

1. VPS:

- First,

2.

3. often used DOM properties and methods

```
document.body.innerHTML = 'This is the text of the body element';

document.body.firstChild.parentNode.innerHTML = 'I am the parent and my
↳ inner HTML has been replaced!';

document.querySelector('h1').innerHTML = 'Most popular TV show searches
↳ in 2016'; // returns the first selected element

document.querySelector('#fourth').innerHTML = 'Fourth element';

document.body.style.backgroundColor = '#201F2E';

let liRef = document.createElement('li');
liRef.id = 'oaxaca';
liRef.innerHTML = "Oaxaca, Mexico";

document.getElementById('more-destinations').appendChild(liRef);

parent.removeChild(child);
```

4. webpack.config.js

```
const path = require('path');
const HtmlWebpackPlugin = require('html-webpack-plugin');

// common.js syntax
module.exports = {
  entry: './src/index.js',
  output: {
    path: path.join(__dirname, '/dist'),
    filename: 'index_bundle.js'
  },
  module: {
    rules: [
```

```

    {
      test: /\.js$/,
      exclude: /node_modules/,
      use: {
        loader: 'babel-loader'
      }, Or
      use: [
        // apply multiple loaders and options
        "htmlhint-loader",
        {
          loader: "html-loader",
          options: {
            /* ... */
          }
        }
      ]
    }
  ],
},
plugins: [
  new HtmlWebpackPlugin({
    template: './src/index.html',
    filename: 'index.html',
    inject: 'body'
  })
]
}

```

5. Computed property names

Starting with ECMAScript 2015, the object initializer syntax also supports computed property names. That allows you to put an expression in brackets [], that will be computed and used as the property name.

```

// Computed property names (ES2015)
var i = 0;
var a = {
  ['foo' + ++i]: i,
  ['foo' + ++i]: i,
  ['foo' + ++i]: i
};

```

```

console.log(a.foo1); // 1
console.log(a.foo2); // 2
console.log(a.foo3); // 3

var param = 'size';
var config = {
  [param]: 12,
  ['mobile' + param.charAt(0).toUpperCase() + param.slice(1)]: 4
};

console.log(config); // {size: 12, mobileSize: 4}

```

6. A presentational component can often be written as a *stateless functional component*

```

// A component class written in the usual way:
export class MyComponentClass extends React.Component {
  render() {
    return <h1>Hello world</h1>;
  }
}

// The same component class, written as a stateless functional
→ component:
export const MyComponentClass = () => {
  return <h1>Hello world</h1>;
}

// Works the same either way:
ReactDOM.render(
  <MyComponentClass />,
  document.getElementById('app')
);

```

7. Child Components Update Their Parents' state in React

Parent.js

```

import React from 'react';
import ReactDOM from 'react-dom';
import { Child } from './Child';

```

```

class Parent extends React.Component {
  constructor(props) {
    super(props);
    this.changeName = this.changeName.bind(this);
    this.state = { name: 'Frarthur' };
  }

  changeName(newName) {
    this.setState({ name: newName });
  }

  render() {
    return <Child name={this.state.name} onChange={this.changeName} />
  }
}

ReactDOM.render(
  <Parent />,
  document.getElementById('app')
);

```

You cannot declare method `changeName(newName)` as `changeName: function(newName)`, otherwise won't work. The same goes for `render()`

Child.js

```

import React from 'react';

export class Child extends React.Component {
  constructor(props) {
    super(props);
    this.handleChange = this.handleChange.bind(this);
  }

  handleChange(e) {
    const name = e.target.value;
    this.props.onChange(name);
  }
}

```

```

render() {
  return (
    <div>
      <h1>
        Hey my name is {this.props.name}!
      </h1>
      <select id="great-names" onChange={this.handleChange}>
        <option value="Frarthur">
          Frarthur
        </option>

        <option value="Gromulus">
          Gromulus
        </option>

        <option value="Thinkpiece">
          Thinkpiece
        </option>
      </select>
    </div>
  );
}
}

```

8. class inheritance

```

class HospitalEmployee {
  constructor(name) {
    this._name = name;
    this._remainingVacationDays = 20;
  }

  get name() {
    return this._name;
  }

  get remainingVacationDays() {
    return this._remainingVacationDays;
  }
}

```

```

    takeVacationDays(daysOff) {
        this._remainingVacationDays -= daysOff;
    }
}

class Nurse extends HospitalEmployee {
    constructor(name, certifications) {
        super(name);
        this._certifications = certifications;
    }

    get certifications() {
        return this._certifications;
    }

    addCertification(newCertification) {
        this.certifications.push(newCertification);
    }
}

const nurseOlynyk = new Nurse('Olynyk', ['Trauma', 'Pediatrics']);
nurseOlynyk.takeVacationDays(5);
console.log(nurseOlynyk.remainingVacationDays);
nurseOlynyk.addCertification('Genetics');
console.log(nurseOlynyk.certifications);

```

9. The major difference between a GET request and POST request is that a POST request requires additional information to be sent through the request. This additional information is sent in the body of the post request.

