

Revision Control Systems

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C.S.Rhodes

Introduction

Motivation

What is it?

Darcs

cis320project

```
notes.txt  
index.php  
dbschema.sql  
project.css  
jquery.js  
project.js  
index.php  
project.js  
index.php  
newdbschema.sql  
...
```

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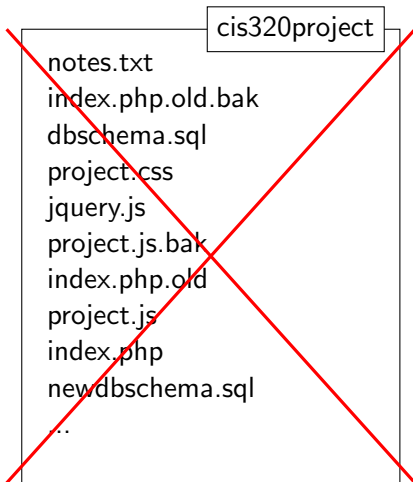
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What is it?

Darcs



- tracking changes made to a collection of files;
 - what was changed? by whom? when?
 - 'free' backup.
- managing changes made to a collection of files;
 - revisit earlier versions;
 - 'global undo' and 'redo';
 - merging multiple changes into one consistent state.
- dealing with collaborative work;
 - not immediately relevant to your project;
 - (likely) very relevant to your future work;
 - highly relevant to Open Source software development.

Revision control is not just for source code:

- text documents (e.g. \LaTeX documents);
- machine configuration files;
- experimental data;
- database schemata;
- ... (anything that changes).

Embedded Revision Control Systems:

- Microsoft Word, OpenOffice Writer ('Track Changes');
- Content Management Systems;
- Wikis (e.g. Wikipedia);
- ...

- Centralized systems: 'master' repository with 'working copies'
 - ancient/dead: RCS, SCCS;
 - creaky: CVS;
 - active(ish): Subversion, Perforce.
- Distributed systems: peer-to-peer, working copies come with history
 - creaky: svk, arch, tla, baz, Bitkeeper;
 - active: git, darcs, mercurial, bzr, monotone.

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Revision control systems comprise:

- ① Tools for manipulating changes;
 - Theory of *patches*.
- ② A database system to keep track of changes;
 - a file containing a list of patches;
 - the zipped content of patches;
 - both kept within a `_darcs` directory.
- ③ Mechanisms for distributing changes.
 - pull patches from local filesystem, http or ssh;
 - push patches to local filesystem, or over ssh;
 - send patches by e-mail.

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- Every working copy
 - is a first-class repository;
 - contains the entire development history;
 - can be used for independent development.
- New branches are created by copying existing repositories.
- The **patch** is the fundamental object:

The state of a repository is defined to be the result of applying a given sequence of *patches* to an empty tree.

Where to look for more information:

- Darcs website: <http://darcs.net/>
- Wiki: <http://wiki.darcs.net/>
- Wikipedia entry:
<http://en.wikipedia.org/wiki/Darcs>
- Links from <http://doc.gold.ac.uk/~mas01cr/teaching/cis320/>