HOW TO USE A DESIGN PATTERN pdf

1: Javascript Design Patterns: What They Are & How To Use Them

Summary Among developers, design patterns are a popular way to think about design, but what is the proper way to think about design patterns? In this interview, Erich Gamma, co-author of the landmark book, Design Patterns, talks with Bill Venners about the right way to think about and use design patterns.

In this blog, we are going to discuss the decorator design patterns with Scala. Therefore, there can be various combinations of toppings. My business is growing, and now, I want to expand it. So, I am going to add two more topping options for my valuable customers. This is a very tedious task. What am I going to do now? Am I going to drop the idea of expanding the business? I am going to use the decorator design pattern to solve this problem. What Is a Design Pattern? Design patterns are the best practices that a programmer can use to solve commonly-faced problems when designing an application or system. It is not a finished design that can be transformed directly into the source code, but it is a description or template for how to solve a problem that can be used in many different situations. Decorator Design Pattern The decorator design pattern is a structural design pattern. A structural design pattern focuses on the Class and Object composition. The decorator design pattern is all about adding responsibilities to objects dynamically. This pattern also gives some additional responsibility to our base class. The decorator design pattern is about creating a decorator class that can wrap the original class and provides additional functionality, keeping the class methods signature intact. It is somewhat like the chain of responsibility pattern , with the difference being that, in the chain of responsibility pattern, exactly one of the classes handles the request, while in the decorator design pattern, all classes handle the request. A design that uses the decorator often results in a system composed of lots of little objects that all look alike. In the following example, we show the UML diagram that we follow with the decorator design pattern to solve our problem: Better luck next time!

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2: c# - When to use which design pattern? - Stack Overflow

Design patterns are used to solve the recurring problems and complexities in designing software applications. The Gang of Four design patterns are divided into three categories: creational.

Visitor Template Method In this article, we are learning and understanding Creational Design Patterns in detail including UML diagram, template source code and a real-world example in C. Creational Design Patterns provide ways to instantiate a single object or group of related objects. These patterns deal with the process of object creation in such way that they are separated from their implementing system. That provides more flexibility in deciding which object needs to be created or instantiated for a given scenario. There are the following five such patterns. Abstract Factory Creates a set of related objects or dependent objects. The "family" of objects created by the factory is determined at run-time depending on the selection of concrete factory classes. An abstract factory pattern acts as a super-factory that creates other factories. An abstract factory interface is responsible for creating a set of related objects or dependent objects without specifying their concrete classes. The UML class diagram below describes an implementation of the abstract factory design pattern. The classes,objects and interfaces used in the above UML diagram is described below. Client This class uses the Abstract Factory and Abstract Product interfaces to crreate a family of related objects. This is an interface that creates abstract products. This is an interface that declares a type of products. This is a class that implements the abstract factory interface to create concrete products. Concrete Product This is a class that implements the abstract product interface to create products. The following code shows the basic template code of the abstract factory design pattern implemented using C: These objects will be accessed by inheriting their base class interface. When the client is instantiated, a concrete factory object is passed to its constructor and populate private fields of the client with appropriate data or values. The Abstractfactory is a base class for concrete factory classes that generate or create a set of related objects. This base class contains a methods definition for each type of object that will be instantiated. The base class is declared as Abstract so that it can be inherited by other concrete factory subclasses. The concrete factory classes are inheriting from the Abstractfactory class and overrides the method of the base class to generate a set of related objects required by the client. There can be a specifeid number of concrete factory classes depending on the software or application requirements. Abstractproduct is a base class for the types of objects that the factory class can create. There should be one base type for every distinct type of product required by the client. The concrete product classes are inheriting from Abstractproduct class. Each class contains specific functionality. Objects of these classes are generated by abstractfactory classes to populate the client. Real-world example of Abstract factory design pattern using C As an example, consider a system that does the packaging and delivery of items for a web-based store. The company delivers two types of products. The first is a standard product that is placed in a box and delivered through the post with a simple label. The second is a delicate item that requires shock-proof packaging and is delivered via a courier. In this situation, there are two types of objects required, a packaging object and a delivery documentation object. We could use two factories to generate these related objects. The one factory will be responsible for creating packaging and other delivery objects for standard parcels. The second will be responsible for creating packaging and delivery objects for delicate parcels. Class Client Output The example code above creates two client objects, each passing to a different type of factory constructor. Types of generated objects are accessed through the client properties. Note While studying abstract factory patterns, one question is, what are concrete classes? So I Google searched for that and the following is the answer to my question. A concrete class is nothing but a normal class that has all basic class features, like variables, methods, constructors, and so on. We can create an instance of the class in other classes. Singleton The Singleton design pattern is one of the simplest design patterns. This pattern ensures that the class has only one instance and provides a global point of access to it. The pattern ensures that only one object of a specific class is ever created. All further references to objects of the singleton class refer to the same underlying instance. There are situations in a project where we want only one instance of the object to be created and shared among the clients. No client can create an instance from outside. It is more appropriate than

