Structural Modelling: Object Diagrams

Software Systems — Design — L3T1

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UNIVERSITY OF TWENTE. | Formal Methods & Tools

Object Diagram is . . .

- a static structural diagram that
  - shows a snapshot of a system
  - by showing the system's
    - objects
    - values
    - links
- A stepping stone towards
  - object-oriented modelling

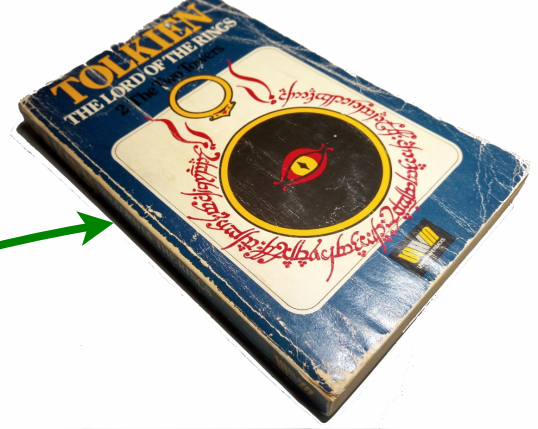
https://en.wikipedia.org/wiki/Object_diagram

Object-Oriented

- OOP is a programming paradigm
- The focus is on objects
- An object is a piece of data/code
  - belong together
  - represent an actual object/concept

Alternatives to OOP

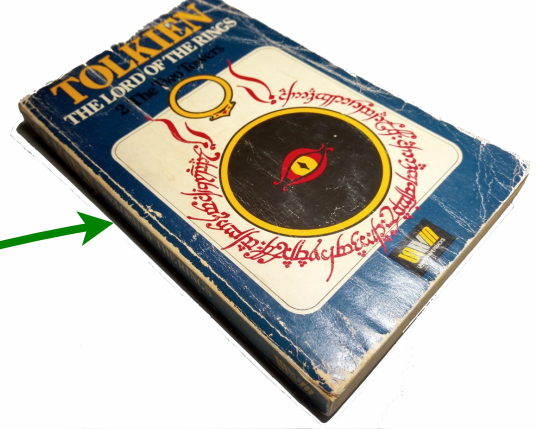
- Algorithms
  - procedural / imperative
- Constraints
  - declarative
- Pipelines
  - functional
- Data
  - relational



models

twoTowers

Object

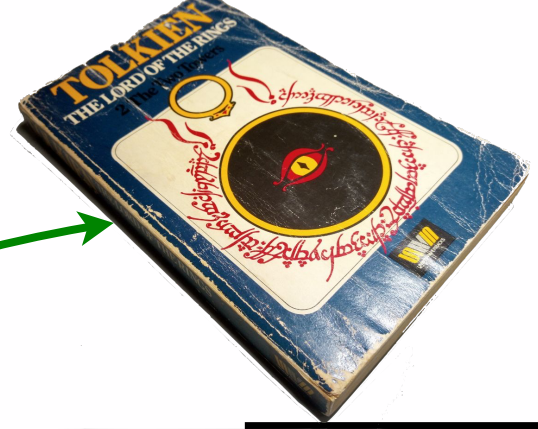


models

twoTowers

```
volume = 2
title = “The Two Towers”
author = “J. R. R. Tolkien”
series = “Lord of the Rings”
```

Object’s Attributes

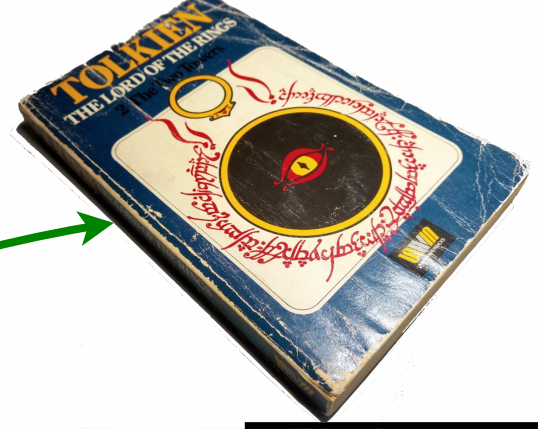


models

twoTowers
volume = 2 title = “The Two Towers” author = “J. R. R. Tolkien” series

series
size = 3 title =“Lord of the Rings” author = “J. R. R. Tolkien”

