Evolution

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November 18, 2008

Outline

Problems

Software evolves

How to deal with new versions?

How to deal with new library versions?

How to change the code?

Outline

Version Control Systems

File-based

- CVS
- SVN
- GIT/Mercurial/Bazaar

Version Control Systems

Metamodel-based

StORE (Visual Works)

Monticello 2 (Squeak)

ENVY (IBM VAST/VA Smalltalk)

Outline

Problems

Is it OK to subclass existing class?

Is it OK modify a foreign method?

Is it OK add a method to foreign class?

Classboxes

Classboxes is a module system supporting local class refinements.

Classboxes – Example

```
classbox greetings-cb {
  class hello {
    method say-hello { print ``Hello!''  }
    method say-good-bye { print ``Good bye!''  }
  }
}

classbox spanish-greetings-cb {
  import class hello from classbox greetings-cb
  refine class hello {
    refine method say-hello { print ``Hola!''  }
  }
}
```

Classboxes – Example (cont.)

```
classbox application-cb {
  import class hello from classbox greetings-cb {
  class app {
    method main { hello.say-hello; hello.say-good-bye
  }

classbox spanish-application-cb {
  import class app from classbox application-cb
  import class hello classbox spanish-greetings-cb
}
```

Outline

Hints

Many many classes

Many many methods

Be carefull with private/protected methods

Be carefull with final/sealed classes

One responsibility per class

Write libraries as set of traits, if possible :-)

Outline

Refactoring

Changing the code without changing the functionality.

Simple examples

- Rename a parameter or temporary
- Rename the method
- Extract to method

Complex refactoring

at:ifAbsent → at:ifAbsentPut:

```
propertyAt: key

  ↑dict
    at: key
    ifAbsent:
      [dict
        at: key
        put: nil]
```

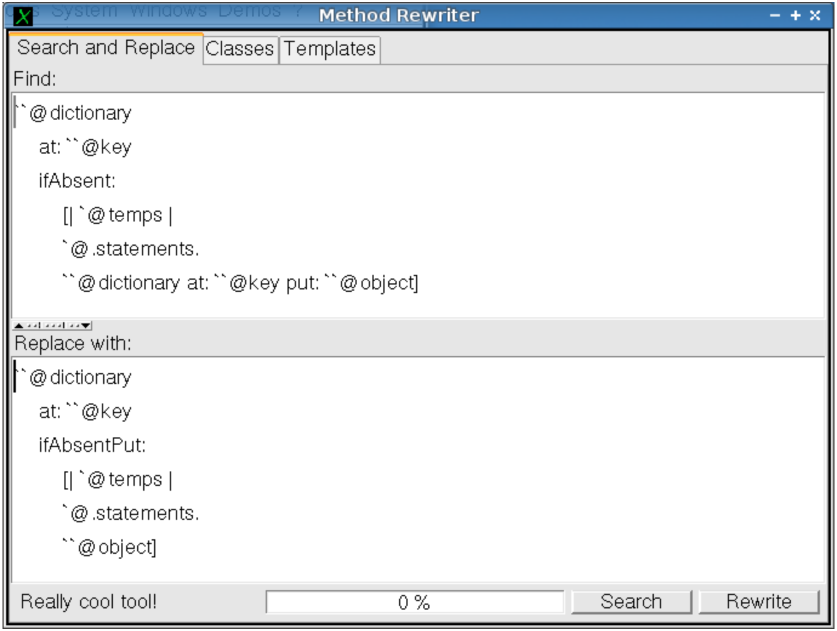
Complex refactoring II

at:ifAbsent → at:ifAbsentPut:

```
propertyAt: key

  ↑dict
    at: (self normalizeKey: key)
    ifAbsent:
      [|default|
      default←self defaultValueForProperty: key.
      dict
        at: (self normalizeKey: key)
        put: default]
```

Complex Refactoring – Method Rewriter



Find:

```
``@dictionary
   at: ``@key
   ifAbsent:
      [| `@temps |
      `@.statements.
      ``@dictionary at: ``@key put: ``@object]
```

Replace with:

```
``@dictionary
   at: ``@key
   ifAbsentPut:
      [| `@temps |
      `@.statements.
      ``@object]
```

Really cool tool!

Changing the code