creating a global variable since this may be copied and leads to multiple access points. The UML class diagram below describes an implementation of the abstract factory design pattern: This method returns a single instance held in a private "instance" variable. In the singleton pattern, all the methods and instances are defined as static. The static keyword ensures that only one instance of the object is created and you can call methods of the class without creating an object. The constructor of a class is marked as private. This prevents any external classes from creating new instances. The class is also sealed to prevent inheritance, that could lead to sub classing that breaks the singleton rules. The following code shows the basic template code of the singleton design pattern implemented using C. The eager initialization of singleton pattern Lazy initialization of singleton pattern Thread-safe Double-checked Locking initialization of singleton pattern: The code above shows the "lockThis" object and the use of locking within the "GetInstance" method. By locking the dummy "lockThis" variable, all other threads will be blocked. This means that two threads will not be able to simultaneously create their own copies of the object. Real-world example of Abstract factory design pattern using C. Singleton pattern form Output The preceding sample code creates two new variables and assigns the return value of the GetState method to each. They are then compared to check that they both contain the same values and a reference to the same object. I hope this article gives you an introduction about design patterns and various types of design patterns used in. In this article we learned the Abstract factory and Singleton Design Patterns in detail. The remaining patterns of the Creational Design Pattern Group will explained in my next article.

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3: Design Pattern Factory Pattern

If you know the design patterns, then when you are working through a design, and particular part of a system requires something that fits a design pattern you have, then use it. Don't try to fit a system round a design pattern, fit design patterns in to your system (where they fit).

When an interior designer refers to texture they are speaking to the surface quality of a material. Every surface has a texture whether it be smooth or rough, bumpy or flat. Our perception of texture is also influenced by the textures of adjacent surfaces, our viewing distance, as well as the lighting applied. For example, rough surfaces seem more textured next to smooth surfaces, when viewed up close, and when grazed with light i. Additionally, texture can be described as either tactile or visual. Tactile texture relates to the actual feeling of a surface â€" smooth, rough, soft, hard, etc. Visual texture is our perception of what a texture might feel like. In other words, we often make assumptions about the texture of a material based on our memory of touching similar surfaces. At Hatch Interior Design , we often incorporate texture to enforce the design concept. As discussed, texture helps to differentiate various objects and surfaces, transform light, and influence scale, but it can also communicate a particular design style. For example, typically when you envision a modern interior, glossy materials and minimally textured surfaces come to mind. These types of surfaces communicate a sleek and simple design style that often relates to contemporary interiors. Pattern See how this colourful pattern really adds interest to this boardroom designed by Emmanuelle Moureaux Architecture and Design? Although pattern can help to add texture to a space it has a very different definition. Pattern relates to the repetition of a graphic motif on a material. Remember that texture refers to the 2D quality of a surface, where as a pattern relates to illustrative perception. In commercial interior design, pattern is often applied using wallcoverings, tile, carpeting, and other graphic elements. Like texture, pattern can also define surfaces, impact scale, convey a design style, and add visual interest to a space. As mentioned, texture and pattern have a huge role in defining the design style of a space. This is why in commercial interior design, it is very important that these elements are applied in a way that relate to the corporate brand of the business. Send the right message to your customers by applying the various elements of design in and effective way. Did you miss our post about line? Read about it by clicking here. Did you miss our post about colour?

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4: When should I useâ€”and not useâ€”design patterns? - Software Engineering Stack Exchange

Using the Factory pattern, we develop an abstraction that isolates the logic for determining which type of class to create. Factory Pattern creates objects, in this post we will implement the factory design pattern in a C# application.

