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### **Question 1**

mongo DB is NoSQL database. It uses its default driver to do CRUD operation.

Mongoose is an object modeling tool-based mongo DB driver package. Default mongo DB driver is difficult to manage so mongoose make the job easier.

<b>mongo DB</b>	<b>Mongoose</b>
It has no schema	It has schema
It is difficult to manage	It is easier to manage
It is ODM	It is ORM
CRUD is comparatively faster	CRUD is comparatively slower

CRUD operations using vanilla mongo DB are as follows:

#### **CREATE:**

- Declaration: `db.collection-name.insert({"field":"value"})`
- Example: `db.student.insert({ "name":"waqas" })`

#### **READ:**

- Declaration: `db.collection-name.find({"field":"value"})`
- Example: `db.student.find({ "name":"waqas" })`

#### **UPDATE:**

- Declaration: `db.collection-name.update({  
 "find":"value"  
 $set:{  
 "replace":"value"  
 }  
})`
- Example: `db.student.update({  
 "roll_no":"1234"  
 $set:{  
 "name":"waqas"  
 }  
})`

### **DELETE:**

- Example: `db.collection-name.delete ({ "feild":"value" })`
- Example: `db.student.delete ({ "name":"waqas" })`

## **Question 2**

If the URL objects are named explicitly, then PUT is used. And if the server decides them then POST is used.

PUT is idempotent, so if an object is PUT twice, it has no effect. This is a nice property.

With POST 2 requests coming in at the same time making modifications to a URL, and they may update different parts of the object.

## **Question 3**

The existing HTTP PUT method only allows a complete replacement of a document. This proposal adds a new HTTP method, PATCH is to modify an existing HTTP resource.

## **Question 4**

Technology	React	AngularJS
Author	Facebook community	Google
Type	Open source JS library	Fully-featured MVC framework
Toolchain	High	Low
Language	JSX	JavaScript, HTML
Learning Curve	Low	High
Packaging	Strong	Weak
Rendering	Server Side	Client Side
App Architecture	None, combined with Flux	MVC
Data Binding	Uni-directional	Bi-directional
DOM	Virtual DOM	Regular DOM
Latest Version	15.4.0 (November 2016)	1.6.0

### Advantages of angularJS:

- Global **community support** is one of the factors, that can easily make Angular the best JavaScript framework. Developers and designers constantly collaborate and contribute to the community, increasing credibility and reliability of the framework.
- It is a **full-fledged** framework that can run in any browser or platform. Moreover, it is consistent, overwhelmed with ready-made tools, ng components are robust and quite mature, as contrasted with React.
- **Two-way data bind** is probably the top feature, as it diffuses the impact after every minor data change and does way with the need for further effort with data sync in view and model.

### Disadvantages of angularJS:

- Despite a comprehensive and clear manual, steep learning curve and complexity are named among the main weak points of Angular.js. programmers should place special emphasis on security to make apps reliable and safe

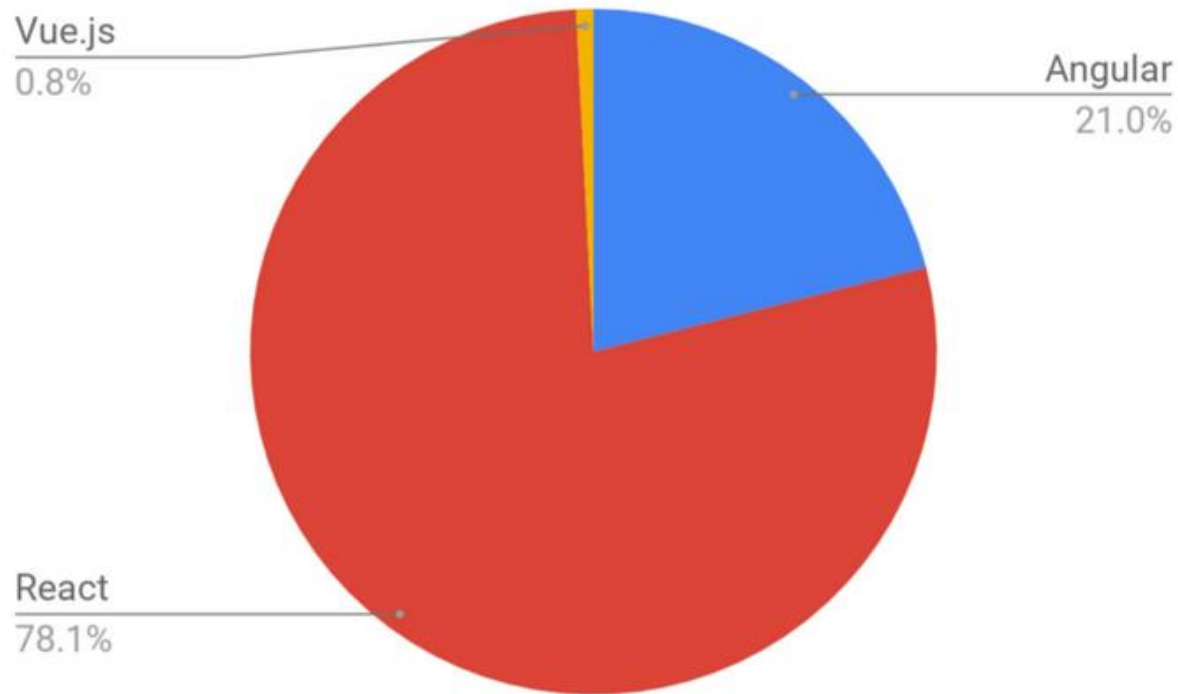
### Advantages of ReactJS:

- **JSX** is a JS syntax that enables HTML quotes and usage of HTML tag syntax for subcomponents rendering. It promotes building of machine-readable code and provides ability to compound components in one compile-time verified file.
- **Prompt rendering** is among the best features of React that gives a significant edge over Angular. The technology comprises smart methods to mitigate the amount of DOM operations, optimize and accelerate the updates process. Virtual DOM (Document Object Model) is of great use while handling vast databases.
- The core difference between reactjs and angularJS is that React is **JS-centric**, while ng2 remains HTML-centric. JavaScript is far more robust, than HTML, that makes React far more simple, focused and consistent.

