Recap: Developer's Environment

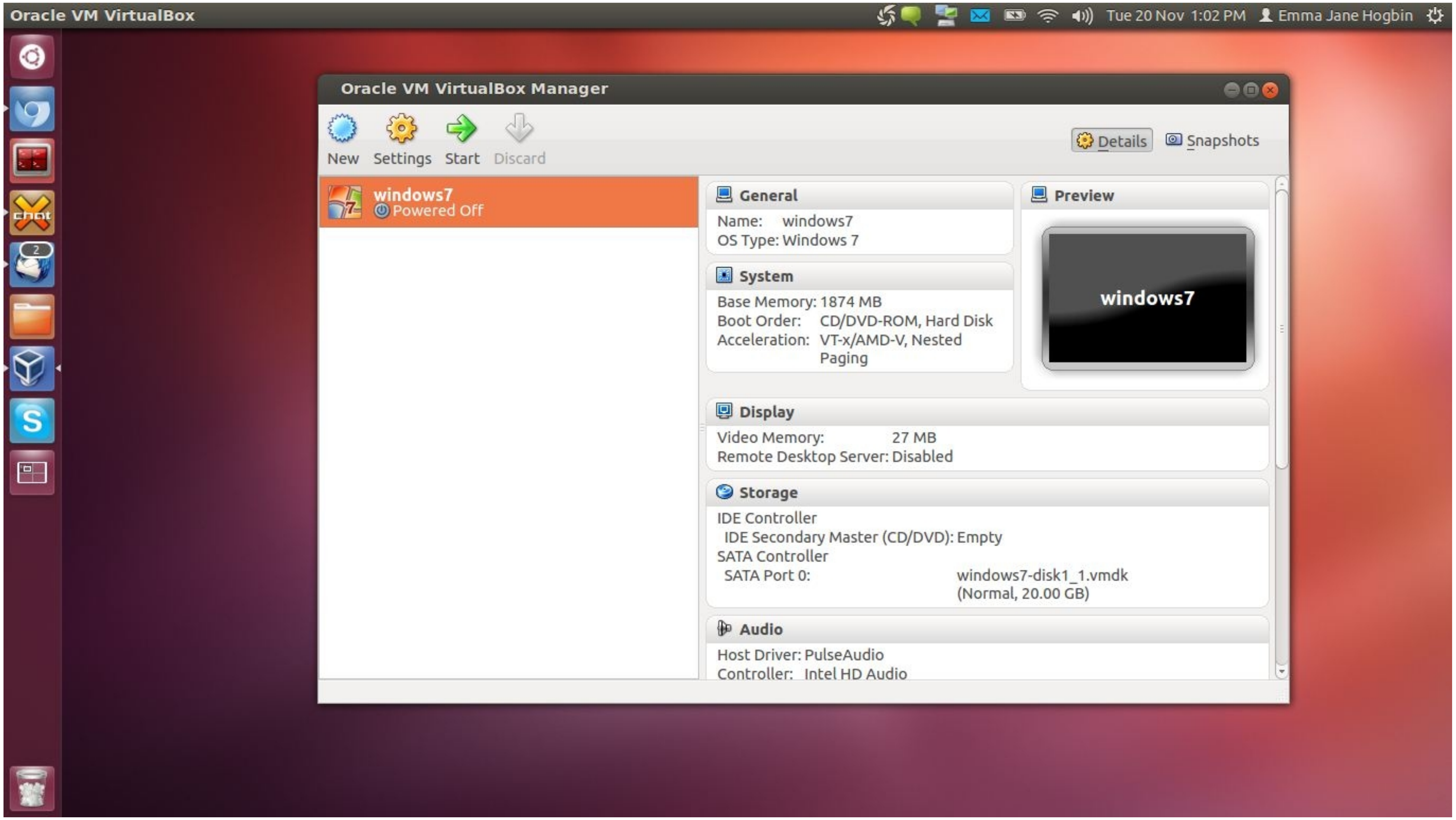
There's no audio yet.

We'll start at 2PM (Eastern Time).

Standardizing Your Test Environment

- VirtualBox -> machine inside a machine
  "the oracle thing"
- Chef -> configuration scripts for how the machine inside the machine is setup
- Vagrant -> wrapper for Chef + VirtualBox
- Putty (or SSH) -> to log into Baby Ubuntu

VirtualBox Without Vagrant



General
Name: windows7
OS Type: Windows 7

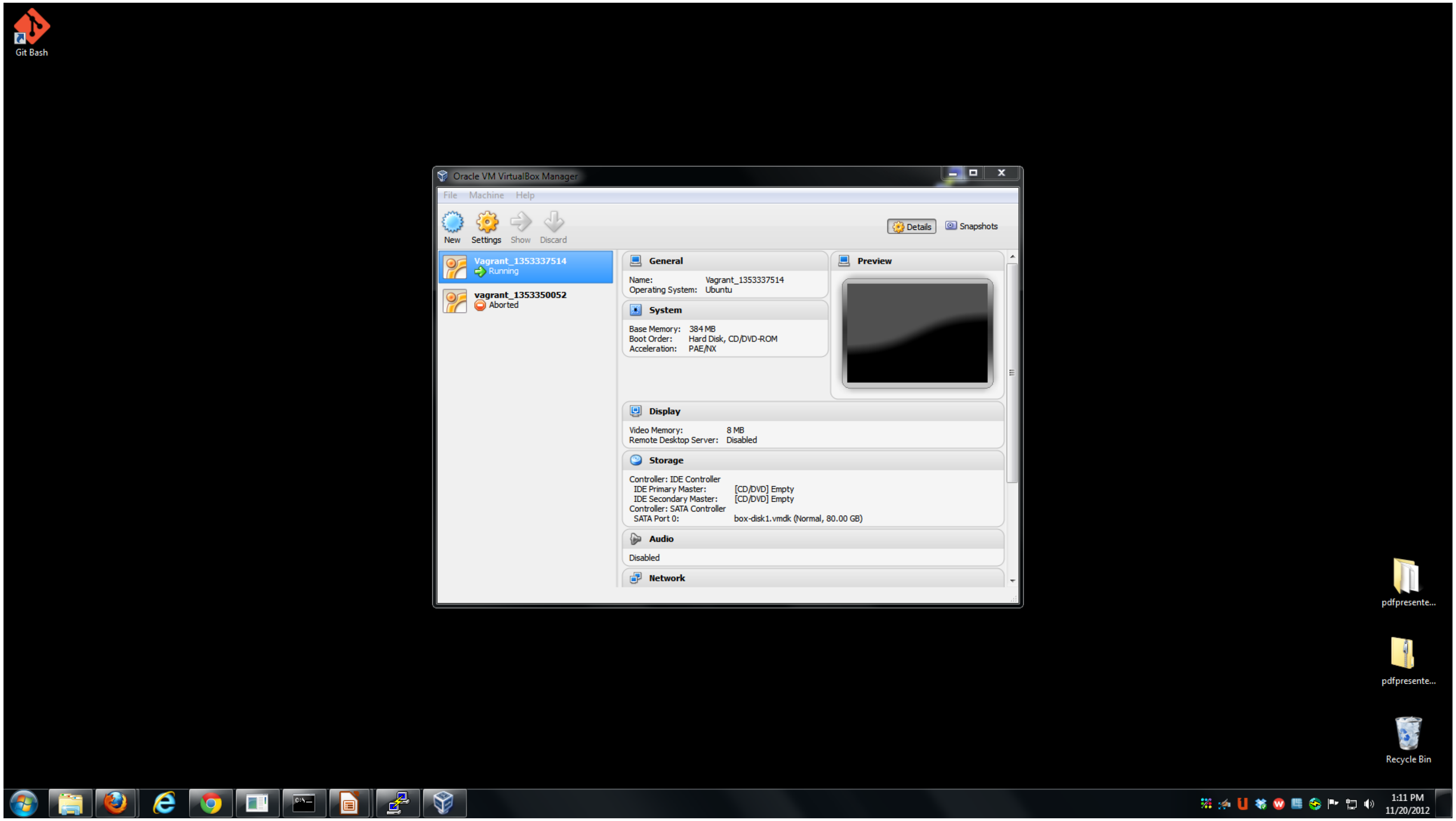
System
Base Memory: 1874 MB
Boot Order: CD/DVD-ROM, Hard Disk
Acceleration: VT-x/AMD-V, Nested Paging

Display
Video Memory: 27 MB
Remote Desktop Server: Disabled

Storage
IDE Controller
IDE Secondary Master (CD/DVD): Empty
SATA Controller
SATA Port 0: windows7-disk1_1.vmdk (Normal, 20.00 GB)

Audio
Host Driver: PulseAudio
Controller: Intel HD Audio

VirtualBox Without Vagrant (windows)



