



**NOT**

YOUR FATHER'S  
JAVA

**NOT**

YOUR MOTHER'S  
JAVASCRIPT



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**NOT YOUR  
FATHER'S JAVA | MOTHER'S JS**

Dmitry Chuyko

[www.bell-sw.com](http://www.bell-sw.com) | 2023



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WHO WE ARE

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## Java? is simple?

```
void main() {  
    out.println("Hello, World!");  
}
```

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# Java and JavaScript

## Java (™)

- 1995
- Sun/Oracle
- 2006 OpenJDK (based on 7)

## JavaScript (™)

- 1995
- Netscape
- ™ Sun/Oracle
- 1998 Netscape Communicator opensourced, OSI initiative
- EcmaScript ECMA-262 defined by TC39
- <https://github.com/tc39/proposals/blob/HEAD/finished-proposals.md>
- <https://babeljs.io/>

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## Some of Java features that made it great

Multi-threading

- Synchronization

Garbage collection

Class library

Specifications

- JVM 1. Garbage Collected Heap
- JLS 1. Synchronized Methods

Backward compatibility



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## Good old JavaScript code

```
function Car (vendor, color) {  
  this.vendor = vendor;  
  this.color = color;  
}
```

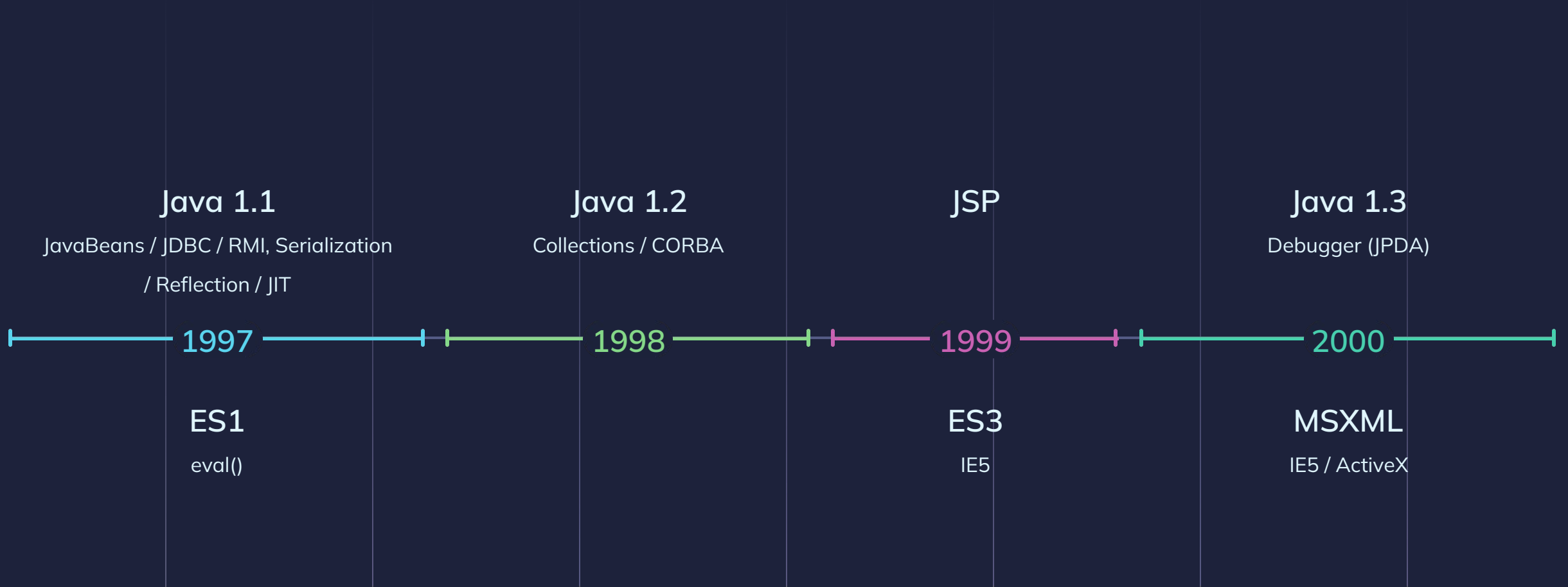
```
Car.prototype.description = function() {  
  return this.color + ' ' + this.vendor;  
};
```

WAT <https://www.destroyallsoftware.com/talks/wat>

WTFJS <https://www.youtube.com/watch?v=et8xNAc2ic8>

# Dark ages

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## Good old Java code

```
List rows = new ArrayList();
....
for(Iterator rowIterator = rows.iterator(); rowIterator.hasNext(); ) {
    Object o = rowIterator.next();
    if(o instanceof Row) {
        Row row = (Row) o;
        ...
    } else {
        throw new ClassCastException();
    }
}
```

