1. ATL Transformation Example: introduce primary key

This example is extract from *Catalogue of Model Transformations* by K. Lano. Section 1.6: Introduce primary key, page 6.

```
A
+att : B

↓

A
+att : B
+akey : Integer
```
2. ATL Transformation overview

2.1. Description
This transformation applies to any persistent class. If the class does not already have a primary key, it introduces a new identity attribute, of integer type.

2.2. Purpose
This is an essential step for implementation of a data model in relational database.

2.3. Rules specification
Our transformation has the same source and the target metamodel, KM3. We use 2 different names (KM3 and KM3target), but they refer to the same metamodel.

- For a Metamodel element, another Metamodel element is created:
  - with the same name and location,
  - Linked to the same contents.

- For a Package element, another Package element is created:
  - with the same name,
  - Linked to the same contents.
2.4. ATL Code

module PrimaryKey;
create OUT: KM3target from IN: KM3;

--@begin rule Metamodel
rule Metamodel {
  from
    inputMm:KM3!Metamodel
  to
    outputMm:KM3target!Metamodel {
      location <- inputMm.location,
      contents <- inputMm.contents
    }
}
--@end rule Metamodel

--@begin rule Package
rule Package {
  from
    inputPkg:KM3!Package
  to
    outputPkg:KM3target!Package {
      name <- inputPkg.name,
      contents <- inputPkg.contents
    }
}
--@end rule Package

--@begin rule Class
rule Class {
  from
    inputA:KM3!Class
to
outputA:KM3target!Class {
  name <- inputA.name,
  isAbstract <- inputA.isAbstract,
  structuralFeatures <- inputA.structuralFeatures
},
key:KM3target!Attribute {
  name <- inputA.name.toLowerCase()+'Key',
  isOrdered <- false,
  isUnique <- false,
  location <- '',
  lower <- 1,
  upper <- 1,
  type <- KM3!DataType.allInstances()->select(a|a.name = 'Integer')-->first(),
  owner <- outputA
}
@end rule Class

---begin rule reference
---rule DataType {
---from
inputData:KM3!DataType
---to
outputData:KM3target!DataType{
  name <- inputData.name,
  location <- inputData.location
}
---end rule reference

3. References

[1] Catalogue of Model Transformations
http://www.dcs.kcl.ac.uk/staff/kcl/tcat.pdf