

ECE 413/513 – Fall 2017

Exam 2

Friday, December 01, 2017

Name: _____

No booklets, additional paper, textbooks, or other materials may be referenced during this examination with the exception of one 8.5"x11" sheet of paper (front and back). Your only other resources are a pen/pencil, eraser, and this exam.

Submit answers only in space indicated on each page.

1. Multiple Choice Questions (1.5 points each)

- (1.1) Which of the following are NOT considered a part of full-stack development? (Choose all that apply)
- (a) Data modeling
 - (b) User interfaces
 - (c) Front-end development
 - (d) Server-side development
 - (e) Smartphone app development
- (1.2) What happens when trying to decode an invalid authentication token with the command `jwt.decode(token, secret);`?
- (a) The method returns false.
 - (b) The method returns null.
 - (c) The method returns undefined.
 - (d) The method throws an exception.
 - (e) None of the above
- (1.3) What package automatically decodes data posted to an Express endpoint?
- (a) `bodyParser`
 - (b) `express-generator`
 - (c) `Mongoose`
 - (d) `express.Router`
 - (e) None of the above
- (1.4) What error code should be returned for an unsuccessful POST request to an RESTful endpoint?
- (a) 200
 - (b) 201
 - (c) 400
 - (d) 401
 - (e) None of the above
- (1.5) Using a RESTful interface, what is the appropriate verb for an endpoint that revises a product review by a user?
- (a) GET
 - (b) POST
 - (c) UPDATE
 - (d) PUT
 - (e) None of the above
- (1.6) Which of the following correctly sends an authentication token named `authToken` using an `XMLHttpRequest` object named `xhr`?
- (a) `xhr.authToken = authToken;`
 - (b) `xhr.xAuth = authToken;`
 - (c) `xhr.setRequestHeader("x-auth", authToken);`
 - (d) `xhr.setAuthHeader(authToken);`
 - (e) None of the above

(1.7) Given a Mongoose model named `Restaurant`, which MongoDB command will return all restaurants in the database?

- (a) `db.restaurant.findAll()`
- (b) `db.restaurant.find({})`
- (c) `db.restaurants.findAll()`
- (d) `db.restaurants.find()`
- (e) Nothing

(1.8) `bcrypt.hash()` does which of the following? (*Choose all that apply*)

- (a) Encrypts the method's first argument given the password passed the method's second argument.
- (b) Compresses and encrypted the method's string argument.
- (c) Returns a hash for the method's argument. For the same input, the method always return the same hash.
- (d) Returns a hash for the method's argument. For the same input, the method always return a unique hash.
- (e) None of the above

(1.9) For an Express endpoint, which of the following assigns the variable `userRating` with a route parameter named `rating`?

- (a) `userRating = req.rating;`
- (b) `userRating = req.query.rating;`
- (c) `userRating = req.param.rating;`
- (d) `userRating = req.body.rating;`
- (e) None of the above

(1.10) Which of the following statements uses jQuery to update the contents of a `div` with ID `error` to have HTML contents `<p>Invalid user name of password.</p>`?

- (a) `$("#error").html("<p>Invalid user name of password.</p>");`
- (b) `$(".error").val("<p>Invalid user name of password.</p>");`
- (c) `$("#error").innerHTML("<p>Invalid user name of password.</p>");`
- (d) `$("#error").html("<p>Invalid user name of password.</p>");`
- (e) None of the above

2. Short Answer Questions (3 points each)

(2.1) Write JavaScript code that checks if the local storage contains an item named `authToken`. If the item exists, the code should assign the variable `userAuthToken` with the item.

(2.2) Write a regular expression that *exactly* matches a string consisting of a city, state and ZIP code. The city must be followed by a comma (,), the state must be two capital letters, and the ZIP code must be 5 digits optionally followed by a hyphen (-) and four digits. Ex: "Tucson, AZ 85721" matches, whereas " Tucson AZ 85721" does not match.

(2.3) Write a MongoDB/Mongoose query to find all `Review` documents with a `rating` greater than 2.

3. User-based authentication (10 points total)

Write an Express route for an endpoint `/amion` that checks if a user's authentication token is still valid. The authentication token's data consists of a `username` and `expires` name/value pairs, where `username` is a string and `expires` is the date on which the token expires. In response to a POST request to the `/amion` endpoint, the endpoint should validate the authentication token and check that the current date is less than the `expires` date. If the token is valid and the current date is less than the `expires` date, the endpoint should return a JSON response with the `expires` date and an appropriate status code. Otherwise, the endpoint should return the JSON response `{expires: "invalid"}` and an appropriate status code

Hint: You can convert a string to a `Date` object using `new Date(dateString)`.

4. MongoDB and Mongoose (16 points)

(4.1) (6 points) Complete the schema definition for a Mongoose schema named `restaurantSchema` containing the following:

- a. Restaurant name
- b. First opened date
- c. Address stored as an object consisting of street address, city, state, and ZIP code
- d. Hours of operations stored as an array for each day of the week
- e. Average restaurant rating

Write your answer in the box.

```
var db = require("../db");
```

```
var Restaurant = db.model("Restaurant", restaurantSchema);  
module.exports = Restaurant;
```

(4.2) (10 points) Given the `Restaurant` model defined above, complete the `/register` endpoint to create and save a new `Restaurant` to the database given the following request and response JSON formats. The restaurant's first opened date should be the current date, and the average rating and hours of operations can be omitted.

Request:

```
{
  name: "Corn Beef Cakes",
  street address: "123 Food Lane",
  city: "Tucson",
  state: "AZ",
  zip: "85721"
}
```

Response (Success):

```
{
  created: "yes"
}
```

Response (Failure):

```
{
  created: "no"
}
```

```
var express = require('express');
var router = express.Router();
var Restaurant = require("../models/restaurant");

router.post('/register', function(req, res, next) {
```

```
});
```

Extra Credit. Ajax (3 points)

Using jQuery's \$.ajax() method and DOM manipulation methods, write JavaScript code to:

1. Initiate an Ajax call to a server with the following details:
 - a. The API endpoint is located at the URL `https://notareal.site/flightstatus`
 - b. In response to a GET request to the endpoint with the properties `flightcode` and `date`, the API will return JSON listing the current flight status.
 - c. The web page contains two text `<input>` elements with IDs `flightCode` and `flightDate`, that are used to specify the flight code and date.
2. For a successful request, the JavaScript should update a `<div>` with the ID `currentStatus` to list the current flight status. The server's JSON response will consist of the keys `"Flight Status"`, `"Scheduled Departure"`, and `"Estimated Departure"`, where each key's value is a string.
3. If an error occurs, the JavaScript should update and show a `<div>` with the ID `error` to display the message "Error communicating the with the server."