Vagrant_1353337514
Running

vagrant_1353350052
Aborted

General

Name: Vagrant_1353337514
Operating System: Ubuntu

System

Base Memory: 384 MB
Boot Order: Hard Disk, CD/DVD-ROM
Acceleration: PAE/NX

Preview

Display

Video Memory: 8 MB
Remote Desktop Server: Disabled

Storage

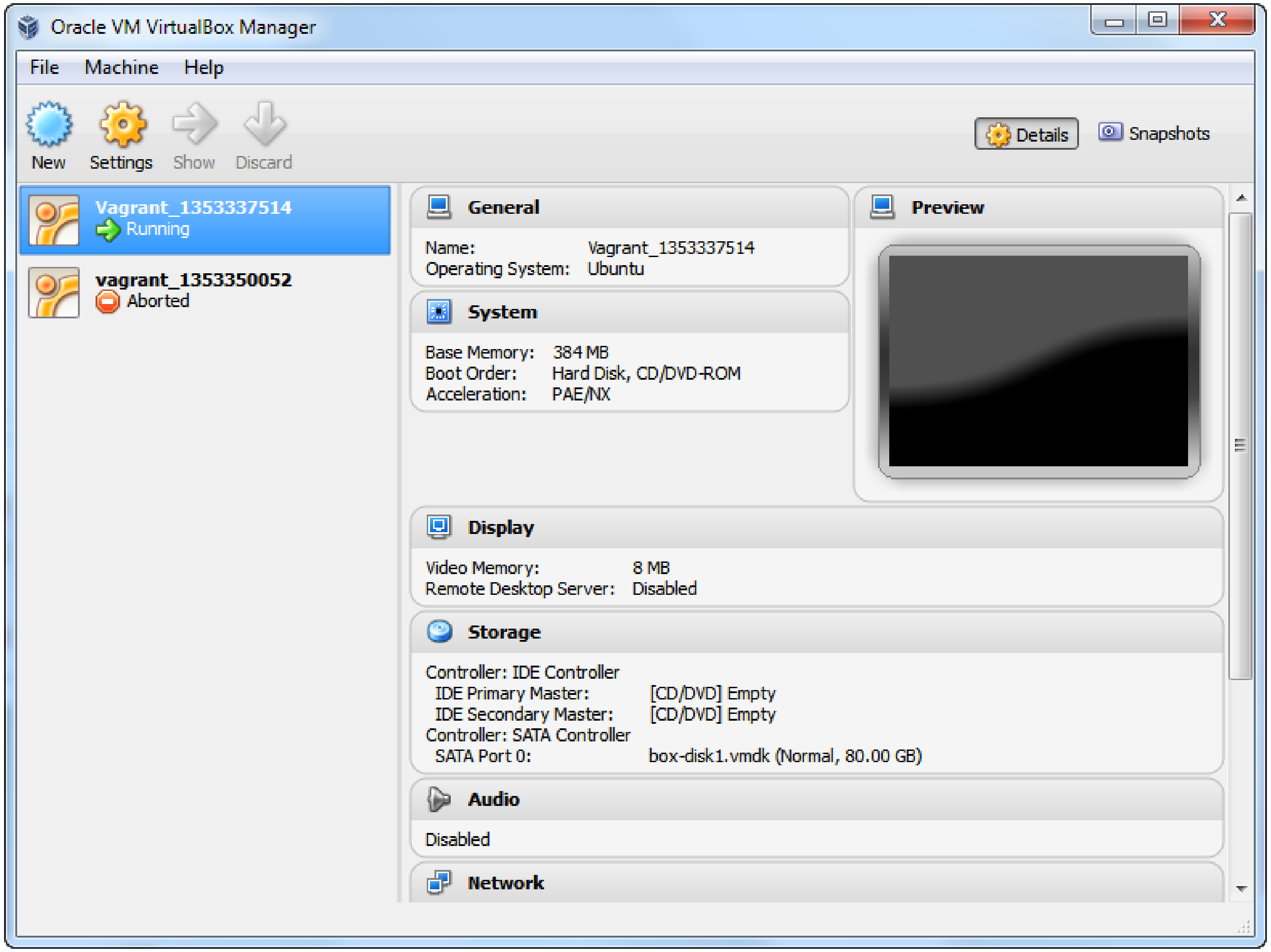
Controller: IDE Controller
IDE Primary Master: [CD/DVD] Empty
IDE Secondary Master: [CD/DVD] Empty
Controller: SATA Controller
SATA Port 0: box-disk1.vmdk (Normal, 80.00 GB)

Audio

Disabled

Network

Administering Machines with VirtualBox



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IDE Primary Master: [CD/DVD] Empty
IDE Secondary Master: [CD/DVD] Empty
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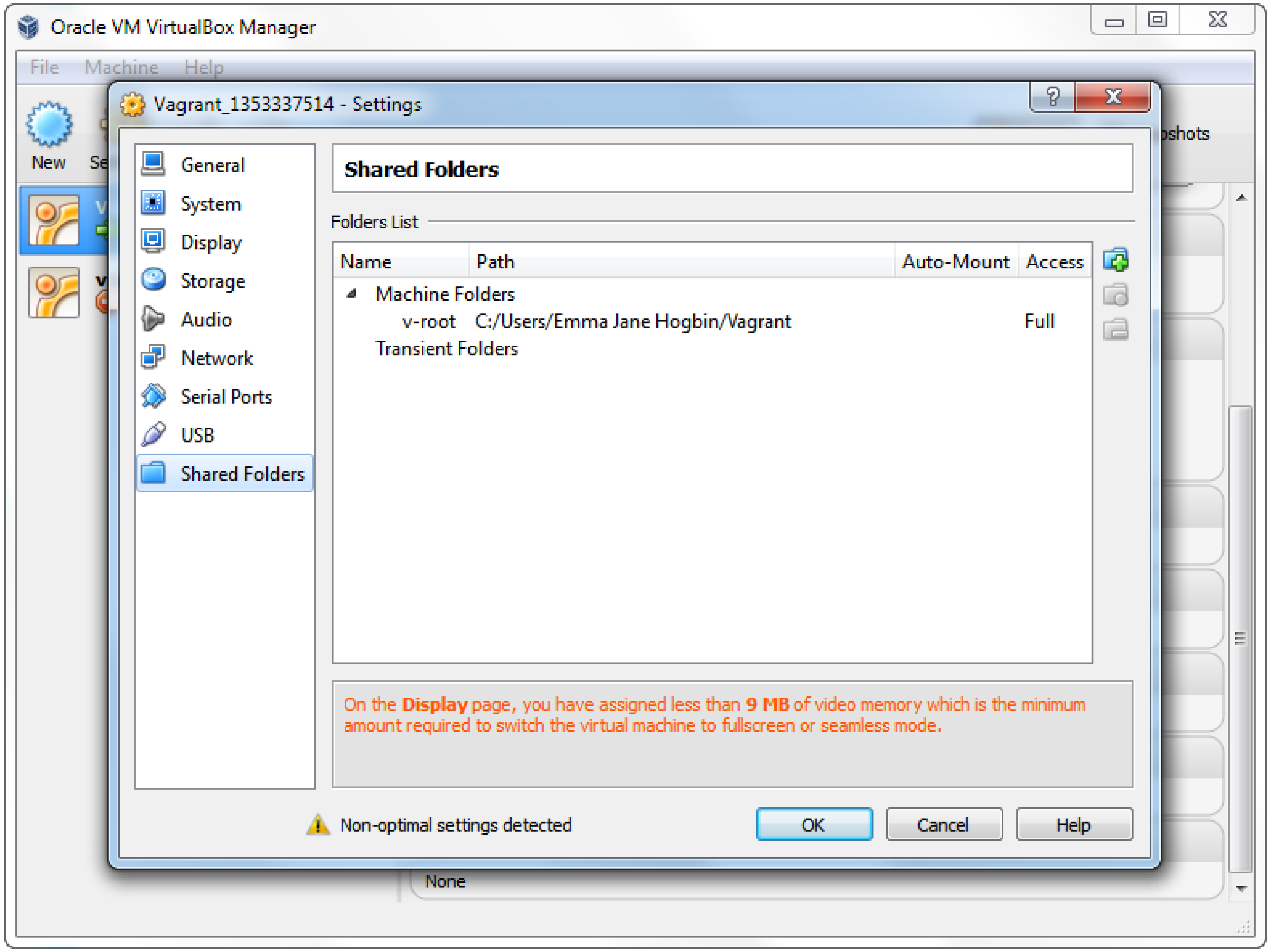
Audio

Disabled

Network

Shared Folders



Shared Folders

Folders List

Name	Path	Auto-Mount	Access
Machine Folders			
v-root	C:/Users/Emma Jane Hogbin/Vagrant		Full
Transient Folders			

On the **Display** page, you have assigned less than **9 MB** of video memory which is the minimum amount required to switch the virtual machine to fullscreen or seamless mode.

