SUPPORTING INCREMENTAL CHANGES IN LARGE MODELS

Jannik Laval, Simon Denier, Stéphane Ducasse
RMod Team - INRIA

Andy Kellens
Software Languages Lab - VUB
ROADMAP

• Problem

• Different naive approaches
  • copy
  • delta
  • lookup

• Our proposal
PROBLEM

• How to predict impact of changes?

• How to predict and compare different futures?

• In large models.
EXAMPLE

• move mB1() in classA.
• remove classC.
DIFFERENT NAIVE APPROACHES

• Copy
• Delta
• LookUp
COPY

• Pros
  • each version is complete
  • easy to use and to transform

• Cons
  • high creation time
  • high memory usage
DELTA

Model 1

Pack1

classA

parentPackage

classB

classC

mA1() to anInvocation

mA2() from to

mB1() to from

mB2() from

Model 2

- removeLinkBetween: classB and: mB1()
- createLinkBetween: classA and: mB1()
- removeClass: classC
DELTA

• Pros
  • each version is represented by its changes
  • fast to create a version

• Cons
  • slow to access a version
LOOKUP

Model 1

- Pack1
- classA
- ParentClass
- mA1()
- mA2()
- anInvocation

Model 2

- Pack1'
- classA'
- ParentClass
- mB1'

removedClass C
LOOKUP

• Pros
  • only changed entities are copied

• Cons
  • time for lookUp
  • what about removed elements?
• a problem:
• mB2() parentClass?
PERFORMANCES

<table>
<thead>
<tr>
<th>Approach</th>
<th>cost of creation</th>
<th>cost of access</th>
<th>memory cost</th>
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</thead>
<tbody>
<tr>
<td>copy</td>
<td>++++</td>
<td>1</td>
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</tr>
<tr>
<td>delta</td>
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<tr>
<td>lookUp</td>
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</tbody>
</table>
ORION APPROACH

- pointers approach
- access to updated elements
- by an ID
- mB2() parentClass?
ORION APPROACH

• Pros
  • fast creation and low memory usage: only changed elements
  • fast access: with the ID or pointers

• Cons
  • a model depends on its predecessors
## Performances

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ITS FUTURE

• Use it to make manual and automatic prediction changes

• Comparing different changes

• Coupling with analysis tools (Famix)
THANKS

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