GrahamS 3 Good point for the benefits of using them as verbal shorthand for complex concepts. I think they have become verbal shorthand for those familiar with them. Later, it got formalized. Things like the idea of a design pattern, as well as the patterns themselves proceed through a series of refinements from good idea to more formalized idea. We had design patterns long before we had the concept of "design pattern". I would suggest you a good book Refactoring to Patterns: This book introduces the theory and practice of pattern-directed refactorings: Using code from real-world projects, Kerievsky documents the thinking and steps underlying over two dozen pattern-based design transformations. Along the way he offers insights into pattern differences and how to implement patterns in the simplest possible ways. And yes, the main idea is to keep everything as simple as possible. It is not big, so I just used google cache to get it: Software design patterns can and do lead to over-engineering Over-engineering is the process of over complicating something. In the case of programming, making your code more complex and possibly more flexible than it needs to be. More specifically, implementing complex software design patterns on simple problems. Start simple not complex How does this happen? Usually you program in extra functionality that you anticipate will be used or prove to be useful later. But what happens if this need never materialises? In most cases, the cruft gets left there. Ironically, if you get to the point of over engineering or over applying patterns you are right back where you started. Software design patterns appeal to programmers or developers because they allow them to naturally express and create beautiful architectures. Consider refactoring to a pattern rather than starting from one What might be a good way to avoid this design pattern abuse? Consider refactoring to a pattern rather than starting from one. Chances are your design could be much simpler without it. If you do find at a later stage that your design truly could benefit from a structured pattern, then refactor to allow for it. When you design, solve the problem in the simplest way possible. Simple light weight software is always a good thing. But prototyping or building an initial build0 proof of concept build before production on the actual product begins can help avoid this and the problem of over-engineering.

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5: Design Patterns in .Net

Design patterns are used to solve common design problems and reduce the complexities in our code. The mediator pattern is a behavioral design pattern that promotes loose coupling between objects.

Aesthetic patterns and functionalities that are very simple have to be implemented. The UI is ready. Yet, if you judge it as mere patterns, then it becomes a cookie cutter kind of matter. You may not find out the difference in feel while using it. Let us focus on the main types of UI design patterns. Uniqueness, simple and attractive. This is the most complicated thing. The visual strategies handled differ from site to site. This is where the problem either shrinks or becomes a perfect storm. The pattern should function as a platform on which you can customize your page rather than existing likes cloth bits to be stitched together for interface. The Input and Output â€" This pattern focuses on the form based interactions with the users. Like submitting some input to the site. The outputs thrown by the sites especially their behavior decides on how pleased the user felt during the journey. Users tend to just leave straight away if they are displeased with the site behavior. So moving around the site should be designed as easy as it could be. The Structure â€" Contents should have a smooth structure rather than appearing like fish market. An organized site will always ensure higher visit rate. The distribution of content will ensure prevention of data unread. In order to save them, it could be even said as mandatory to make sure there is a comprehensible structure followed. Going Social â€" Better late than never. If nothing works â€¦. We always have this life saver which promotes the business to unexpected extremes. This is a magical place which turns even the dead to life. Yesâ€¦ you can opt for social media to make your business very lively provided you are obsessed to posting contents nonstop. Three levels of patterns: Now that you are familiar with pattern types, we shall move on to the levels of UI design. Based on three benchmarks, you can deepen the patterns for better understanding. The implementation â€" This is the foremost base level strategy which is the overall walk through of the site. The bird view functioning of the system is what we categorize as implementation. The places that components take makes the page more simple. The search column if placed at the top right corner will ease the search process. Submit buttons placed in the end, scroll to bottom and top options are some ideas that should be in the checklist and of course implement them according to the site that you are building. The flow â€" A gradual flow concerned over the travel of users in the site should have a careful planning. This is what gives additional points to the pattern. Assisting the users throughout their movement in the site gives them confidence over using it making them feel free to navigate and explore. Plan over the best strategies of receiving inputs from users. Simplify that process to as much as you can thus customizing the site to specific needs. Giving a paralyzing feel to the users when they encounter overflowing options. Hide the additional options in the expandable menu as the main page may be cluttered. When a site is over informative but unstructured, then it leads to a clumsy appearance which may turn users dissatisfied. The context â€" Context solely depends on the genre of your site. Say is it an entertainment related page. This would require fields like event calendar, portfolios etc. May be they should just concentrate on the marketing portion rather than a full pledged social site. Is it the Right UI Design? Will the users have a good time? Before jumping into the extreme details like the flow or implementation of user inputs and the navigation functions, it is important to focus on the visual hierarchy of the site. Selecting the UI patterns and establishing it is a 4 step process. Problem determination â€" What was the cause? Research on how others solved such problems â€" May be the time consumption can be tracked and you may not waste time over researching all from scrap. Solution finding on other successful sites â€" Whoo!!! Here are the success stories. Save the pattern and the proper usage so that recreation would be easy â€" A future motive. It should be fit enough to get the inputs from the users in both quantitative and qualitative aspects. Only when there is sound information from the users the pattern can be considered as a healthy one to be used. If your business is a user input based, then keep the site a massively interacting one. Best pattern to be adaptedâ€" Have a reference so that it may guide you in achieving the goal. Have quite a number of good references instead of just sticking to one thing of your choice. The more you refer the more ideas you may be exposed to. What will this pattern solveâ€" The choice of a pattern should suffice the requirements. The first one being the problems. Whatever

