Roll Number: 16L-4126
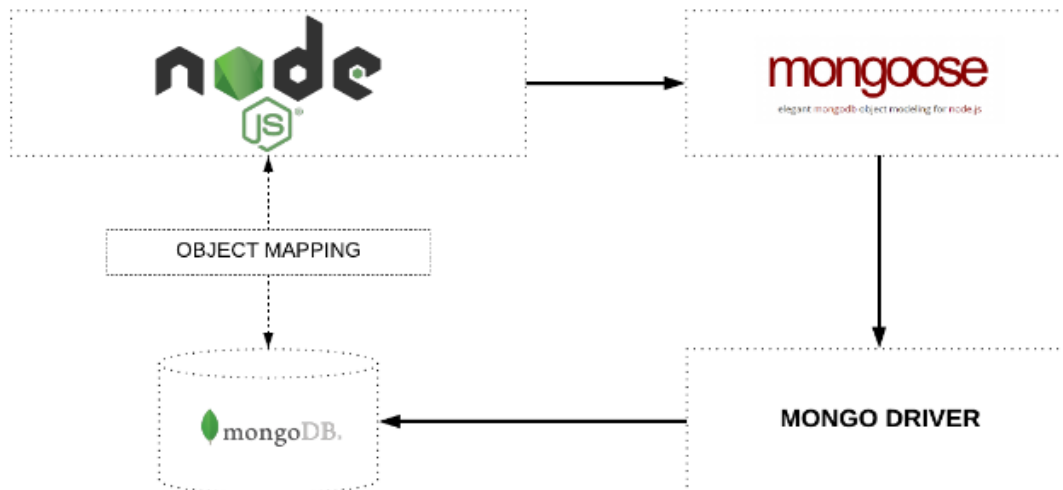
Name: Minahil Imtiaz

Question1: MongoDB vs Mongoose.

Answer: MongooseJS is an Object Document Mapper (ODM) that makes using MongoDB easier by translating documents in a MongoDB database to objects in the program.

Advantages:

- It provides schema validation i.e. assigning default values for document properties and validating data
- It provides easy maintenance of code i.e. queries use function chaining rather than embedded mnemonics and use of named collections
- It provides relationship between objects in data and in MongoDb by providing an abstraction layer which doesn't require the use of named collections.

Object Mapping between Node and MongoDB managed via Mongoose

CRUD using MongoDb package

For retrieving:

```
const collection = db.collection('documents');
  // Find some documents
  collection.find({}).toArray(function(err, docs) {
    assert.equal(err, null);
    console.log("Found the following records");
    console.log(docs)
```

For Insertion:

```
 const collection = db.collection('documents');
  // Insert some documents
  collection.insertMany([
    {a : 1}, {a : 2}, {a : 3}
  ], function(err, result) {
    assert.equal(err, null);
    assert.equal(3, result.result.n);
    assert.equal(3, result.ops.length);
    console.log("Inserted 3 documents into the collection");
    callback(result);
```

For Update :

```
const collection = db.collection('documents');
// Update document where a is 2, set b equal to 1
collection.updateOne({ a : 2 }
  , { $set: { b : 1 } }, function(err, result) {
  assert.equal(err, null);
  assert.equal(1, result.result.n);
  console.log("Updated the document with the field a equal to 2");
```

For deletion:

```
const collection = db.collection('documents');
// Delete document where a is 3
collection.deleteOne({ a : 3 }, function(err, result) {
assert.equal(err, null);
assert.equal(1, result.result.n);
console.log("Removed the document with the field a equal to 3");
```

(Reference1: https://medium.com/chingu/an-overview-of-mongodb-mongoose-b980858a8994)

(Reference2: https://www.npmjs.com/package/mongodb)

Question2: PUT VS POST

Answer: The PUT is used to update an object while POST is used to create new object. But with POST we can update as well as update the object that's why in example POST was used to update the employee.

Question3: PUT vs PATCH.

Answer: The HTTP method PATCH is used for partial updates. By partial update I mean the user wants to change only few fields of the resource. The HTTP method PUT can be used for partial updates by sending data of all fields of the resource along with the updated values. But this is not suitable approach as it may consume more time and bandwidth as it entirely replaces the resource.

The HTTP PATCH method is recommended as it is safer, easier and requires only set changes to be applied.

Question4: React lie in comparison to AngularJS?

