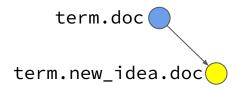
Git Branching

Software Engineering for Scientists

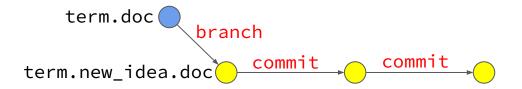
term.doc







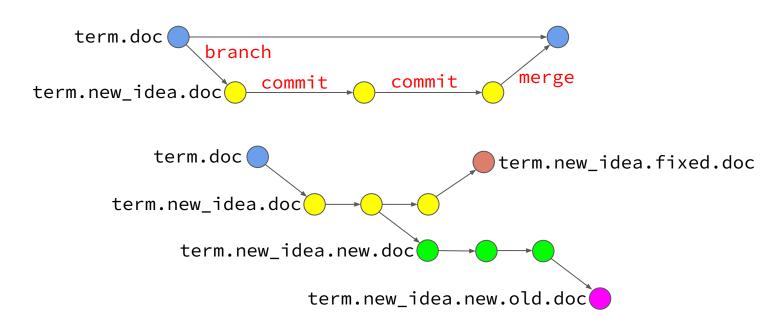


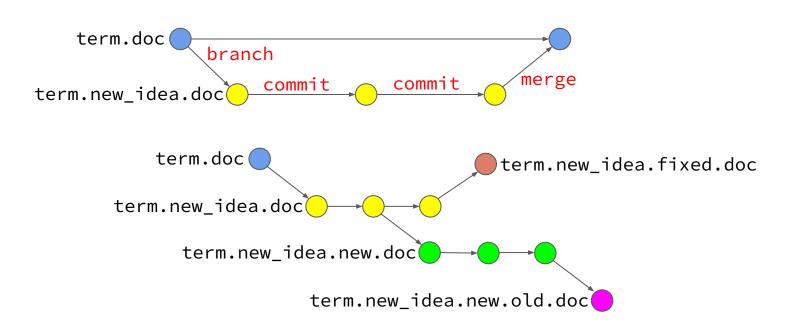




A **branch** is an independent line of development

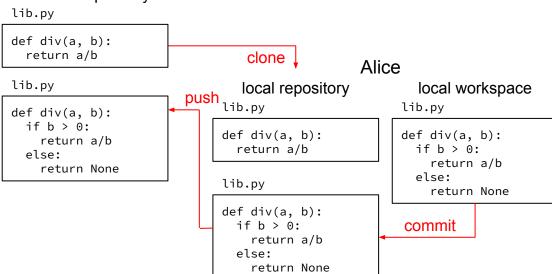
(new file, changes to files)





git branching/merging is cheap and fast

remote repository



remote repository

lib.py

def div(a, b):
 return a/b

remote repository

branch — main
lib.py

def div(a, b):
return a/b

github remote repository

main
lib.py

def div(a, b):
return a/b

clone
local repository

main
lib.py

def div(a, b):

return a/b

github remote repository

main
lib.py

def div(a, b):
return a/b

clone
local repository

main
lib.py

branch
fix_div
lib.py

def div(a, b):
return a/b

def div(a, b):
return a/b

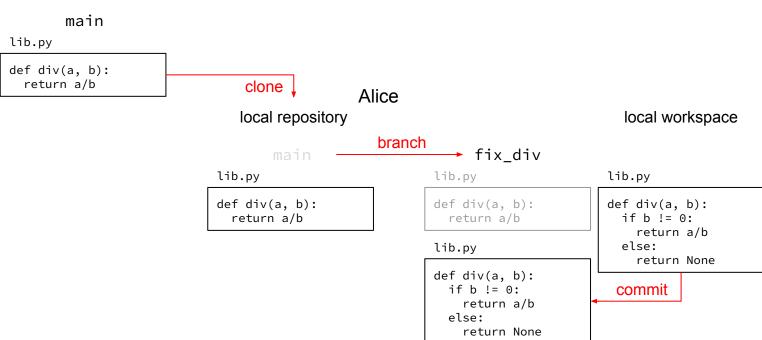
github remote repository main lib.py def div(a, b): return a/b clone Alice local repository local workspace branch fix_div lib.py lib.py lib.py def div(a, b): def div(a, b): def div(a, b): if b != 0: return a/b return a/b

return a/b

return None

else:

github remote repository main

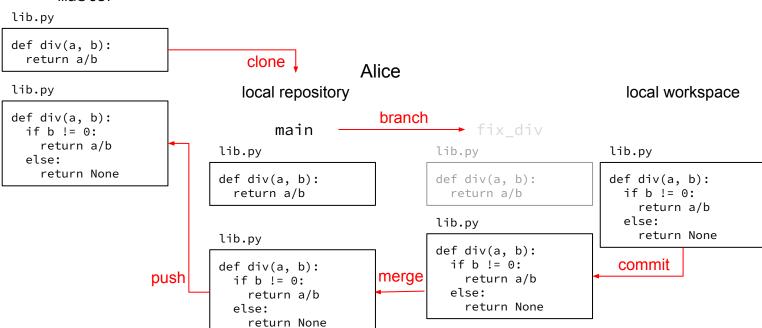


github remote repository

main lib.py def div(a, b): return a/b clone Alice local workspace local repository branch fix_div main lib.py lib.py lib.py def div(a, b): def div(a, b): def div(a, b): if b != 0: return a/b return a/b return a/b else: lib.py return None lib.py def div(a, b): if b != 0: commit def div(a, b): merge return a/b if b != 0: else: return a/b return None else: return None

