

Lecture 7

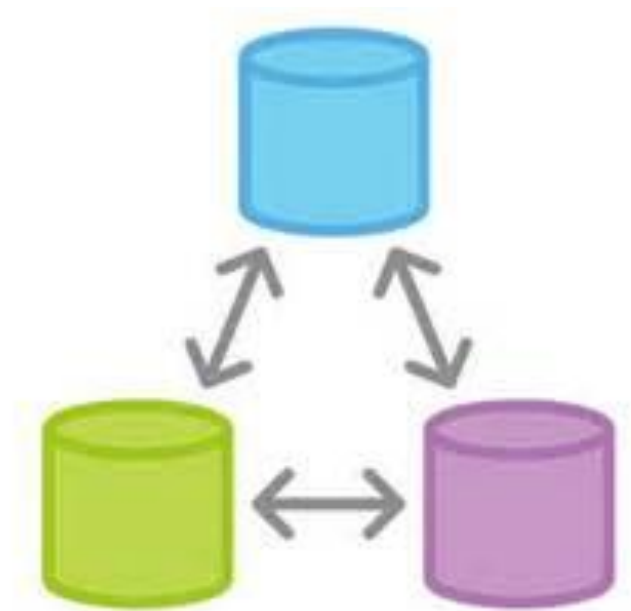
More Remotes and Working with Github



Sign in on the attendance sheet!

Today

- Review of basic remotes we learned last week
- More practical explanation of remotes with Github
- Practice using Github



Remote Tracking Branches

- Usually, we create local branches that have the same names as remote branches.
- Local branches can track remote branches. Git will tell you when they are “ahead”, “behind”, “diverged”, or “up-to-date”.
- Use `git push -u <remote> <branch>` to setup.

Centralized Git Workflow

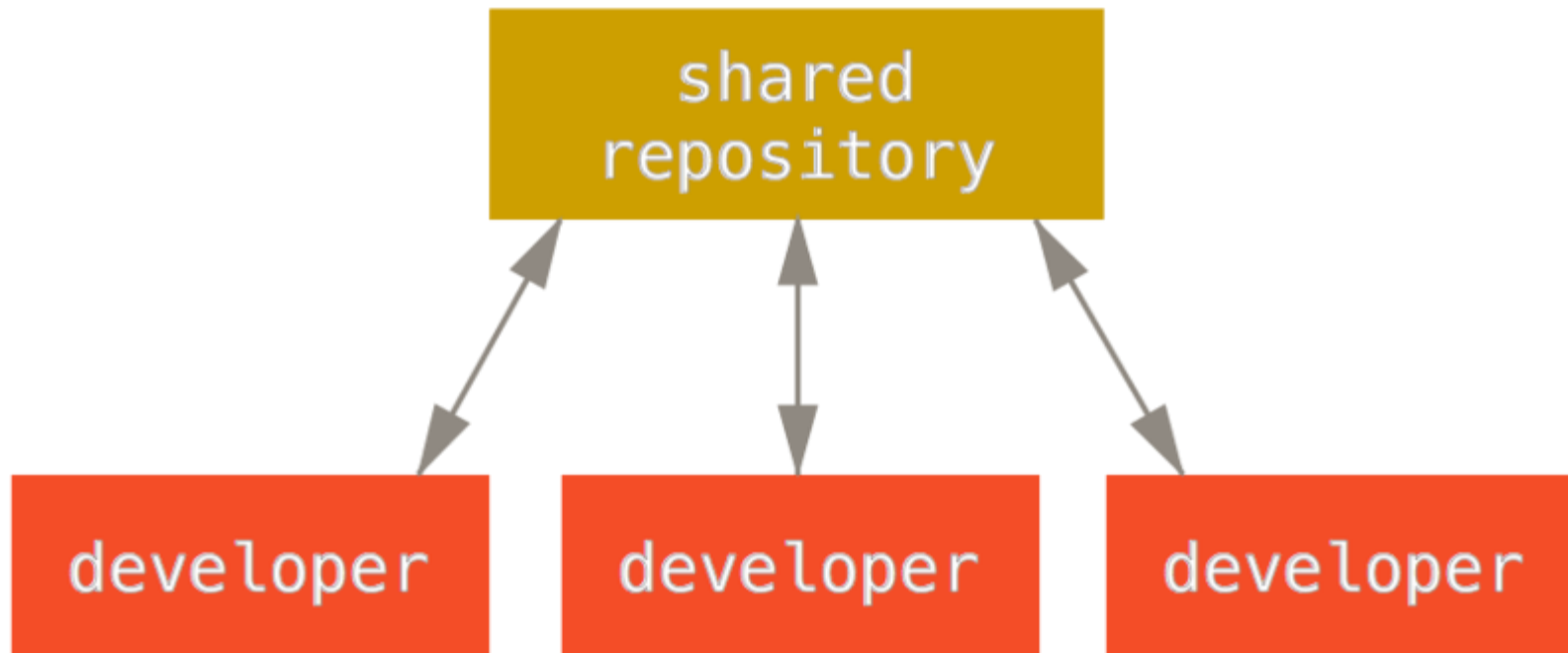
Scenario: We want to contribute a change to a file in a repository on Github



