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Express.js : Node.js is a fast JavaScript runtime environment that we use to build Server-side applications, but it does not know how to perform serving files, handling requests and handling HTTP methods. So this is where express.js come in.

Express is a node.js web application framework that provides broad features for building web and mobile applications. It is used to build a single page, multipage and hybrid web application.

It's a layer built on the top of the node.js that helps manage servers and routes.

Body parser : body-parser extracts the entire body portion of an incoming request stream and exposes it on req.body. The middleware was a part of Express.js earlier but now you have to install it separately.

This body-parser module parses the JSON, string and URL encoded data submitted using HTTP Post request.

Multer :

Multer is a node.js middleware for handling multipart/form-data, which is primarily used for uploading files.

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~~Mangrove~~

Mongoose: Mongoose is an Object Data Modeling (ODM) library for MongoDB and Node.js. It manages relationships between data, provides schema validation, and is used to translate between objects in code and the representation of those objects in MongoDB.

"It work as a bridge b/w nodes and message"

route: use to import route.js files

Const app =

'express()': Call all the module of express, so we use inbuilt function.

app.use(): is used to mount the specified middleware function at the path which is being specified.

bp.json() - middleware for passing json object.

`app.use(bodyParser.json())`: looks at requests where the Content-Type header is present and transforms the text-based JSON input into JS-accessible variables under req.body.

app.use(bodyParser.urlencoded({ extended : true}));

does the same for URL-encoded requests,
the extended: true specifies that the req body
object will contain values of any type instead of
just strings.

What's UseNewUrlParser true?

The underlying MongoDB driver has deprecated
their current connection string parser. Because
this is a major change, they added the useNewUrlParser
flag to allow users to fall back to the old parser
if they find a bug in the new parser.

You should set useNewUrlParser: true unless
that prevents you from connecting.

Then and Catch in JS:

The main difference between the form promise
• then (success, error) and promise.then(success)
• catch(error) is that in case if success callback
returns a rejected promise, then only the second
form is going to catch that rejection.

In many environments (e.g. Heroku), and as a convention
you can set the environment variable PORT to tell
your web server what port to listen on.

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`process.env.PORT || 3000` means: whatever is in the environment variable `PORT`, or `3000` if there's nothing there.

so you pass that to `app.listen`, or to `app.set('port')`, and that makes your server able to accept a "What port to listen on" parameter from the environment.

`mongoose.connect()`: use to connect with mongodb.

`app.use('/route')`: use for accessing route globally.

`app.listen()`: The `app.listen()` method binds itself with the specified host and port to bind and listen for any connections.

`app.use(express.json())`:

`express.json()` is a method built-in express to recognize the incoming request object as a JSON object.

`JSON.parse()`: It converts JSON format to object format.

`JSON.stringify()`: It converts object to string format.

Model: A mongoose model is a wrapper on the mongoose Schema.

Schema: A mongoose schema defines the structure of the document, default values, validation etc.

ObjectId: It is a unique Id & it's a Hexadecimal strings. It contains only 12 bytes, 24 digits only 0-9 or a-f letters.

ref:

The ref option is what tells Mongoose which model to use during population, in our case the story model.

populate:

population is the process of replacing the specified path in the document of one collection with the actual document from the other collection.

JWT: JSON Web Token:

"JWT is json object which we used to securely information over the web"

Json Web Token consists of 3 parts -

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- 1) Header → type
Algorithm
- 2) Payload → rat (issuing)
exp (expiring)
- 3) Signature → secret key

Middleware

The middleware in node.js is a function that will have all the access for requesting an object, responding to an object, and moving to the next middleware function in the application request-response cycle.

"MW is a function that sit between request and response cycle."

"if next is not used then our program control flow is hang."

Next()

It is a call back function in a middleware.

call back function - A callback is a function passed as an argument to another function. This technique allows a function to call another function.

A callback function can run after another function has finished.

Types -

- 1) Application-level

- 2) Router-level

- 3) Error-handling

- 4) Built-in

- 5) Third party middleware

Signature

"Collection of modules in a package."
"→ package is a library"

Authentication:

Authentication is the process of recognizing a user's identity.

ex:- username & password.

Authorization:

Authorization is the process of giving someone permission to do or have something.

Example - House ownership.

Moment:

The moment module is used for parsing, validating, manipulating, and displaying dates and times in JS.

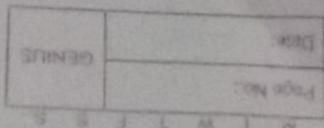
nodemon:

nodemon is a tool that helps develop Node.js based application by automatically restarting the node application when file changes in the directory are detected.

