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Learn how to handle authentication with Node using Passport.js

by Antonio Erdeljac

SOURCE

In this article you will learn how to handle **authentication** for your Node server using **Passport.js.** This article **does not cover Frontend authentication.** Use this to configure your **Backend authentication** (Generate token for each user & protect routes).

Keep in mind that **if you get stuck on any step, you can refer to this GitHub repo**.

In this article I will teach you the following:

- Handling protected routes
- Handling JWT tokens
- Handling unauthorised responses
- Creating a basic API
- Creating models & schemas

Introduction

What is Passport.js?

Passport is authentication middleware for Node.js. As it's extremely flexible and modular, Passport can be unobtrusively dropped into any Express-based web application. A comprehensive set of strategies supports authentication using a username and password, Facebook, Twitter, and more. Find out more about Passport here.

Tutorial

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Create a new directory with this “app.js” file inside:

```
const express = require('express');
const path = require('path');
const bodyParser = require('body-parser');
const session = require('express-session');
const cors = require('cors');
const mongoose = require('mongoose');
const errorHandler = require('errorhandler');

//Configure mongoose's promise to global promise
mongoose.promise = global.Promise;

//Configure isProduction variable
const isProduction = process.env.NODE_ENV === 'production';

//Initiate our app
const app = express();

//Configure our app
app.use(cors());
app.use(require('morgan')('dev'));
app.use(bodyParser.urlencoded({ extended: false }));
app.use(bodyParser.json());
app.use(express.static(path.join(__dirname, 'public')));
app.use(session({ secret: 'passport-tutorial', cookie: { maxAge: 60000 }, resa

if(!isProduction) {
  app.use(errorHandler());
}

//Configure Mongoose
mongoose.connect('mongodb://localhost/passport-tutorial');
mongoose.set('debug', true);

//Error handlers & middlewares
if(!isProduction) {
  app.use((err, req, res) => {
    res.status(err.status || 500);

    res.json({
      errors: {
        message: err.message,
```

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```
      },
    });
  });
}

app.use((err, req, res) => {
  res.status(err.status || 500);

  res.json({
    errors: {
      message: err.message,
      error: {},
    },
  });
});

app.listen(8000, () => console.log('Server running on http://localhost:8000/')
```

app.js hosted with ♡ by GitHub view raw

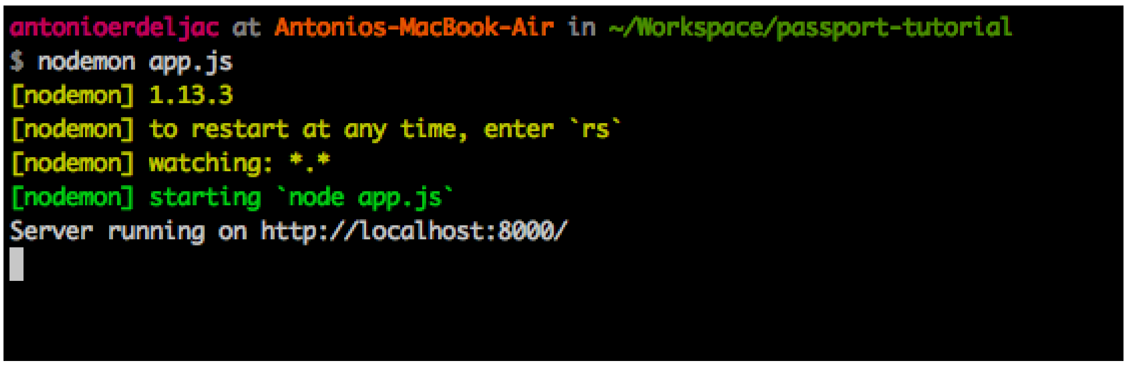
We will install nodemon for easier development.

```
npm install -g nodemon
```

nodemon hosted with ♡ by GitHub view raw

and then we will run our "app.js" with it.

