Refactoring and Lattice Theory

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Introduction

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- A common simplifying refactoring is to replace a group of attributes by a single attribute.
- It is possible to detect when this is possible by using lattice theory.

Availability of Presentation

This talk is available from my web-site:

`http://frodo.elon.edu`

under the link Presentations.

Classes, Attributes, and Methods

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- The behavior of the class is defined in its methods, which are the code used to access and modify the data in the attributes.

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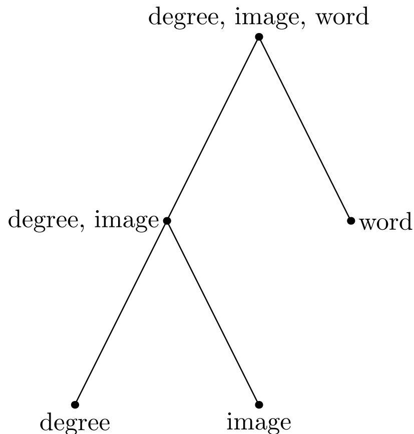
Lattice of Signatures

The sets of attributes in the signatures form a lattice.



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- In a finite lattice, every ideal is a principal ideal.

Extracting Classes

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- It is awkward to extract out a class if the attributes if there are methods that include some of the attributes but not others.
- When you extract a set of attributes that form a principal ideal in the attributes lattice, all of the methods are either part of the new class are separate from it.

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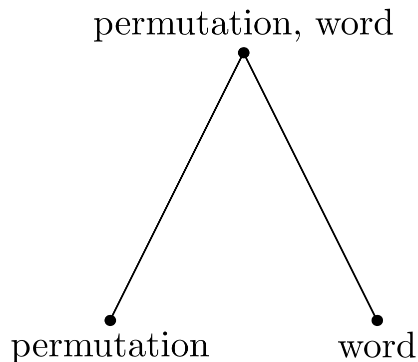

- Extract degree, image attributes into new Permutation class.

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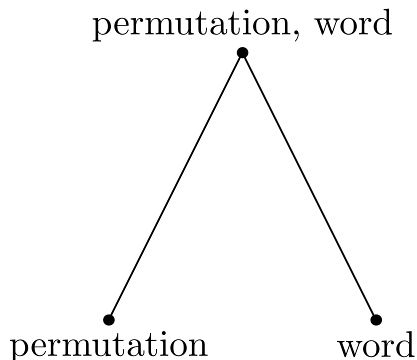

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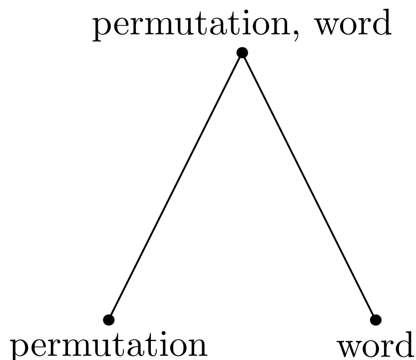

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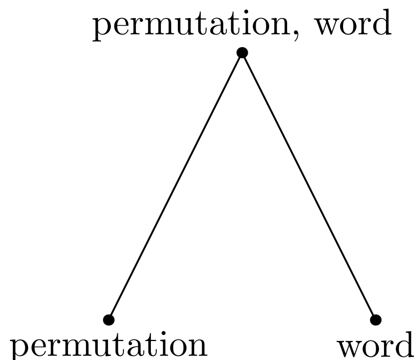

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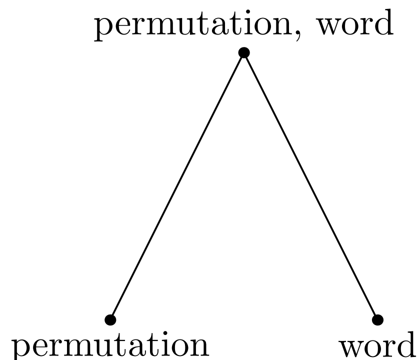

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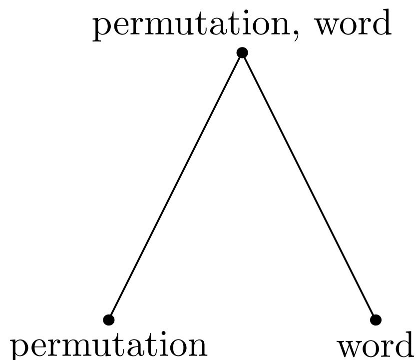

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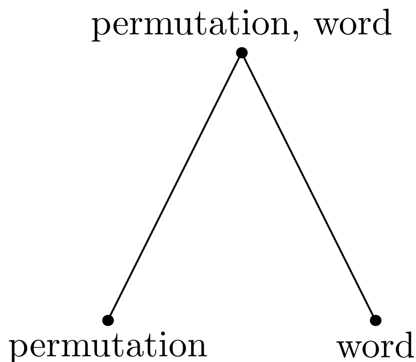

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- If any of the deleted methods need to be called publicly, we can delegate them to permutation.

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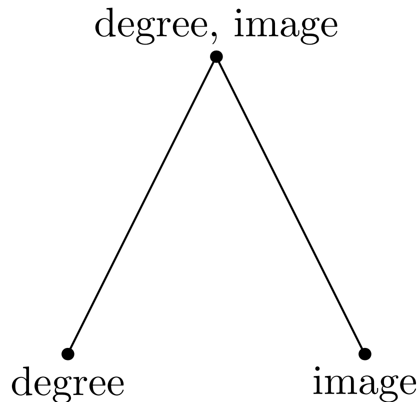

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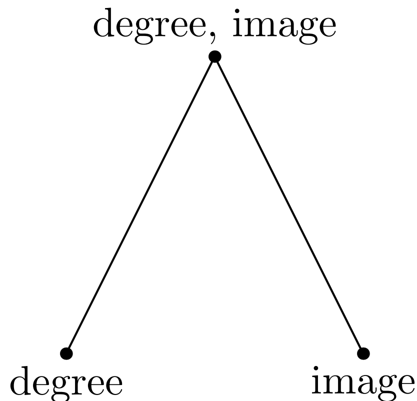

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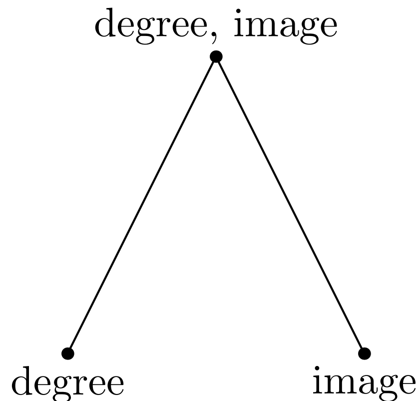

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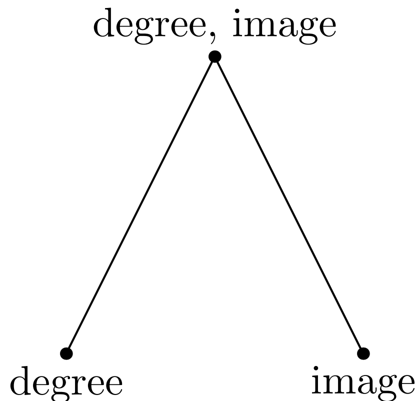

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- A natural way to identify which attributes to extract is to look at attribute signatures for the methods, and to look for any non-trivial principal ideals.
- A non-trivial principal ideal indicates a natural candidate for extraction of the respective attributes.