10. async await POST

```

// async await POST

async function getData(){
    try {
        const response = await fetch('http://api-to-call.com/endpoint', { //
            ↪ sends request
            method: 'POST',
            body: JSON.stringify({id: '200'})
        });
    }
}

```

```

    if (response.ok){ // handles response if successful
      const jsonResponse = await response.json();
      // Code to execute with jsonResponse
    }
    throw new Error('Request Failed!');
  } catch (error){ // handles response if unsuccessful
    console.log(error);
  }
}

```

11. async await GET

```

// async await GET

async function getData(){
  try {
    const response = await fetch('http://api-to-call.com/endpoint');
    if (response.ok){ // handles response if successful
      const jsonResponse = await response.json();
      // Code to execute with jsonResponse
    }
    throw new Error('Request Failed!');
  } catch (error) { // handles response if unsuccessful
    console.log(error);
  }
}

```

12.
 - used `fetch()` to make GET and POST requests
 - check the status of the responses coming back
 - catch errors that might possibly arise
 - taking successful responses and rendering it on the webpage

13. fetch() POST Requests

```

// fetch POST

fetch('http://api-to-call.com/endpoint', {
  method: 'POST',
  body: JSON.stringify({id: '200'}) // sends request
}).then(response => {

```

```

    if (response.ok){
        return response.json(); // converts response object to JSON
    }
    throw new Error('Request failed!');
}, networkError => console.log(networkError.message) // handles errors
).then(jsonResponse => {
    // Code to execute with jsonResponse // handles success
});

```

14. fetch() GET Requests

```

// fetch GET

fetch('http://api-to-call.com/endpoint').then(response => { // sends
    ↪ request
    if (response.ok){
        return response.json(); // converts response object to JSON
    }
    throw new Error('Request failed!');
}, networkError => console.log(networkError.message) // handles errors
).then(jsonResponse => {
    // Code to execute with jsonResponse // handles success
});

```

15. Boilerplate code for making an XHR POST request

From codecademy:

```

// XMLHttpRequest POST

const xhr = new XMLHttpRequest();
const url = 'http://api-to-call.com/endpoint';
const data = JSON.stringify({id: '200'}); // Converts data to a JSON
    ↪ string

// handles response
xhr.responseType = 'json';
xhr.onreadystatechange = () => {
    if (xhr.readyState === XMLHttpRequest.DONE){
        // Code to execute with response
    }
};

```



```
xhr.open('POST', url);  
xhr.send(data);
```

16. Boilerplate code for making an XHR GET request

From codecademy:

```
// XMLHttpRequest GET  
  
const xhr = new XMLHttpRequest(); // creates new object  
const url = 'http://api-to-call.com/endpoint';  
  
// handle responses  
xhr.responseType = 'json';  
xhr.onreadystatechange = () => {  
  if(xhr.readyState === XMLHttpRequest.DONE){  
    // Code to execute with response  
  }  
};  
  
//opens request and sends object  
xhr.open('GET', url);  
xhr.send();
```

From w3schools

```
var xhttp = new XMLHttpRequest();  
xhttp.onreadystatechange = function() {  
  if (this.readyState == 4 && this.status == 200) {  
    // Typical action to be performed when the document is ready:  
    document.getElementById("demo").innerHTML = xhttp.responseText;  
  }  
};  
xhttp.open("GET", "filename", true);  
xhttp.send();
```

17. With a GET request, we're retrieving, or *getting*, information from some source (usually a website). For a POST request, we're *posting* information to a source that will process the information and send it back

18. json example. **Data types:** Number, String, Boolean, Array, Object, Null

```
{
  "name": "Brad Traversy",
  "age": 35,
  "address": {
    "street": "5 main st",
    "city": "Boston"
  },
  "children": ["Brianna", "Nicholas"]
}
```

19. javascript object example

```
var person = {
  name: "Brad",
  age: 35,
  email: function(){
    return 'brad@gmail.com';
  }
};
console.log(person.name);
console.log(person.email());
```

20. Section **DOM Template Parsing Caveats** covered is is special attribute offers a workaround

21. Wrap form widgets inside a p tag

```
<p>
  <label for="name">
    <span>Name: </span>
    <strong><abbr title="required">*</abbr></strong>
  </label>
  <input type="text" id="name" name="username">
</p>
```

