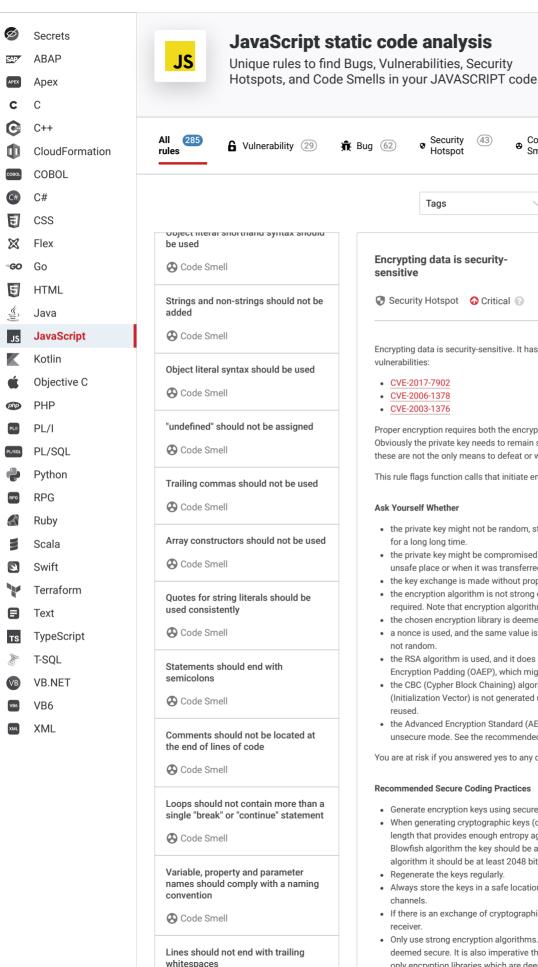
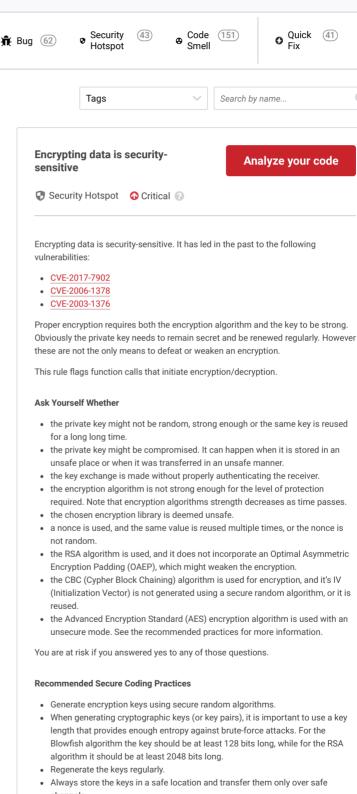


Products ✓





• If there is an exchange of cryptographic keys, check first the identity of the

• Only use strong encryption algorithms. Check regularly that the algorithm is still

deemed secure. It is also imperative that they are implemented correctly. Use

only encryption libraries which are deemed secure. Do not define your own

encryption algorithms as they will most probably have flaws.

• When a nonce is used, generate it randomly every time.

Code Smell

Files should contain an empty newline at the end

Code Smell

An open curly brace should be located at the end of a line

Code Smell

Tabulation characters should not be used

Code Smell

Function and method names should comply with a naming convention

Code Smell

- When using the RSA algorithm, incorporate an Optimal Asymmetric Encryption Padding (OAEP).
- When CBC is used for encryption, the IV must be random and unpredictable. Otherwise it exposes the encrypted value to crypto-analysis attacks like "Chosen-Plaintext Attacks". Thus a secure random algorithm should be used. An IV value should be associated to one and only one encryption cycle, because the IV's purpose is to ensure that the same plaintext encrypted twice will yield two different ciphertexts.
- The Advanced Encryption Standard (AES) encryption algorithm can be used with various modes. Galois/Counter Mode (GCM) with no padding should be preferred to the following combinations which are not secured:
 - o Electronic Codebook (ECB) mode: Under a given key, any given plaintext block always gets encrypted to the same ciphertext block. Thus, it does not hide data patterns well. In some senses, it doesn't provide serious message confidentiality, and it is not recommended for use in cryptographic protocols at all.
 - o Cipher Block Chaining (CBC) with PKCS#5 padding (or PKCS#7) is susceptible to padding oracle attacks.

Sensitive Code Example

```
// === Client side ===
crypto.subtle.encrypt(algo, key, plainData); // Sensitive
crypto.subtle.decrypt(algo, key, encData); // Sensitive
```

```
// === Server side ===
const crypto = require("crypto");
const cipher = crypto.createCipher(algo, key); // Sensitive
const cipheriv = crypto.createCipheriv(algo, key, iv); // Se
const decipher = crypto.createDecipher(algo, key); // Sensit
const decipheriv = crypto.createDecipheriv(algo, key, iv); /
const pubEnc = crypto.publicEncrypt(key, buf); // Sensitive
const privDec = crypto.privateDecrypt({ key: key, passphrase
const privEnc = crypto.privateEncrypt({ key: key, passphrase
const pubDec = crypto.publicDecrypt(key, privEnc); // Sensit
```

See

- OWASP Top 10 2017 Category A3 Sensitive Data Exposure
- OWASP Top 10 2017 Category A6 Security Misconfiguration
- MITRE, CWE-321 Use of Hard-coded Cryptographic Key
- MITRE, CWE-322 Key Exchange without Entity Authentication • MITRE, CWE-323 - Reusing a Nonce, Key Pair in Encryption
- MITRE, CWE-324 Use of a Key Past its Expiration Date
- MITRE, CWE-325 Missing Required Cryptographic Step
- MITRE, CWE-326 Inadequate Encryption Strength
- MITRE, CWE-327 Use of a Broken or Risky Cryptographic Algorithm
- SANS Top 25 Porous Defenses

Deprecated

This rule is deprecated; use {rule:javascript:S4426}, {rule:javascript:S5542}, {rule:javascript:S5547} instead.

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