Non-optimal settings detected

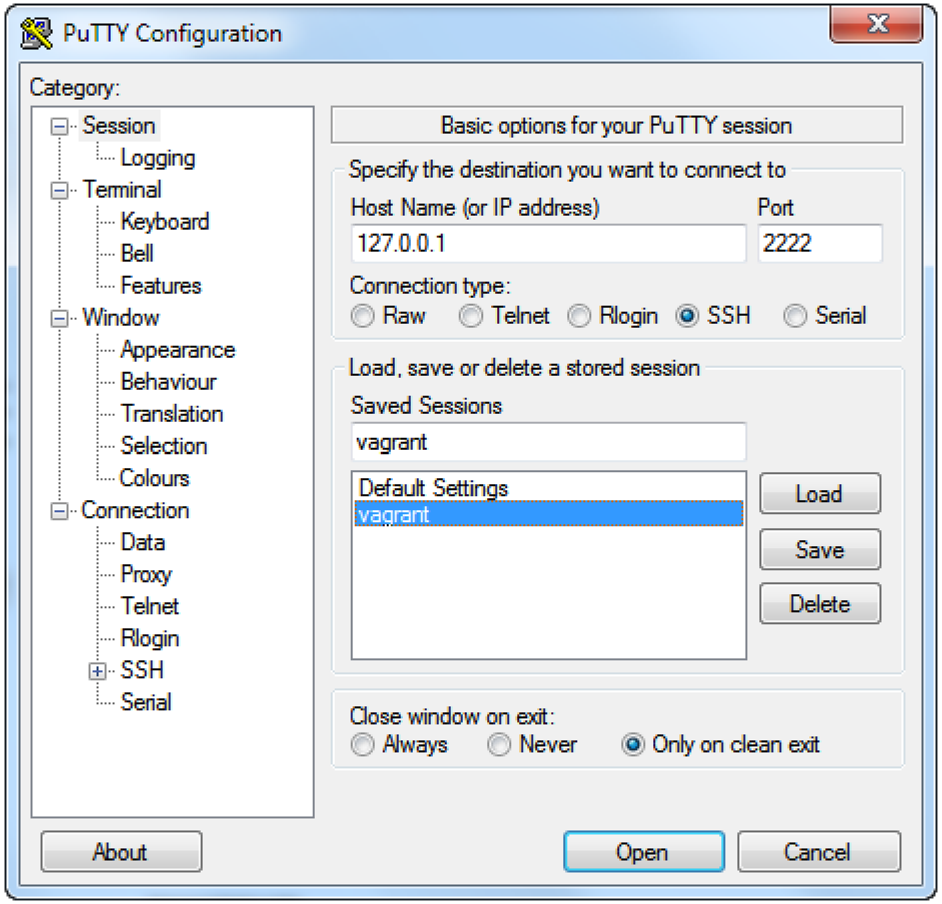
Logging Into Baby Ubuntu

- Windows -> putty
- OSX -> command line

$ vagrant ssh

Username: vagrant

Password: vagrant


Basic options for your PuTTY session

Specify the destination you want to connect to

Host Name (or IP address): 127.0.0.1

Port: 2222

Connection type: Raw Telnet Rlogin [✓ SSH] Serial

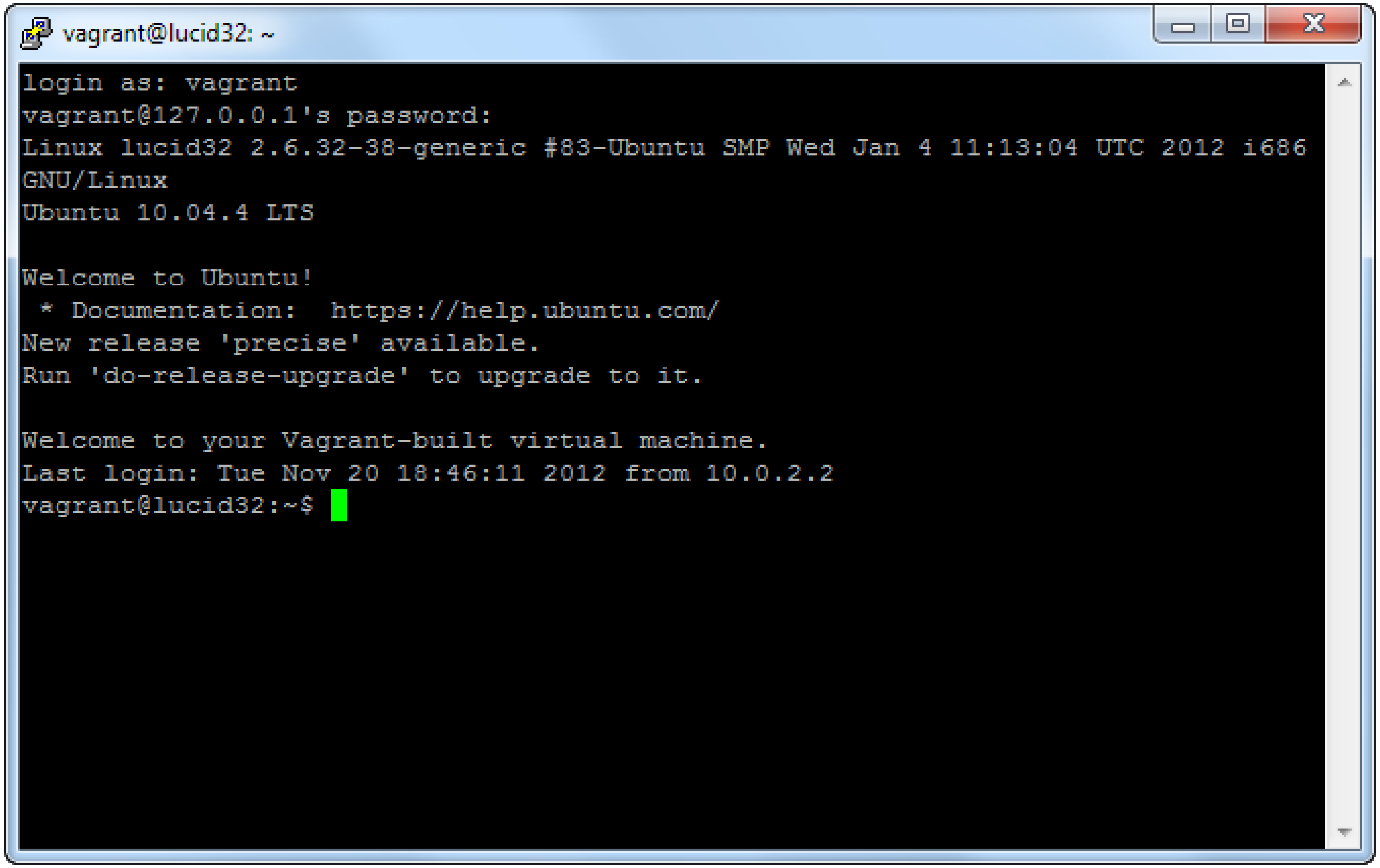
Load, save or delete a stored session

Saved Sessions: vagrant

Default Settings
vagrant

Close window on exit: Always Never [✓ Only on clean exit]

Inside Baby Ubuntu



```
login as: vagrant
vagrant@127.0.0.1's password:
Linux lucid32 2.6.32-38-generic #83-Ubuntu SMP Wed Jan 4 11:13:04 UTC 2012 i686
GNU/Linux
Ubuntu 10.04.4 LTS

Welcome to Ubuntu!
 * Documentation:  https://help.ubuntu.com/
New release 'precise' available.
Run 'do-release-upgrade' to upgrade to it.

Welcome to your Vagrant-built virtual machine.
Last login: Tue Nov 20 18:46:11 2012 from 10.0.2.2
vagrant@lucid32:~$
```

Getting the Right Start Point

- Jeff Eaton
  https://github.com/eaton/vagrant-chef-dlamp
- Vagrant Project
  http://drupal.org/project/vagrant/git-instructions
- Mark Sonnabaum
  https://github.com/msonnabaum/drush-ci-chef
- Patrick Connolly
  https://github.com/myplanetdigital/vagrant-ariadne/

Version Control Basics

Benefits of Version Control

- Backup and restore
- Syncronization across multiple systems
- Short-term undo to test implications
- Long-term undo to reverse bugs
- Track changes to see why/how software evolved
- Track ownership to give ‘credit’ to change makers
- Sandboxing our code to test changes without affecting others

There is no excuse for not having version control.

The cheapest way to get version control is to use an automated backup system, like Dropbox, for your code.

Terminology

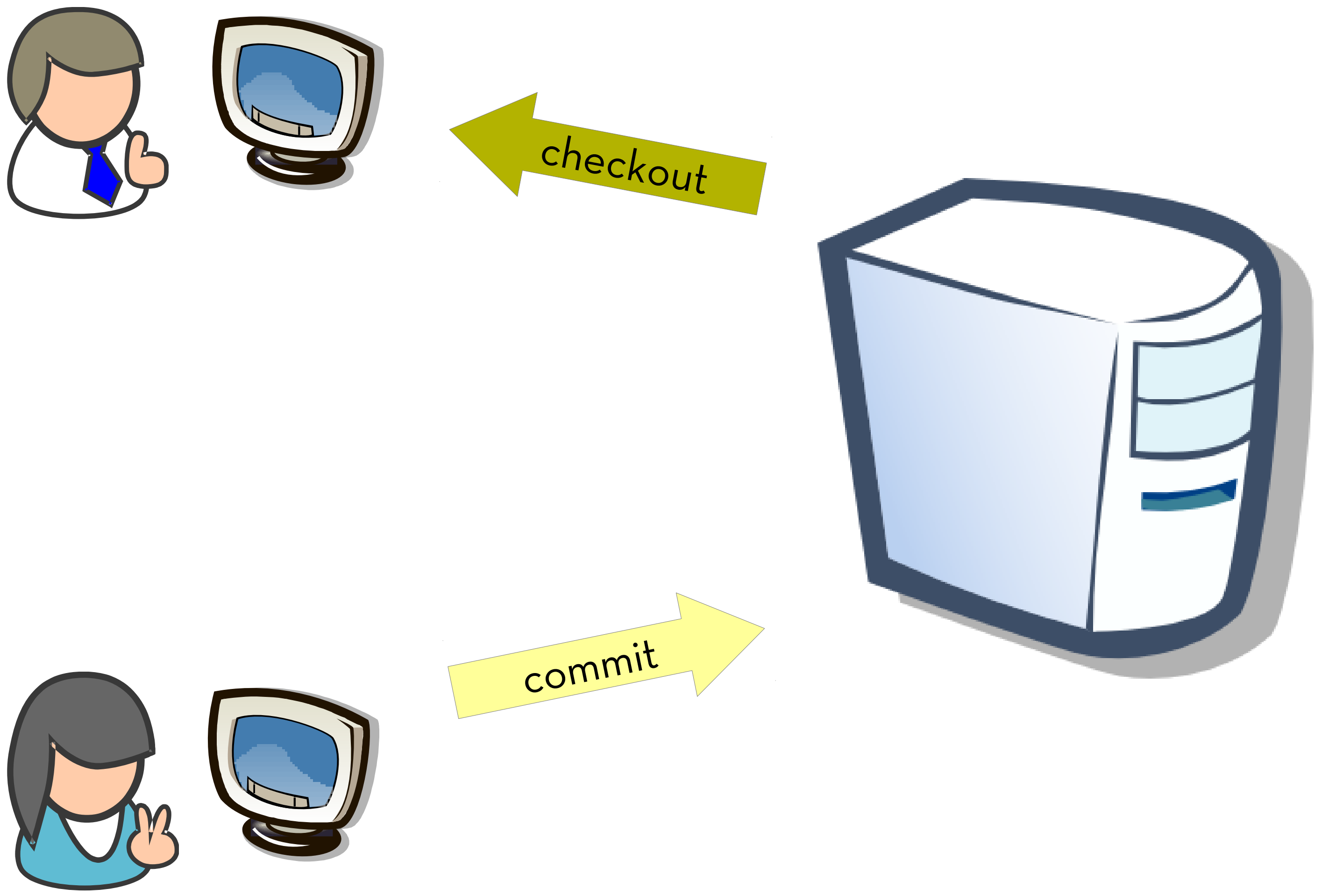
- **Repository**. The database of changes to your files.
- **Server**. The computer storing the repository.
- **Client**. The computer connecting to the repository.
- **Working copy**. Your local copy, where changes are made.
- **Trunk** (or "**main**"). The current, primary source for unchanged code.
- **Head**. The latest revision in the repository.

Basic Actions

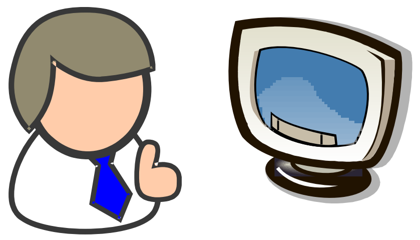
- **Add**. Put a file into the repo.
- **Revision**. Checks what version a file is on.
- **Check out**. Download files from the main repository.
- **Check in**. Upload changed files to the main repository.
- **Changelog**. A list of changes made to a file since it was created.
- **Update/sync**. Synchronize your files with the ones from the main repository.
- **Revert**. Throw away your local changes and reload the latest version from the repository.

