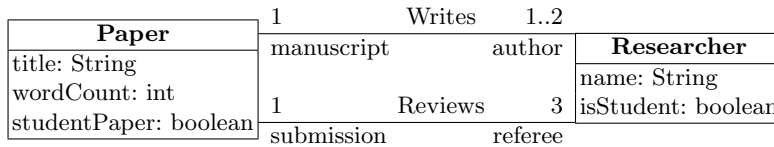


Papers and researchers: An example of an unsatisfiable UML/OCL model

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context Researcher **inv** NoSelfReviews:

```
{ Nobody can review his own paper }
self.submission->excludes(self.manuscript)
```

context Paper **inv** PaperLength:

```
{ Papers should have less than 10000 words }
self.wordCount < 10000
```

context Paper **inv** AuthorsOfStudentPaper:

```
{ A paper is a student paper iff any of its authors is a student }
self.studentPaper = self.author->exists(x | x.isStudent )
```

context Paper **inv** NoStudentReviewers:

```
{ Students cannot review papers }
self.referee->forAll(r | not r.isStudent)
```

context Paper **inv** LimitsOnStudentPapers:

```
{ There must be at least one student paper and at most four }
Paper::allInstances()->exists(p | p.studentPaper) and
Paper::allInstances()->select(p | p.studentPaper) ->size() < 5
```

This class diagram annotated with OCL constraints models the relationships between *researchers* participating in a conference and the *papers* being submitted and reviewed. Authors are classified depending on whether they are students or not. If any author of a paper is a student, the paper will be classified as a student paper.

This model is not strongly satisfiable (it is not possible to create a finite non-empty instantiation of the model) due to two different reasons:

1. The multiplicities of the associations do not allow the creation of a finite and non-empty instance even if OCL constraints are ignored.
2. The OCL constraints and the multiplicities create a contradiction: there must be one student paper, with an student author, and it must be a reviewer, even though students cannot review any paper.