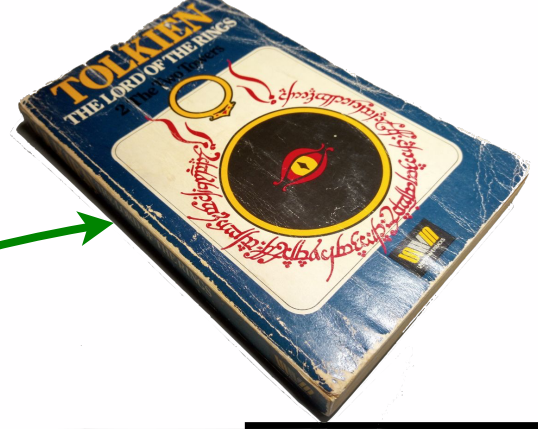
Object Attributes



models

twoTowers	series
volume = 2 title = “The Two Towers” author = “J. R. R. Tolkien”	size = 3 title =“Lord of the Rings” author = “J. R. R. Tolkien”

Objects’ Association



models

twoTowers:Book

volume = 2
title = “The Two Towers”
author = “J. R. R. Tolkien”

series:BookSeries

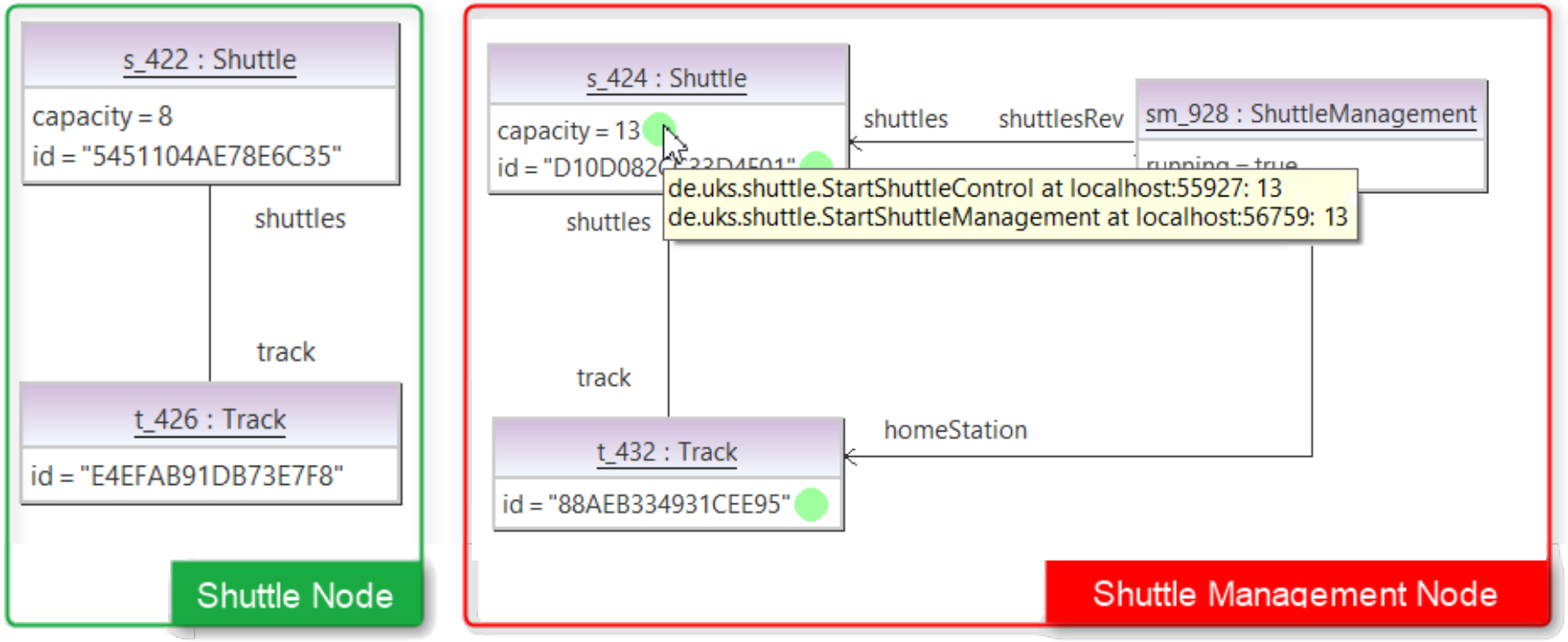
size = 3
title =“Lord of the Rings”
author = “J. R. R. Tolkien”

Object’s Class

Showcasing

- Demonstrate the system’s design
  - including runtime changes
- Get feedback
  - colleagues
  - domain experts
- Validate
  - are we building the right product?

Debugging



Koch, Zündorf, *Graphical Debugging of Distributed Applications*, 2015

Conclusion

- OOP, OOSD, OOD, OOA, …
- Draw design decisions
  - object vs attribute
  - association direction
- Good for
  - showcasing
  - debugging
- Next: class diagrams!

Topics/Slides Disclaimer

- Good ✅
  - watch before Q&A
  - embrace reality
  - try out at labs
  - ask for feedback
  - apply to project
  - dig deeper
  - recall from slides
- Bad ❌
  - slides over videos
  - assumptions
  - blanks
  - timing