Code Generation by Term Rewriting

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Code Generation is Rewriting

```
entity-to-java :
  |[ entity x_class { prop* } ]| ->
  compilation-unit|[
      package domain;
      class x_class { }
  ]|
```

Generating Many Files

```
strategies

  generate =
    collect(generate-code)

  generate-code =
    entity-to-java

rules

  entity-to-java :
    |[ entity x_class { prop* } ]| ->
    JavaFile(["src"],
      compilation-unit|[
        package domain;
        class x_class { }
      ]|)
```

Generating JPA Entity Classes

```
entity-to-java :
  |[ entity x_class { prop* } ]| ->
  JavaFile(["src"],
    compilation-unit|[
      package domain;
      @Entity class x_class {
        ~*cbd*
      }
    ]|)
  where cbd* := <filter(property-to-java); concat> prop*
```

Generating Setters and Getters

```
property-to-java :
  |[ x :: String (ann*) ]| ->
  class-body-dec*|[
    protected String x = "";

    public String x_get() {
      return x;
    }

    public void x_set(String newitem) {
      x = newitem;
    }
  ]|
  where x_get := <concat-strings> ["get", x]
      ; x_set := <concat-strings> ["set", x]
```

Identifier Concatenation

```
property-to-java :
  |[ x :: String (ann*) ]| ->
  class-body-dec*|[
    protected String _#x = "";

    public String get#x() {
      return _#x;
    }

    public void set#x(String newitem) {
      _#x = newitem;
    }
  ]|
```

Exercise 4.1: Generating Many-to-Many Associations

- `cd strategoxt-tutorial/generation`
- generate code for `Set` valued properties
- `tasks -> Set<Task>`
- see `test/Task.java` for inspiration

Code Generation by Model Transformation

Z. Hemel, L. C. L. Kats, and E. Visser. Code Generation by Model Transformation. A Case Study in Transformation Modularity. In J. Gray, A. Pierantonio, and A. Vallecillo, editors, Theory and Practice of Model Transformations. First International Conference on Model Transformation (ICMT 2008), volume 5063 of Lecture Notes in Computer Science, pages 183–198, Heidelberg, July 2008. Springer.

- generating partial classes
- combining analysis and transformation

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