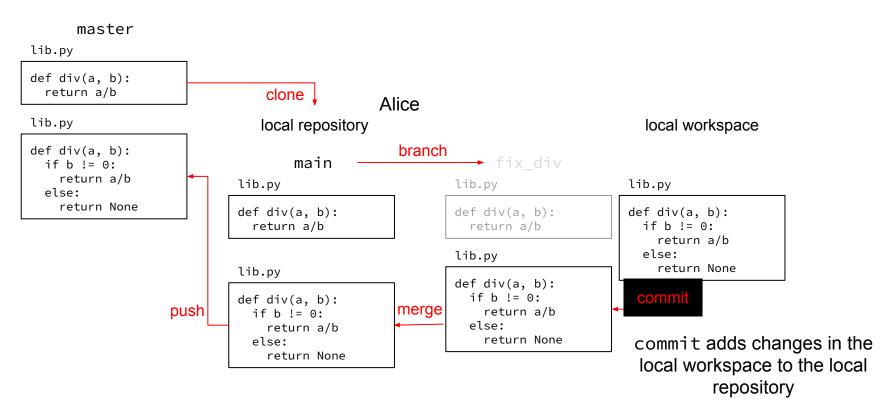
remote repository

master



Edits and new files will stay in your local workspace until they are committed to a branch

remote repository



local repository

main

lib.py

def div(a, b):
 return a/b

local workspace

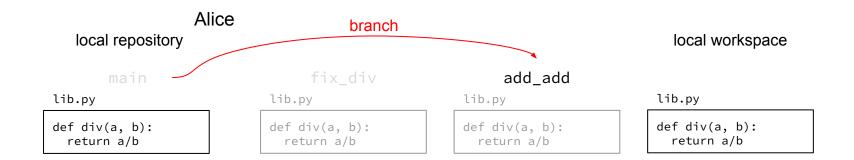
lib.py

def div(a, b):
 return a/b

Alice local repository main branch fix_div lib.py def div(a, b): return a/b fix_div

```
lib.py

def div(a, b):
return a/b
```



local repository

local workspace

main

lib.py

def div(a, b):
 return a/b

fix_div

lib.py

def div(a, b):
 return a/b

add_add

lib.py

def div(a, b):
 return a/b

lib.py

def div(a, b):
 return a/b

def add(a, b):
 return a + a

local repository

local workspace

main
lib.py

def div(a, b):
return a/b

fix_div
lib.py

def div(a, b):
 return a/b

add_add
lib.py

def div(a, b):
 return a/b

def add(a, b):
 return a + a

commit

local repository

local workspace

main
lib.py

def div(a, b):
 return a/b

fix_div
lib.py

def div(a, b):

return a/b

de

lib.py

def div(a, b):
 return a/b

def div(a, b):
 return a/b

def add(a, b):
 return a + a

commit

local repository

local workspace

fix_div add_add lib.py lib.py lib.py lib.py def div(a, b): def div(a, b): def div(a, b): def div(a, b): return a/b return a/b return a/b return a/b def add(a, b): lib.py return a + a def div(a, b): commit return a/b def add(a, b): return a + b