```
$ nodemon app.js
```



```
antonioerdeljac at Antonios-MacBook-Air in ~/Workspace/passport-tutorial
$ nodemon app.js
[nodemon] 1.13.3
[nodemon] to restart at any time, enter `rs`
[nodemon] watching: *.*
[nodemon] starting `node app.js`
Server running on http://localhost:8000/
```

Creating the user model

Create a new folder called "models", and create the "Users.js" file inside that folder. This is where we will define our "UsersSchema". We are going to use `JWT` and `Crypto` to generate `hash` and `salt` from the received `password` string. This will later be used to validate the user.

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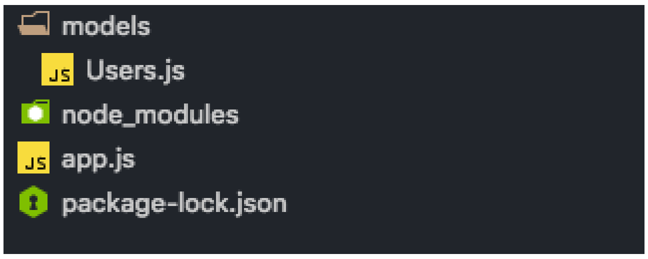
```javascript
const jwt = require('jsonwebtoken');

const { Schema } = mongoose;

const UsersSchema = new Schema({
  email: String,
  hash: String,
  salt: String,
});

UsersSchema.methods.setPassword = function(password) {
  this.salt = crypto.randomBytes(16).toString('hex');
  this.hash = crypto.pbkdf2Sync(password, this.salt, 10000, 512, 'sha512').toS
};

UsersSchema.methods.validatePassword = function(password) {
  const hash = crypto.pbkdf2Sync(password, this.salt, 10000, 512, 'sha512').to
  return this.hash === hash;
};

UsersSchema.methods.generateJWT = function() {
  const today = new Date();
  const expirationDate = new Date(today);
  expirationDate.setDate(today.getDate() + 60);

  return jwt.sign({
    email: this.email,
    id: this._id,
    exp: parseInt(expirationDate.getTime() / 1000, 10),
  }, 'secret');
}

UsersSchema.methods.toAuthJSON = function() {
  return {
    _id: this._id,
    email: this.email,
    token: this.generateJWT(),
  };
};

mongoose.model('Users', UsersSchema);
```

Users.js hosted with ♡ by GitHub view raw



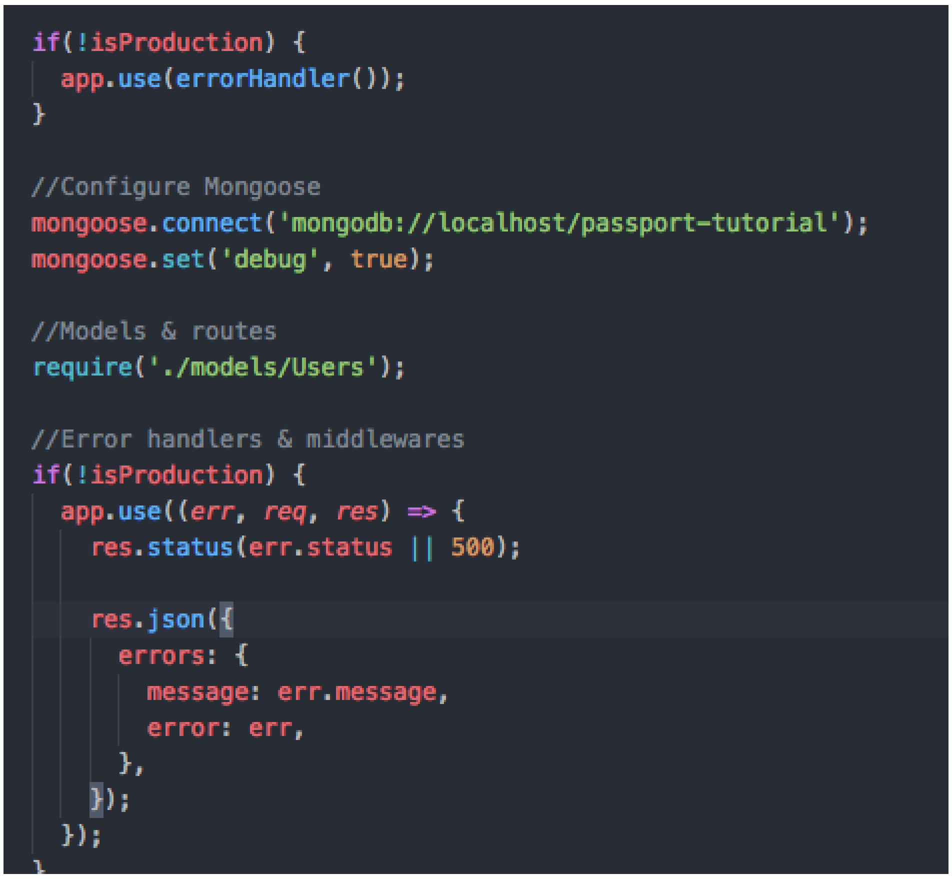
```
models
  Users.js
node_modules
app.js
package-lock.json
```

You should now have this structure

Let's add our newly created model to "app.js".

Add the following line to your "app.js" file after configuring `Mongoose`:

```
require('./models/Users');
```



```
if(!isProduction) {
  app.use(errorHandler());
}

//Configure Mongoose
mongoose.connect('mongodb://localhost/passport-tutorial');
mongoose.set('debug', true);

//Models & routes
require('./models/Users');

//Error handlers & middlewares
if(!isProduction) {
  app.use((err, req, res) => {
    res.status(err.status || 500);

    res.json({
      errors: {
        message: err.message,
        error: err,
      },
    });
  });
}
```

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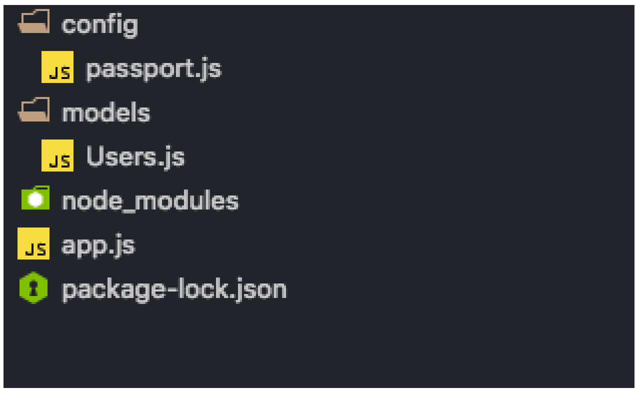
Configure Passport

Create a new folder “config” with the “passport.js” file inside it:

```
const mongoose = require('mongoose');
const passport = require('passport');
const LocalStrategy = require('passport-local');

const Users = mongoose.model('Users');

passport.use(new LocalStrategy({
  usernameField: 'user[email]',
  passwordField: 'user[password]',
}, (email, password, done) => {
  Users.findOne({ email })
    .then((user) => {
      if(!user || !user.validatePassword(password)) {
        return done(null, false, { errors: { 'email or password': 'is invalid'
      }

      return done(null, user);
    }).catch(done);
}));
```

passport.js hosted with ♡ by GitHub view raw

In this file, we use the method `validatePassword` that we defined in from Passport's `LocalStrategy`.

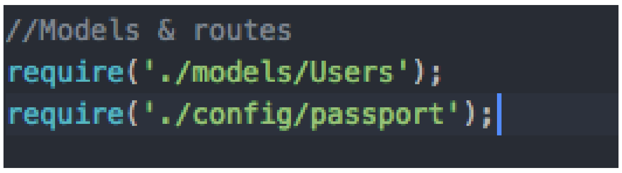


```
config
  passport.js
models
  Users.js
node_modules
app.js
package-lock.json
```

You should now have this structure

Let's connect "passport.js" to our "app.js" file. Add the following line **below all** `models`:

```
require('./config/passport');
```



```
//Models & routes
require('./models/Users');
require('./config/passport');
```

The Passport require must be below all models

Routes and authentication options

Create a new folder called "routes" with the file "auth.js" inside it.

token that will be sent from the **client side** in the **request's headers**. We also create an `auth` object with `optional` and `required` properties. We will use these later in our routes.