Centralized Git Workflow



WHAT?!?!? I thought Git was a
Distributed Version Control System!



Centralized Git Workflow

Step 1: Make sure the master branch in your repository is up to date with origin/master

```
Aaron@HELIOS ~/Dropbox/Dropbox Documents/98174/98174-github-practice (master)
$ git fetch origin
Username for 'https://github.com': aperley
Password for 'https://aperley@github.com':
remote: Counting objects: 3, done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), done.
From https://github.com/aperley/98174-github-practice
 4f6bf0a..06dbe8b  master    -> origin/master

Aaron@HELIOS ~/Dropbox/Dropbox Documents/98174/98174-github-practice (master)
$ git status
On branch master
Your branch is behind 'origin/master' by 1 commit, and can be fast-forwarded.
  (use "git pull" to update your local branch)

nothing to commit, working directory clean

Aaron@HELIOS ~/Dropbox/Dropbox Documents/98174/98174-github-practice (master)
$ git merge origin/master
Updating 4f6bf0a..06dbe8b
Fast-forward
 file1.txt | 1 +
 1 file changed, 1 insertion(+)
```

Centralized Git Workflow

Step 2: Create a new “topic branch” from master

```
Aaron@HELIOS ~/Dropbox/Dropbox Documents/98174/98174-github-practice (master)
$ git checkout -b my-feature
Switched to a new branch 'my-feature'
```

Centralized Git Workflow

Step 3: Work and make some commits on that branch

```
Aaron@HELIOS ~/Dropbox/Dropbox Documents/98174/98174-github-practice (my-feature)
$ vi file1.txt

Aaron@HELIOS ~/Dropbox/Dropbox Documents/98174/98174-github-practice (my-feature)
$ git diff
diff --git a/file1.txt b/file1.txt
index d1c8845..f492641 100644
--- a/file1.txt
+++ b/file1.txt
@@ -1,2 +1,4 @@
 This is file1!
 It is a good file.
+
+Adding my-feature

Aaron@HELIOS ~/Dropbox/Dropbox Documents/98174/98174-github-practice (my-feature)
$ git commit -am "Add my-feature to file1.txt"
[my-feature 59119c2] Add my-feature to file1.txt
1 file changed, 2 insertions(+)
```


Centralized Git Workflow

Step 4: Merge the branch back into master

```
Aaron@HELIOS ~/Dropbox/Dropbox Documents/98174/98174-github-practice (my-feature)
$ git checkout master
Switched to branch 'master'
Your branch is up-to-date with 'origin/master'.

Aaron@HELIOS ~/Dropbox/Dropbox Documents/98174/98174-github-practice (master)
$ git merge my-feature
Updating 06dbe8b..59119c2
Fast-forward
 file1.txt | 2 ++
 1 file changed, 2 insertions(+)
```