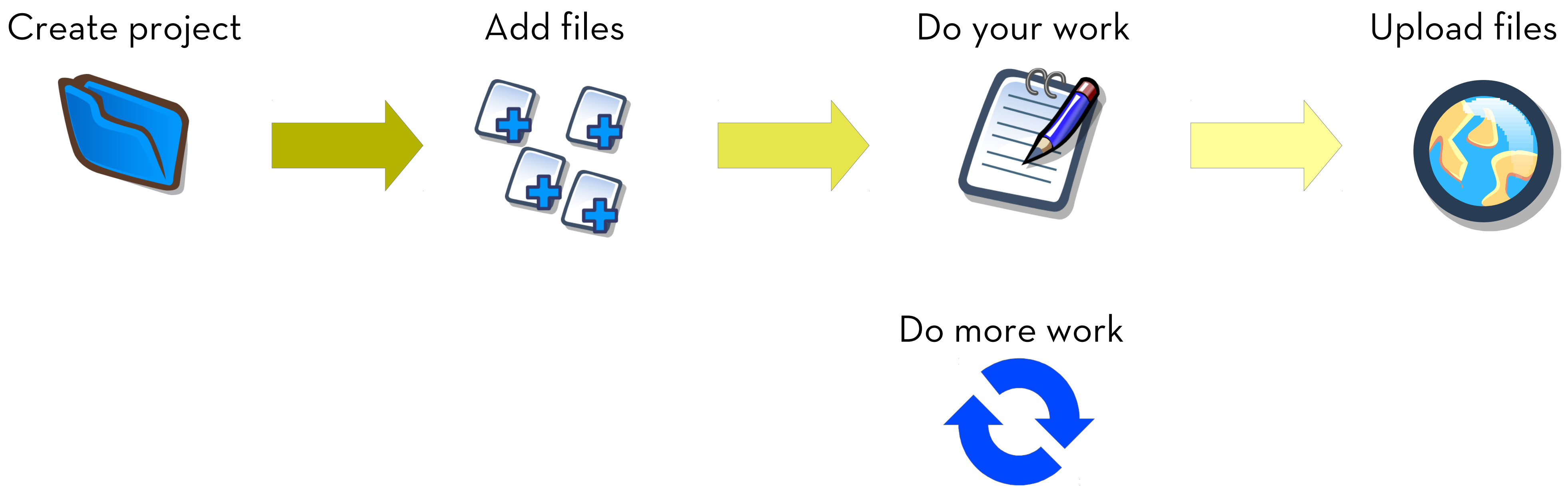
Workflow: Centralized

no local commits



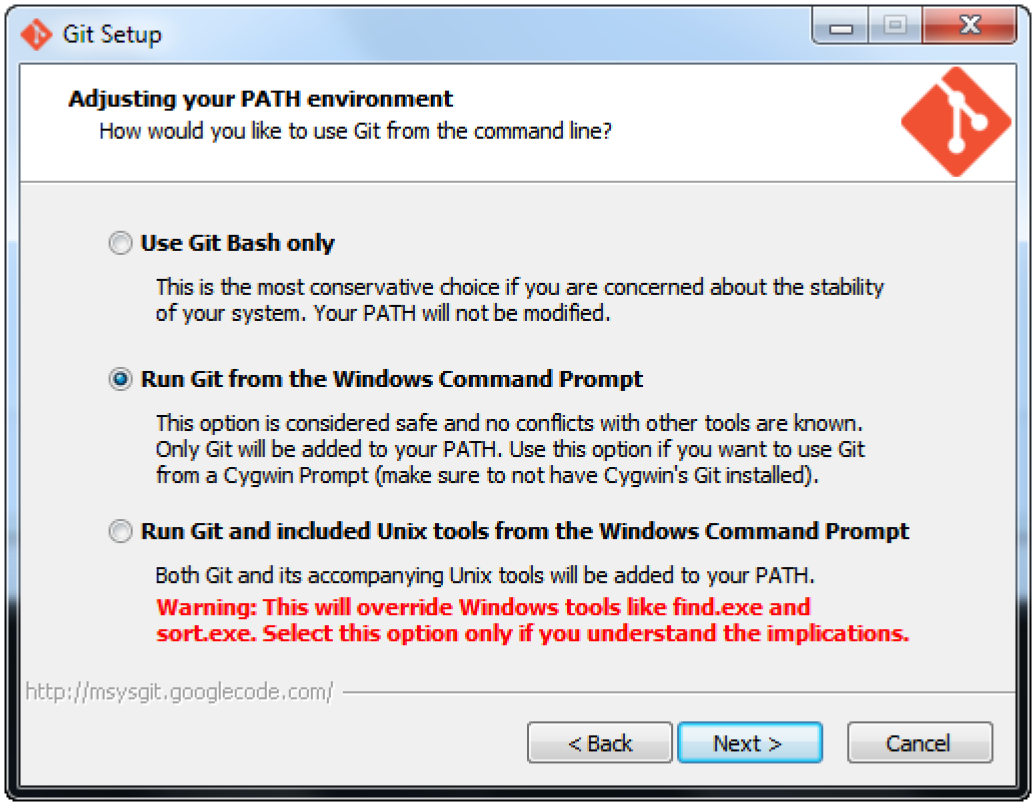
Workflow: The Solo Developer





Installing Git

- Command line
- Desktop integration
- Graphical interface



Adjusting your PATH environment

How would you like to use Git from the command line?

( ) **Use Git Bash only**

This is the most conservative choice if you are concerned about the stability of your system. Your PATH will not be modified.

[✓] **Run Git from the Windows Command Prompt**

This option is considered safe and no conflicts with other tools are known. Only Git will be added to your PATH. Use this option if you want to use Git from a Cygwin Prompt (make sure to not have Cygwin's Git installed).

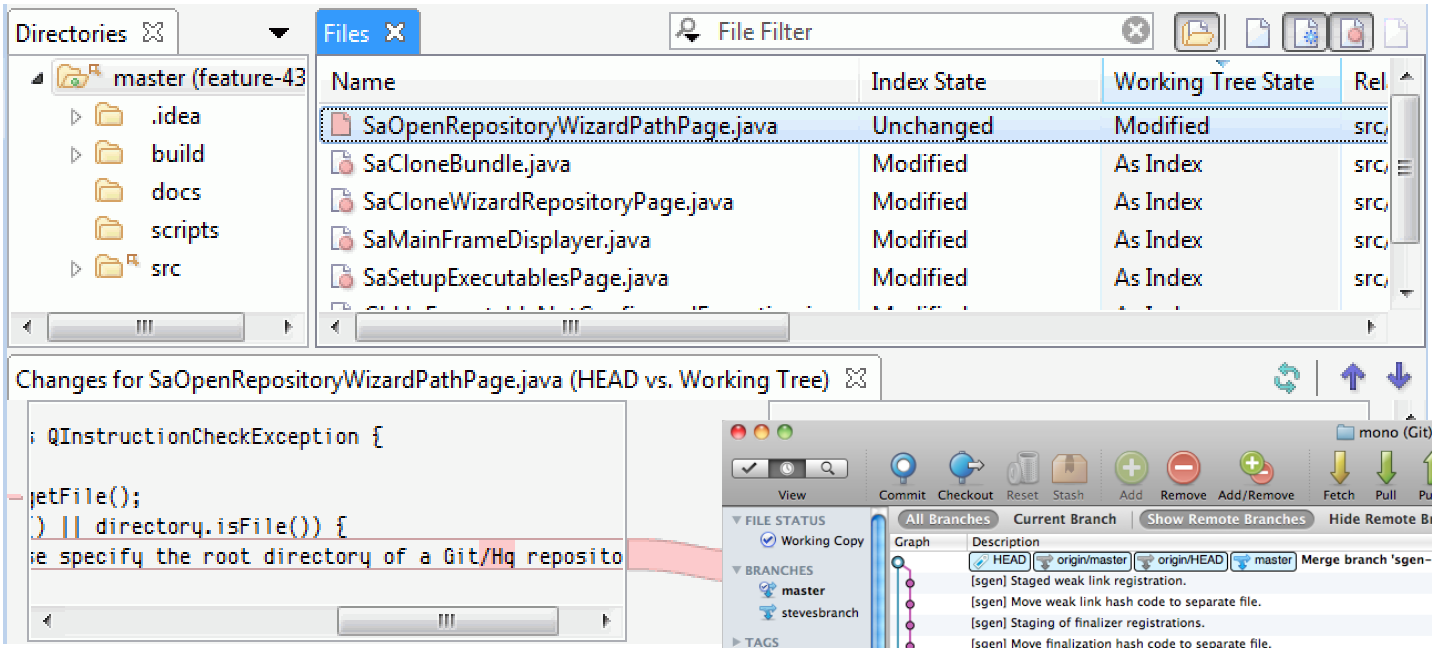
( ) **Run Git and included Unix tools from the Windows Command Prompt**

Both Git and its accompanying Unix tools will be added to your PATH.

Warning: This will override Windows tools like find.exe and sort.exe. Select this option only if you understand the implications.

http://msysgit.googlecode.com/

Git GUIs



Name	Index State	Working Tree State	Rel
SaOpenRepositoryWizardPathPage.java	Unchanged	Modified	src,
SaCloneBundle.java	Modified	As Index	src,
SaCloneWizardRepositoryPage.java	Modified	As Index	src,
SaMainFrameDisplayer.java	Modified	As Index	src,
SaSetupExecutablesPage.java	Modified	As Index	src,