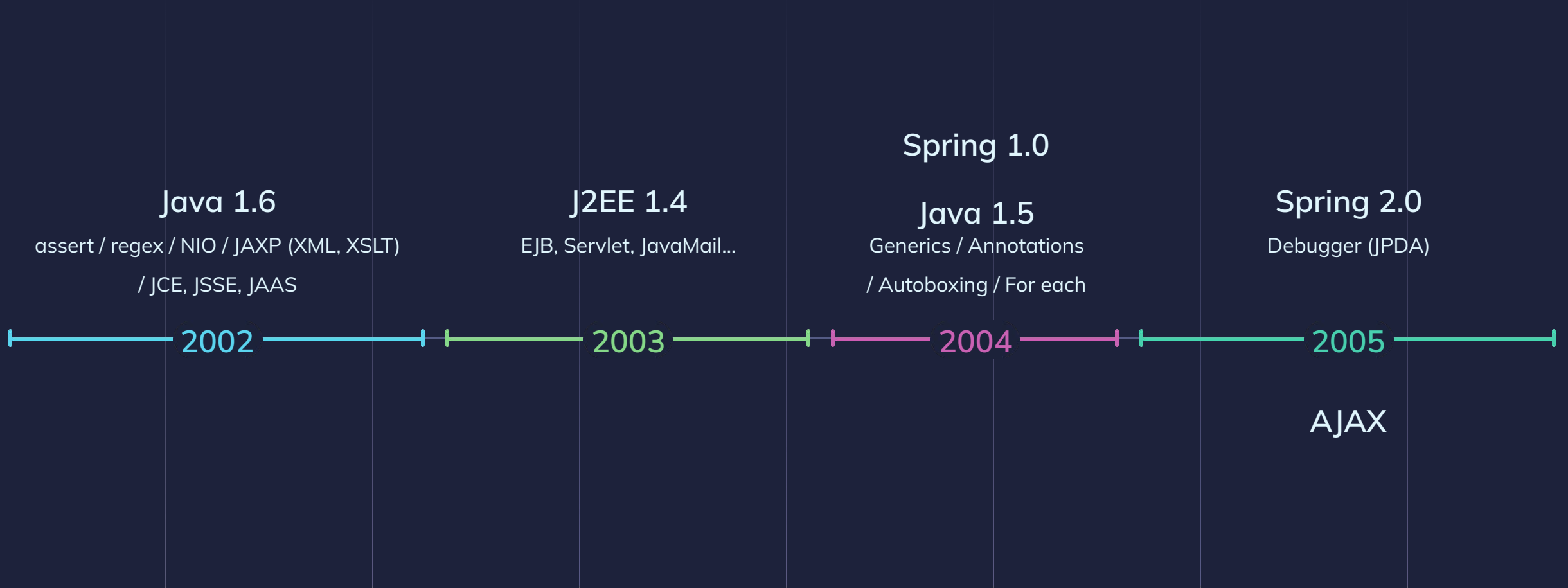
Boring

Java can be a fun [https://www.youtube.com/results?search\\_query=java+puzzlers](https://www.youtube.com/results?search_query=java+puzzlers)



# Middle ages

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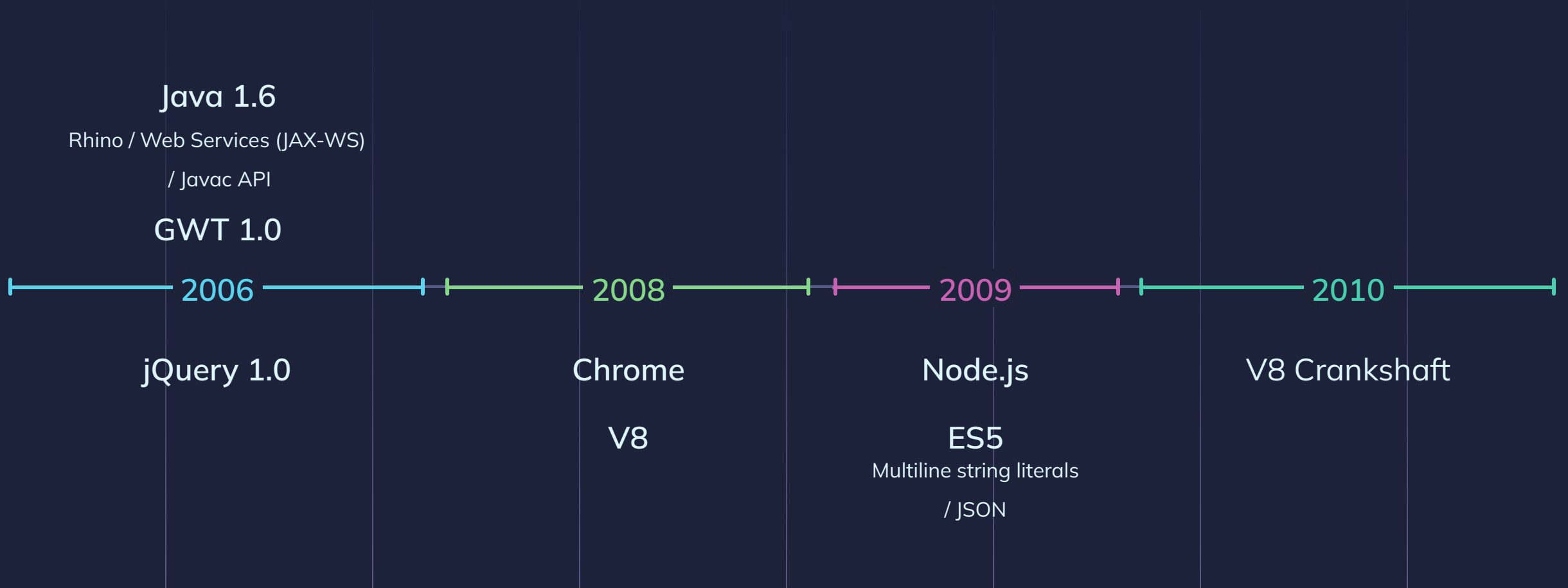
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## XML is fancy

```
xhr = new XMLHttpRequest();  
  
xhr.onload = function() {  
    alert(xhr.responseXML.documentElement.nodeName);  
};
```

