

Tests & Quizzes

WrittenTest

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Part 1 of 3 - / 30.0 Points

Answer each of the following questions with True or False and providing rationale. If you only state True or False you will get zero credit. If you find it hard to state why something is true, try stating how

Question 1 of 23 5.0 Points

All Asynchronous functions are non-blocking.

- ☐ True
☐ False

Rationale:

They are blocking functions, but we can provide callback with the following things that depend on them, to make sure our program work

Comment: Depends on what?

Question 2 of 23 5.0 Points

Full-Stack development is possible thanks to JavaScript.

- ☐ True
☐ False

Rationale:

Absolutely yes, because thanks to java we have express handling the back end and angular for the front-end

Comment: Thanks to Java!!

Question 3 of 23 5.0 Points

All the Queues in Node do not cause starvation to each other (they do not prevent each other from executing) because of the limit that is enforced.

- ☐ True
☐ False

Rationale:

Because sometimes we can do the opposite

Comment: What is the opposite?

Question 4 of 23 5.0 Points

Mongoose adds a Schema to a MongoDB application.

- ☐ True
☐ False

Rationale:

Mongoose adds applicable Schema to MongoDB database which is considered as a MongoDB Application

Question 5 of 23 5.0 Points

Because of LibUV, all I/O operations are non-blocking.

- ☐ True
☐ False

Rationale:

LibUV is the handling for all I/O operations, but even in that case I/O sometimes is blocking

Comment: When is the I/O blocking?

Question 6 of 23 5.0 Points

One drawback of the MEAN stack is the limitation it enforces on the UI. Since Angular is a Node application, while a callback is being executed express is blocked.

- ☐ True
☐ False

Rationale:

false because express will wait till the callback come to him

Comment: Where is each application running?

Part 2 of 3 - Node / 21.0 Points

Answer the following questions regarding Node.

Question 7 of 23 3.0 Points

What is Node?

Node is a platform that help us compile Javascript outside the browser

Comment: Only compile JavaScript?

Question 8 of 23 3.0 Points

Is Node single-threaded or multi-threaded? Why?

Single-threaded

Comment: Is there any real multi-threading in Node?

Question 9 of 23 3.0 Points

What is the "Event Loop"?

The event loop is the main processing in the node that processes any application and delivers every part of the code to the handler for it such as V8 engine

Comment: What about the queues?

Question 10 of 23 3.0 Points

What is a Tick?

Tick is a processing format in Event-Loop

Comment: What is processing format?

Question 11 of 23 3.0 Points

What is the "Next Tick" Queue? When does it get executed?

Next Tick Queue is the event must be called when the Tick happend

Comment: There is no relationship between a tick and the nextTickQueue.

Question 12 of 23 3.0 Points

What queue in Node executes a Mongoose database operation?

LibUV

Comment: Nice (the shortest and correct answer in the whole class).

Question 13 of 23 3.0 Points

What is the difference between Asynchronous and non-blocking callback functions?

Asynchronous is a blocking but sometimes we can provide a non-blocking callback function inside the Asynchronous to make it non-blocking

Comment: Why? how?

Part 3 of 3 - Questions / 49.0 Points

Question 14 of 23 4.0 Points

State two benefits of using npm? and one disadvantage.

We use npm to install the package or update the package, we can use npm to run script, disadvantage I think npm sometimes is not predictable.

Comment: How is it not predictable, please elaborate.

Question 15 of 23 5.0 Points

State two benefits of using Promises? and one disadvantage.

The benefits of promises are we can handle error easily and it has a complete method that is helpful in debugging, one disadvantage is that promise is slower

Comment: How is complete helpful for debugging?

Why are promises slow?

Question 16 of 23 5.0 Points

What are the rules for using MongoDB driver in your express code? Why is it a better idea to use Mongoose instead?

MongoDB driver is helpful in accessing the data base through express but using MongoDB driver is painful, especially in processing the data, because you need to do validation to each input before you parse the data to your database, but with mongoose which is built on top of MongoDB we don't care about validation because with the schema that is provided by mongoose, we are sure that the validation will happen.

Comment: How do you use the mongoDB driver.

Question 17 of 23 5.0 Points

What is DI and what is its main benefit? Provide an example of DI at each layer of the MEAN application (if possible).

DI is dependency Injection, which is injecting the dependency in the constructor creation, and the main benefit of it is that the dependency will be instantiated before the creation of the constructor, for example:

```
constructor( route: Router){  
  
}
```

in this case, we have route as a variable of type Router which is DI

Comment: Express?

Node?

Mongoose?

Question 18 of 23 5.0 Points

What is Sharding in MongoDB? Why would you use it? What are the components of a Sharding System? What is Replication in MongoDB? What is a Write Concern and why would we want to use it?

Sharding is a collection that is provided in the cluster replication method, the benefit of it is that tolerance and the components for it is having a primary and secondaries.

Replication in MongoDB is a way to provide backup, the main concern is saving data and backing up the data and restore the data

Comment: Sharding is not for tolerance.

What are the components of a Sharding System?

Replica is not for backup, but I will accept this.

What is a Write Concern?

Question 19 of 23 3.0 Points

We learned not to write callbacks functions that may block Node. We know that I/O operations (or DB operations) are performed by Libuv. Since Libuv is multi-threaded, is it still possible for the DB operations' callback to block NodeJS?

Yes because the node itself is single threaded

Comment: Okay, I wish you would elaborate.

Question 20 of 23 2.0 Points

Why is it better to use modern frameworks like Angular, React, or Vue instead of PHP and plain JavaScript to manipulate the DOM?

Because a framework lifts the heavy work, and they don't manipulate the dom, because they don't have to.

Question 21 of 23 10.0 Points

If we need to build a MongoDB solution with 5 fault tolerance, and 10 shards.

What is more expensive to add a new shard or to add a new regular node?

Can the other option be cheaper, how?

cheaper is a new shard, because we will be using the same router, and the hashing will be the same, other option may not be cheaper than a new shard

Comment: What about in terms of machines that need to be added for each case?

Question 22 of 23 5.0 Points

What are three benefits of using environment variables in your application?

If we use environment variables:

-we don't have hardcoded variables

-if we need to change a value for a variable used various times, we change it once

-separation of concern, the variables of the development version may be different then the one for production

Question 23 of 23 5.0 Points

What is the minimum number of Node instances you will get if your application uses one express server, one React UI, one Angular UI, two child_processes, and 3 MongoDB shards, each shard is running as a cluster of three regular nodes and one arbiter node? Why?

One node, because the node is single-threaded.

Comment: What about the other parts?



