Security

SQL Injection

Cosa è:

SQL injection è una tecnica di *code injection* dove si inietta del codice SQL

```
# Define POST variables
uname = request.POST['username']
passwd = request.POST['password']

# SQL query vulnerable to SQLi
sql = "SELECT id FROM users WHERE username='" + uname + "' AND password='" + passwd + "'"

# Execute the SQL statement
database.execute(sql)
```

https://www.acunetix.com/websitesecurity/sql-injection/

Come si combatte?

Semplicemente usando: **prepared statements and parameterized queries**

```
$stmt = $dbConnection->prepare('SELECT * FROM employees WHERE name = ?');
$stmt->bind_param('s', $name);
```

Oppure pulendo tutti gli input:

```
mysqli_real_escape_string ( mysqli $link , string $escapestr ) : string
```

This function is used to create a legal SQL string that you can use in an SQL statement. The given string is encoded to an escaped SQL string, taking into account the current character set of the connection.

```
$unsafe_variable = $_POST["user-input"];
$safe_variable = mysql_real_escape_string($unsafe_variable);
mysql_query("INSERT INTO table (column) VALUES ('" . $safe_variable . "')");
```

Javascript

JavaScript was initially created to *“make web pages alive”*.

Scripts are provided and executed as plain text. They don’t need special preparation or compilation to run.

```
<!DOCTYPE html>
<html>
<body>

<h2>JavaScript Statements</h2>

<p>A <b>JavaScript program</b> is a list of <b>statements</b> to be executed by a computer.</p>

<p id="demo"></p>

<script>
var x, y, z;  // Declare 3 variables
x = 5;    // Assign the value 5 to x
y = 6;    // Assign the value 6 to y
z = x + y;  // Assign the sum of x and y to z

document.getElementById("demo").innerHTML =
"The value of z is " + z + ".";
</script>

</body>
</html>
```

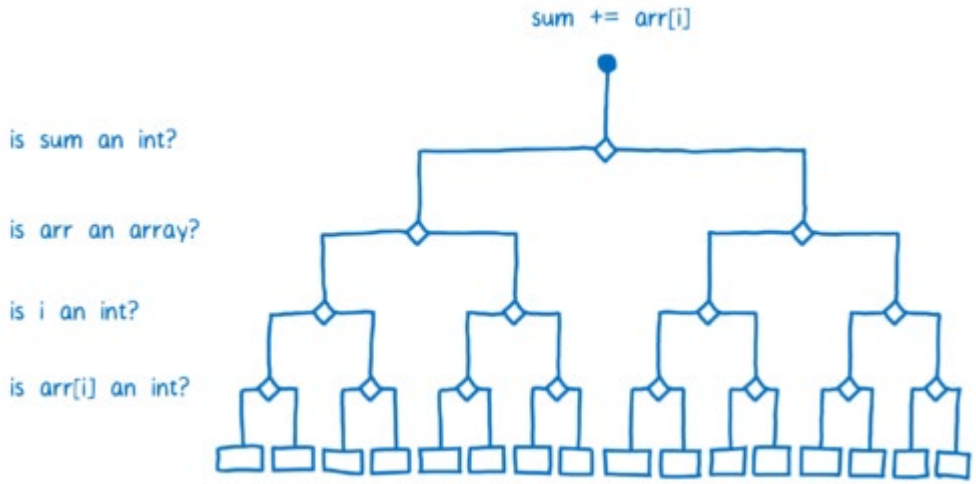
https://www.w3schools.com/js/js_examples.asp

Javascript

Javascript è un linguaggio debolmente tipizzato

https://hacks.mozilla.org/2017/02/a-crash-course-in-just-in-time-jit-compilers/


```
function arraySum(arr) {
  var sum = 0;
  for (var i = 0; i < arr.length; i++) {
    sum += arr[i];
  }
}
```