### Disadvantages of ReactJS:

- Comparing react vs angular performance, first of all it's worth mentioning that reactjs is not a full-scale framework and for this very reason integration of the UI library into a common MVC framework requires deeper programming knowledge. It is still young and not mature, considering tutorial volumes, limited ecosystem, etc.
- Apart from pros and cons of reactjs, we should also mention Flux that is frequently applied for adding a structure and architecture to react app. Usage of both technologies can become a challenge for non-experienced programmer, as it lacks structured and comprehensive documentation or guide.

## Question 5



Vue.js is a JavaScript framework, launched in 2013, which perfectly fits for creating highly adaptable user interfaces and sophisticated Single-page applications.

### Advantages of VueJS:

- **Empowered HTML:** This means that Vue.js has many similar characteristics with Angular and this can help to optimize HTML blocks handling with a usage of different components.
- **Detailed documentation:** Vue.js has very circumstantial documentation which can fasten learning curve for developers and save a lot of time to develop an app using only the basic knowledge of HTML and JavaScript.
- **Adaptability:** It provides a rapid switching period from other frameworks to Vue.js because of the similarity with Angular and React in terms of design and architecture.
- **Awesome integration:** Vue.js can be used for both building single-page applications and more difficult web interfaces of apps. The main thing is that smaller interactive parts can be easily integrated into the existing infrastructure with no negative effect on the entire system.
- **Large scaling:** Vue.js can help to develop pretty large reusable templates that can be made with no extra time allocated for that according to its simple structure.
- **Tiny size:** Vue.js can weight around 20KB keeping its speed and flexibility that allows reaching much better performance in comparison to other frameworks.

## Comparison of VueJS with AngularJS and ReactJS:

Every framework has its own pros and cons, meaning that there should be just a right choice for every single case during the product development. In a nutshell, there is no substantial difference which framework to choose, because it just takes some time to get used to the new one.

### Question 6

AngularIO or Angular2+ or Angular v2 and above or simply Angular is a renewed form of vanilla angularJS.

Angular is based on TypeScript while AngularJS is based on JavaScript. TypeScript is a superset of ES6.

AngularJS uses terms of scope and controller. It also has a concept of rootScope whereas Angular does not have a concept of scope or controllers, instead it uses a hierarchy of components as its main architectural concept. A "Component" is a directive with a template.

Example AngularJS:

```
var app = angular.module('myApp', []).controller('myCtrl', function($scope) {
    $scope.firstName = "abc";
    $scope.lastName = "xyz";
});
```

Example AngularIO:

```
@Component({
    selector: 'app-my-app',
    templateUrl: './my-app.component.html',
    styleUrls: ['./my-app.component.css']
})

export class MyAppComponent {

    firstName = "";
    lastName = "";

    onAdd() {

        this.firstName = "abc";
        this.lastName="xyz";

    }
}
```

In addition to this, angular and angularJS has diff way of defining directives.

For example: ng-model in AngularJS means two-way binding. And for one-way binding, it uses ng-bind.

In Angular, there is only ngModel for both one- and two-way binding, however, if it is written in “[ ]”, one-way binding is achieved. And if it is written in “[ ( ) ]”, two-way binding is achieved.

Example AngularJS:

```
<div ng-app="">

<p>Input something :</p>
<input ng-model="something" >
<p> {{something}}</p>

</div>
```

Example AngularIO:

```
<textarea matInput rows="5" [(ngModel)]="Something"> </textarea>

<p> {{Something }} </p>
```

Similarly, in Angular, some directives have changed their names like ng-repeat is changed to ngFor etc.

## **Question 7**

Linting is the process of checking the source code for Programmatic as well as Stylistic errors which are made during coding. Linting is done by running a program that will analyze code for potential errors.

JSlint and ESLint both more or less done the same job. Their breif comparison is given in the table.

JSlint	ESlint
older	newer

non-configurable / non-extensible i.e. it lacks a configuration file (by which settings can be changed.	easily configurable and extensible and has many plugins available
rules cannot be disabled / added	rules can be changed/toggled
Undocumented features	It has its documentation available however ESLint documentation can either be a hit or miss situation. The rules list is easy to follow and is grouped into logical categories, but the configuration instructions are confusing in some places.
Difficult to know which rule is causing which error	Supports custom reporters so it is easier to know which rule is causing which error
faster than ESLint	slower than JSLint but again is not a hindrance at all

## Question 8

Ajax is used to fetch data to/from database / server without PostBack (blocking) or Page Refresh. Whereas,

AngularJS is a Front-end framework which offers capabilities such as MVC pattern support, templating, and deep-link routing. This nature makes AngularJS excel in single-page applications. By having said that,

### **AngularJS is preferable:**

when the goal is to build a single-page application that delivers a seamless user experience with fluid transitions and short response times. But

### **Ajax is preferable:**

when simple applications are needed to be developed rapidly. The reason being it's lightweight and its minimal initial workload which makes it a good fit for round-trip applications.