How Node JS middleware Works?

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Middleware functions are functions that have access to the request object (`req`), the response object (`res`), and the next middleware function in the application's request-response cycle. The next middleware function is commonly denoted by a variable named `next` .

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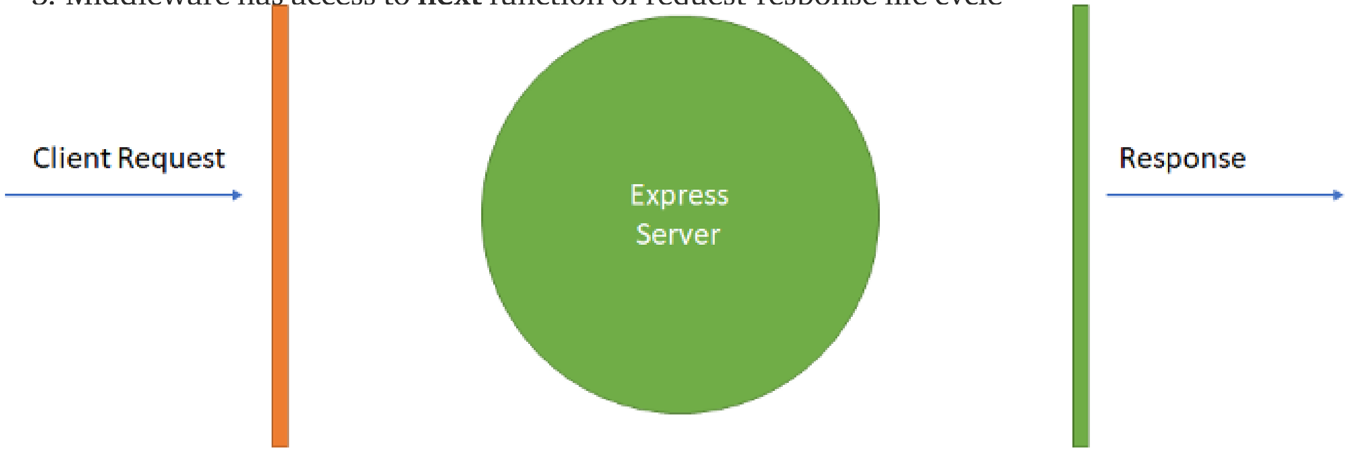
1. As name suggests it comes in middle of something and that is request and response cycle
2. Middleware has access to **request** and **response** object
3. Middleware has access to **next** function of request-response life cycle



Middleware functions can perform the following tasks:

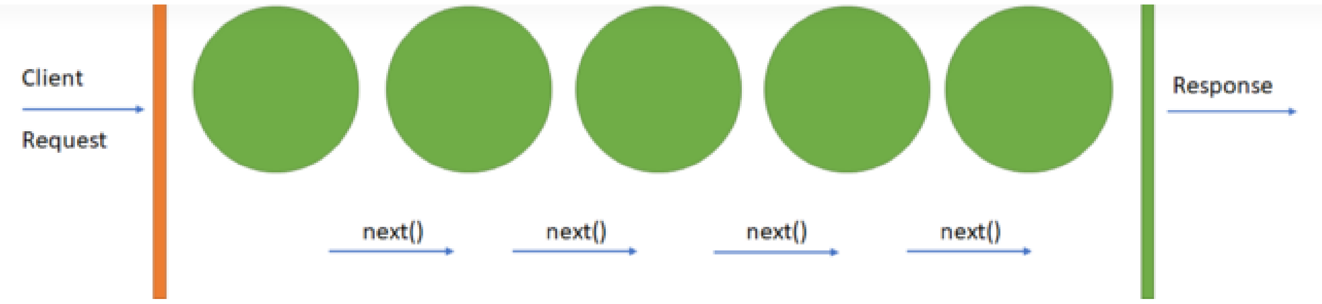
- Execute any code.
- Make changes to the request and the response objects.
- End the request-response cycle.
- Call the next middleware in the stack.