```javascript
const jwt = require('express-jwt');

const getTokenFromHeaders = (req) => {
  const { headers: { authorization } } = req;

  if(authorization && authorization.split(' ')[0] === 'Token') {
    return authorization.split(' ')[1];
  }
  return null;
};

const auth = {
  required: jwt({
    secret: 'secret',
    userProperty: 'payload',
    getToken: getTokenFromHeaders,
  }),
  optional: jwt({
    secret: 'secret',
    userProperty: 'payload',
    getToken: getTokenFromHeaders,
    credentialsRequired: false,
  }),
};

module.exports = auth;
```

auth.js hosted with ♡ by GitHub view raw

In the same "routes" folder create an "index.js" file:

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```

router.use('/api', require('./api'));

module.exports = router;
```

index.js hosted with ♡ by GitHub view raw

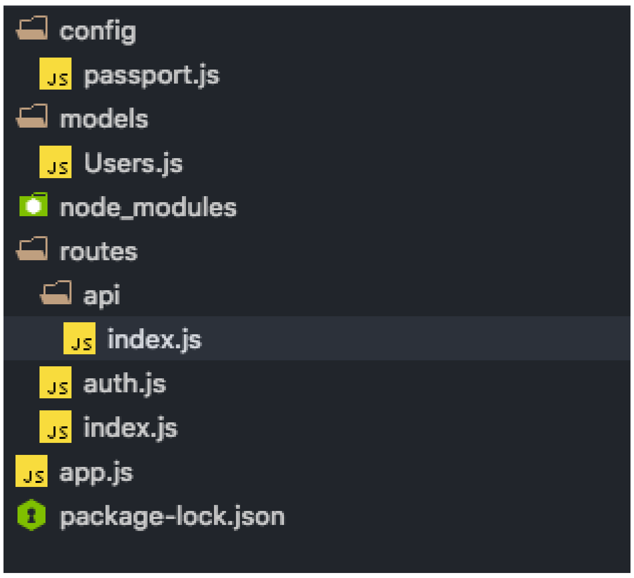
We now need an “api” folder inside the “routes” folder, with another “index.js” file inside it.

```
const express = require('express');
const router = express.Router();

router.use('/users', require('./users'));

module.exports = router;
```

index.js hosted with ♡ by GitHub view raw



```
config
  passport.js
models
  Users.js
node_modules
routes
  api
    index.js
  auth.js
  index.js
app.js
package-lock.json
```

You should now have this structure

Now, let's create the "users.js" file that we require in "api/index.js".

First, we are going to create an **optional auth** route `'/'` which will be used for new model creation (register).

```
router.post('/', auth.optional, (req, res, next) ...
```

After that, we are going to create another **optional auth** route `'/login'` . This will be used to activate our passport configuration and validate a received password with email.

```
router.post('/login', auth.optional, (req, res, next) ...
```

Lastly, we will create a **required auth** route, which will be used to return the currently logged in user. Only logged in users (users that have their token successfully sent through request's headers) have access to this route.

```
router.get('/current', auth.required, (req, res, next) ...
```

```
const mongoose = require('mongoose');
const passport = require('passport');
const router = require('express').Router();
```

