IS683 Final Exam

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? How would you use them in the future?

Solution:

Software design pattern is a general reusable solution to a commonly occurring problem within a context in software design. The biggest benefit of design patterns in my opinion is that it gives developers a common vocabulary to talk about software solutions.

I will ensure to incorporate it in all my future developmental works religiously

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

Solution:

A unit test could be a code that tests a unit like a class, a function, or a module with top-level code. It is built usually by the developer who wrote the code. It is used as a test before the actual integration testing of the code.

1. What is GIT and how is it used to manage software projects?

Solution:

GIT is a distributed revision control and source code management system.

It is highly glorified for its capability to manage projects faster than even. It can be hundred times faster than a remote login system in fetching revision history from a locally stored repository

1. Describe and diagram the CSS box model.

Solution:

The CSS box model is a box that wraps around HTML elements.

It consists of: margins, borders, padding and the content.

Margin: It clears an area around the border.

Borders: t wraps around the padding and content.

Padding: Clears an area around the content

Content: It is where the actual text appears in the box

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

Solution:

HTML stand as the structure CSS stands as its decorator and JavaScript as a gear to control some mechanism involved in the process of making a web page or a web application using all the three.

1. Describe the purpose of the Singleton design pattern.

Solution:

It is used a single instance of an object in JavaScript that can be reused.

Its sole purpose is to avoid creating multiple instances of the same object

1. Describe the purpose of the Factory design pattern.

Solution:

Factory methods are more expressive and can have different names. Hence they should be considered as an alternative to constructors mostly when constructors are not expressive enough

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

Solution:

The sole purpose of Publisher-Subscriber pattern is to generalize the messaging pattern. Like a publisher characterizes his messages into classes and publishes it to the public rather than to a restricted audience. Similarly a Subscriber only receives the mess of his interest from the classes he is interested in

1. Describe the purpose of the decorator pattern.

Solution:

Its sole purpose is to expend the additional characteristics to a particular activity.

A real world example could be of cycle factory that makes designer cycles. With a base code to make a cycle with two wheels, a seat, brakes and handle a few more functions can be added to the base function to add additional features according to the designer skills and end user requirements. This is the base logic of Decorator design design

1. Write JavaScript pseudo code that illustrates any design pattern that you can remember and identify the pattern you are illustrating.

Solution:

Var Cycle = function(){console.log(‘assemble: add core parts’) };

var CycleDecorator = function(Cylce){this.cylce=cycle};

var DiskBrakeDecorator = function(cycle) {

CycleDecorator.call(this, cycle);

console.log('Assemble: add Disk brakes');

In the above example:

Function car acts the base class for the cycle designers. Function ‘DiskBrakeDecorator’ is a pattern to add additional parts like a disk brake to the cycle

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 a version control system? Provide some practical examples that illustrate to your team how you will use version control to manage the development of the project.

A VCS provides 3 important elements; reversibility, concurrency, and annotation.In general, a Version control system provides a platform accessible to all the developers in my team to code from their home or from office but to still participate actively in the group. Git hub is one such system to consider. It is much quicker and almost a hundred times faster than a remote desktop login in fetching revision history from a locally stored repository. I would also recommend a good documentation methodology to be followed while each developer in my team contributes towards the code. Thus my team would be able to make a clear, transparent and easy to access code for my web app.

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.

Solution:

A good developer religiously cultivates a hobbit of unit testing.

For the following reasons:

First of all it proves that your code is right and hence boosts up your confidence levels

Secondly it reduces the cost of bugs

They make better designs

It helps you code faster and better

It demonstrates your progress

A simple ex to demonstrate unit testing.

public class SimpleSum

{

public int Sum(string numbers)

{

if(numbers.Length==0)

{

return 0;

}

if(!numbers.Contains(","))

{

return int.Gross(numbers);

}

else

{

throw new InvalidOperationException( "I can only handle 0 or 1 numbers for now!");

}

}

}

class SimpleGross Tests

{

public static void TestReturnsZeroWhenEmptyString()

{

try

{

SimpleGross p = new SimpleGross();

int result = p.GrossAndSum(string.Empty);

if(result!=0)

{

Console.WriteLine( TestReturnsZeroWhenEmptyString:

Gross and sum should have returned 0 on an empty string);

}

}

catch (Exception e)

{

Console.WriteLine(e);

}

}

}

Answer the following questions in 1 sentence or less. Each one is worth 2 points each:

1. Name 5 HTML “tags” and identify what each one does
   1. Article <article> tag: A new tag added in HTML5 . used to define an article
   2. <canvas> tag: used to draw graphics. Like a chart or map or similar using javascript
   3. <iframe> tag: is used to define a frame inside a web page
   4. <aside> tag: Defines some content aside the base page content
   5. <nav> tag: defines navigation links.
2. Calculate the golden ratio for a web page that has a maximum width of 960 px.

960\*1.68= 593

1. What is the proper name for the bolded HTML code part:

<a **href**=”www.google.com>Google</a>

Href is an attribute to the anchor tag “a”. Abbreviated as hypertext reference.

1. What is the proper name for the bolded HTML code part:

<**a** href=”www.google.com>Google</a>

A is element tag. It is called as the “anchor tag”

1. Write the CSS code that would turn each link green.

Solution: a: link {

Color: green;

}

1. Explain the purpose of the CSS property float.

The purpose of using float is to change the normal flow of the web contents to a desired distortion.

For ex: float left; // this will float a container or image towards the left and the contents below it will just wrap around

1. Explain the purpose of the CSS property clear.

Solution:

Using flat attribute on a container will make the other containers in the web page to warap around the above element. “Clear “attribute is used to not allow this to happen. So that the contents below will just remain in their default position

1. Explain the difference between an ID and a Class within the context of CSS.

ID is used when a style has to be applied only to a specific element or container. It is used only once.

A class is defined to be used to any number of elements

1. Explain why you would include some JavaScript at the bottom of your web page rather than the top.

JavaScript takes time to load , and hence it is not recommend to put it at the top since it is sometimes annoying when the user sees a page loading icon at the top. This can be hidden from the user if the JavaScript is acting at somewhere at the top of the page.

Hence it is recommended to keep the javascript at the lower side of your web page.

1. Given the following CSS code, write the corresponding HTML code that would be required to trigger the CSS rule.

#myid .myclass h2 {

Color: green;

}

Solution:

<div ID= “myid” >

<h2 class= “myclass”> Some text </h2>

</div>

1. What is the proper name for the bolded CSS code:

**H1 {**

**Color: blue;**

**}**

Solution:

It is a **Block**

1. What is the proper name for the bolded CSS code:

H1 {

**Color: blue;**

}

Solution:

It is a **declaration**

1. What is the proper name for the bolded CSS code:

**H1** {

Color: blue;

}

Solution:

It is a type **selector**

1. What is the proper name for the bolded CSS code:

H1 {

**Color:** blue**;**

}

Solution:

It is an **attribute**

1. What is the proper name for the bolded CSS code:

H1 {

Color**: blue;**

}

Solution:

It is a **Value**

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.

Link to Github : <https://github.com/mr365/github_for_mari>