# Gallant age

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## The power of \$

```
$(document).ready(function(){  
    $(".btn-slide").click(function(){  
        $("#panel").slideToggle("slow");  
        $(this).toggleClass("active");  
    });  
});
```

# Gallant age

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Java 7

nvokedynamic / Strings in switch / try-with-resources /  
diamond operator <> / JSR 166 / NIO

2011

2013

asm.js

Well optimized



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## The power of |

```
for (i = 1; (i | 0) < (n | 0); i = (i | 0) + 1 | 0) {  
    // It's yet not an assembly  
}
```

## Java 8 (LTS)

Lambdas / Streams / CompletableFuture / Nashorn  
/ Annotations on types(still no standard @NotNull)

2014

## TypeScript 1.0

2015

## V8 TurboFan

## ES6

var, let, const / String templates / Destructuring assignment, destructor  
/ Arrow functions / Iterators / Generators / Promises  
/ Classes, constructors, inheritance / Map

# JS is simple

```
let cities = ['San Francisco', 'Los Angeles'];  
let places = ['Miami', ...cities, 'Chicago']; // ['Miami', 'San Francisco', 'Los Angeles', 'Chicago']
```

```
var o = {p: 42, q: true};  
var {p, q} = o;
```

```
console.log(p); // 42  
console.log(q); // true
```

```
var {p: foo, q: bar} = o;
```

```
console.log(foo); // 42  
console.log(bar); // true
```

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# Modern age

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# Modern age

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# GraalVM



high-performance JDK designed to accelerate the execution of applications written in Java and other JVM languages while also providing runtimes for ... a number of other popular languages.



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## GraalVM

### Polyglot. Re-use libraries

- Java (bytecode)
- JavaScript, Python, Ruby, R, WASM, Java (Truffle)
- LLVM (bitcode)

### Graal compiler

- JIT with HotSpot VM
- AOT with SubstrateVM. Native Image
  - “Closed world” assumption

### Written in Java

# Polyglot is simple

```
ScriptEngine eng = new ScriptEngineManager().getEngineByName("graal.js");  
Object fn = eng.eval("(function() { return this; })");  
Invocable inv = (Invocable) eng;  
Object result = inv.invokeMethod(fn, "call", fn);
```

```
var file = new (Java.type('java.io.File'))("test.md");  
var fileName = file.getName();
```

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# Modern age

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## JDK 16

Pattern Matching for instanceof <https://openjdk.org/jeps/394>  
/ Records <https://openjdk.org/jeps/395>

## JDK 17 (LTS)

Pattern Matching for switch (P) <https://openjdk.org/jeps/406>  
Sealed classes <https://openjdk.org/jeps/409>

2021

## ES2021

WeakRefs / FinalizationRegistry  
/ Promise.any() / &&=, ||=, ??=

## JDK 18

Deprecate Finalization for Removal <https://openjdk.org/jeps/421>

## JDK 19

Record Patterns (P) <https://openjdk.org/jeps/405>

2022

## ES2022

Top level await (in imports) / Private # fields, 'in' operator  
/ Fields not in constructor / Chaining errors  
/ Static fields and private static methods with the static keyword, static blocks



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## JS is simple

```
class User {  
  // public field  
  name = 'admin'  
  
  // private field  
  #password = 'password';  
}
```

# Bright future

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JDK 20

Record Patterns (P) <https://openjdk.org/jeps/432>

Pattern Matching for switch (P) <https://openjdk.org/jeps/433>

2023

ES2023





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# Java is simple

```
record Point(int x, int y) {}

void printSumRecordPattern(Object o) {
    if (o instanceof Point(int x, int y)) {
        System.out.println(x + y);
    }
}

static String formatPatternSwitch(Object o) {
    return switch (o) {
        case Integer i -> String.format("int %d", i);
        case Long l -> String.format("long %d", l);
        case Double d -> String.format("double %f", d);
        case String s -> String.format("String %s", s);
        default -> o.toString();
    };
}
```



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## Java 21+... is simple?

```
// Hello.java
void main() {
    System.out.println("Hello, World!");
}
```

```
$ java HelloWorld.java
```



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Thank you for  
your attention!



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