Javascript

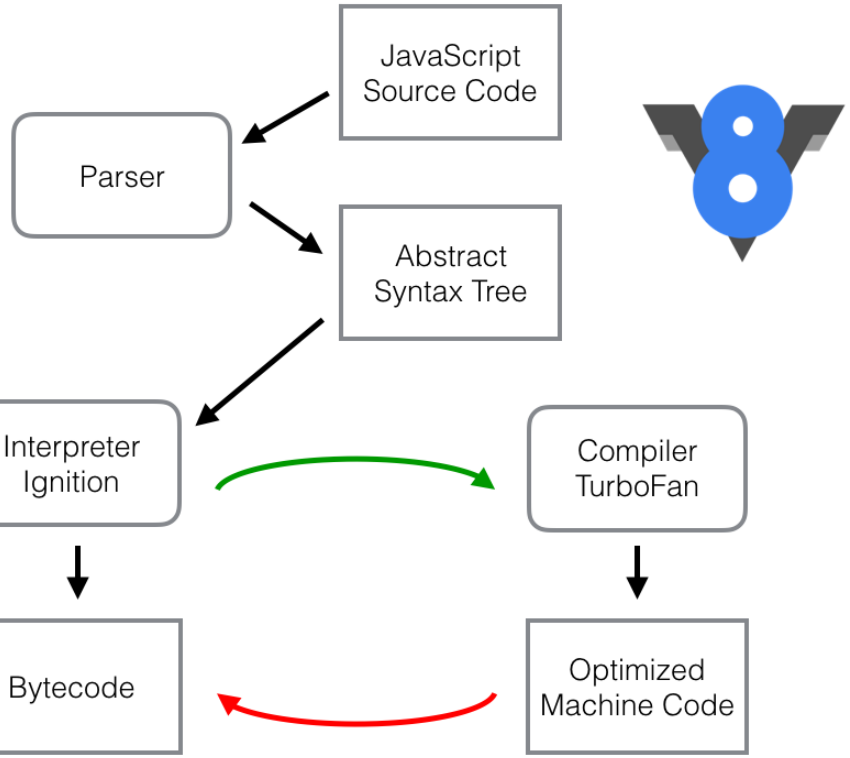
(SpiderMonkey)

(Nitro)

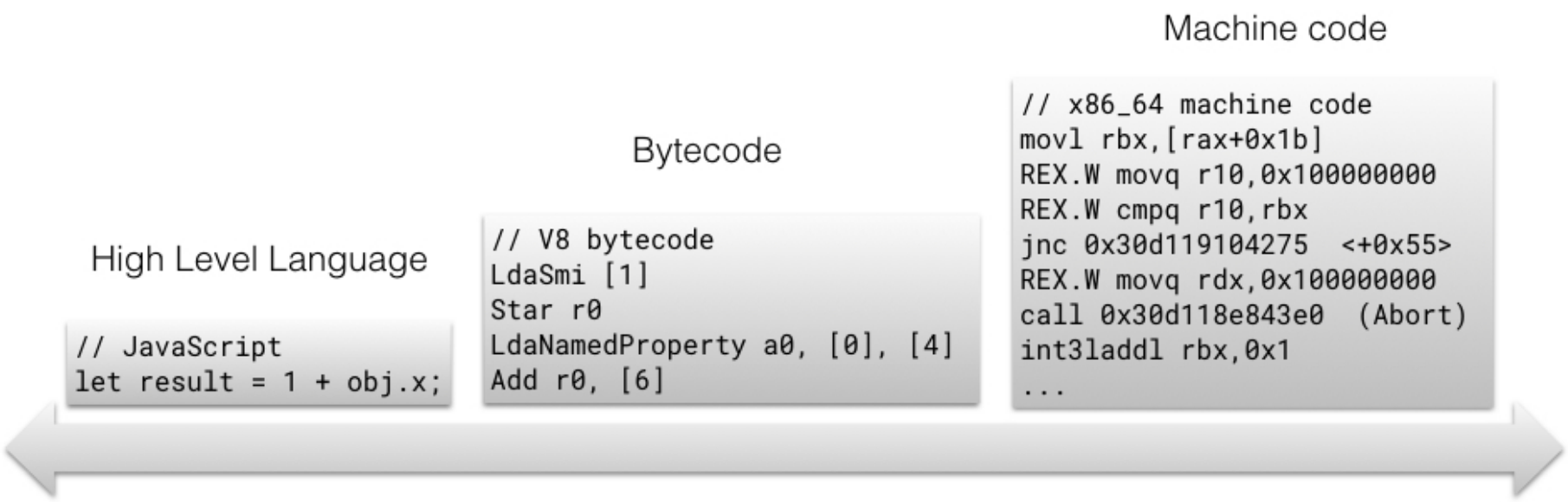
1. The engine (embedded if it's a browser) reads ("parses") the script.