problems that were the hindrance to a good site should be overcome by the use of the chosen pattern. When should it be usedâ€” Say if you are using a ratings pattern, then it should require a feedback column either a written one or numerical or whichever format you wish to have. So usage matters a lot. Pattern usage â€” This is the technically detailed area of your site. The hovering that creates minor difference in the UI which indicates some message to the users, or the option to change the user ratings in later times are some examples that determines how smart the pattern can be made use of. Have a happy pattern discovery!!!

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6: Design Pattern Overview

Among developers, design patterns are a popular way to think about design, but what is the proper way to think about design patterns? In this interview, Erich Gamma, co-author of the Gang of Four book, talks with Bill Venners about the right way to think about and use design patterns.

Patrick shares how to apply design patterns to write cleaner JavaScript. Developers often encounter coding problems in JavaScript that can be solved by using well-established design patterns. Because JavaScript is not a traditional Object Oriented programming language , design patterns are harder to discern, but not impossible to accomplish. Design patterns are not code snippets that can be used directly in your code like a data structure. Design patterns are structured best practices that the programmer can use to solve common problems when developing or designing an application or system. It is important for developers to be able to recognize and apply these patterns correctly to avoid reinventing the wheel. I will detail some commonly used design patterns in JavaScript to show it is possible to use design patterns in the JavaScript world. Creational Patterns Prototype This is a design pattern used specifically to clone attributes of an object into new objects, hence the word prototype. JavaScript does this by creating new objects, so setting up your own prototype is an important design pattern to know, especially in JavaScript. In JavaScript, if you want a class, this is how it gets done. Module The module pattern is probably the most commonly used pattern after prototype. All of the module code exists within a closure. Import variables by passing in values through the function execution. Export variables expose variables by returning an object. Why use a module? A module should be used in any system beyond a single function JavaScript. When to use a singleton? The singleton pattern is used when you only ever want exactly ONE instance of an object. An observer pattern, is a subscription model, where you assign your object to listen to events. When to use it? This helps prevent tightly coupled code. Structural Patterns Adapter The adapter pattern is an abstraction or intermediate from one interface to another. The growing use and popularity of frameworks that use design patternsâ€" Ember , React , KnockoutJS â€"make it a necessity be able to identify and utilize software design patterns more than ever. I encourage developers to use as many design patterns in JavaScript as possible. This comprehensive list of exceptionally well thought out design patterns examples in JavaScript is a great resource to continue the path of discovery.

7: How To Use The Best UI Patterns? | Digital Marketing Company in Chennai India

The decorator design pattern is a structural design pattern. A structural design pattern focuses on the Class and Object composition. The decorator design pattern is all about adding.

8: Software design pattern - Wikipedia

The strategy pattern is a behavioral design pattern that allows you to decide which course of action a program should take, based on a specific context during runtime. You encapsulate two different algorithms inside two classes, and decide at runtime which strategy you want to go with.

9: How do you know when to use design patterns? - Stack Overflow

Factory pattern is one of the most used design patterns in Java. This type of design pattern comes under creational pattern as this pattern provides one of the best ways to create an object. In Factory pattern, we create object without exposing the creation logic to the client and refer to newly created object using a common interface.

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