Centralized Git Workflow

Step 5: Push master to origin/master

```
Aaron@HELIOS ~/Dropbox/Dropbox Documents/98174/98174-github-practice (master)
$ git push origin master
Username for 'https://github.com': aperley
Password for 'https://aperley@github.com':
Counting objects: 5, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 302 bytes | 0 bytes/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To https://github.com/aperley/98174-github-practice.git
   06dbe8b..59119c2  master -> master
```

What if someone else pushes to master before I do?

- Your push will be rejected:

```
$ git push origin master
Username for 'https://github.com': aperley
Password for 'https://aperley@github.com':
To https://github.com/aperley/98174-github-practice.git
 ! [rejected]          master -> master (fetch first)
error: failed to push some refs to 'https://github.com/aperley/98174-github-practice.git'
hint: Updates were rejected because the remote contains work that you do
hint: not have locally. This is usually caused by another repository pushing
hint: to the same ref. You may want to first integrate the remote changes
hint: (e.g., 'git pull ...') before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.
```

What if someone else pushes to master before I do?

- Git status will indicate that your branch and its remote tracking branch have **diverged**

```
$ git fetch origin
Username for 'https://github.com': aperley
Password for 'https://aperley@github.com':
remote: Counting objects: 134, done.
remote: Compressing objects: 100% (57/57), done.
remote: Total 134 (delta 40), reused 126 (delta 34), pack-reused 0
Receiving objects: 100% (134/134), 12.35 KiB | 0 bytes/s, done.
Resolving deltas: 100% (40/40), done.
From https://github.com/aperley/98174-github-practice
  59119c2..dae710a  master    -> origin/master
  * [new branch]    adevienn  -> origin/adevienn
  * [new branch]    cdgu      -> origin/cdgu
  * [new branch]    cmontag  -> origin/cmontag
  * [new branch]    ctabrizi -> origin/ctabrizi
  * [new branch]    dcao     -> origin/dcao
  * [new branch]    dpratyus -> origin/dpratyus
  * [new branch]    eycho    -> origin/eycho
  * [new branch]    jbgoldst -> origin/jbgoldst
  * [new branch]    jbroitma -> origin/jbroitma
  * [new branch]    jpleung  -> origin/jpleung
  * [new branch]    kaiwenw1 -> origin/kaiwenw1
  * [new branch]    klung    -> origin/klung
  * [new branch]    my-demo  -> origin/my-demo
  * [new branch]    skhemka  -> origin/skhemka
  * [new branch]    yuel2    -> origin/yuel2

Aaron@HELIOS ~/Dropbox/Dropbox Documents/98174/98174-github-practice (master)
$ git status
On branch master
Your branch and 'origin/master' have diverged,
and have 1 and 44 different commits each, respectively.
(use "git pull" to merge the remote branch into yours)

nothing to commit, working directory clean
```

What if someone else pushes to master before I do?