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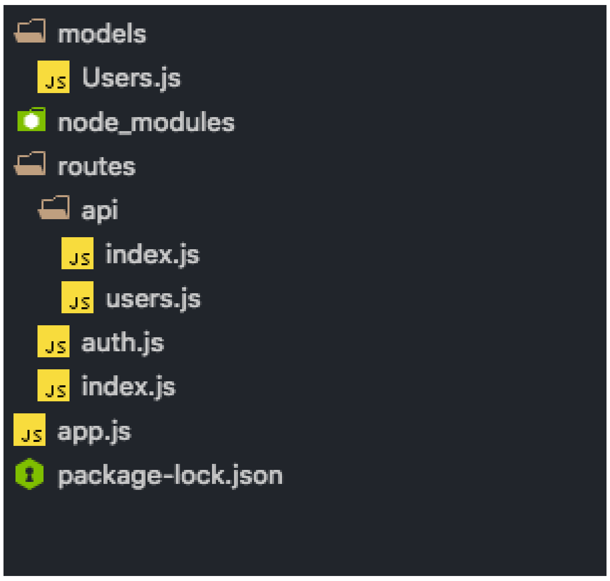
```

//POST new user route (optional, everyone has access)
router.post('/', auth.optional, (req, res, next) => {
  const { body: { user } } = req;

  if(!user.email) {
    return res.status(422).json({
      errors: {
        email: 'is required',
      },
    });
  }

  if(!user.password) {
    return res.status(422).json({
      errors: {
        password: 'is required',
      },
    });
  }

  const finalUser = new Users(user);

  finalUser.setPassword(user.password);

  return finalUser.save()
    .then(() => res.json({ user: finalUser.toAuthJSON() }));
});

//POST login route (optional, everyone has access)
router.post('/login', auth.optional, (req, res, next) => {
  const { body: { user } } = req;

  if(!user.email) {
    return res.status(422).json({
      errors: {
        email: 'is required',
      },
    });
  }

  if(!user.password) {
    return res.status(422).json({
      errors: {
      },
    });
  }

  return passport.authenticate('local', { session: false }, (err, passportUser
    if(err) {
      return next(err);
    }

    if(passportUser) {
      const user = passportUser;
      user.token = passportUser.generateJWT();

      return res.json({ user: user.toAuthJSON() });
    }

    return status(400).info;
  })(req, res, next);
});

//GET current route (required, only authenticated users have access)
router.get('/current', auth.required, (req, res, next) => {
  const { payload: { id } } = req;

  return Users.findById(id)
    .then((user) => {
      if(!user) {
        return res.sendStatus(400);
      }

      return res.json({ user: user.toAuthJSON() });
    });
});

module.exports = router;
```

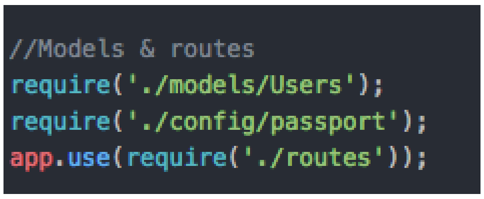


```
models
  Users.js
node_modules
routes
  api
    index.js
    users.js
  auth.js
  index.js
app.js
package-lock.json
```

You should now have this structure

Let's add our "routes" folder to "app.js". Add the following line **below our passport** `require`:

```
app.use(require('./routes'));
```



```
//Models & routes
require('./models/Users');
require('./config/passport');
app.use(require('./routes'));
```

Route testing

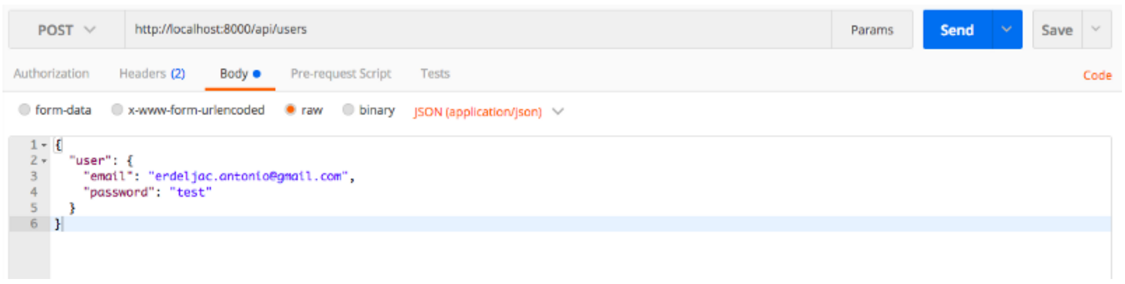
I will be using Postman to send requests to our server.

