CS520 Web Programming
Version Control with Subversion

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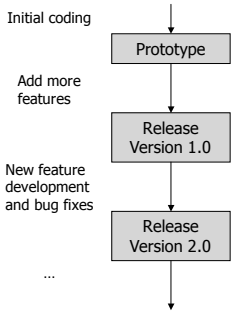
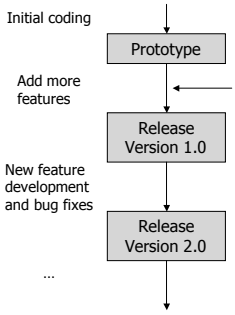
Overview

- Version control systems
- Basic concepts
  - Repository and working copies
  - Tag, branch, and merge
- Using Subversion

The Process of Application Development



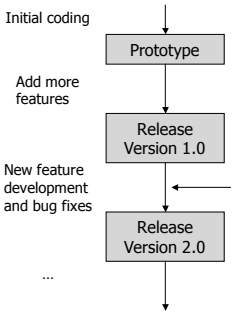
Problems During Development



New feature has broken existing code.

- How do we find out which part of the code has been changed?
- How do we revert back to the previous version?

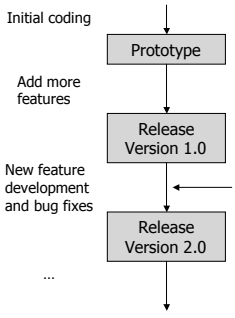
Problems During Development



- Can we give the customer the development version with the bug fix?
- Do we still have the Version 1.0 code?

Customer 1 requests a feature or bug fix.

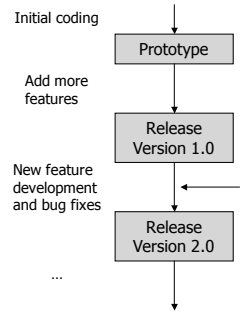
Problems During Development



- Where do we put in the bug fix?
  - Version 1.0
  - Version 1.0 + customer 1's feature / bug fix
  - Development version

Customer 2 requests a feature or bug fix.

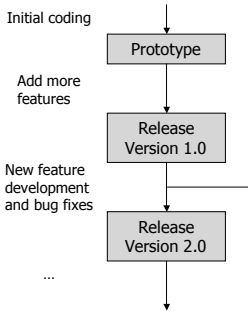
Problems During Development



- How many different versions do we need to maintain?

Customer n requests a feature or bug fix.

Problems During Development



- How do we collect all the bug fixes into one release?

Put all changes into an intermediate release.

Version Control Systems

- **CVS**
  - Most popular / well known / widely used open source version control system
  - Somewhat obsolete due to some inherent system limitations
- **Subversion**, Arch, Monotone, git
- Commercial
  - Visual SourceSafe
  - ClearCase
  - BitKeeper

Subversion

- Pros: A better CVS
  - Fixed many annoying aspects of CVS
    - Recursive add, binary file handling, keyword substitution, local diff, status output etc.
  - Significant improvements
    - Atomic commit, constant time branching and tagging, better structure design etc.
  - *Feels like CVS*
- Cons: Just a better CVS
  - Does not scale to large, distributed development environments

Common Command Syntax

```
svn <command> [src_dir] [dest_dir]
```

Could be local directories or URLs.

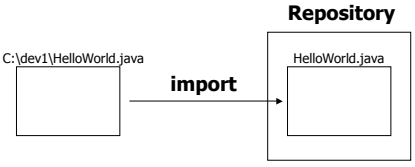
Examples:

svn ls file:///home/cysun/subversion/cs520

svn log http://cs3.calstatela.edu/cs520

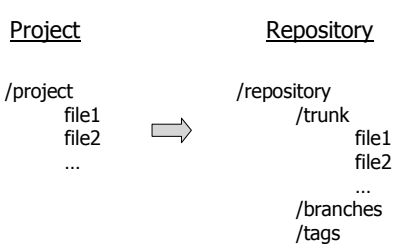
svn checkout svn://cs3.calstatela.edu/cs520/csns/trunk csns

Import

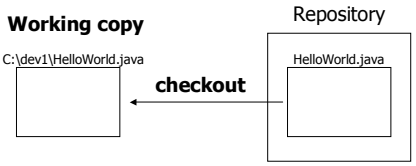


- Put a project into a repository

Directory Structure

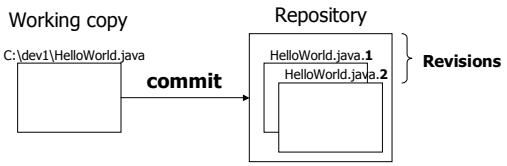


Checkout



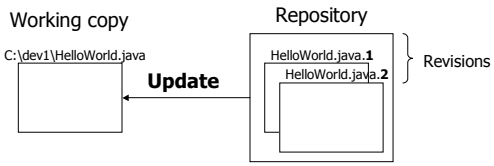
- Get a copy of the project from the repository
  - Working copy is *version controlled*

Commit (Checkin)



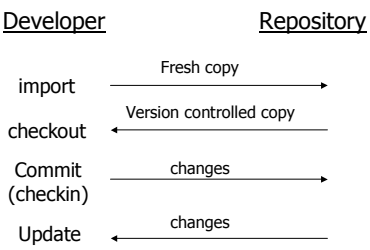
- Send changes back to the repository

Update

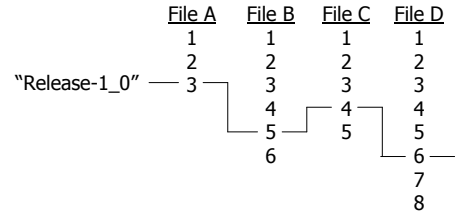


- Pull changes out of the repository and apply them to the working copy

Basic Version Control Operations

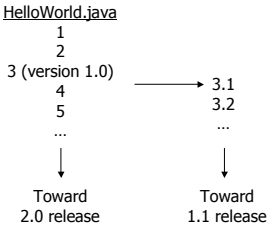


Tag – Mark A Moment in Time




```
svn copy svn://…/trunk svn://…/tags/Release-1_0
```

Branch – Work in Parallel

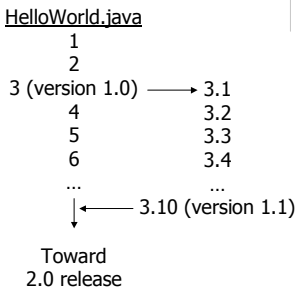



```
svn copy svn://…/trunk svn://…/branch/R1_1-branch
```

Merge

- Copy changes between different branches

```
svn merge src_url dest_url
```



Other Useful Commands

- Status
- Revert
- Add
- Remove
- Ls
- Log

Online Resources

- The Subversion book - http://svnbook.red-bean.com/
- Import and merge with Subclipse - http://csns.calstatela.edu/wiki/content/cysun/course_materials/subversion/