2. Then it converts ("compiles") the script to the machine language.

3. And then the machine code runs, pretty fast.



Javascript

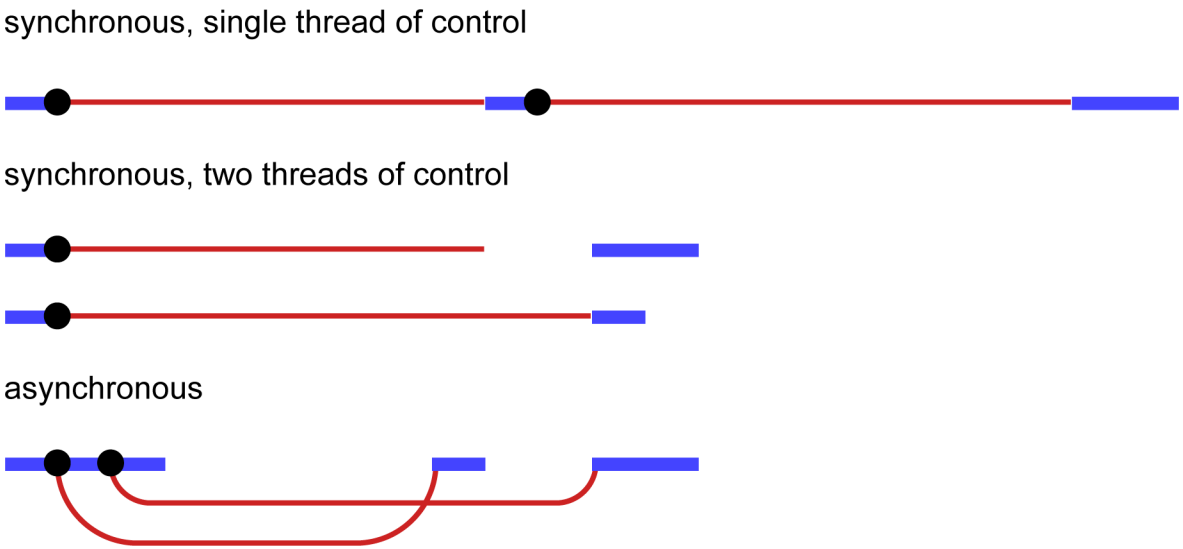


Google

@fhinkel

Javascript

JavaScript is always synchronous and single-threaded. If you're executing a JavaScript block of code on a page then no other JavaScript on that page will currently be executed.



Javascript – Callback and Promise

One approach to asynchronous programming is to make functions that perform a slow action take an extra argument, a *callback function*. The action is started, and when it finishes, the callback function is called with the result.

```
setTimeout(() => console.log("Tick"), 500);
```

A *promise* is an asynchronous action that may complete at some point and produce a value. It is able to notify anyone who is interested when its value is available.

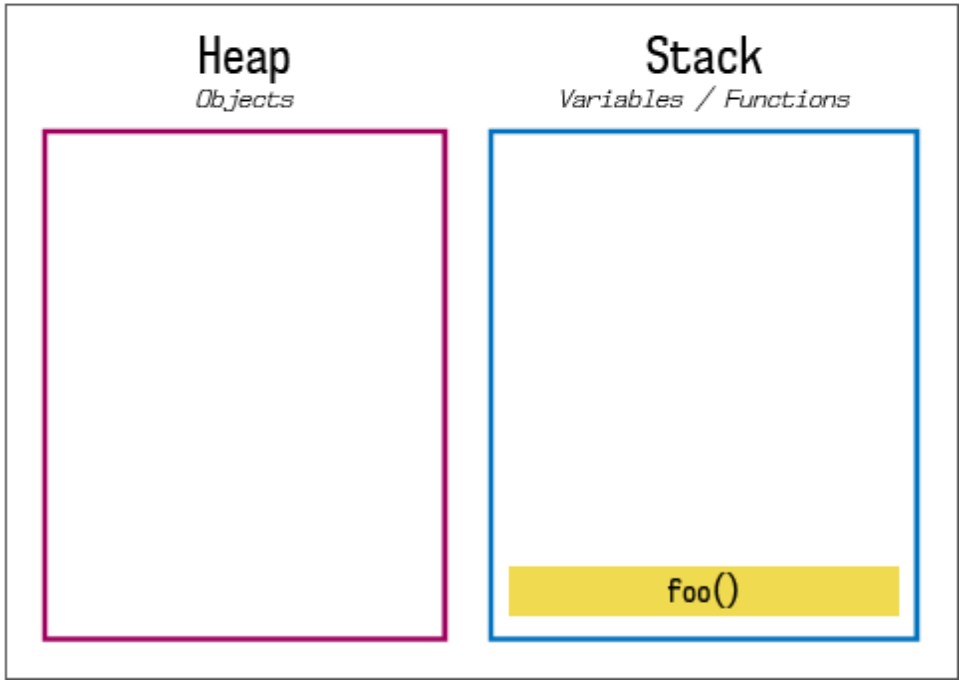
```
let fifteen = Promise.resolve(15);
fifteen.then(value => console.log(`Got ${value}`));
```

