IS217 Final Exam

GIT HUB LINK: <https://github.com/jamesgriffith/FinalExam>

Answer the following questions in 1-2 paragraphs. Each one is worth 5 points.

1. What is a software design pattern? Why are they important?

* *A: A software design pattern is a solution that is reusable. The patterns can also be implemented into universal and common problems.*

*They are important because they save time and are proven to work in most cases.*

1. What is unit testing? Why is it important? How would you use it?

* *A: Unit testing is testing all of the functions in a program. A unit is any function in the program. The unit is supposed to give the user the same result each time. When you test the unit, you are refactoring it.*

*Unit testing is a tedious thing, but it is worth it. It saves time and helps build things more efficiently.*

*I would use it to test out new functions that I have never worked with before. There are several libraries to help you with this or you can just open the console and run the code.*

1. Describe the relationship between HTML, CSS, and JavaScript.

* *A: HTML: Hyper Text Markup Language*

*CSS: Cascading Style Sheet*

*Javascript: DOM Manipulation*

*The Javascript can make the functions while the CSS styles the objects in the html markup. CSS -> HTML <- JAVASCRIPT*

1. Describe the purpose of the Singleton design pattern.

* *A: The purpose of a singleton pattern is to create a class with one instance. Its access points are global. You don’t call the instance directly.*

1. Describe the purpose of the Factory design pattern.

* *A: The purpose of a factory pattern is creating objects. What makes this pattern different is it doesn’t require a constructor to be assigned.*

*Example of how it would work*

*Function HotDogStand(supplies)*

*{*

*This.bun = supplies.buns 20*

*This.sauce = supplies.sauce “mustard”;*

*}*

1. Describe the purpose of the publish and subscribe pattern.

* *A: Publisher: Creating and initiating the events*

*Subscriber: receiving the events and notifications.*

*This pattern allows any user to subscribe to it with the proper codes and handlers. They will receive broadcasted notifications from the publisher*

1. Describe the purpose of the decorator pattern.

* *A: The decorator pattern is a structural pattern. The decorator pattern adds behaviors to the existing classes.*

1. Write the JavaScript code that illustrates a decorator pattern.

* *A: function HotDogStand ( hotdogBrand ) {*

*This.brand = “null”;*

*}*

*//decorate*

*hotDog.setbrand = function ( brandName) {*

*this.brand = brandName*

*};*

1. Write the JavaScript code that illustrates a factory pattern.

*Function HotDogStand(supplies)*

*{*

*This.bun = supplies.buns 20*

*This.sauce = supplies.sauce “mustard”;*

*}*

1. Write JavaScript pseudo code that illustrates the singleton design pattern.

*A: Function name: singletonPattern*

*Declare variable: object1*

*Initiate the variable obj1*

1. What is jQuery and provide examples of why you would use it? When would you not choose to you it?

*A: JQuery is a library in javascript that is used to make programming easier.*

*Jquery has a number of functions; animation development, create elements in the DOM and handle events.*

*You wouldn’t use jquery for larger, more complicated project because your code can easily turn into a mess with callbacks everywhere.*

1. What is Backbone.js and how is it different than jQuery

*A: BackBone.js is a javascript library that gives structure and organization to your code. It has a few key components; Model, View, Collection, Router.*

*Backbone is a small library, but it is very powerful. It essentially helps you save time with programs and keep your code organized.*

*The difference between backbone and Jquery is the fact that Backbone offers more structure and organization where Jquery will result in a mess of callbacks.*

1. Write the JavaScript code to select an element by tag.

*Function getTags(){*

*Var testTag = document.getElementsByTagName(“hashtag”);*

*Document.write(testTag);*

*}*

1. Write the JavaScript code to select by ID

*Function getId(){*

*Var testID = document.getElementById(“form1”);*

*}*

1. Write the JavaScript code to select an id and then add html to it.

*Function getIdNew(){*

*Document.getElementById(“divName”).innerHTML = ‘chicken nuggets’;*

*}*

1. Write the JavaScript code to create an element.

Function createName (){

Var name = document.createElement(picture);

}

1. What is Node.js?

*A: Node.Js is a server-side portion of javascript. It receives and sends http requests like a server. It is installed like any other windows program. It uses ports, sockets and threads. You can run script on it without a web browser. When creating an application, you must specify and open port.*

1. What is the difference between unit and functional testing?

*A: When you do unit testing, you are testing and refoactoring ever single unit(function) in the code.*

*When you do functional testing, you are testing piece of the program and how it functions. What it interacts with and such.*

Answer the following questions in 2-3 paragraphs. Each one is worth 10 points.

1. You have been hired to design and manage a team of developers tasked with creating a web application. How would you explain to your developer the importance of using standard design patterns when designing the system? Provide some practical examples that illustrate to your team how you will use the concept of design pattern within the project.

*A: I would first have them read up on design patterns if they are not familiar already. I would explain to them that these patterns will help us get jobs done a lot quicker and also state the fact that these are proven solutions.*

*If our job was to create a mail system, I would show them the pub/sub pattern to prove that half the code is in front of them and all they need to do is built from it. They would see my point and continue to build onto it.*

1. You have been hired to design and manage a team of developers tasked with creating a web application. How would you explain to your developer the importance of creating unit tests? Provide some practical examples that illustrate to your team why unit testing is important.

*A: I would explain to them that unit testing is proven to save time and help build a program more efficient. The program could have 5 lines of code when it could’ve have been done with only one line. The programmer would not see that and then when they are testing, they would see something went wrong and then happen to gaze over to find the ugly code they wrote before and convert it to 1 line instead of 5.*

*Unit tests can also demonstrate that a programmer is proficient in what they do for the company.*

Bonus Points:

Create a repository on github and commit any file to it to demonstrate your ability to use Github. Include a link to the repository inside your test submission.