Answer: AngularJS is designed and managed by Google making it a rapidly growing JavaScript Framework as it powers 1,471,509 live websites, while ReactJS owned by Facebook powers 305,267 live sites today. These statistics show AngularJs is getting more popular and more projects are being done using AngularJs.

Advantages of AngularJs:

- AngularJs keeps on offering new features which proves increasing credibility and reliability of the framework.It also shows the global community support towards the AngularJs.
- AngularJs provides less compilation time i.e less than 3 seconds.
- AngularJs is more consistent as ng components are robust and quite mature as contrasted with React.
- AngularJs provides two way data binding minimizing the risks of errors.
- AngularJs uses MVVM (Model-View-ViewModel) allows developers to work separately on the same app section using the same set of data while ReactJs uses MVC model which requires more learning.

<u>Drawbacks of AngularJs:</u>
- ReactJs provides easy syntax and is easy to learn.
- React is more flexible and responsive.
- React uses Virtual DOM which allows better arrangement of documents in HTML, XHTML, or XML formats.

<u>Conclusion:</u>
Both ReactJs and AngularJs are powerful and flexible. But the learning curve of ReactJs is lower than AngularJs. Generally, AngularJs is used to make core skeleton and ReactJs is used side by side to improve parts of application. So in my opinion, AngularJs is more developed and used than ReactJs.

(Reference: https://www.moveoapps.com/blog/reactjs-vs-angularjs/)

Question5: Vue lie in comparison to React and AngularJS?

Answer: Vue.js is an open-source JavaScript framework for building user interfaces and single-page applications.

Benefits of Vue:

- 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 feature provided easy learning og VueJs
- Vue.js can weight around 20KB
- Vue.js is an interface layer and can be used in pages and reusable templates.
-

Benefits of Angular and React

ReactJs is easy to learn along with high flexibility, responsiveness and virtual DOM .

AngularJs provides detailed documentation, MVVM structure , two way data binding and faster compilation .

Conclusion:

VueJs provides much simpler and easier way to code. But the learning curve of VueJs is quite low. Despite the fact, developers love the amalgement provide between AngularJs and ReactJs. But the market of VueJs is very small.

(Reference: https://blog.techmagic.co/reactjs-vs-angular5-vs-vue-js-what-to-choose-in-2018/)

Question6: AngularIO different from AngularJS?

Answer: The stable release of angular is 7.0. The Angular 7.0 is providing many new features as compared to previous versions which will be discussed below:

- CLI prompts user about various commands. For example, you can create new project by typing ng new + enter.
- Angular 7.0 is providing many updated dependencies. For example, TypeScript 3.1 , RxJS 6.3 and Node 10 etc.

- Angular Material CDK has been improved. For instance, you can use drop and drop and virtual scrolling by importing **DragDropModule** or the **ScrollingModule**

- By using **select** element inside of a mat-form-field the user can get accessibility and usability advantages.

(Reference: https://www.quora.com/Whats-new-in-Angular-7-What-are-the-differences-between-Angular-6-and-7)

Question7: Linting?

Answer: Linting refers to process analyzing source code to flag lexical errors , bugs and syntactic errors made during coding. 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.

Benefits:

- o It saves you time.
- o It makes your code better.
- o It decreases the chances of code breaking

JS LINT
JSLint analyzes JavaScript code and make sures syntax, validations and coding conventions are being correctly followed.

ES LINT
ESLint, a code quality tool, identifies and report on patterns found JavaScript code. ESLint uses Espree for JavaScript parsing and uses an AST to evaluate patterns in code.

Benefits:
- ESLint is completely configurable and pluggable.
- ESLint allows you to toggle the rules
- ESLint has configuration levels like within project , directory or file
- ES Lint allows you to add Custom Rules, Parsers, and Reporters
- ES Lint allows documentation

(Reference1: http://www.gistia.com/eslint-why-use-eslint/)
(Reference2: https://www.codeguru.com/tools/the-top-five-javascript-linting-tools.html)

Question8: Where you would prefer to use AngularJS over AJAX ?

Answer: Ajax can be used when user want achieve reduced bandwidth , increase in speed , supporting asynchronous , easier navigation and dynamic web application development and updating part of page without refreshing etc. But Ajax provides difficulty in debugging, result in browser incompatibility and increased load on web servers .

AngularJS is a full-fledged, front end MVC framework which does a lot more like providing 2-way data binding, templating, filters and directives etc. AngularJs is complete front end framework but for CRUD operations it uses Ajax.

(Reference: https://www.quora.com/What-is-the-difference-between-AJAX-and-AngularJS)