Javascript – Callback and Promise

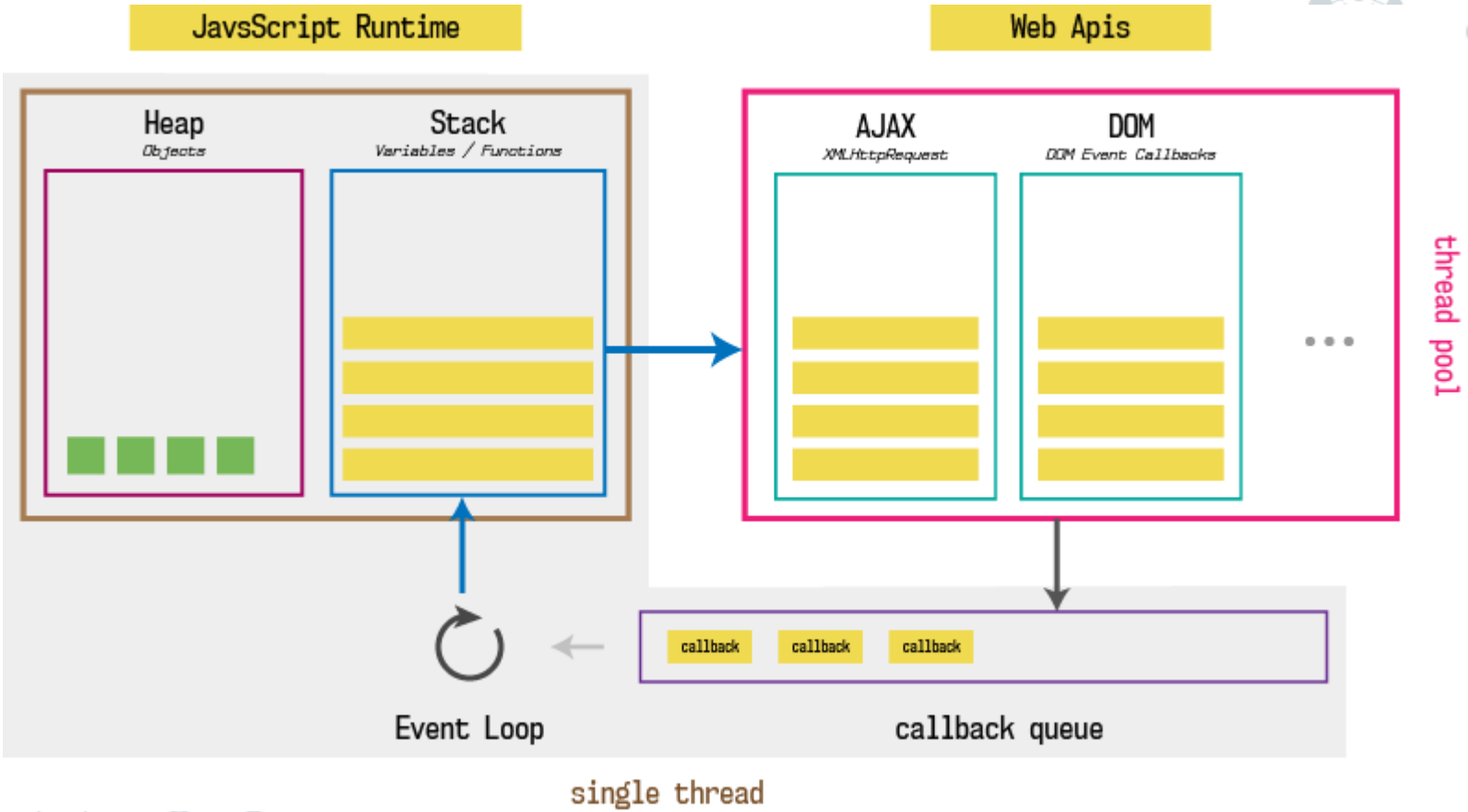
JavsScript Program

```
function baz(){
   console.log('Hello from baz');
}

function bar() {
   baz();
}

function foo() {
   bar();
}

foo();
```

