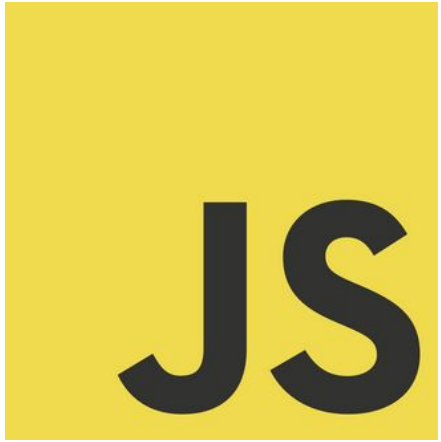
23-02-2017

ES6 Part 1



Agenda

- Before We Start ?
- Terminology
- What is ECMAScript ?
- History
- Goals for ES6
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- How to use ES6 today ?
- Live Coding Session

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2) Block Scoping
3) Destructuring
4) Spread Operator
5) Arrow Function
6) Default Arguments in Functions
7) Template String/Literal
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Before We Start

a small quiz ...

Terminology

- **ECMAScript** : a language standardized by ECMA International
- **JavaScript** : the commonly used name for implementations of the ECMAScript standard
- **TC 39** : the group of people who developed the ECMA-262 standard
- **ECMAScript 6** : the 6th edition of ECMA-262

What is ECMAScript ?

Let’s go back in time ...

History

- **ECMAScript 1** : 1997
- **ECMAScript 2** : 1998
- **ECMAScript 3** : 1999
- **ECMAScript 4** : Abandoned
- **ECMAScript 5** : 2009
- **ECMAScript 6** : 2015
- **ECMAScript 7** : 2016-2017

Goals for ES6

- **Better Support for**
  - Complex Applications
  - Libraries
  - Code Generators

Let Variable & Constants

let and const allows you to declare variables that are limited in scope to the block, statement, or expression on which it is used. This is unlike the var keyword, which defines a variable globally, or locally to an entire function regardless of block scope.

Variables

ECMAScript 5

var

Function-Scoped

```
var links = [];

for(var i=0; i<5; i++) {
  links.push({
    onclick: function() {
        console.log('link: ', i);
    }
  });
}

links[0].onclick();
links[1].onclick();
```

ECMAScript 6

let

Block-Scoped

```
var links = [];

for(let i=0; i<5; i++) {
  links.push({
    onclick: function() {
        console.log('link: ', i);
    }
  });
}

links[0].onclick();
links[1].onclick();
```

Let Variable

```
function test() {
    let foo = 1;

    if (foo === 1) {
        let foo = 22;
        console.log(foo);
    }

    if (foo === 22) {
        let foo = 33;
        console.log(foo);
    }

    console.log(foo);
}

test();
```

Const : Block-Scoped

```
const msg = 'hello world';

var msg = 123;

msg = 123;
```

- Only be defined once (within their scope)
- Cannot change the value once set

Destructuring

The **destructuring assignment** syntax is a JavaScript expression that makes it possible to extract data from arrays or objects using a syntax that mirrors the construction of array and object literals.

Inshort : Ability to extract values from objects or arrays into variables.

Creating Variables from Object Properties

ECMAScript 5

```
var bootcamp = {
    group: 'ttn',
    title: 'ECMA6',
    venue: 'Cool Space'
};

var group = bootcamp.group;
var title = bootcamp.title;
var venue = bootcamp.venue;

console.log(group); // ttn
console.log(title); // ECMA6
console.log(venue); // Cool Space
```

ECMAScript 6

```
var bootcamp = {
    group: 'ttn'',
    title: 'ECMA6',
    venue: 'Cool Space'
};


let {group,title,venue} = bootcamp;


console.log(group); // ttn
console.log(title); // ECMA6
console.log(venue); // Cool Space
```

Can also change the name of the local variable

```
var bootcamp = {
        group: 'ttn',
        title: 'ECMA6',
        venue: 'Cool Space'
};


let {group: _group, title: _title, venue: _venue} =
bootcamp;

console.log(_group); // ttn
console.log(_title); // ECMA6
console.log(_venue); // Cool Space
```

Creating Variables from Array Elements

TO THE NEW

ECMAScript 5

```
let brews = [
    "Corona",
    "Foster's",
    "Budweiser"
];

let x = brews[0];
let y = brews[1];
let z = brews[2];

console.log(x); // Corona
console.log(y); // Foster's
console.log(z); // Budweiser
```

ECMAScript 6

```
let brews = [
    "Corona",
    "Foster's",
    "Budweiser"
];

let [x, y, z] = brews;



console.log(x); // Corona
console.log(y); // Foster's
console.log(z); // Budweiser
```

Functions with Multiple Return Values

```
function getDate() {
  let date = new Date();
  return [date.getDate(), date.getMonth() + 1,
date.getFullYear()];
}


let [day, month, year] = getDate();


console.log(day);   // 23
console.log(month); // 2
console.log(year);  // 2017
```

Swapping Values

ECMAScript 5

```
let a = 1;
let b = 2;
let temp;

temp = a;      // a = a+b;
a = b;         // b = a-b;
b = temp;      // a = a-b;

console.log(a); // 2
console.log(b); // 1
```

ECMAScript 6

```
let a = 1;
let b = 2;

[b, a] = [a, b]


console.log(a); // 2
console.log(b); // 1
```

Spread Operator

TO THE NEW

ECMAScript 5

```
function addStrings(a, b) {
  return a + " " + b;
}

let vals = ['Go', 'Vegan'];

addStrings(vals[0], vals[1])

// returns "Go Vegan"
```

ECMAScript 6

```
function addStrings(a, b) {
  return a + " " + b;
}

let vals = ['Go', 'Vegan'];

addStrings(...vals)

// returns "Go Vegan"
```

Arrow Functions

Fat arrow functions, also known as just arrow functions are a brand new feature in ECMAScript 2015 (formerly ES6). Rumor has it that the => syntax was adopted over ->due to CoffeeScript influence and the similarity of sharing this context.