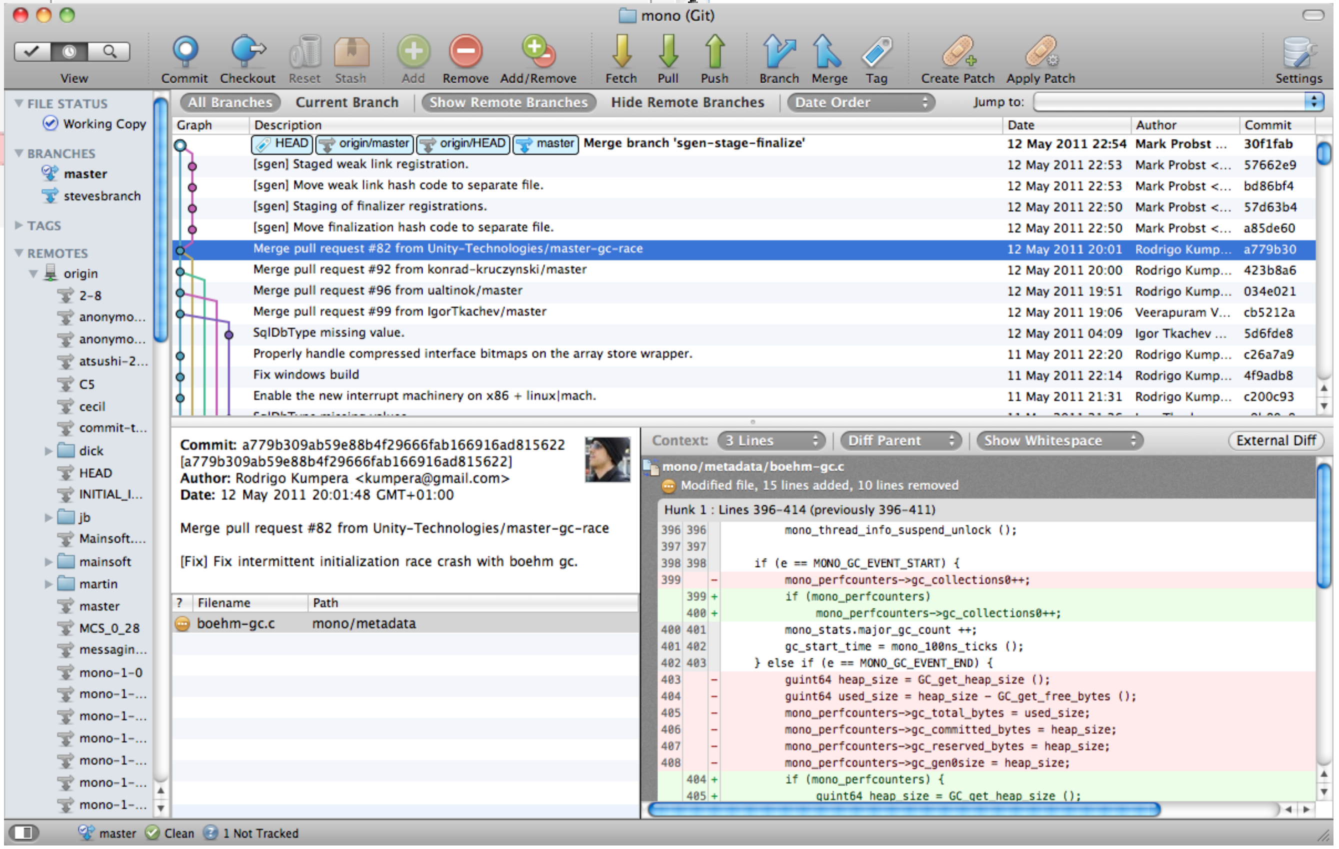
Changes for SaOpenRepositoryWizardPathPage.java (HEAD vs. Working Tree)

```
; QInstructionCheckException {

jetFile();
) || directory.isFile()) {
ie specify the root directory of a Git/Hg reposito
```

SmartGit, cross-platform

SourceTree, OSX



Graph	Description	Date	Author	Commit
	HEAD origin/master origin/HEAD master Merge branch 'sgen-stage-finalize'	12 May 2011 22:54	Mark Probst ...	30f1fab
	[sgen] Staged weak link registration.	12 May 2011 22:53	Mark Probst <...	57662e9
	[sgen] Move weak link hash code to separate file.	12 May 2011 22:53	Mark Probst <...	bd86bf4
	[sgen] Staging of finalizer registrations.	12 May 2011 22:50	Mark Probst <...	57d63b4
	[sgen] Move finalization hash code to separate file.	12 May 2011 22:50	Mark Probst <...	a85de60
	Merge pull request #82 from Unity-Technologies/master-gc-race	12 May 2011 20:01	Rodrigo Kump...	a779b30
	Merge pull request #92 from konrad-kruczynski/master	12 May 2011 20:00	Rodrigo Kump...	423b8a6
	Merge pull request #96 from ualtinok/master	12 May 2011 19:51	Rodrigo Kump...	034e021
	Merge pull request #99 from IgorTkachev/master	12 May 2011 19:06	Veerapuram V...	cb5212a
	SqlDbType missing value.	12 May 2011 04:09	Igor Tkachev ...	5d6fde8
	Properly handle compressed interface bitmaps on the array store wrapper.	11 May 2011 22:20	Rodrigo Kump...	c26a7a9
	Fix windows build	11 May 2011 22:14	Rodrigo Kump...	4f9adb8
	Enable the new interrupt machinery on x86 + linux|mach.	11 May 2011 21:31	Rodrigo Kump...	c200c93

Commit: a779b309ab59e88b4f29666fab166916ad815622
[a779b309ab59e88b4f29666fab166916ad815622]
Author: Rodrigo Kumpera <kumpera@gmail.com>
Date: 12 May 2011 20:01:48 GMT+01:00

Merge pull request #82 from Unity-Technologies/master-gc-race

[Fix] Fix intermittent initialization race crash with boehm gc.

?	Filename	Path
	boehm-gc.c	mono/metadata

mono/metadata/boehm-gc.c
Modified file, 15 lines added, 10 lines removed

Hunk 1 : Lines 396-414 (previously 396-411)

```
          mono_thread_info_suspend_unlock ();

      if (e == MONO_GC_EVENT_START) {
-         mono_perfcounters->gc_collections0++;
+         if (mono_perfcounters)
+             mono_perfcounters->gc_collections0++;
          mono_stats.major_gc_count ++;
          gc_start_time = mono_100ns_ticks ();
      } else if (e == MONO_GC_EVENT_END) {
-         guint64 heap_size = GC_get_heap_size ();
-         guint64 used_size = heap_size - GC_get_free_bytes ();
-         mono_perfcounters->gc_total_bytes = used_size;
-         mono_perfcounters->gc_committed_bytes = heap_size;
-         mono_perfcounters->gc_reserved_bytes = heap_size;
-         mono_perfcounters->gc_gen0size = heap_size;
+         if (mono_perfcounters) {
+             guint64 heap_size = GC_get_heap_size ();
```

master Clean 1 Not Tracked

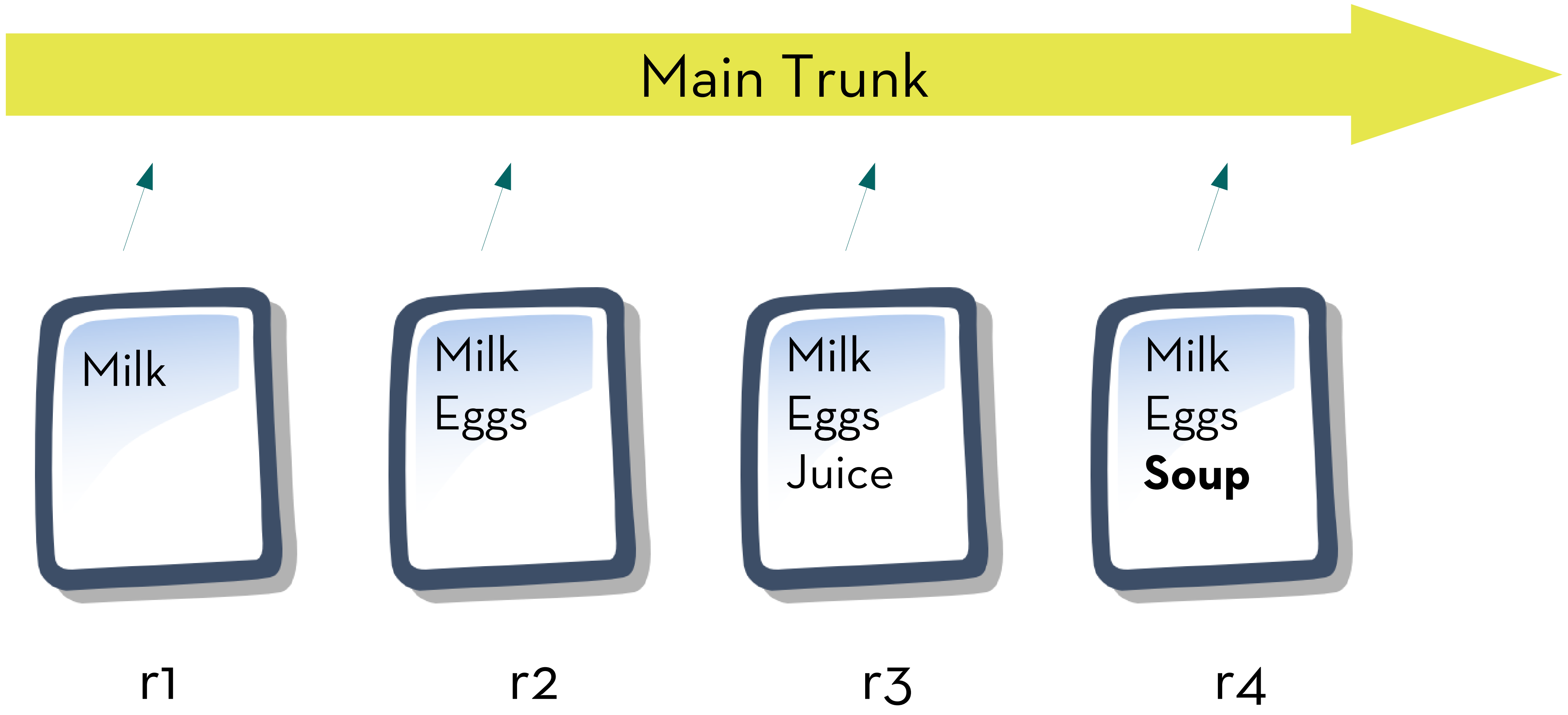
My First Version-Controlled Project

There are three steps needed to version your work:

