

Understanding Git with Alloy

Milestone 3

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Git Structure

Repository

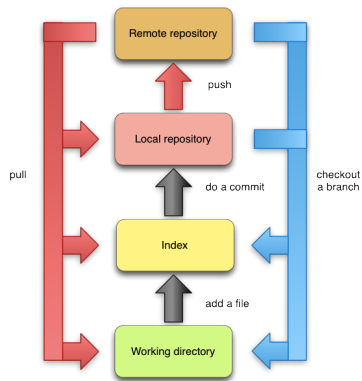
Working Directory




Index

Operations



The Git Structure

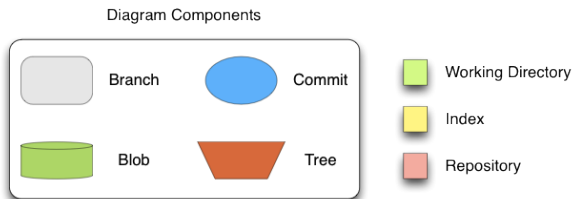


-  Local operations
-  Remote operations
-  Local/Remote operations



Repository

Esta imagem tem que ser alterada; Quadrado exterior sendo o repositório, 2 quadrados internos, um para os objectos e outro para as referências



Blob and Tree

Blob

- Represents the content of a file;
- The name is calculated from its content;

```
sig Blob extends Object {}
```

Tree

- Relation from names to Blobs or/and Trees;
- Used to represent the file system structure;

```
sig Tree extends Object {  
  contains: Name -> lone(Tree+Blob)  
}
```



Commit

- It is like a snapshot of the project on a certain moment in time;
- Author, Committer, Comment - Not important for us;
- Parent - The Commit which originated the current;
- Tree - Pointer to a Tree Object;

```
sig Commit extends Object {  
  points : Tree,  
  parent : set Commit,  
  abs: Path  $\Rightarrow$  Object,  
  merge : set State  
}
```

```
sig RootCommit extends Commit {}
```



Branch and HEAD

Branch

- It is just a pointer to a commit;

HEAD

- Special reference that identifies the current Branch;

```
sig Branch{  
  marks: Commit lone → State,  
  branches: set State,  
  head: set State  
}  
  
lone sig Master extends Branch{}
```



Working Directory

- Subset of a file system with the content of a project;
- These files can be the current files or files retrieved from the repository.

```
sig Path {  
  pathparent: lone Path,  
  name: Name,  
  unmerge: set State  
}  
  
one sig Root extends Path{}
```



Index

- Something in between the working directory and repository;
- It keeps a relation from file to content;
- The files in index will be in the next commit;

```
sig File{  
  path: Path,  
  blob: Blob,  
  index: set State  
}
```

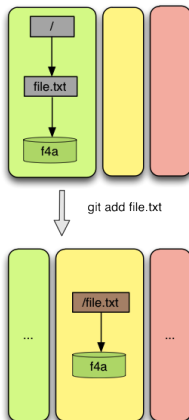


Modeled Operations

- Add and Remove
- Commit
- Branch and Branch Remove
- Checkout
- Merge



Add



Remove