Arrow functions serve two main purposes:

-> more concise syntax (a shorthand way of declaring functions)

-> sharing lexical this with the parent scope. (shares the scope with the parent)

Functions

TO THE NEW

ECMAScript 5

```
var addAndLog = function(a, b) {
  let c = a + b;
  console.log(a, '+' ,b ,'=' ,c);
  return c;
};

addAndLog(1, 2);
// 1 + 2 = 3 (returns 3)
```

ECMAScript 6

```
let addAndLog = (a, b) => {
  let c = a + b;
  console.log(a,'+',b,'=',c);
  return c;
};

addAndLog(1, 2);
// 1 + 2 = 3 (returns 3)
```

Fat Arrow Functions in ECMAScript 6

```
let add = (a, b) => a + b;

add(1,2); // 3
```

```
let addOne = a => a + 1;

addOne(1); // 2
```

```
let add = (a, b) => a + b;
let pi = () => 22/7;

pi(); // 3.142857142857143
add(1,2); // 3
```

Fat Arrow Functions Shares the Scope of Parent

TO THE NEW

ECMAScript 5

```
function Person() {
  this.age = 23;

  setTimeout(function() {
    console.log(this.age);    // undefined
  }, 1000);
}

var p = new Person();
```

```
var that = this;

setTimeout(() => {
  console.log(that.age); // 23
}, 1000);
```

ECMAScript 6

```
function Person() {
  this.age = 23;

  setTimeout(() => {
    console.log(this.age); // 23
  }, 1000);
}

var p = new Person();
```

Default Parameters

ECMAScript 5

```
function add(a, b) {
  b = typeof b !== 'undefined' ? b : 1;
  return a + b;
}
add(1); // returns 2
```

ECMAScript 6

```
function add(a, b = 1) {
  return a + b;
}
add(1); // returns 2
```

Template String Literals

Template strings are string literals allowing embedded expressions. You can use multi-line strings and string interpolation features with them.

- back tick character (`) is used to build multi-line strings
- ${} synatx to reference variables and expressions

String Literals

```
let phrase = `If nothing goes right, go to sleep.`;

console.log(phrase);
```

```
let multiLine = `I can't hear you,
so I'll just laugh and hope it wasn't a question.`;

console.log(multiLine);
```

```
let back = `Who the hell uses \` in a sentence?`;

console.log(back);
```

String Substitution

```
let name = 'akash';

console.log(`Hello ${name}`); // Hello akash
```

```
var bootcamp = {
    group: 'ttn',
    title: 'ECMA6',
    venue: 'Cool Space'
};

console.log(`We are ${bootcamp.group},
learning ${bootcamp.title} at a ${bootcamp.venue}`);

// We are ttn,
// learning ECMA6 at a Cool Space
```

Expressions

```
console.log(`Value of pi is ${22/7}`);

// Value of pi is 3.142857142857143
```

```
console.log(`Today is ${new Date()}`);

// Today is Thursday Feb 23 2017 10:10:10 GMT+0530
(IST)
```

Backward Compatibility

When can I use what ?

- Compability tables: https://kangax.github.io/compat-table/es6
- Follow @esdiscuss
- http://caniuse.com

How to use ES6 today ?

Transpilers

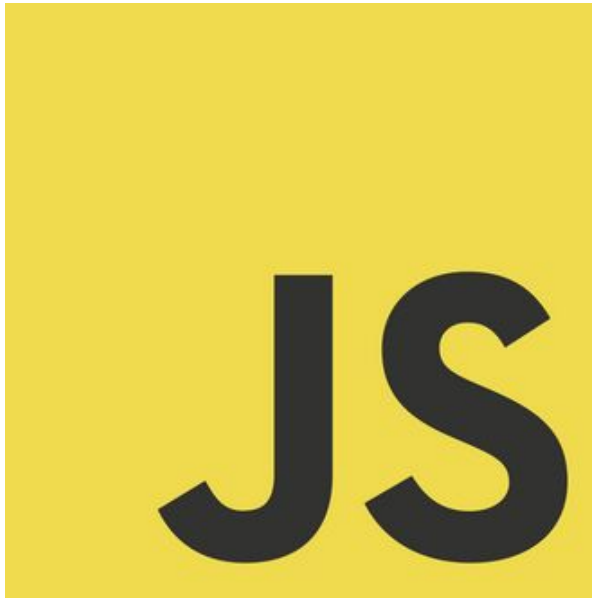
- Babel : http://babeljs.io
- Traceur : https://github.com/google/traceur-compiler
- TypeScript (Superset of JavaScript that aims to align with ECMAScript) http://www.typescriptlang.org

How to use ES6 today ?

Module Bundlers

- Webpack : http://webpack.github.io
- Browserify : http://browserify.org
- Rollup : http://rollupjs.org

Live Coding Session



Thank You

Any queries? Open to Q&A

Now we leave and you all write some next-gen JavaScript!