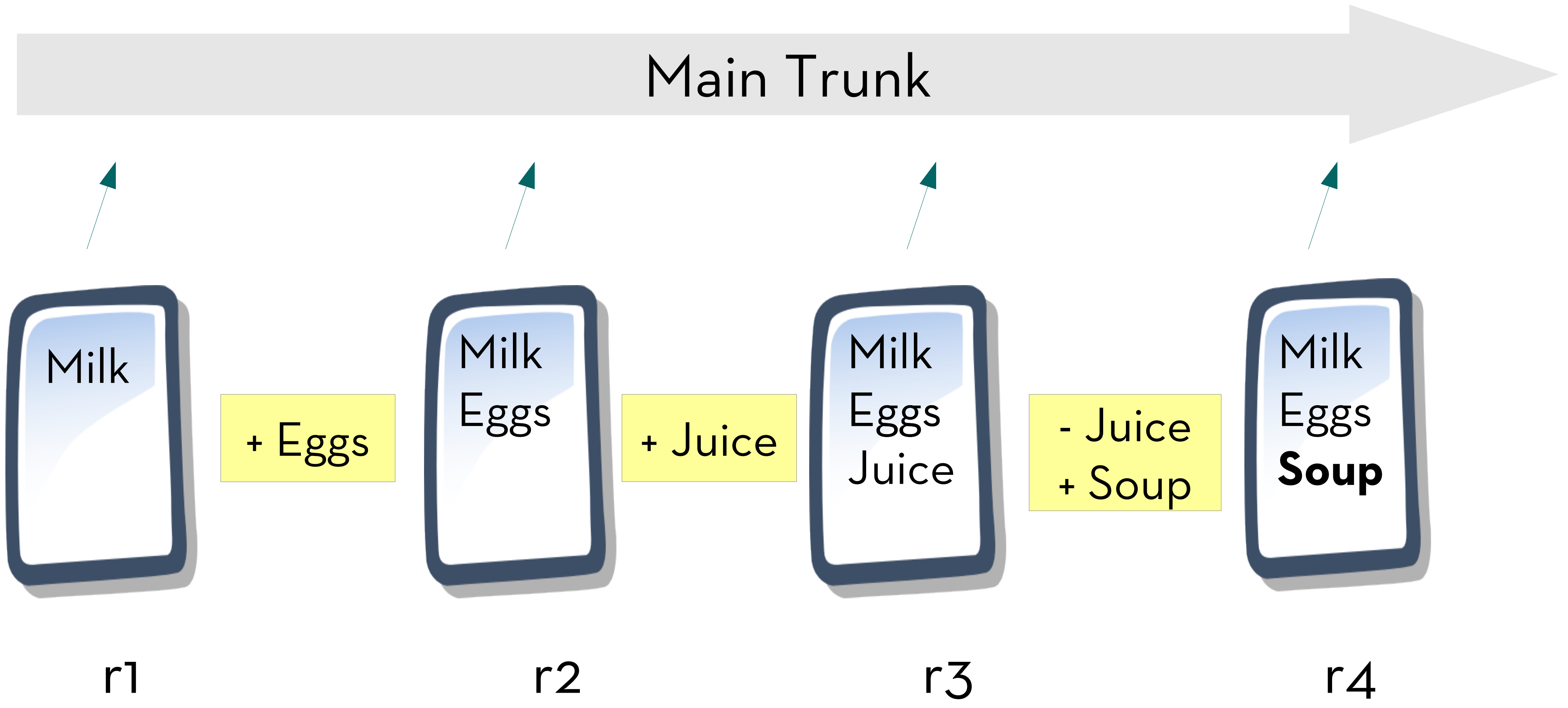
1. identify a folder as a git repository.
   ```
   cd <my_project_folder>
   git init
   ```
2. notify git of new files you would like it to monitor.
   ```
   git add <filename>
   ```
3. commit your changes to the repository.
   ```
   git commit -m “your message about the changes”
   ```