NPM → Node Package Manager

npm i

npm uninstall



Package: A package in Node.js contains all the files you need for a module.

"Collection of functions is a module."

Package.json():

The package.json file is the heart of any Node project.

It records important metadata about a project which is required before publishing to npm and also defines functional attributes of a project that npm uses to install dependencies, run scripts and identify the entry point to our package.

Package.lock.json()

It contains basic information about the project. It describes the exact tree that was generated to allow subsequent installs to have the identical tree. It is a mandatory for every project.

It is automatically generated for those operations where npm modifies either node-modules tree or package.

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Cors:Cross-Origin resource sharing

Cors is a node.js package for providing a Connect/Express middleware that can be used to enable Cors with various options.

It allows us to relax the security applied to an API. This is done by bypassing the Access-Control-Allow-Origin headers, which specify which origins can access the API.

"The access-control-allow-origin response header indicates whether the response can be shared with requesting code from the given origin."

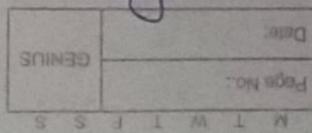
AWS-Sdk -

The AWS-Sdk for JS simplifies use of AWS services by providing a set of libraries that are consistent and familiar for JS developers.

It provides support for API lifecycle consideration such as credential management, retries, data marshaling, serialization and deserialization.

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Redis -

Redis is an open source, in memory data structure store used as a database, Cache, message broker, and streaming engine.

Redis provides data structures such as strings, hashes, lists, sets, stored sets with range queries, bitmaps, hyperloglogs, geospatial indexes and streams.

"Redis stands for - Remote Dictionary Server."

- Redis is a fast, open source, in memory, key-value data store
- Redis is a super fast and efficient in-memory, key-value cache and store. It's also known as a data structure server, as the keys can contain strings, lists, sets, hashes and other data structures.

GET_ASYNC - Gets a value with the given key.

SET_ASYNC - Sets the value with the given key

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Caching :

Caching is the process of storing copies of files in a Cache or a temporary storage location so that they can be accessed more quickly.

Redirect - An instance of redirecting something from one address to another, such as an email or a URL for a web page.

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Short_id -

- It is a npm package.
- 'shortid' used to create short non-sequential url-friendly unique id.

By default, it uses 7-14 url-friendly characters:
A-Z, a-z, 0-9.

{no or not ready_check : true} ;
default to false.

When a connection is established to the redis server, the server might still be loading the database from disk.

While loading, the server not respond to any commands. To work around this, node redis has a "ready check" which sends the INFO command to the server.

Bind Operator -

We can bind an object to a common function, so that the function gives different results when it's need.

util.promisify() :- defines in utilities module of Node.js standard library

It is basically used to convert a method that return responses using a callback function to return response in a promise object.

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AWS

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→ AWS-SDK :

The AWS-SDK for JS supports three runtimes: Javascript for browser, Node.js for Server, React Native for mobile development.

It also supports cross-runtime: a service client package can be run on browser, Node.js and React-Native without code change.

SDK - "Software Development Kit".

→ Config-update :

→ Region: Nearest server from your place otherwise it will be costly.

ACL: Access Control List

Bucket: Some or folder.

Key: name of file/other folder + filename

Body: Bits & Bytes from that will be saved in buffer. (file.buffer) in S3 there is upload functionality.

data.location : callback function.

data's location → URL

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Version - 2006 → `async & await` was not there, that's why we use new promises

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Hashing - (It is a One Way process)

Hashing turns your password (or any other piece of data) into a short string of letters and/or numbers using an encryption algorithm.

"Hashing is not reversible."

Encryption work both - encrypt or decrypt the data

Salt :

Password Salting is a technique to protect password in databases by adding a string of 32 or more characters and then hashing them.

\$2b\$10\$noUJ5kTnqTUFkBYlveukokSxUFxfuackskfator
 ; ; ; ; ;
 ; ; ; ; ; --- hash value

- Salt = Random Numbers

- Cost-factor $\geq 10 = 2^{10}$ rounds

↳ hash algorithm identifier $\geq 2b = \text{BCrypt}$
 OR (2a)

$\$[\text{algorithm}]\$[\text{cost}]\$[\text{salt}][\text{hash}]$

- 2 char hash algorithm identifier prefix.
"\\$2a\\$" or "\\$2b\\$" indicates Bcrypt
- Cost factor (n) $\rightarrow 2^n$
- 16-byte (128 bit) salt, base 64 encoded to 22 characters
- 24-byte (192 bit) hash, base 64 encoded to 31 characters

bcrypt -

The bcrypt hashing function allows us to build a password security platform that scales with computation power and always bases every password with a salt.