22. Three ways to change elements' visibility

```
display: none; /* completely gone, never existed */
visibility: hidden; /* still occupies space */
opacity: 0; /* still occupies space */
```

23. CSS Margins: You can set the margin property to `auto` to horizontally center the element within its container. To horizontally center a block element (like `<div>`), use `margin: auto;`
Note: Center aligning has no effect if the width property is not set (or set to 100%).
24. The default font-size is 16px, so `1em` equals 16px
25. `width` and `height` can only be applied to elements that are not inline elements. Some examples of inline and block elements, also see [w3schools](#) (块级元素内联元素)

```
<section id="inline">
  <span>inline</span>
  <a>inline</a>
  <b>inline</b>
  <em>inline</em>
</section>
<section id="block">
  <div>block</div>
  <nav>nav</nav>
  <aside>main</aside>
  <main>main</main>
</section>
```

26. `<h1>` is the most important part of a html doc
27. self-closing tags in HTML5: `
` `<embed>` `<hr>` `<iframe>` `` `<input>` `<link>` `<meta>`
28. Layout elements

```
<body>
  <header>
    <nav>

    </nav>
  </header>
  <section>
    <main>
      <article>

      </article>
    </main>
    <aside>

    </aside>
```

```
</section>
<footer>

</footer>
</body>
```

29. In addition to data properties, Vue instances expose a number of useful instance properties and methods. These are prefixed with `$` to differentiate them from user-defined properties
30. Out of the box, webpack won't require you to use a configuration file. However, it will assume the entry point of your project is `src/index.js` and will output the result in `dist/main.js` minified and optimized for production
31. When installing a package that will be bundled into your production bundle, you should use `npm install --save`. If you're installing a package for development purposes (e.g. a linter, testing libraries, etc.) then you should use `npm install --save-dev`
32. Popular CSS pre-processors including LESS, SASS, Stylus, and PostCSS
33. Follow this guide if the built-in configuration of Vue CLI does not suit your needs, or you'd rather create your own webpack config from scratch
34. `vue-loader` is a loader for **webpack** that allows you to author Vue components in a format called **Single-File Components (SFCs)**
35. `http.request()` returns an instance of the `http.ClientRequest` class. The `ClientRequest` instance is a writable stream. If one needs to upload a file with a POST request, then write to the `ClientRequest` object.
36. With `http.request()` one must always call `req.end()` to signify the end of the request – even if there is no data being written to the request body
37. `querystring.parse(str[, sep[, eq[, options]]])` parses a URL query string (`str`) into a collection of key and value pairs. For example, the query string `'foo=bar&abc=xyz&abc=123'` is parsed into:

```
{
  foo: 'bar',
  abc: ['xyz', '123']
}
```

38. `querystring.stringify(obj[, sep[, eq[, options]]])` produces a URL query string from a given `obj` by iterating through the object's "own properties"

```
querystring.stringify({ foo: 'bar', baz: ['qux', 'quux'], corge: '' });  
// returns 'foo=bar&baz=qux&baz=quux&corge='
```

39. `JSON.stringify(value[, replacer[, space]])` converts a JavaScript value to a JSON string

```
let person = {  
  name: "Brad",  
  age: 35  
};  
  
person = JSON.stringify(person);  
// person = JSON.parse(person); // back to an object  
  
console.log(person);
```

40. `JSON.parse(text[, reviver])` parses a JSON string, constructing the JavaScript value or object described by the string. trailing commas are not allowed,
`JSON.parse('[1, 2, 3, 4,]')`; will throw an error
41. If you access a method **without** `()`, it will return the **function definition**
42. JS index position starts at zero!

Anatomy of an HTTP transaction

server.js:

```
const http = require('http');  
  
http.createServer((request, response) => {  
  console.log(request.method);  
  console.log(request.url);  
  
  request.on('error', (err) => {  
    console.error(err);  
    response.statusCode = 400;  
    response.end();  
  });  
  response.on('error', (err) => {  
    console.error(err);  
  });  
});
```

```
if(request.method === 'POST' && request.url === '/echo'){
  // let body = [];
  // request.on('data', (chunk) => {
  //   body.push(chunk);
  // }).on('end', () => {
  //   body = Buffer.concat(body).toString();
  //   response.writeHead(200, {'Content-Type': 'text/plain'});
  //   response.end(body);
  // });
  request.pipe(response);
}else {
  response.statusCode = 404;
  response.end();
}
}).listen(8080);

console.log('Server listening on port 8080');
```