- We know how to fix diversions! `git merge`

```
$ git merge origin/master
Auto-merging file1.txt
CONFLICT (content): Merge conflict in file1.txt
Automatic merge failed; fix conflicts and then commit the result.

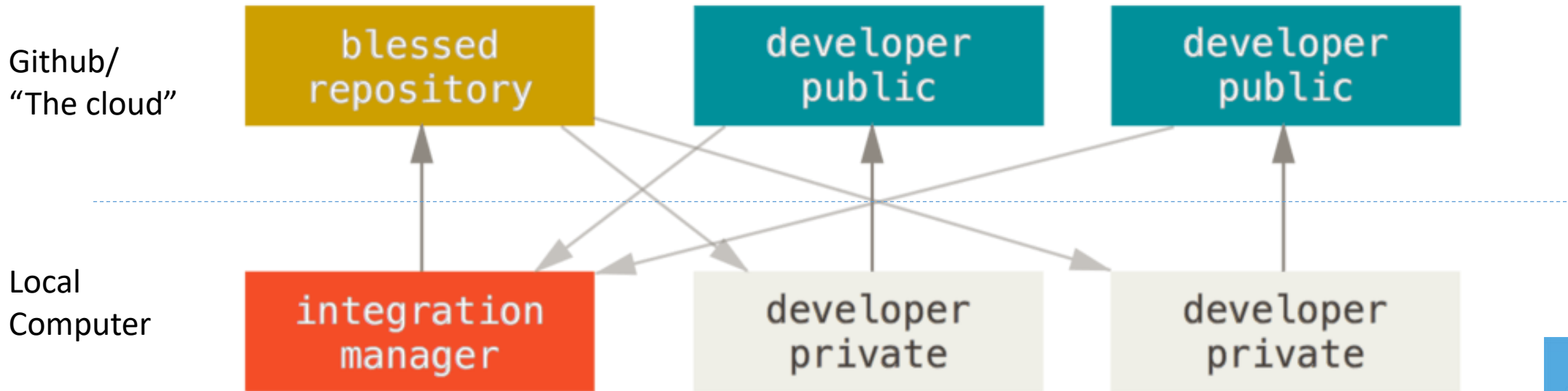
Aaron@HELIOS ~/Dropbox/Dropbox Documents/98174/98174-github-practice (master|MERG
$ vi file1.txt

Aaron@HELIOS ~/Dropbox/Dropbox Documents/98174/98174-github-practice (master|MERG
$ git add file1.txt

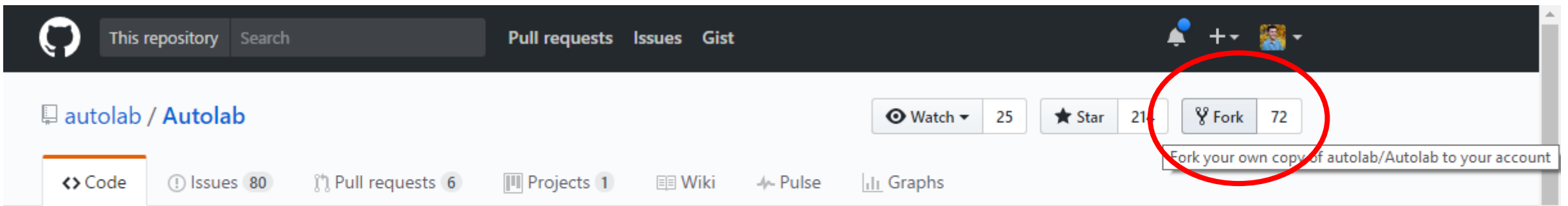
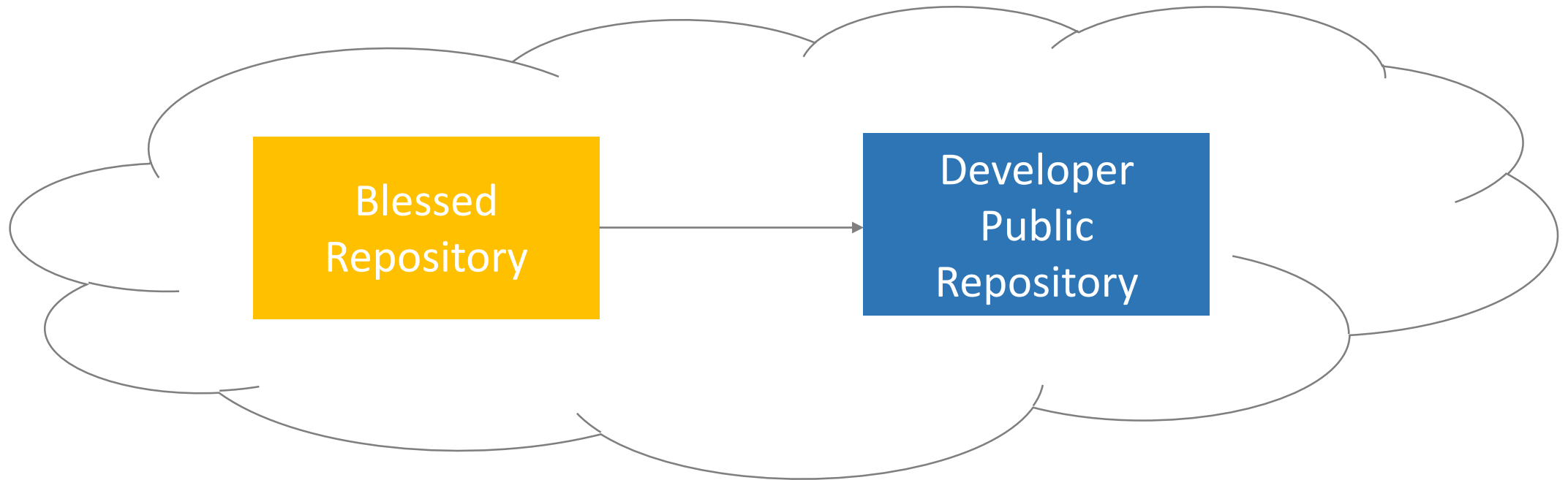
Aaron@HELIOS ~/Dropbox/Dropbox Documents/98174/98174-github-practice (master|MERG
$ git commit
[master f4a5ccf] Merge remote-tracking branch 'origin/master'

Aaron@HELIOS ~/Dropbox/Dropbox Documents/98174/98174-github-practice (master)
$ git push
Username for 'https://github.com': aperley
Password for 'https://aperley@github.com':
Counting objects: 24, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (4/4), done.
Writing objects: 100% (6/6), 589 bytes | 0 bytes/s, done.
Total 6 (delta 2), reused 0 (delta 0)
remote: Resolving deltas: 100% (2/2), completed with 1 local objects.
To https://github.com/aperley/98174-github-practice.git
   dae710a..f4a5ccf master -> master
```

