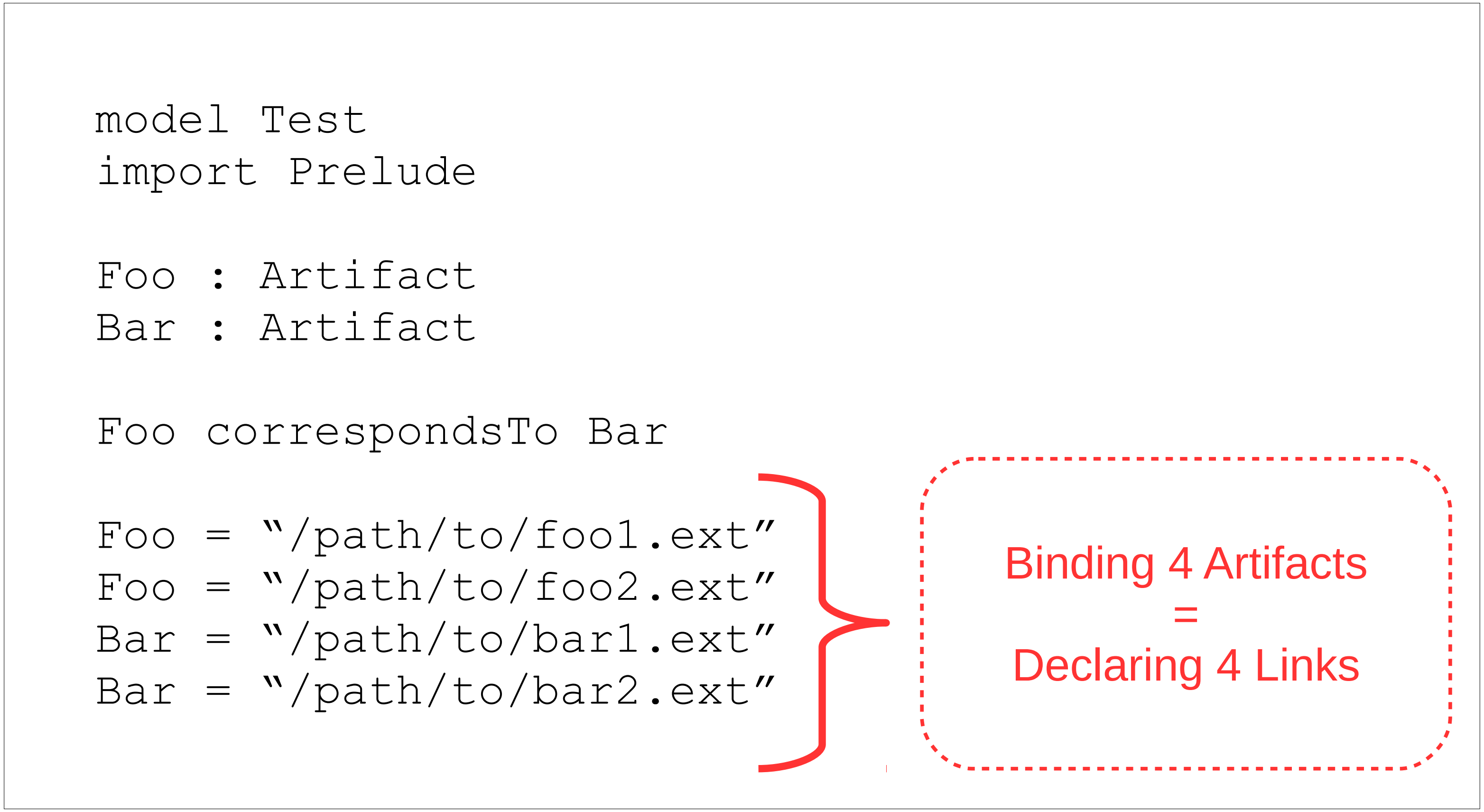
MegaL

Traceability Link Recovery

Declared Traceability Links



```
model Test
import Prelude

Foo : Artifact
Bar : Artifact

Foo correspondsTo Bar

Foo = “/path/to/foo1.ext”
Foo = “/path/to/foo2.ext”
Bar = “/path/to/bar1.ext”
Bar = “/path/to/bar2.ext”
```

Binding 4 Artifacts
=
Declaring 4 Links

Test.megal

Declared Traceability Links

```
Input: Megamodel m
Output: TraceabilityLinks tls
Foreach (RelationShip rel in m) {
    Links lLinks := allLinks(rel.left)
    Links rLinks := allLinks(rel.right)
    Foreach (Link lLink in lLinks) {
        Foreach (Link rLink in rLinks) {
            tls.add(TraceabilityLink(rel,lLink,rLink))
        }
    }
}
```

Pseudo code recovery algorithm for **explicit** Traceability Links

Declared Traceability Links

```
correspondsTo(“/path/to/foo1.ext”,“/path/to/bar1.ext”)
correspondsTo(“/path/to/foo1.ext”,“/path/to/bar2.ext”)
correspondsTo(“/path/to/foo2.ext”,“/path/to/bar1.ext”)
correspondsTo(“/path/to/foo2.ext”,“/path/to/bar2.ext”)
```

Recovered Traceability Links

Inferred Traceability Links

The idea is to recover/infer Traceability Links such as:

- correspondsTo(“/path/to/foo1.ext”,“/path/to/bar1.ext”)
  - correspondsTo(“/path/to/foo1.ext/fooPartN”,“/path/to/bar1.ext/barPartI”)
  - ...
  - correspondsTo(“/path/to/foo1.ext/fooPartM”,“/path/to/bar1.ext/barPartJ”)

Inferred Traceability Links

Additional Info is needed to infer traceability links

```
model Prelude
…
File < Artifact
Folder < Artifact
Fragment < Artifact
…
partOf < Artifact * Artifact
partOf < Artifact * Technology
partOf < Technology * Technology
partOf < Language * Technology
…
elementOf < File * Language
```

Prelude.megal

Inferred Traceability Links

Step 1

```
model Test
FooBarTech : Technology

FooLang : Language
FooLang partOf FooBarTech

BarLang : Language
BarLang partOf FooBarTech
```

Test.megal

Declaring “top-level” composite entities for a technology model

Inferred Traceability Links

<u>Step 2</u>

```
Foo : Artifact
Foo elementOf FooLang
Bar : Artifact
Bar elementOf BarLang

Foo correspondsTo Bar

Foo = “/path/to/foo1.ext”
Foo = “/path/to/foo2.ext”
Bar = “/path/to/bar1.ext”
Bar = “/path/to/bar2.ext”
```

Test.megal

Declaring **<u>explicit</u>** traceability Links
Declaring artifacts as components of a language to make fragments retrievable

Inferred Traceability Links

Step 3

```
FooPart : Fragment
FooPart partOf Foo //would imply FooPart elementOf FooLang?

BarPart : Fragment
BarPart partOf Bar //would imply BarPart elementOf BarLang?

FooPart correspondsTo BarPart //needed?
```

Test.megal

Declaring **implicit** traceability Links
Declaring fragment artifacts as components of other Artifacts

Inferred Traceability Links

Do we base traceability link inference
on partOf/elementOf hierarchies?