Our server accepts the following body:

```
      "email": String,
      "password": String
    }
  }
```

Creating a POST request to create a user

Test body:



POST http://localhost:8000/api/users

Body: ● raw JSON (application/json)

```
{
  "user": {
    "email": "erdeljac.antonio@gmail.com",
    "password": "test"
  }
}
```

Response:

```
{
    "user": {
        "_id": "5b0f38772c46910f16a058c5",
        "email": "erdeljac.antonio@gmail.com",
        "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJlbWFpbCI6ImV
    }
}
```

We will now use this token and add it to our “Headers” in Postman’s

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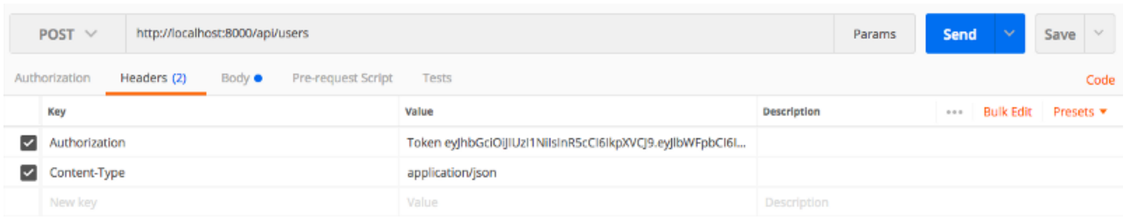

http://localhost:8000/api/users

	Key	Value	Description
✓	Authorization	Token eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJlbWFpbCI6I...	
✓	Content-Type	application/json	
	New key	Value	Description

And now let's test our **auth only** route.

Creating a GET request to return the currently logged in user

Request URL:

```
GET http://localhost:8000/api/users/current
```

Response:

```
{
    "user": {
        "_id": "5b0f38772c46910f16a058c5",
        "email": "erdeljac.antonio@gmail.com",
        "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJlbWFpbCI6ImV
    }
}
```

Let's try to do it **without token in "Headers".**

Response:

The end

Thank you for going through this tutorial. If you notice any errors please report them to me. **If you got stuck on any step**, please refer to this GitHub repo.

You can contact me through:

- erdeljac DOT antonio AT gmail.com
- Linkedin

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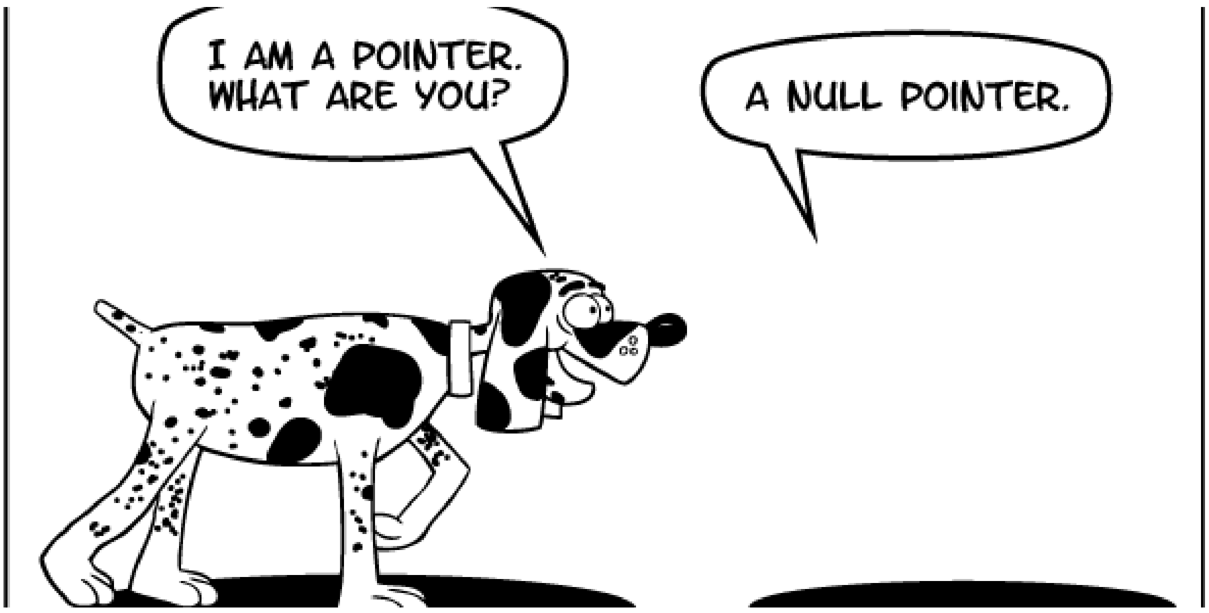

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