**Q1:**

Mongoose is just a JavaScript library for MongoDB 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.

Briefly - Mongoose is a set of high-level APIs for interaction with MongoDB, using JS as a language.

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.

**CRUD operations in MongoDB**

Create:

Create or insert operations add new documents to a collection. If the collection does not currently exist, insert operations will create the collection.MongoDB provides the following methods to insert documents into a collection:

● db.collection.insertOne()

● db.collection.insertMany()

For example:

db.student.insertOne({

regNo: "6305",

name: "ALI HAIDER",

Course: “Web development”

)}

Read:

Read operations retrieves documents from a collection; i.e. queries a collection for documents. MongoDB provides db.collection.find() methods to read documents from a collection.

For example:

db.students.find({"regNo":"6305"})

Update:

Update operations modify existing documents in a collection. MongoDB provides the following methods to update documents of a collection:

● db.collection.updateOne()New in version 3.2

● db.collection.updateMany()New in version 3.2

● db.collection.replaceOne()

Example:

db.student.updateOne({

"regNo": "6307" },

$set:

{

"name":"Ali haider"

})

Delete:

Delete operations remove documents from a collection. MongoDB provides the following methods to delete documents of a collection:

● db.collection.deleteOne()

● db.collection.deleteMany()

Example:

db.student.deleteOne({“regNo”:”6307”})

**Q2:**

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.

POST was utilized to update data in the Employees test AJAX application in light of the fact that in ajax we were utilizing xml and through that we can straightforwardly make get, post or head requests. As two of them are very comparable so we utilized post instead of put.

**Q3:**

No , PUT cannot be used for partial updates, you have to specify the entire entity in case of PUT. If you want to update your name in the online university application you should use PATCH, because it doesnot require to enter the complete entity. You will have to specify only the name in order to update it.

**Q4:**

Advantages of Reactjs:

• React allows you to use HTML codes as it comes forward with JSX. You can practice HTML tags and syntax for rendering subcomponents.

• It offers the ability to compound the components of the app in a single time file, and it also promoted the development of machine-readable programs.

• React comes with an ideal setup for app developers and it had led to a large number of developers using React Native for application development.

• React has a prompt rendering feature that gives it a slight edge over the Angular JavaScript. It consists of various approaches to lessen the amount of DOM operation and thereby speeds up the updating process, making it more efficient.

• React has a Virtual DOM which can help developers manage an extensive database.

• React is a purely JavaScript based library product. A primary difference is that Angular is a subset of HTML and React is not.

• React is a choice that you make when you are looking for reliable, intensive and straightforward programming. It is a relatively more advanced language than Angular.

Disadvantages of Reactjs

• A traditional MVC framework like Rail needs configuration and integrating Reactjs into it slows down the development time and process.

• If you combine the advantages and disadvantages for React, you will see that the framework might be suitable for specific applications and not work for the rest. Every app is different.

Advantages of Angularjs

• Angular is known for its community and developer support services. Angularjs has brought in a rise in demand for its framework because of its support factors.

• The Angular framework runs on all browser environments regardless of its platforms.

• Angular has established itself as a reliable framework because it includes off-the-rack tools and it also has robust components which are evolved in Juxtapose.

• Angular comes with a Bi-directional data binding feature that is, in fact, the primary difference between Reactjs and Angularjs. It disperses influence after every set of data changes.

Disadvantages of Angularjs:

• Angular does not consist of extensive, all-inclusive documentation or a clear manual.

• It also has a steep learning curve which is one of its main drawbacks.

Conclusion:

Both AngularJS and React are equally useful for writing applications. But they are entirely different frameworks to use. Some programmers may say that AngularJS is superior to React and vice versa. What’s in actuality best for an in-hand project is the way you utilize these frameworks.

**Q5:**

Vue is a progressive framework for building user interfaces . Unlike other monolithic frameworks, Vue is designed from the ground up to be incrementally adoptable.

Comparing VueJS with Angular and React

**Performance**

When it comes to rendering performance, VueJS generally outperforms many existing popular frameworks such as AngularJS or React. In fact, VueJS is one of the fastest frameworks to date. For example, the AngularJS 1 equivalent of our demo application, containing one row of data, took almost 14.7 milliseconds longer to render. The significance of this performance difference becomes more evident when increasing our dataset from 1 row to 100 rows of data: VueJS now renders the page in 488.7 milliseconds, whilst AngularJS requires 534.3 milliseconds.

**Memory footprint**

Another interesting comparison factor is the memory footprint across the different frameworks.