Integration-Manager Workflow



Step 1. Fork the public repository

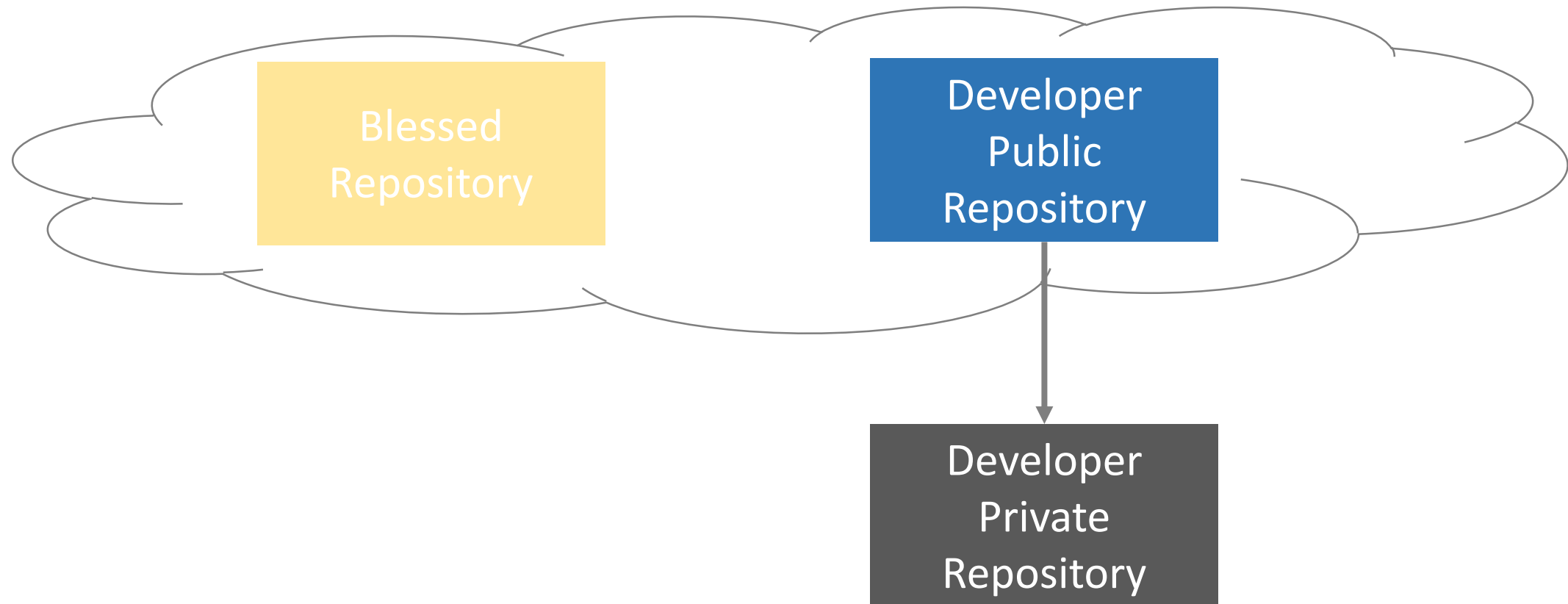


Course management service that enables auto-graded programming assignments. <http://www.autolabproject.com/>

[autograding](#) [scoreboard](#) [students](#) [education](#) [autolab](#) [feedback](#)

Step 2. Clone your public repository

```
$ git clone https://github.com/aperley/Autolab.git
```



Step 3. Create a **feature branch** and make some commits

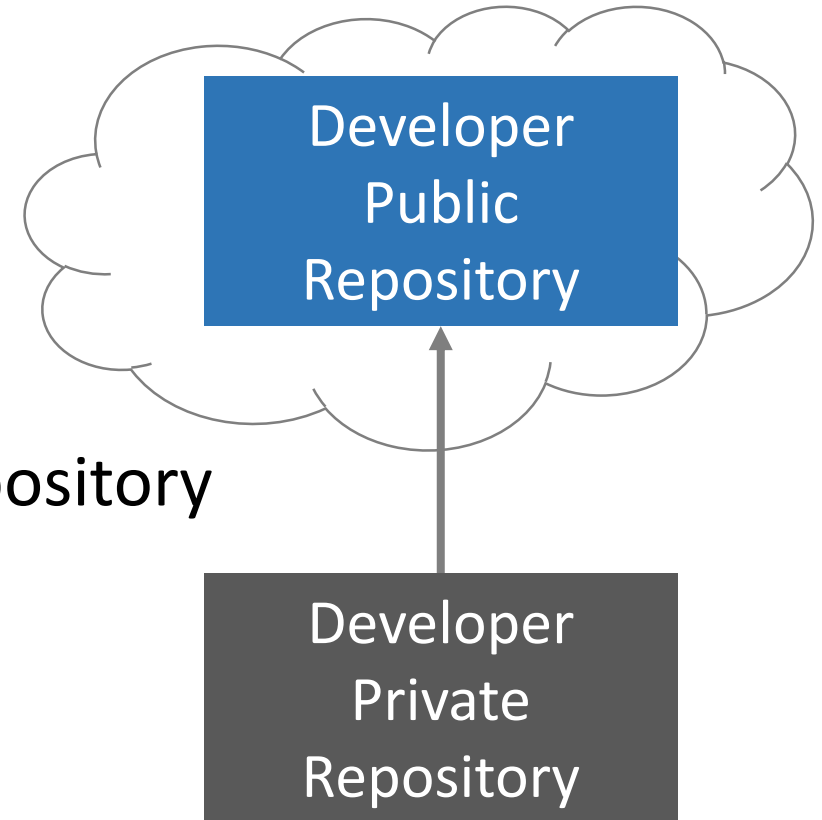
```
$ git checkout -b my-feature
```

```
$ <do some work>
```

```
$ git commit -am "add my feature"
```