define:work

Basic Check-ins

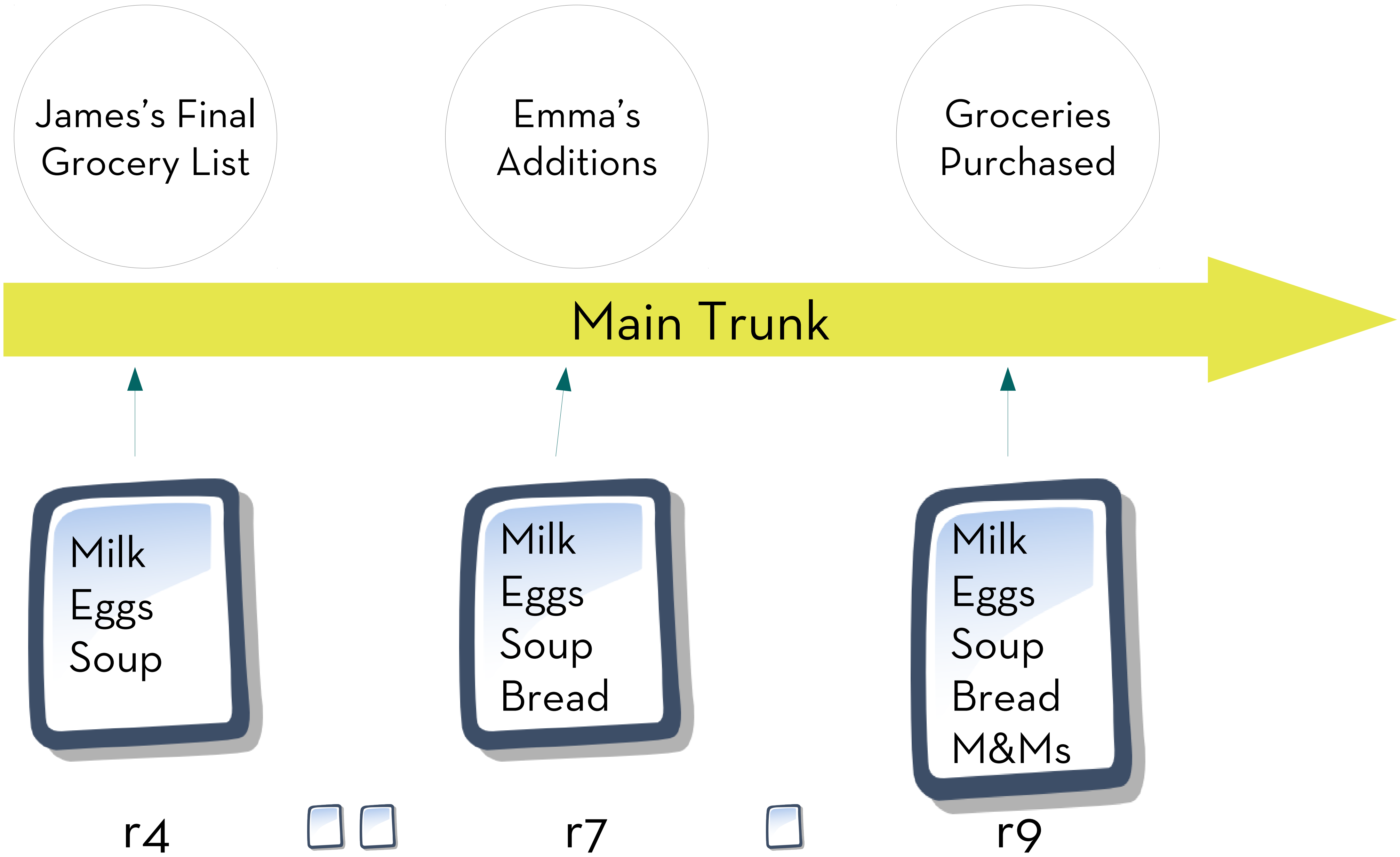


Diffs Show the Difference Between Two Versions of a Project



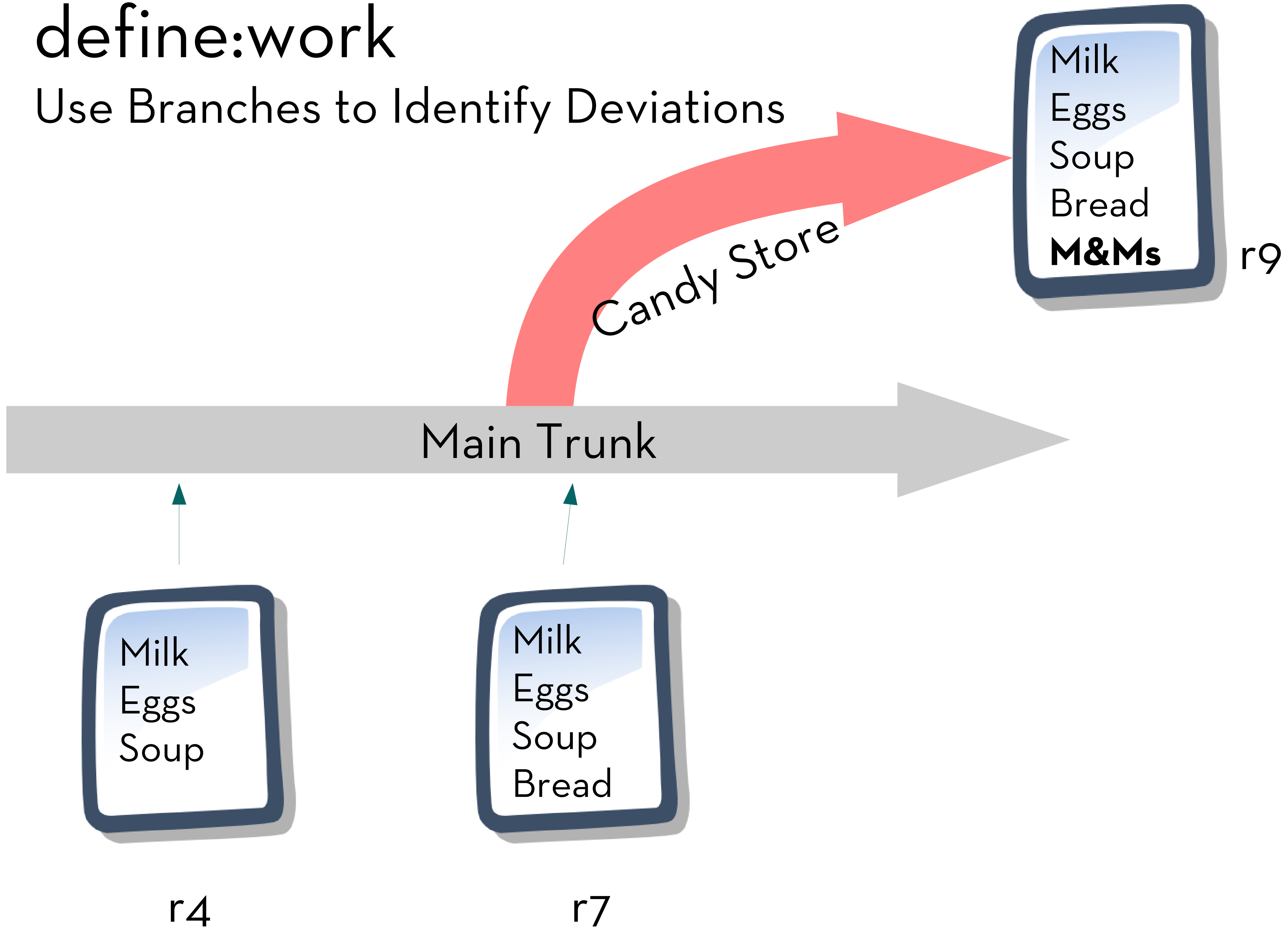
define:work

Use Tags to Identify Milestones



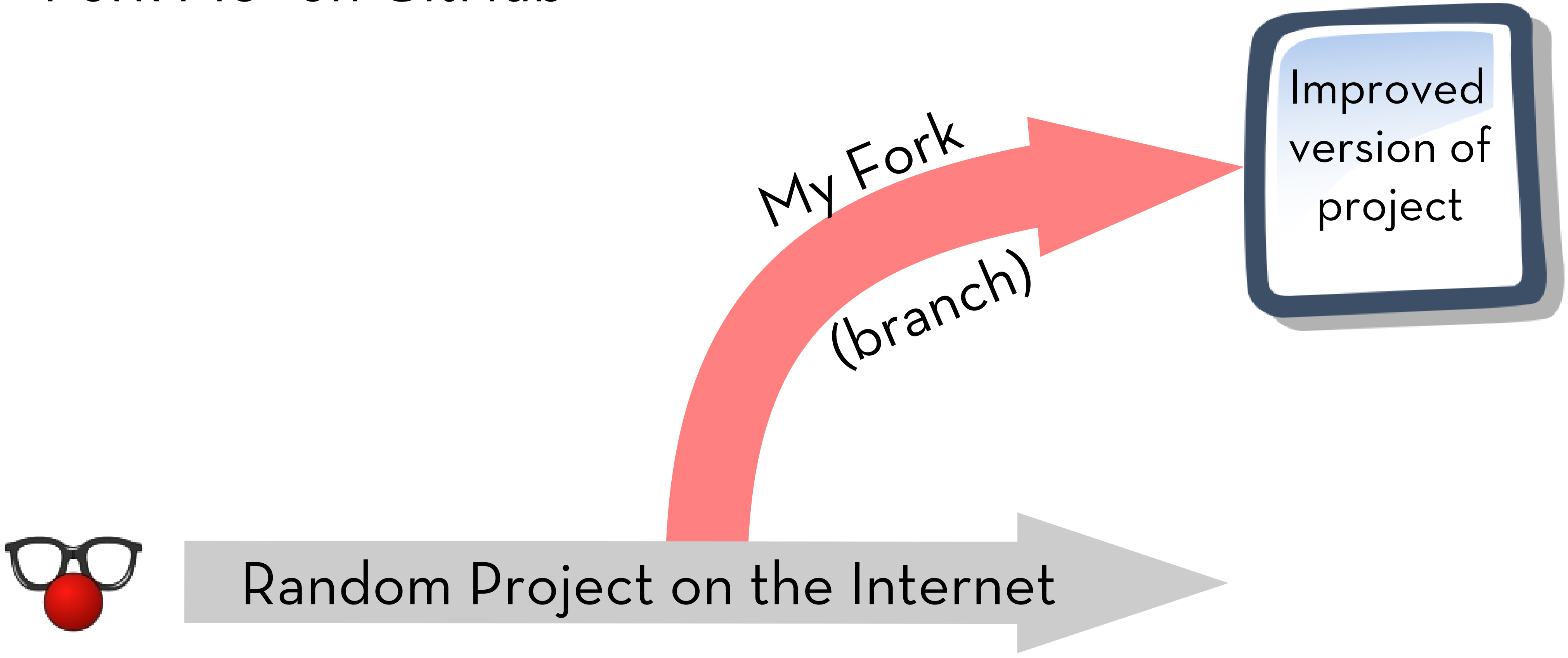
define:work

Use Branches to Identify Deviations

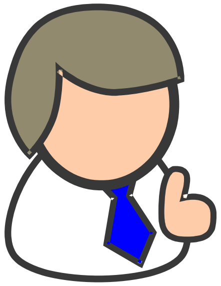


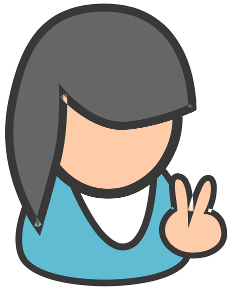
Workflow: Read-only Projects

“Fork Me” on GitHub



Workflow: Partner





1. James starts a grocery list

2. Emma already had a grocery list started. She asks to see James's list.

3. James remembers a couple more items.

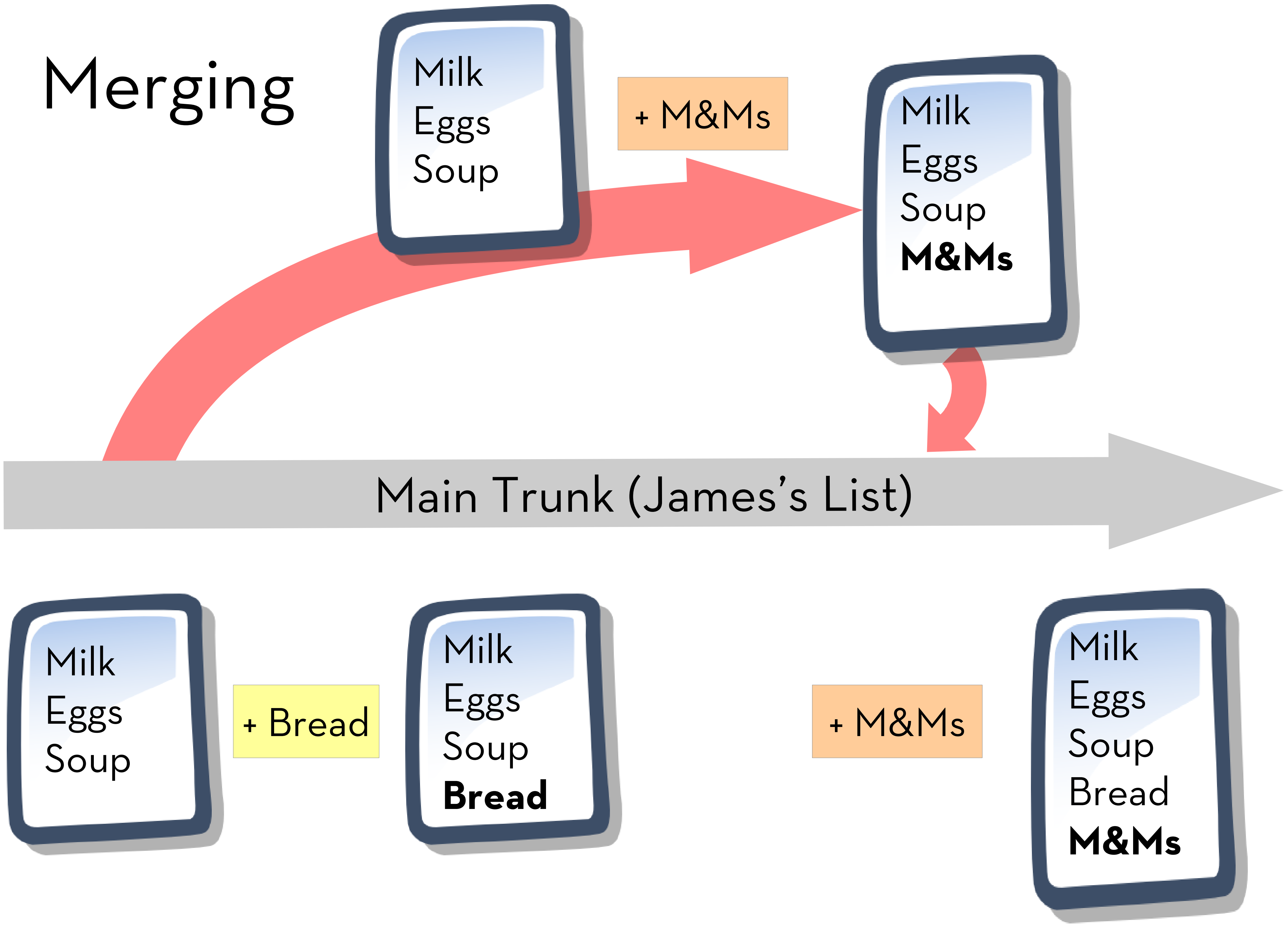
4. Emma adds a few things from her list.

