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**WEB PROGRAMMING ASSIGNMENT**

(**CS-406)**

**Submitted To : Ma’m Shamsa Abid**

**Submitted By:  
  
 MUHAMMAD SAAD ZAHEER  
 L16-4103**

**QUESTION NO 1**

A)

**MONGODB VS MONGOOSE:**

Mongoose is just a JavaScript library for MongoDB, which is a database, used to abstract and simplify some of the boilerplate in interaction with MongoDB, exposed by its native API, including object-modeling and introducing some level of schematic coherence.Mongoose is an Object Document Mapper (ODM)

MongoDB is the software that manages durable storage and efficient retrieval & processing of your data, Mongoose is a set of high-level APIs for interaction with MongoDB, using JS as a language. Some of the differences are:

1. The first difference between a Mongoose and a native-MongoDB application is that a module containing the schema and model must be created in the models directory.
2. The second major difference, although arguably relative to each developer, is that queries are easier to construct and read in Mongoose than in native-MongoDb.

**B)**

We are using mongoose because we can define the schema for the documents in a particular collection. Also, It provides a lot of convenience in the creation and management of data in MongoDB. It is easy to query in mongoose. We have to write less code and chances of error are also less.Queries use function chaining rather than embedded mnemonics which result in code that is more flexible and readable, therefore more maintainable as well.

EXAMPLE:  
CREATE:-

db.student.insert({

rollNo: "4103",

name: "MSZ",

course: {

courseName: "WEB",

duration: "6 Months"

},

address: {

city: "Lahore",

state: "Punjab",

country: "Pakistan"

}

})

READ:-

db.students.find({"rollNo":"4103"})

UPDATE:-

db.student.update({

"rollNo": "3014"

},

$set:

{

"name":"Muhammad Saad Zaheer"

})

DELETE:-

db.collection\_name.remove({"state":"Punjab"})

**QUESTION NO 2**

A)

Post is used to create document, Put is used to create or update document.

The **POST** method is used to request that the origin server accept the entity enclosed in the request as a new subordinate of the resource identified by the Request-URI in the Request-Line.

The **PUT** method requests that the enclosed entity be stored under the supplied Request-URI. If the Request-URI refers to an already existing resource, the enclosed entity SHOULD be considered as a modified version of the one residing on the origin server. If the Request-URI does not point to an existing resource, and that URI is capable of being defined as a new resource by the requesting user agent, the origin server can create the resource with that URI."

B)

POST was used to update employee data in the Employees sample AJAX application because in ajax we were using xml and through that we can directly make get, post or head request. As two of them are quite similar so we used post in place of put.

**QUESTION 3**

A)  
PUT:

The PUT method requests that the enclosed entity be stored under the supplied Request-URI. If the Request-URI refers to an already existing resource, the enclosed entity SHOULD be considered as a modified version of the one residing on the origin server. If the Request-URI does not point to an existing resource, and that URI is capable of being defined as a new resource by the requesting user agent, the origin server can create the resource with that URI.

PUT is considered idempotent. When you PUT a resource, these two assumptions are in play:

1. You are referring to an entity, not to a collection.
2. The entity you are supplying is complete (the entire entity).

PATCH:

The PATCH method requests that a set of changes described in the request entity be applied to the resource identified by the Request- URI.

Whats the real difference between PUT and PATCH? I've read somewhere the PUT might be used to replace entire entity under specific resource, so one should send the full entity (instead of set of attributes as with PATCH).

B)

Patch should be used if only the name is to be changed or updated in an online form rather than PUT which replaces the whole form.

**QUESTION 4**

A)

ReactJS is an open-source, isomorphic JavaScript library but not a framework.It is developed by Facebook.As well as also seen on Instargram in 2012. It provides the possibility to create apps that are updated from time to time without the need to reload the page. The main purpose is to create high-performance solution that are updated from time to time without having to reload the page. This partial update technology is very convenient for single page apps developers. It uses one-way data binding with immutable data structures and give us both server-side and client-side rendering to give it a performance edge over competing technologies.

B)

AngularJS analysis

Regarding AngularJS, it is very popular and robust framework with open source code for web applications that consist of one HTML-pages with CSS JavaScript named (SPAs). In fact, AngularJS is monolithic frameworks which include these three paradigms: Models, Views and Controllers, as we all known as MVC design patern. But Angular developers say that it actually isn’t MVC and more looks like MV\*. And perfectly, in our opinion, is coming to developments regarding small and medium projects. Although views in AngularJS has a very compact shape in terms of handling large amounts of data it loses in Angular vs React fight to the latter.

Conclusion:  
Both React and Angular work on completely diverse approaches to front-end application development for startup, small and medium enterprises. The technologies are both powerful and flexible and while neither is better or worse, it depends on your business application goals and system constraints that make the final choice.

