

Week 3 Quiz 1

1. What is the primary benefit of software design patterns

- To develop software in a way that allows it to be generated by an LLM
- To provide a standardized solution to common software problems
- To obscure software's functionality in a way that hopefully improves its security.
- To prioritize software performance and efficiency above any other potential consideration

Software design patterns help developers approach common problems in a standardized way that can often help in debugging and preventing further issues.

2. Which pattern provides an interface for creating objects in a superclass but allows subclasses to alter the type of objects that will be created?

- Factory pattern
- Singleton pattern
- Creational pattern
- Structural pattern

The factory pattern allows subclasses to alter the details of how objects that are part of a superclass will be created while

3. Which of the following is NOT true of working with an LLM to implement software design patterns like those of the Gang of Four?

- LLMs are a great tool to help you learn about and understand design patterns
- If you intend on implementing design patterns it's best to have the LLM implement them all at the same time.
- LLMs can remember details about an ongoing project, allowing you to iteratively implement changes
- LLMS will be familiar with many common software design patterns

It is advised that you work iteratively with an LLM on a task like this, ensuring that the code still works as intended each step of the way. It is possible that sweeping changes will increase instances of hallucinated or just incorrect code.

4. Which of the following best describes how you should work with an LLM to implement design patterns in software.
- You should only use an LLM to help implement a software design pattern if you have separate and prior experience implementing the pattern.
 - If you don't understand a design pattern that is suggested by an LLM you should implement it anyway. They can be trained on a large amount of data and their recommendations can be trusted.
 - When implementing a software design pattern it's best to not provide context about your project as they can confuse the model.
 - LLMs can be useful tools for brainstorming software patterns relevant to your project and helping you learn how they could actually be implemented.

LLMs are great tools to work with as you look to build your background on software design patterns.

5. Why is the singleton pattern particularly well-suited to a situation like managing a database connection?
- Databases are typically only used once by an application
 - Multiple parts of the application can make use of a single database connection once it has been created
 - The singleton pattern ensures that new database connections are only added one at a time.
 - The singleton pattern ensures the database connection is accessed securely
- Different parts of an application can make use of the same database connection, so the singleton pattern which ensures there's only one instance of a class instantiated and provides global access to it is ideal for managing that connection.*