5. The grocery lists are combined and James goes shopping.

Collaborative Actions

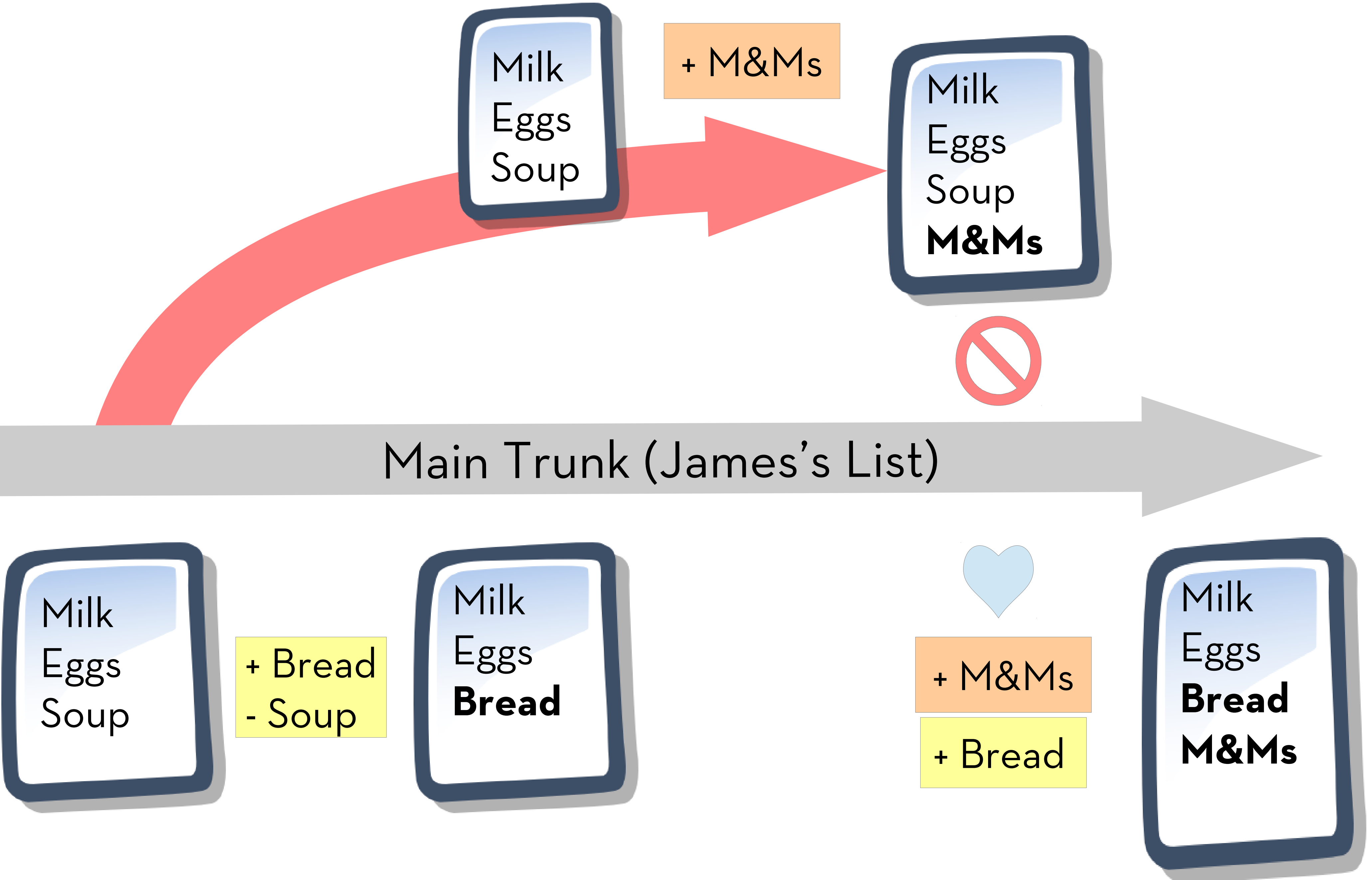
- Branch. Create a separate copy of a repository for personal use.
- Diff/change/delta. Identifies the differences between two versions of a file.
- Merge/patch. Apply the changes from one version of a file, to another.
- Conflict. When two versions of a file have proposed changes at the same place.
- Resolve. Deciding which version of conflicting changes should be applied, and which should be discarded.

Merging

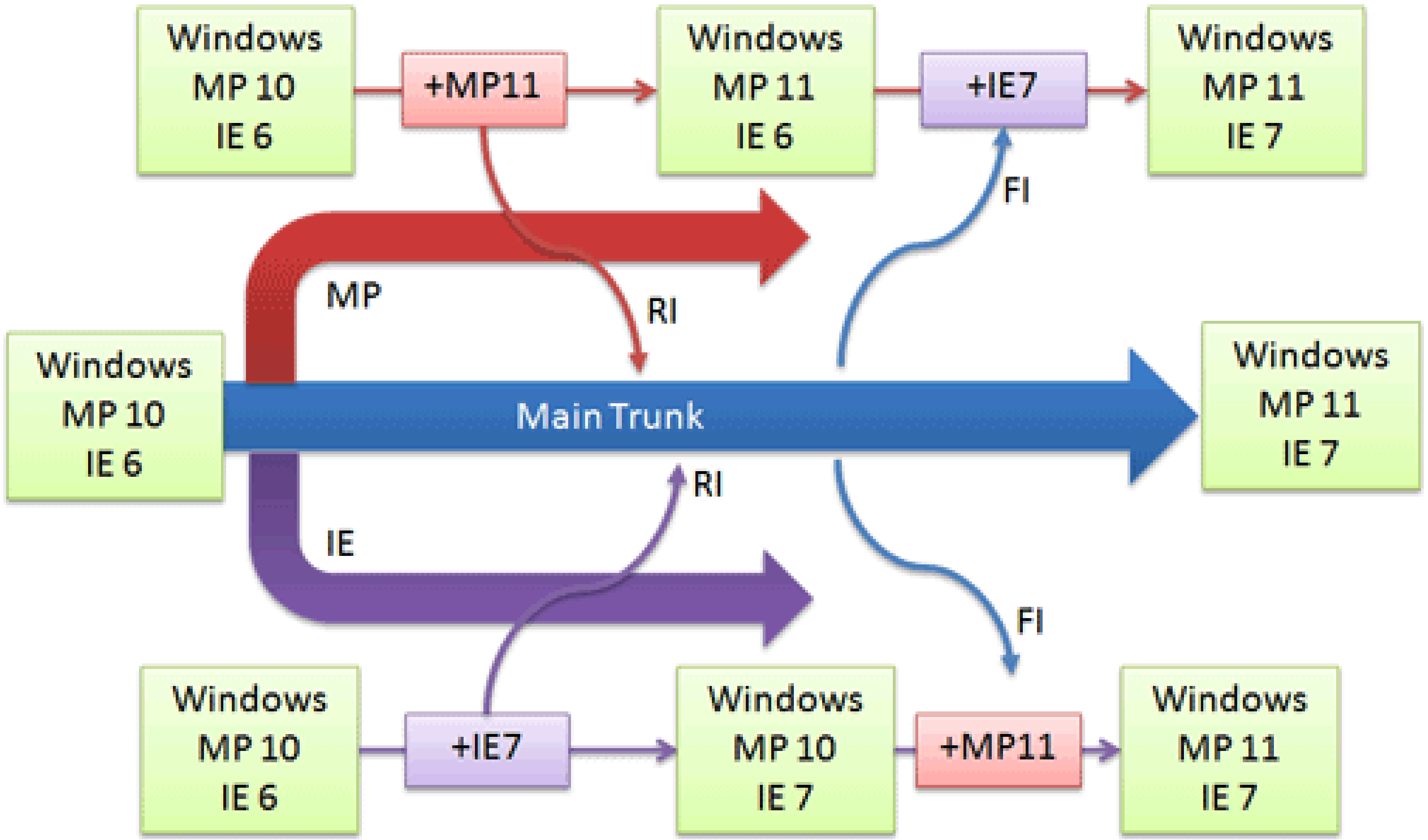


Milk
Eggs
Soup
+ M&Ms
Milk
Eggs
Soup
M&Ms
Main Trunk (James's List)
Milk
Eggs
Soup
+ Bread
Milk
Eggs
Soup
Bread
+ M&Ms
Milk
Eggs
Soup
Bread
M&Ms

Resolving Conflicts

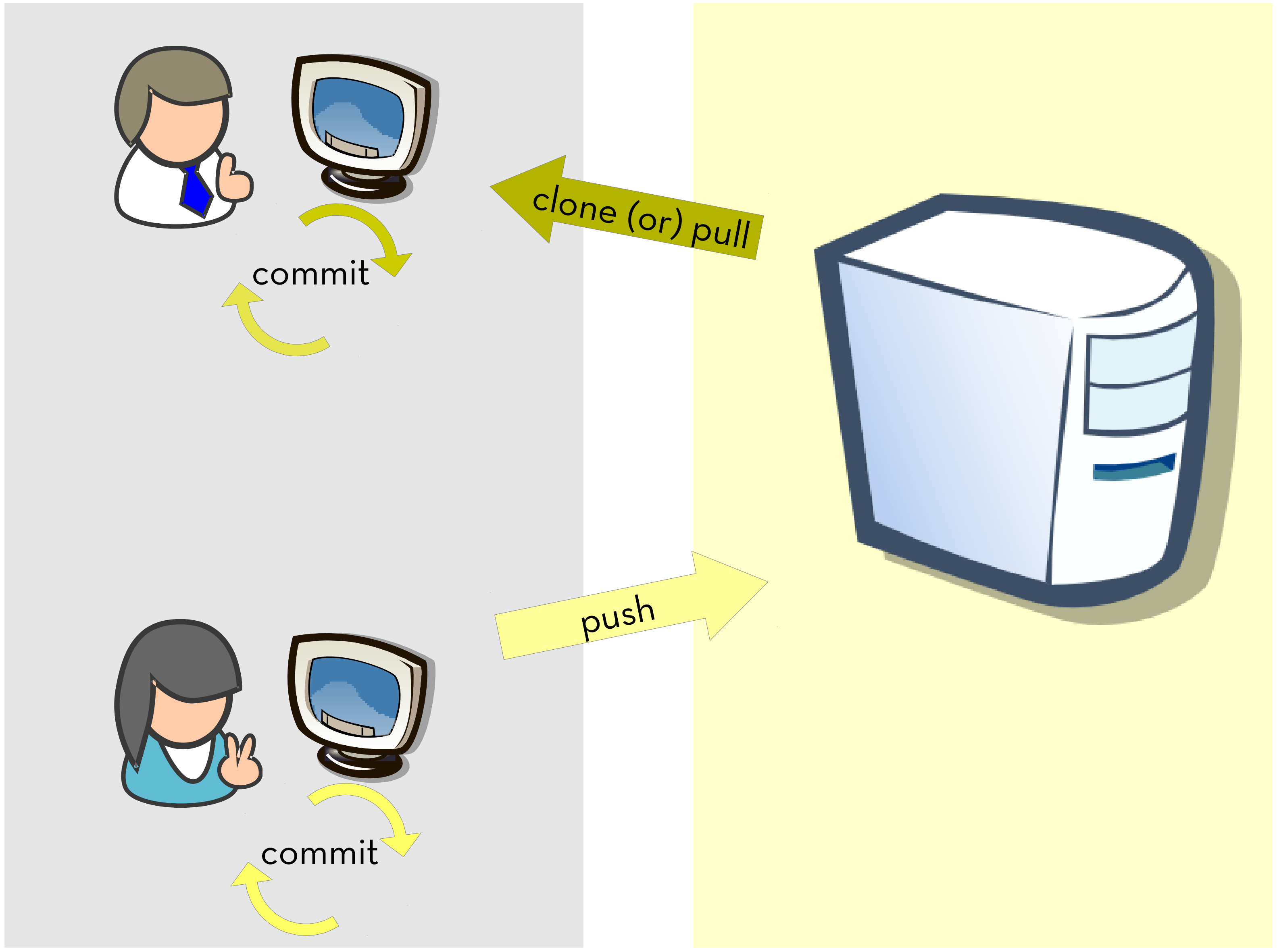


Sample Project



http://betterexplained.com/articles/a-visual-guide-to-version-control/

Workflow:
Decentralized with a shared mainline



Homework

- Create a new repository for one of your own projects.
- In your notebook of problems that you started yesterday, create a list of “similar” clients that might benefit from having a single repository.
- Explore the four vagrant scripts discussed in class.