Krause’s benchmark goes to show that, at roughly 3.6MB, VueJS has a much smaller read memory footprint (after page load) than both React (4.73MB), Angular 1 (5.18MB) and Angular 2 (5.86MB). Although this difference may be small, its significance becomes obvious when considering the memory usage after the addition of 1000 rows: AngularJS v.1.6.1 consumed 14.88MB; at 12.46MB Angular v.2.4.3 consumed only a little less than its predecessor. React v15.4.2 consumed 12.99MB whilst VueJS only required 8.89MB.

**Design flexibility**

Much like React, VueJS, is not very “opinionated”.

This means that the library does not dictate how it should be used, and how applications using it should be designed. Whilst other frameworks may force the developer to follow a certain pattern, VueJS does not.

For example, unlike Ember or Angular, VueJS does not force you to use modules or define a controller: instead, one just creates a VueJS object that is configured with the data and methods needed in the template.

**Functionality**

Similar to React, VueJS focuses just on the development of the actual web-interface. Whilst it does this well, it does just that, and nothing more.

Much like React, VueJS does not come with additional tools and features. Anything outside VueJS’ sole purpose must be achieved by either writing the code yourself, or using third-party libraries. The previously discussed alternatives to VueJS, namely AngularJS 1 and 2 (which are complete frameworks), offer full sets of additional functionality.

For example, AngularJS offers services for performing HTTP requests, promise handling, filters for formatting data, routing, a service for cookie handling, or a service wrapper for handling timeouts.

**Size**

The codebase of VueJS is much smaller and simpler than that of its competitors, such as AngularJS. VueJS 2.1.10 consists of a mere 8569 lines of code. This makes a large difference in terms of actual file size: minified VueJS 2.1.10 is a mere 74KB in size, compared to 168KB for AngularJS 1.6.1 or 520KB for Ember 2.12.0. However, in this comparison, React v.15.4.2 beats VueJS hands-down with 24KB in size.

we discovered that VueJS, React and AngularJS all share very similar concepts, and as such learning how to use VueJS will require minimal effort.

When considering performance, we showed that VueJS outperforms AngularJS, and, in most cases, React.

Lastly, VueJS is similar to React, in that it focuses on a core set of functionality, and as such offers fewer features than Angular. This has the result that VueJS does however provide developers with more design flexibility.

Q6:

**Angular IO vs AngularJs:**

1. First of all, Angular is based on TypeScript while AngularJS is based on JavaScript.

2. AngularJS uses terms of scope and controller. To scope a variable you can add many variables that will be visible in View as well as in Controller. AngularJS has also a concept of rootScope. Variables in rootScope are available on all throughout application. Angular does not have a concept of scope or controllers. Instead of them it uses a hierarchy of components as its main architectural concept. Component is a directive with a template.

3. AngularJS has many directives and every developer can also specify custom new directive. Angular also has standard directives, but they are used in a bit different way. For example: ng-model in AngularJS means that you want to create two-way binding. If you want to create one-way binding, you should use ng-bind.

4. Angular has some advantages over AngularJS i.e. modularity, dynamic loading and reactive programming.

**Q7:**

**Linting:**

Linting is the process of running a program that will analyze source code to flag programming errors, bugs, stylistic errors, and suspicious constructs. This is most helpful in identifying some common and uncommon mistakes that are made during coding.

**JSLint:**

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. JSLint is used for faster and safer coding.

**ESLint:**

ESLint is a tool for identifying and reporting on patterns found in JavaScript code, with the goal of making code more consistent and avoiding bugs. In many ways, it is similar to JSLint and JSHint with a few exceptions. ESLint is completely pluggable, every single rule is a plugin and you can add more at runtime.

**Q8:**

Ajax is the component which enables you to refresh the piece of the page without refresh or invigorate the page while AngularJS is one of the JavaScript framework.

Indeed, even before AngularJS ajax calls were utilized (today likewise) to refresh the specific piece of a page and now you can utilize Angular for too for Ajax calls.One is highlight or say approach to achieve a specific usefulness while other is a major system which incorporate numerous different functionalities alongside Ajax.

You can consider AJAX the capacity to get information from a server without the need to invigorate a site page.

In any case, Angular broadens this thought with two-way information official. So the HTML components on your front end page are in consistent correspondence with your back end server- - and the other way around. Angular can accomplish different things too and is valuable for isolating your worries, i.e. isolating your information, the capacities performed on that information, and how the client sees the information.