If the current middleware function does not end the request-response cycle, it must call `next()` to pass control to the next middleware function. Otherwise, the request will be left hanging.

What is this next()?

A middleware is basically a function that will the receive the Request and Response objects, just like your route Handlers do. As a third argument you have another function which you should call once your middleware code completed. This means you can wait for asynchronous database or network operations to finish before proceeding to the next step. This might look like the following:

All middleware has access to req,res and next



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Types of express middleware

- Application level middleware **app.use**
- Router level middleware **router.use**
- Built-in middleware **express.static,express.json,express.urlencoded**
- Error handling middleware **app.use(err,req,res,next)**
- Thirdparty middleware **bodyparser,cookieparser**

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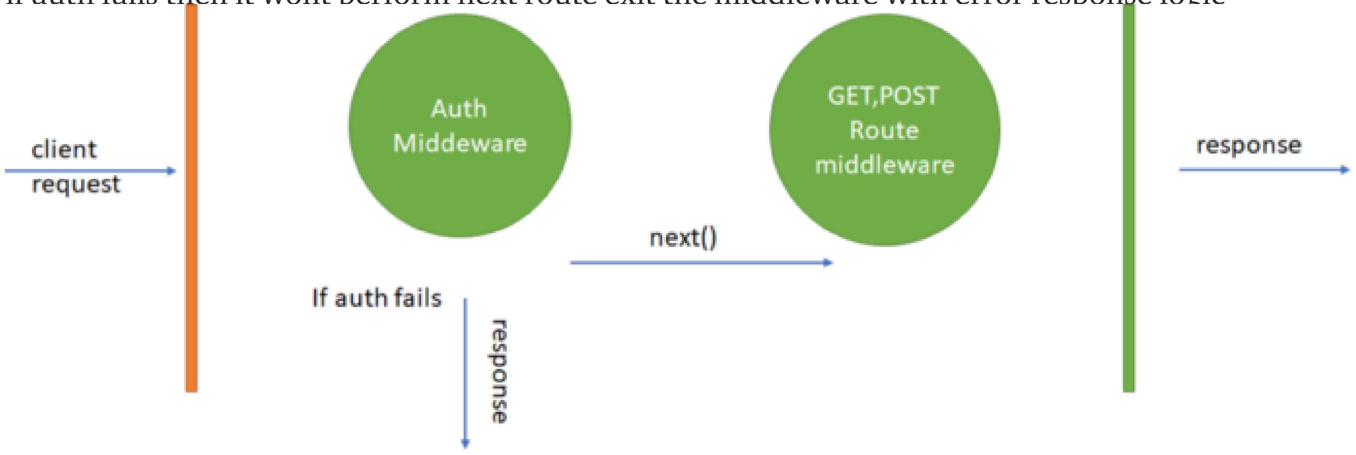
Application Level Middleware

Example 1 : Auth middleware

Suppose we are having five routes **getUsers,getDetails,updateDetails,isLoggedIn,isLoggedOut** every route must be authenticated if the user is not authenticated then he is not able to call the above mentioned routes,so every GET,POST calls required authentication.In this case we build a authtication middleware.
Now once the request comes the auth middleware will do some authentication logic that we have written inside it.Once authentication successful then remaining routed must be called using next() if auth fails then it wont perform next route exit the middleware with error response logic