**QUESTION 5**

A)

Vue is a progressive framework for building user interfaces. Vue is designed from the ground up to be incrementally adoptable. The core library is focused on the view layer only, and is easy to pick up and integrate with other libraries or existing projects. On the other hand, Vue is also perfectly capable of powering sophisticated Single-Page Applications when used in combination with modern tooling and supporting libraries.

B)

Angular and Vue are frameworks and React is a library to build UI. Vue uses easy javascript and html so it is easier to learn than the other two. AngularJS is used to develop Native apps, hybrid apps, web apps and focus on large-scale, feature-rich applications, React is used to develop SPA and mobile apps and Suitable for modern web development and native-rendered apps for iOS and Android and Vue is used to develop Advanced SPA and started supporting Native apps and is ideal for this purpose. Lastly, Angular is based on MVC model, React and Vue are based on Virtual DOM(Document Object Model).

Example:

Javascript for printing hello in vue:

new Vue({  
 el: '#editor',  
 data: {  
 input: '# hello'  
 },  
 computed: {  
 compiledMarkdown: function () {  
 return marked(this.input, { sanitize: true })  
 }  
 },  
 methods: {  
 update: \_.debounce(function (e) {  
 this.input = e.target.value  
 }, 300)  
 }  
})

**QUESTION 6**   
Well, AngularJS is a popular **JavaScript Frontend** Framework for creating web application which was released by **Google** in the year 2010. It became quite popular because of its rich features and built-in functionality to create reactive and responsive web apps.

**Problems with AngularJS**

Then, around year **2012–14** frameworks like **ember**.js and **react**.js (developed by Facebook) popped in with a better benchmark results and performance, highlighting the AngularJS drawbacks to the developer community.

**Inception of the new Angular (Version 2)**

Now, the angular team decided to create a new framework instead of upgrading AngularJS by incorporating all their hard learned lessons from AngularJS. Hence, Angular 2 was released in Sept’ 2016 which is a complete re-write of AngularJS.

**Confusion because of names and versions**

Now, the team decided to go ahead with the same name except the ‘JS’ part. So, the new angular is called as just angular and follows a semantic version approach for versioning. According to it, a new major version of angular will be released in every six months (upgraded version, not a rewrite i.e. Angular version 2/4/5 are all same and should be referred as ‘*angular’* only). The current version is 5.

**QUESTION 7**   
A)

Lint was the name originally given to a particular program that flagged some suspicious and non-portable constructs (likely to be bugs) in C language source code. The term is now applied generically to tools that flag suspicious usage in software written in any computer language.

Linting code is already an established part of any (popular) JavaScript project and, in my opinion, has a lot of benefits such as:

1.Readability

2.Pre-code review

3.Finding (syntax) errors before execution

B)

**JSLint** is a static code analysis tool used in software development for checking if JavaScript source code complies with coding rules. It is provided primarily as a web application through jslint.com, but there are also command-line adaptations. It was created in 2002 by Douglas Crockford.  
  
Example:  
(function ($) {

$.fn.loading = function(msg, type, cssClass){

var prefixes = {

warning: 'Warning: ' + msg,

error: 'Error: ' + msg,

info: 'Info: ' + msg,

warning: 'Caution: ' + msg,

};

if (type) {

concatMsg = prefixes[type];

} else {

concatMsg = msg;

}

$(this).each(function() {

var tis = $(this)

if (msg == false) {

tis.html('');

} else {

tis.html(concatMsg);

}

});

}

})(jQuery);

C)

ESLint is an open source, JavaScript linting utility originally created by Nicholas C. Zakas. Code linting is a type of static analysis that is frequently used to find problematic patterns or code that doesn’t adhere to certain style guidelines. There are code linters for most programming languages, and compilers can sometimes incorporate linting into the compilation process.

For further explanation, I will use the following simple script which generates an AST for the given JavaScript code.

var espree = require('espree');

var fs = require('fs');

var code = `let array = [1,2,'b'];

`;

var ast = espree.parse(code, {

ecmaVersion: 6

});

console.log("writing ast to ast.json")

fs.writeFile("ast.json", JSON.stringify(ast, null, 4), function(err) {

if(err) return err;

});

**QUESTION 8**

Ajax is the feature which allows you to update the part of the page without update or refresh the page while AngularJS is one of the JavaScript framework (to be specific) client side MVC framework (most says MVW, where W is whatever that is MVC/MVVM )

Even before AngularJS ajax calls were used (today also) to update the particular part of a page and now you can use Angular for too for Ajax calls.One is feature or say way to attain a certain functionality while other is a big framework which include many other functionalities along with Ajax.

You can think of AJAX as the ability to get data from a server without the need to refresh a webpage.However, Angular extends this idea with two-way data binding. So the HTML elements on your front end page are in constant communication with your back end server--and vice versa. Angular can achieve other things as well and is useful for separating your concerns, i.e. separating your data, the functions performed on that data, and how the user sees the data.