Then **push** your feature branch to your public repository

```
$ git push origin my-feature
```



Step 4. Create a pull request

autolab / Autolab

Watch 25 Star 214 Fork 73

Code Issues 80 Pull requests 6 Projects 1 Wiki Pulse Graphs

Open a pull request

Create a new pull request by comparing changes across two branches. If you need to, you can also [compare across forks](#).

base fork: autolab/Autolab base: master ... head fork: aperley/Autolab compare: my-feature

✓ Able to merge. These branches can be automatically merged.

Please review the [guidelines for contributing](#) to this repository.



Edit README

Write Preview

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Leave a comment

The integration manager can inspect and **pull** in your changes

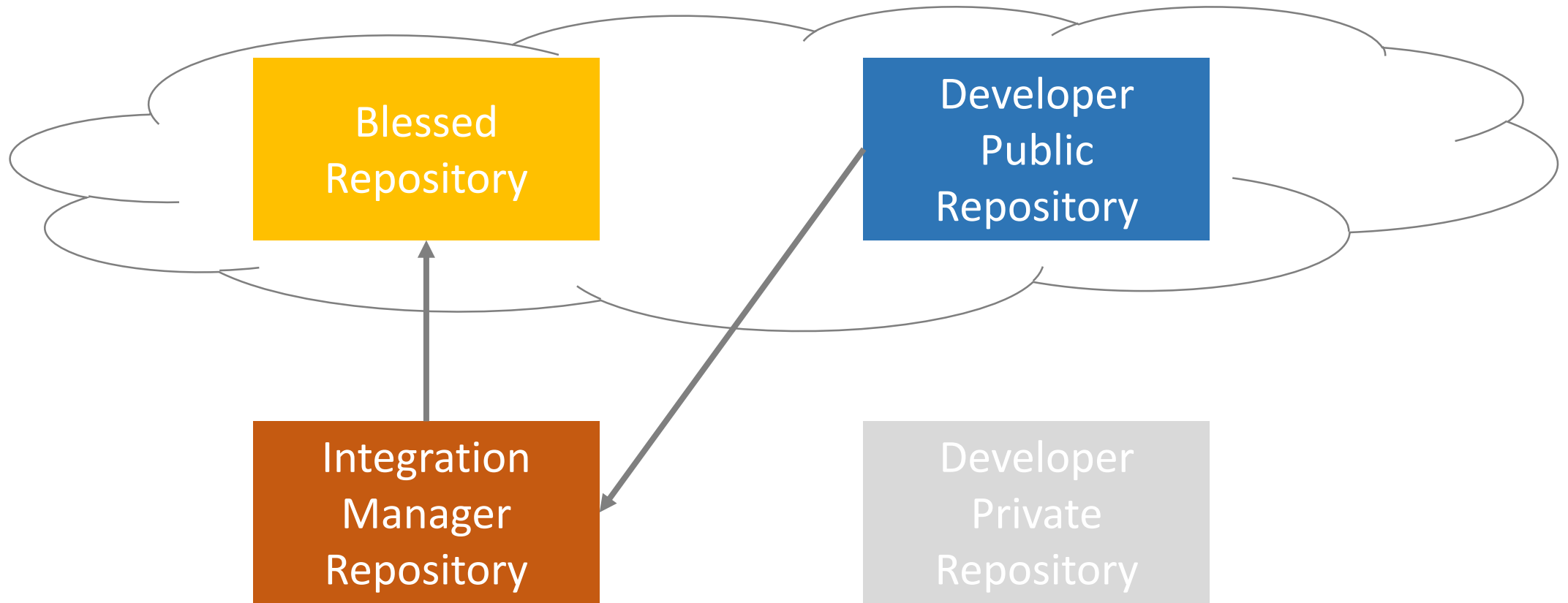
As the integration manager:

```
$ git remote add aperleys-fork  
https://github.com/aperley/Autolab.git  
$ git checkout aperleys-fork/my-feature
```

