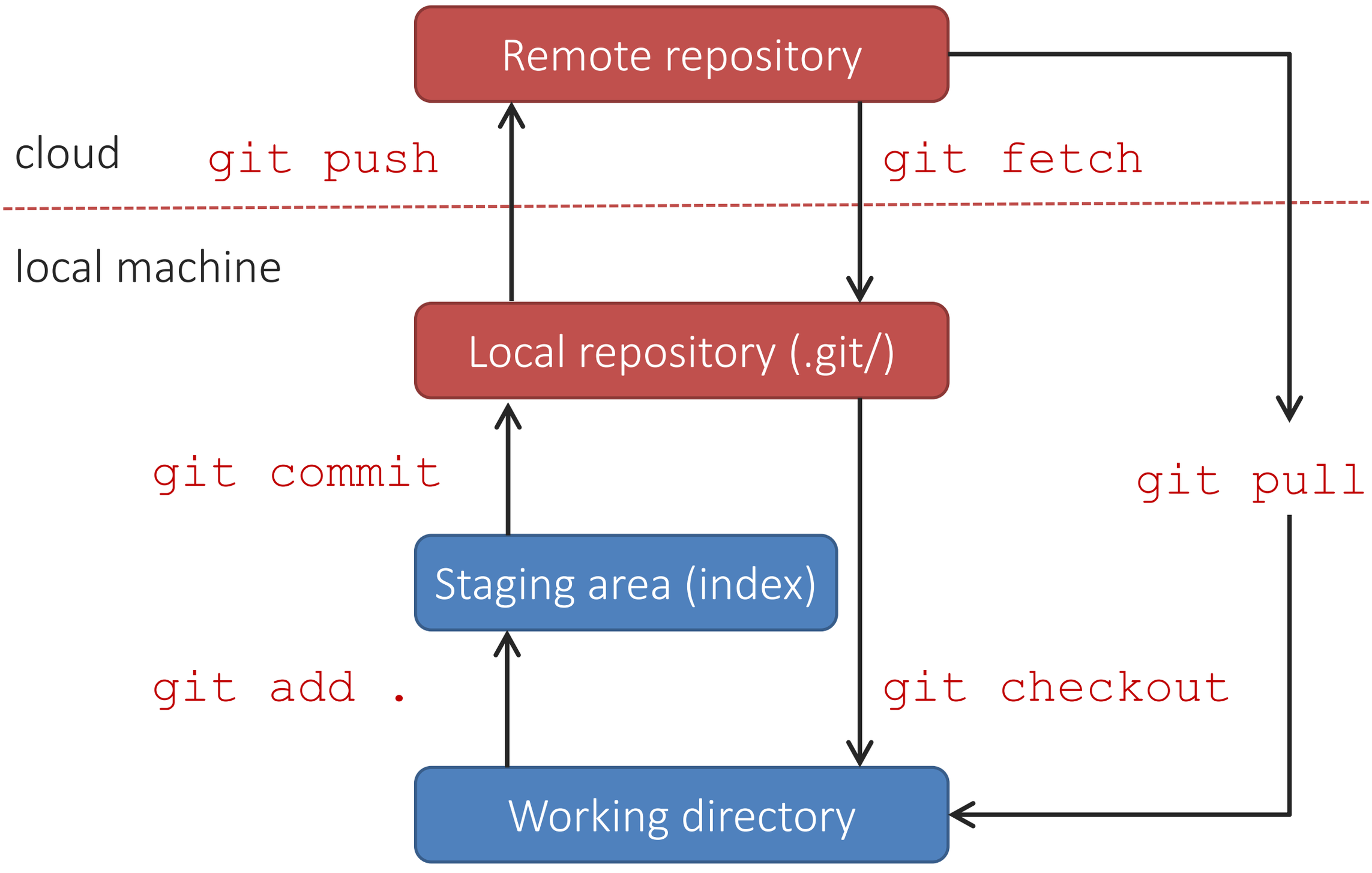
Git – outlook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