local repository

local workspace

main

lib.py

def div(a, b):
 return a/b

fix_div

lib.py

def div(a, b):
 return a/b

add_add

lib.py

def div(a, b):
 return a/b

lib.py

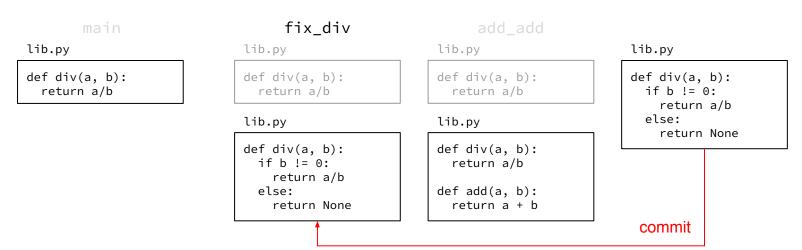
def div(a, b):
 return a/b

lib.py

def div(a, b):
 return a/b

def add(a, b):
 return a + b

local repository



local repository

local workspace

main

lib.py

def div(a, b):
 return a/b

fix_div

lib.py

def div(a, b):
 return a/b

lib.py

def div(a, b):
 if b != 0:
 return a/b
 else:
 return None

add_add

lib.py

def div(a, b):
 return a/b

lib.py

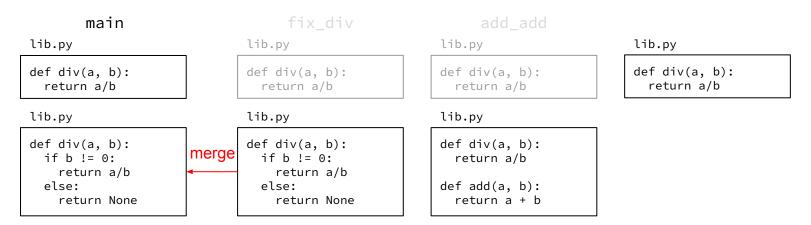
def div(a, b):
 return a/b

def add(a, b):
 return a + b

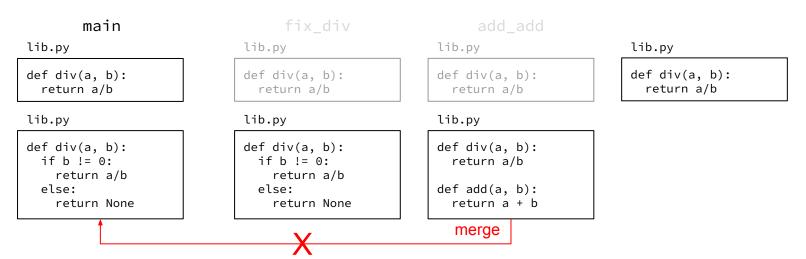
lib.py

def div(a, b):
 return a/b

local repository



local repository



local repository

```
main
                                   fix_div
                             lib.py
                                                        lib.py
lib.py
                                                                                   lib.py
def div(a, b):
                             def div(a, b):
                                                        def div(a, b):
                                                                                   def div(a, b):
                                                                                   <<<<< HEAD
 return a/b
                               return a/b
                                                          return a/b
                                                                                     if b!=0:
                                                                                       return a/b
lib.py
                             lib.py
                                                        lib.py
                                                                                     else:
                                                                                       None
def div(a, b):
                             def div(a, b):
                                                        def div(a, b):
 if b != 0:
                               if b != 0:
                                                                                   ======
                                                          return a/b
                                                                                     return a/b
    return a/b
                                 return a/b
                                                                                   def add(a, b):
 else:
                               else:
                                                        def add(a, b):
                                                                                     return a+b
    return None
                                 return None
                                                          return a + b
                                                                                   >>>>> add_add
                                                           merge
```

local repository

```
main
                                   fix_div
                                                        lib.py
lib.py
                             lib.py
                                                                                   lib.py
def div(a, b):
                             def div(a, b):
                                                        def div(a, b):
                                                                                   def div(a, b):
                                                                                   <<<<< HEAD
 return a/b
                               return a/b
                                                          return a/b
                                                                                     if b!=0:
                                                                                       return a/b
lib.py
                             lib.py
                                                        lib.py
                                                                                     else:
                                                                                       None
def div(a, b):
                             def div(a, b):
                                                        def div(a, b):
 if b != 0:
                               if b != 0:
                                                                                   ======
                                                          return a/b
                                                                                     return a/b
    return a/b
                                 return a/b
                                                                                   def add(a, b):
 else:
                               else:
                                                        def add(a, b):
                                                                                     return a+b
    return None
                                 return None
                                                          return a + b
                                                                                   >>>>> add_add
                                                           merge
```

local repository

```
main
                                   fix div
lib.py
                              lib.py
                                                         lib.py
                                                                                    lib.py
def div(a, b):
                              def div(a, b):
                                                         def div(a, b):
                                                                                    def div(a, b):
                                                                                    <<<<< HEAD
 return a/b
                                return a/b
                                                           return a/b
                                                                                      if b!=0:
                                                                                        return a/b
lib.py
                              lib.py
                                                         lib.py
                                                                                      else:
                                                                                        None
def div(a, b):
                              def div(a, b):
                                                         def div(a, b):
 if b != 0:
                                                                                    ======
                                if b != 0:
                                                           return a/b
                                                                                      return a/b
   return a/b
                                  return a/b
                                                                                    def add(a, b):
 else:
                                else:
                                                         def add(a, b):
                                                                                      return a+b
                                  return None
                                                           return a + b
    return None
                                                                                    >>>>> add add
lib.py
                                                                                    lib.py
def div(a, b):
                                                                                    def div(a, b):
 if b!=0:
                                                                                      if b!=0:
    return a/b
                                                                          commit
                                                                                        return a/b
  else:
                                                                                      else:
    None
                                                                                        None
def add(a, b):
                                                                                    def add(a, b):
  return a+b
                                                                                      return a+b
```