If it looks good:

```
$ git checkout master  
$ git merge aperleys-fork/my-feature  
$ git push origin master
```

The integration manager can inspect and **pull** in your changes



You need to keep your fork up to date

In the private developer repo

```
$ git remote add upstream
```

```
https://github.com/autolab/Autolab.git
```

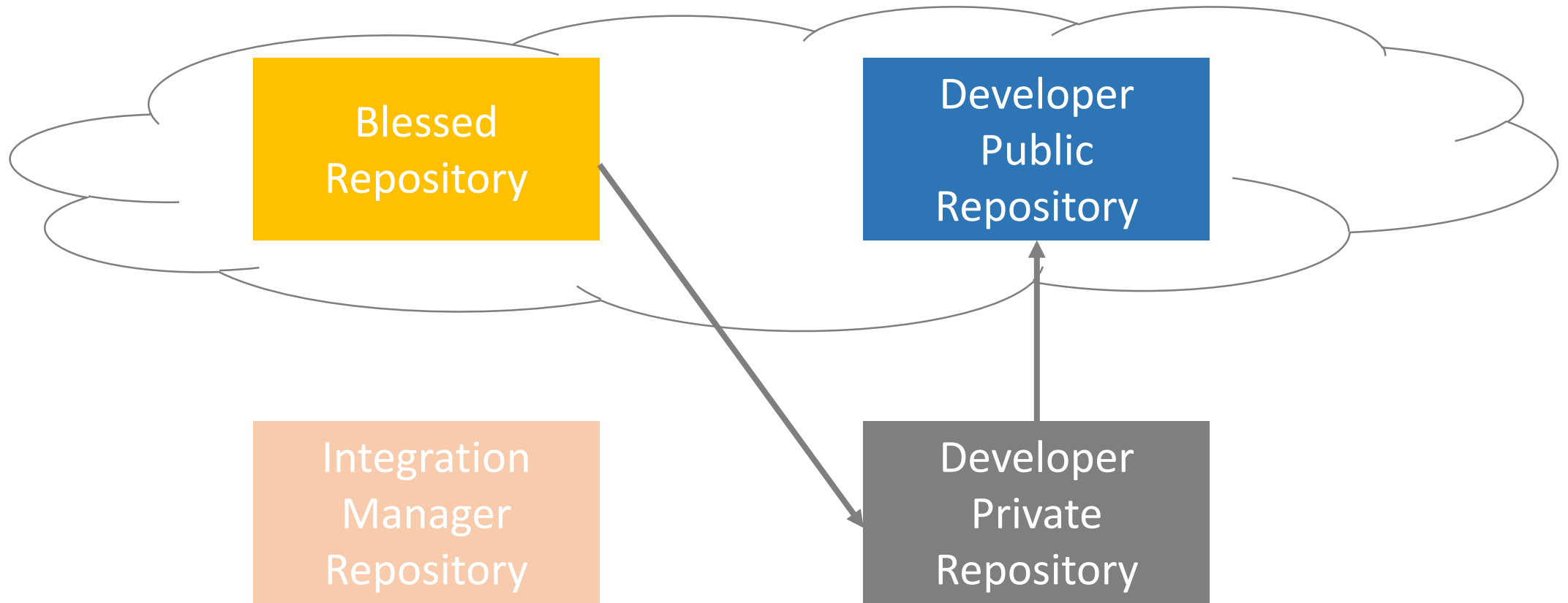
```
$ git fetch upstream
```

```
$ git checkout master
```

```
$ git merge upstream/master
```

```
$ git push origin master
```

You need to keep your fork up to date



Activity/Homework

Create a fork of

<https://github.com/aperley/squirrel-story>

Add a chapter 2 to the story, push it to a branch named chapter-2-ANDREWID on your fork, and make a pull request.