



Design Patterns Review

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Design Patterns Review

- I have no idea what's in the exam.
- Design patterns are a key part of “lower level” software engineering, and it's easy to write exam questions about them.
 - You can show you've *learned* the patterns in the book.
 - You can *apply* your knowledge to a given problem.
 - You can *contrast* and *evaluate* different design patterns and solutions.
- They're also common job interview questions for some companies.

What is a Design Pattern?

- Two of the elements that make up a design pattern are a name, and a list of related patterns. What are the other elements?
- Why is each element important?

What is a Design Pattern?

- The book says:
 - Name
 - Context
 - Problem
 - Forces
 - Solution
 - Antipatterns
 - Related patterns
 - References

Describe a Design Pattern

- Describe the Composite / General Hierarchy pattern.
- Give an example of when you might use it.
- How is Composite / General Hierarchy different from an Inheritance Hierarchy?

What are Patterns Good For?

- Name three patterns that facilitate code reuse. Briefly justify your answers.

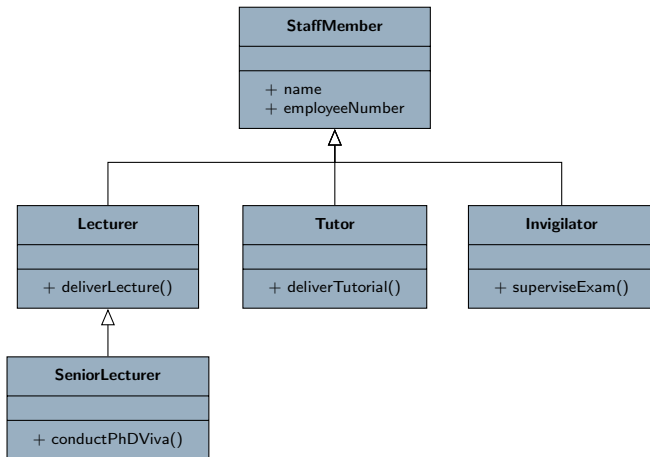
Compare Two Patterns

- What is the difference between an Adapter and a Proxy?

Apply a Design Pattern

- We are modelling staff members in a University.
- All staff members have a name and an employee number.
- Some staff members may be Lecturers. A Lecturer may run a course, and only a Lecturer may do this.
- Some Lecturers may be Senior Lecturers. A Senior Lecturer may conduct a PhD viva, and only a Senior Lecturer may do this.
- Some staff members may be Tutors. A Tutor may deliver a tutorial, and only a Tutor may do this.
- Some staff members may be Invigilators. An Invigilator may supervise an exam, and only an Invigilator may do this.

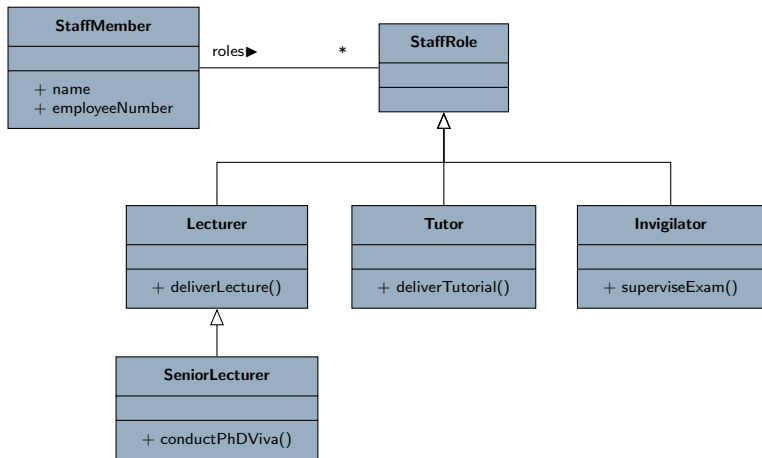
Apply a Design Pattern



Apply a Design Pattern

- But a staff member may be more than one of a Lecturer, a Tutor and an Invigilator. . .

Apply a Design Pattern



Deliberately Awkward Interview Question

- Also, some staff can be First Aid Officers. First Aid Officers can give first aid, and only First Aid Officers may do so.

Deliberately Awkward Interview Question

- Also, some staff can be First Aid Officers. First Aid Officers can give first aid, and only First Aid Officers may do so.
- Some staff members who are both Lecturers and First Aid Officers may be Field Trip Leaders. Field Trip Leaders can lead a field trip, and only Field Trip Leaders may do so.

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