client.js

```
var http = require('http');
var querystring = require('querystring');

var postData = querystring.stringify({
  'msg': 'hello world!'
});

var options = {
  hostname: 'localhost',
  port: 8080,
  method: 'POST',
  headers: {
    'Content-Type': 'application/x-www-form-urlencoded',
    'Content-Length': postData.length
  },
  agent: false,
  path: '/echo'
};
```

```

var req = http.request(options, function (res) {// function emitted when
  ↪ a response is received to this request
  //res is of type <http.IncomingMessage> and can be used to access
  ↪ response status, headers and data.
  //<http.IncomingMessage> implements Readable Stream interface
  console.log('STATUS: ' + res.statusCode);
  console.log('HEADERS: ' + JSON.stringify(res.headers));
  res.setEncoding('utf8');

  // get data as chunks (stream or buffer)
  res.on('data', function (chunk) {
    console.log('BODY: ' + chunk);
  });

  // end response
  res.on('end', function () {
    console.log('No more data in response.')
  });
});

req.on('error', function (e) {
  // console.log('problem with request: ' + e.message);
  console.error(e.stack);
});

// write data to request body
req.write(postData, 'utf8');

req.end(); //With http.request() one must always call req.end() to
  ↪ signify the end of the request

```

[2-5] to \cite{2,3,4,5}

```

const input = "[2-5]";

var numRangeArr = input.match(/\d/gm);

var len = numRangeArr[1] - numRangeArr[0];

var resArr = [];

```

```

for(var i = 0; i <= len; i++){
    var res = Number(numRangeArr[0])+ i;
    resArr[i] = res;
    console.log(resArr);
}

var midRes = resArr.toString();

var result = "\\cite{" + midRes + "}";

```

Anonymous function:

```

var myArray = ["Sam", "Mark", "Tim", "Sam"];

/*anonymous function*/
var result = myArray.filter(function (value, index, array){return
    ↪ array.indexOf(value) == index;});

document.write(result);

```

```

/*let add = function(a,b){
    return a + b;
}

let multiply = function(a,b){
    return a * b;
}*/

let calc = function(num1, num2, callback){
    return callback(num1, num2);
}

console.log(calc(1, 2, function(a, b){
    return a-b;
})));

```

Factory pattern:

```

var peopleFactory = function(name, age, state){

```



```
var temp = {};  
//var temp = new Object();  
  
temp.age = age;  
temp.name = name;  
temp.state = state;  
  
temp.printPerson = function(){  
    console.log(this.name + ", " + this.age + ", " + this.state);  
}  
  
return temp;  
}  
  
var person1 = peopleFactory("john", 23, "CA");  
var person2 = peopleFactory("kim", 27, "SC");  
  
person1.printPerson();  
person2.printPerson();
```

Constructor pattern

```
var peopleConstructor = function(name, age, state){  
  
    this.name = name;  
    this.age = age;  
    this.state = state;  
  
    this.printPerson = function(){  
        console.log(this.name + ", " + this.age + ", " + this.state);  
    }  
}  
  
var person1 = new peopleConstructor("john", 23, "CA");  
var person2 = new peopleConstructor("kim", 27, "SC");  
  
person1.printPerson();  
person2.printPerson();
```

Prototype pattern

```

var peopleProto = function(){

}

//prototype properties
peopleProto.prototype.age = 0;
peopleProto.prototype.name = "no name";
peopleProto.prototype.city = "no city";

peopleProto.prototype.printPerson = function(){
  console.log(this.name + ", " + this.age + ", " + this.city);
}

var person1 = new peopleProto();
person1.name = "John";
person1.age = 23;
person1.city = "CA";

console.log("name" in person1);
console.log(person1.hasOwnProperty("name"));

person1.printPerson();

```

Dynamic prototype pattern

```

//dynamic prototype pattern
var peopleDynamicProto = function(name, age, state){
  this.age = age;
  this.name = name;
  this.state = state;

  // create function only once
  if(typeof this.printPerson !== "function"){
    peopleDynamicProto.prototype.printPerson = function(){
      console.log(this.name + ", " + this.age + ", " + this.state);
    }
  }
}

```

```
var person1 = new peopleDynamicProto("John", 24, "CA");
var person2 = new peopleDynamicProto("Yu", 23, "ZJ");

console.log("name" in person1);
console.log(person1.hasOwnProperty("name"));

person1.printPerson();
person2.printPerson();
```