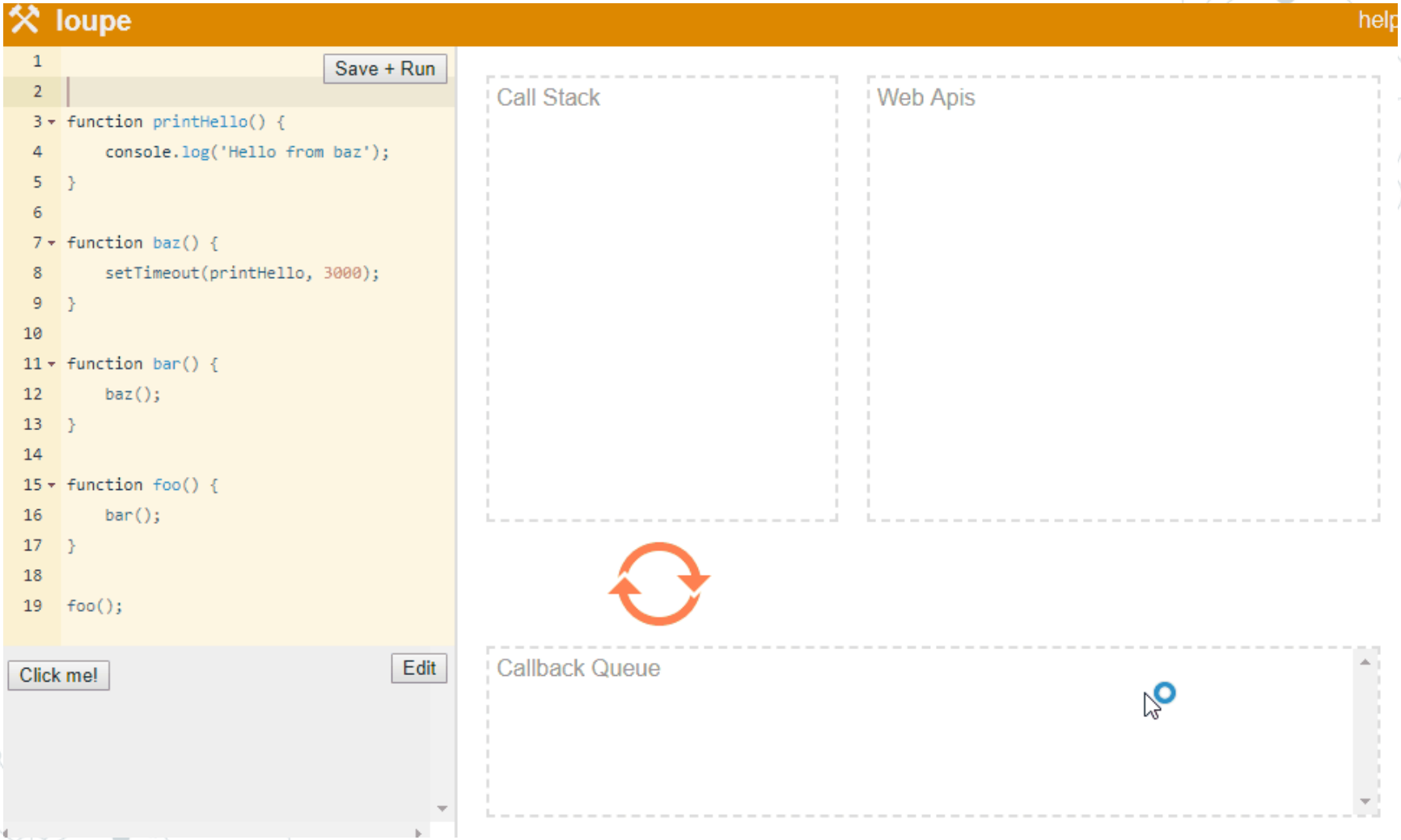
JavsScript Runtime



Javascript – Callback and Promise



Javascript – Callback and Promise



https://latentflip.com/loupe/

Javascript – Callback and Promise

https://www.youtube.com/watch?v=8aGhZQkoFbQ