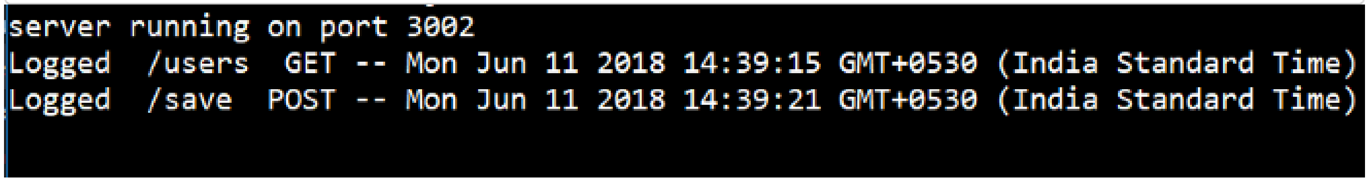


Example 2: Logging Middleware

```
const express = require('express');

// custom middleware create
const LoggerMiddleware = (req,res,next) =>{
    console.log(`Logged  ${req.url}  ${req.method} -- ${new Date()}`)
```

```
const app = express()

// application level middleware
app.use(LoggerMiddleware);


// users route
app.get('/users',(req,res)=>{
    res.json({
        'status':true
    })
})


// save route
app.post('/save',(req,res)=>{
    res.json({
        'status':true
    })
})

app.listen(3002,(req,res)=>{
    console.log('server running on port 3002')
})

```

appindex.js hosted with ❤ by GitHub view raw



```
server running on port 3002
Logged  /users  GET -- Mon Jun 11 2018 14:39:15 GMT+0530 (India Standard Time)
Logged  /save  POST -- Mon Jun 11 2018 14:39:21 GMT+0530 (India Standard Time)
```

Custom logged created using middleware

Router Level Middleware

Router-level middleware works in the same way as application-level middleware, except it is bound to an instance of `express.Router()` .

`const router = express.Router()`

Load router-level middleware by using the `router.use()` and `router.METHOD()` functions.

```
const express = require('express');

const app = express();

const router = express.Router()
```

```
    next()
})


router.get("/user/:id",(req,res,next)=>{
    console.log('Request URL:', req.originalUrl)
    next()
},(req,res,next)=>{
    console.log('Request Type:', req.method)
    next()
},(req,res)=>{
    res.json({
        status:true,
        id:req.params.id
    })
})


app.use('/',router)

app.listen(3000,(req,res)=>{
    console.log('server running on 3000')
})
```

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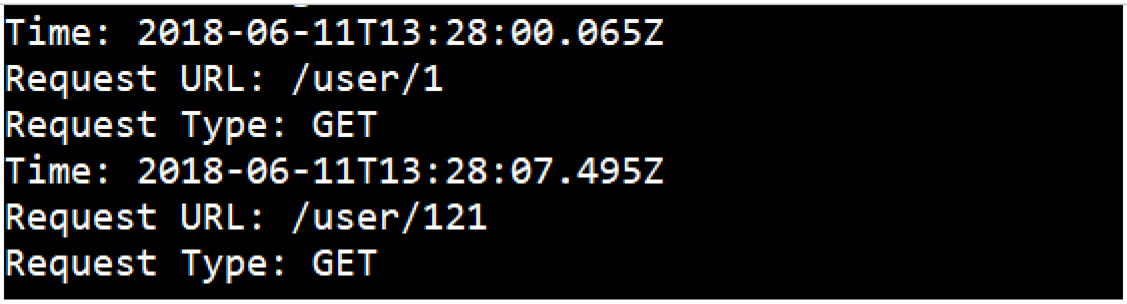

```
Time: 2018-06-11T13:28:00.065Z
Request URL: /user/1
Request Type: GET
Time: 2018-06-11T13:28:07.495Z
Request URL: /user/121
Request Type: GET
```

Error Handing Middleware

Express JS comes with default error handling params, define error-handling middleware functions in the same way as other middleware functions, except error-handling functions have four arguments instead of three:

```
app.use(function (err, req, res, next) {
  console.error(err.stack)
  res.status(500).send('Something broke!')
})
```

Third-party Middlewares

Example: **body-parser**
All middlewares will populate the `req.body` property with the parsed body when the `Content-Type` request header.
app.use({urlencoded:false})

```
const express = require('express');
const bodyParser = require('body-parser');
const app = express();

app.use(bodyParser.urlencoded({extended:false}))

app.use(bodyParser.json())

app.post('/save',(req,res)=>{
  res.json({
    "status":true,
    "payload":req.body
  })
}

app.listen(3000,(req,res)=>{
    console.log('server running on port')
})

```

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For a partial list of third-party middleware functions that are commonly used with Express, see: Third-party middleware.

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