Closure:

```
var addTo = function(passed){

    var add = function(inner){
        return passed + inner;
    }

    return add;
}

var addTwo = addTo(2);
var addThree = addTo(3);

//console.dir(addTwo);
//console.dir(addThree);

console.log(addTwo(1));
console.log(addThree(1));
```

callback function: A callback is a function that is passed as an argument to another function and is executed after its parent function has completed

```
let x = function(){
    console.log("i am called from inside a function");
}

let y = function(callback){
    console.log("do something");
    callback();
}
```

```
y(x);
```

```
/*let calc = function(num1, num2, calcType){  
  
    if(calcType === "add"){  
        return num1 + num2;  
    }else if(calcType === "multiply"){  
        return num1 * num2;  
    }  
  
}  
  
console.log(calc(1, 2, "multiply"));*/  
  
let add = function(a,b){  
    return a + b;  
}  
  
let multiply = function(a,b){  
    return a * b;  
}  
  
let doWhatever = function(a,b){  
    console.log("Here are the two numbers: ", a + ", " + b);  
}  
  
let calc = function(num1, num2, callback){  
    if(typeof callback === "function"){  
        return callback(num1, num2);  
    }  
}  
  
console.log(calc(1, 10, add));
```

```
var myArr = [{  
    num: 5,  
    str: "apple"  
},{  
    num: 7,
```

```
    str: "cabbage"
  },{
    num: 1,
    str: "ban"
  }];

//anonymous function
myArr.sort(function(val1, val2){
  if(val1.str < val2.str){
    return -1;
  }else{
    return 1;
  }
})

console.log(myArr);
```

promises

```
let promiseToCleanTheRoom = new Promise(function(resolve, reject){
  //cleaning the room
  let isClean = false;

  if(isClean){
    resolve("Cleaned up");
  }else{
    reject("not clean");
  }
})

promiseToCleanTheRoom.then(function(fromResolve){
  console.log("The room is " + fromResolve);
}).catch(function(fromReject){
  console.log("The room is " + fromReject);
})
```

```
let cleanRoom =function(){
  return new Promise(function(resolve, reject){
    resolve("Cleaned the room ");
  })
}
```

```

}

let removeGarbage = function(message){
  return new Promise(function(resolve, reject){
    resolve(message + "Remove garbage ");
  })
}

let winIcecream = function(message){
  return new Promise(function(resolve, reject){
    resolve(message + "Won icecream");
  })
}

cleanRoom().then(function(result){
  return removeGarbage(result);
}).then(function(result){
  return winIcecream(result);
}).then(function(result){
  console.log("Finished " + result);
})

//do everything in parallel
/*Promise.all([cleanRoom(), removeGarbage(),
  ↪ winIcecream()]).then(function(){
  console.log("All finished");
})*//

//any one of them
/*Promise.race([cleanRoom(), removeGarbage(),
  ↪ winIcecream()]).then(function(){
  console.log("One of them is finished");
})*//

```

call, apply and bind

```

var obj = {num:3};
var addToThis = function(a, b, c){
  return this.num + a + b + c;
}

```

```

// call
console.log(addToThis.call(obj, 1, 2, 3));

// apply
var arr = [1,2,3]; // only difference from `call`
console.log(addToThis.apply(obj, arr));

// bind
var bound = addToThis.bind(obj);
console.log(bound(1, 2, 3));

```

prototype inheritance

```

var x = function(j){
  this.i = 0;
  this.j = j;

  this.getJ = function(){
    return this.j;
  }
}

x.prototype.getJ = function(){
  return this.j;
}

var x1 = new x(1);
var x2 = new x(4);

console.log(x1.getJ()); // use the method from the parent class, instead
→ of creating one of own
console.log(x2.getJ()); // use the method from the parent class, instead
→ of creating one of own

```

```

// baseclass
var Job = function(){
  this.pays = true;
}

```

```

// prototype method
Job.prototype.print = function(){
    console.log(this.pays ? 'Please hire me' : 'no thank you');
}

// subclass
var TechJob = function(title, pays){
    Job.call(this); // inherits properties and methods from Job function

    this.title = title;
    this.pays = pays;
}

TechJob.prototype = Object.create(Job.prototype); // inherits from the
↳ prototype of Job
TechJob.prototype.constructor = TechJob; // set a constructor for
↳ TechJob

TechJob.prototype.print = function(){
    console.log(this.pays ? this.title + ' job is great, please hire me' :
↳ 'I would rather learn Javascript');
}

var softwarePosition = new TechJob('Javascript Programmer', true);
var softwarePosition2 = new TechJob('vb Programmer', false);

console.log(softwarePosition.print());
console.log(softwarePosition2.print());

```

HTML codes

```

<textarea name="text" row="5000" cols="100" id="inputtext"
↳ style="width:1200px; height:300px; background-color: rgb(204,232,204);
↳ border: 2px solid Tomato; font-size: 15px"></textarea>

```