

## “EXAM 5”: DESIGN PATTERN PROJECT

*Spring 2019*

## Task

This “exam” is actually a short research project. The task is to delve into one of the common architectural or design patterns in object-oriented programming and give a 15-25 minute presentation about your findings.

## Choosing a Pattern

There are many patterns to choose from. Here are some options:

- |                           |                  |
|---------------------------|------------------|
| ○ Abstract Factory        | ○ Builder        |
| ○ Singleton               | ○ Factory method |
| ○ Prototype               | ○ Adapter        |
| ○ Bridge                  | ○ Composite      |
| ○ Decorator               | ○ Facade         |
| ○ Flyweight               | ○ Proxy          |
| ○ Chain of Responsibility | ○ Command        |
| ○ Interpreter             | ○ Iterator       |
| ○ Mediator                | ○ Memento        |
| ○ State                   | ○ Strategy       |
| ○ Template Method         | ○ Visitor        |

And these are just a few examples! You are not limited to these options. If you have another pattern you like, feel free to discuss it with the instructor.

(Note that “Factory method” is *NOT* the same as static factory!)

## Starting Sources

- Book: Design Patterns, Elements of Reusable Object-Oriented Software. I have copy and so does the library. First come, first served.
- Book: Pattern-Oriented Software Architecture, Volume 1, A System of Patterns. I have a copy. First come, first served.
- [https://sourcemaking.com/design\\_patterns](https://sourcemaking.com/design_patterns)
- <https://www.oodesign.com/>

Use these as jumping off points; try to find a few resources not on this list. You can also use the wikipedia page as a starting point: [https://en.wikipedia.org/wiki/Software\\_design\\_pattern](https://en.wikipedia.org/wiki/Software_design_pattern) (just don’t cite it as an actual source).

## Timeline

April 08	Pattern claiming period opens
April 12	Topic and focus must be approved
April 19	Annotated bibliography due
April 26 and 29	Presentations
May 01	Peer Review due

Topics must be unique to each student and will be claimed on a first come first serve basis beginning on April 08. Do a little research and pick out one that looks interesting and just email me.

Your annotated bibliography should include all of the sources you believe you'll use for the presentation. Annotations should be no more than a paragraph, should give a high-level overview of the source, and highlight its importance and/or relevance to your topic and focus area.

You'll be expected to listen attentively to every student's presentation and fill out a basic peer review after each. Presentations should utilize some sort of visual aid, whether that is slides or drawing on the whiteboard. I recommend slides. Be prepared to answer questions regarding your topic and your paper.

## Grading

This project is worth the same as every other exam. There will only be one more exam (the final) after this, for a total of 6. Exams in total make up 40% of your grade, so each one (including this project) is worth  $\frac{40}{6} \approx 6.7\%$  of your total grade. That 6.7% is broken up into 100 points as follows:

Annotated bibliography	25
Presentation	65
Attendance, Attention, and Peer Review	10
Total	100

An "A" presentation:

- *Motivates* the pattern by describing a particular context and a problem in that situation
- Shows how the patterns solves (maybe only partially) the problem, including one or more diagrams and code examples
- Mentions any alternative patterns, briefly describing how they differ from your chosen pattern
- Provides a short discussion of strengths *and weaknesses* of your pattern
- Situates the pattern in the context of other patterns we have seen, e.g., is this an architectural or a design pattern, is it creational, structural, etc.
- Cites its sources (the particular style of citation does not matter, just be consistent)