Software Carpentry II: Programming Tools

Luís Pedro Coelho

Programming for Scientists

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University of Pittsburgh

Carnegie Mellon

If your laptop exploded, how many hours of work would you lose?

Advantages

- Maintain project history.
- Sync between computers.
- Sync between project members.
- . . .

Subversion

Subversion: model

1. Repository
2. Checkout
3. Commit

Example

1. Create a repository
2. Create a checkout
3. Edit
4. Commit

Alternative: Simply Copying

I can do this with file copying, no?

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I can do this with file copying, no?

1. history
2. diffing
3. merging

Do You Keep Old Versions Around?

- bacteria.py
- bacteria1.py
- bacteria2.py
- bacteria3.py
- bacteria4.py
- bacteria5.py
- bacteriaold.py
- bacteriaold2.py
- bacteria.py2
- . . .

Do you explain your changes in the code?

```python
def function(x,y,z):
    ...
    # Added 2/4/92 by LPC
    x = 0
    # Added 3/3/93 by XYZ
    x += 1
    # Added 8/23/97 by XYZ
    # Added 18/4/00 by MH
    print x
```

Diff'ing

You have two versions of a file bacteria.py and bacteria2.py.

Find the changes.

Diffs & Patches

A diff is a patch.

hello.py (1)

```python
print 'Hello World'
```

hello.py (2)

```python
print 'Hello World'
print 'How are you?'
```

diff (1)

```
--- hello.py    2009-02-05 17:40:51.000000000 -0500
+++ hello2.py   2009-02-05 17:41:04.000000000 -0500
@@ -1 +1,2 @@
 print 'Hello World'
+print 'How are you doing?'
```

hello.py (1)

```python
print 'Hello World'
```

hello.py (2)

```python
print 'Hello World'
print 'How are you?'
```

diff (2)

```
--- hello2.py    2009-02-05 17:41:04.000000000 -0500
+++ hello.py     2009-02-05 17:40:51.000000000 -0500
@@ -1,2 +1 @@
 print 'Hello World'
-print 'How are you doing?'
```

hello.py (1)

```python
print 'Hello World'
```

hello.py (2)

```python
print 'Hello World'
print 'How are you?'
```
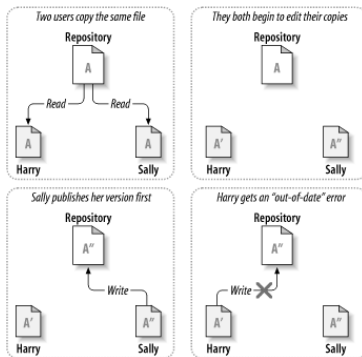
diff (1)

```
--- hello.py      2009-02-05 17:40:51.000000000 -0500
+++ hello2.py     2009-02-05 17:41:04.000000000 -0500
@@ -1 +1,2 @@
 print 'Hello World'
+print 'How are you doing?'
```

Example

```
diff --git a/pyslic/preprocess/preprocesscollection.py
index f060b8a..a8cd9ec 100644
--- a/pyslic/preprocess/preprocesscollection.py
+++ b/pyslic/preprocess/preprocesscollection.py
@@ -120,7 +120,10 @@ class FixIllumination(object):
        @see see
        '''
        assert self.S is not None
-       self.S /= self.S.min()
+       Smin = self.S.min()
+       if Smin == 0:
+           Smin = 1
+       self.S /= Smin
        # float96 is not always very well supported a
        self.S = numpy.array(self.S,float)
```
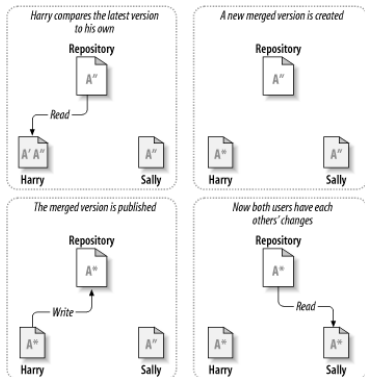
(From the SVN Book — link on course webpage, under *Notes*)

Merging (II)

(From the SVN Book — link on course webpage, under *Notes*)

Version Control Etiquette

- Don't commit over my commit.
- Use the log.

Branches and Tags

- Tag: name for revision.
- Branch: multiple parallel tracks of development.