Sensitive Data

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Sensitive Data

> Sensitive data such as **passwords, credit card numbers, health records, personal information and business secrets** require extra protection, particularly if that data falls under privacy laws (EU's General Data Protection Regulation GDPR), financial data protection rules such as PCI Data Security Standard (PCI DSS) or other regulations. [^1]

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GDPR

> Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation)

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Personal Data as defined in GDPR

- Name and surname
- Home address
- Email address
- Identification card number
- Location data (for example on a mobile phone)
- Internet Protocol (IP) address
- ...

§ Articles 2, 4(1) and(5) and Recitals (14), (15), (26), (27), (29) and (30)

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Sensitive Personal Data as defined in GDPR

- Personal data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs
- Trade-union membership
- Genetic data, biometric data processed solely to identify a human being
- Health-related data
- Data concerning a person's sex life or sexual orientation

§ Article 4(13), (14) and (15) and Article 9 and Recitals (51) to (56)

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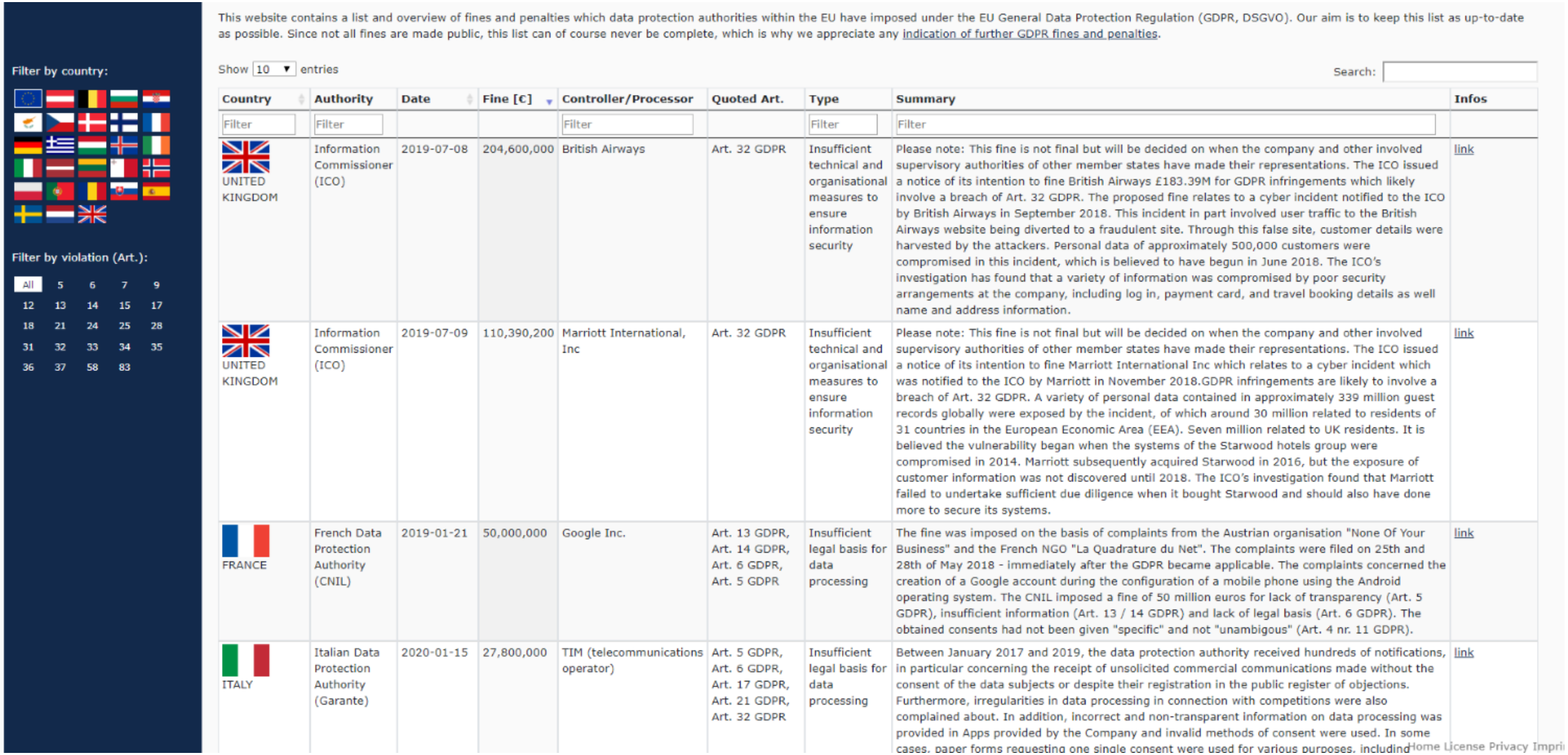
GDPR Enforcement Tracker



Filter by country:

Filter by violation (Art.):

All 5 6 7 9
12 13 14 15 17
18 21 24 25 28
31 32 33 34 35
36 37 58 83

This website contains a list and overview of fines and penalties which data protection authorities within the EU have imposed under the EU General Data Protection Regulation (GDPR, DSGVO). Our aim is to keep this list as up-to-date as possible. Since not all fines are made public, this list can of course never be complete, which is why we appreciate any indication of further GDPR fines and penalties.

Show 10 entries

Search:

Country	Authority	Date	Fine [€]	Controller/Processor	Quoted Art.	Type	Summary	Infos
Filter	Filter			Filter		Filter	Filter	
UNITED KINGDOM	Information Commissioner (ICO)	2019-07-08	204,600,000	British Airways	Art. 32 GDPR	Insufficient technical and organisational measures to ensure information security	Please note: This fine is not final but will be decided on when the company and other involved supervisory authorities of other member states have made their representations. The ICO issued a notice of its intention to fine British Airways £183.39M for GDPR infringements which likely involve a breach of Art. 32 GDPR. The proposed fine relates to a cyber incident notified to the ICO by British Airways in September 2018. This incident in part involved user traffic to the British Airways website being diverted to a fraudulent site. Through this false site, customer details were harvested by the attackers. Personal data of approximately 500,000 customers were compromised in this incident, which is believed to have begun in June 2018. The ICO's investigation has found that a variety of information was compromised by poor security arrangements at the company, including log in, payment card, and travel booking details as well name and address information.	link
UNITED KINGDOM	Information Commissioner (ICO)	2019-07-09	110,390,200	Marriott International, Inc	Art. 32 GDPR	Insufficient technical and organisational measures to ensure information security	Please note: This fine is not final but will be decided on when the company and other involved supervisory authorities of other member states have made their representations. The ICO issued a notice of its intention to fine Marriott International Inc which relates to a cyber incident which was notified to the ICO by Marriott in November 2018.GDPR infringements are likely to involve a breach of Art. 32 GDPR. A variety of personal data contained in approximately 339 million guest records globally were exposed by the incident, of which around 30 million related to residents of 31 countries in the European Economic Area (EEA). Seven million related to UK residents. It is believed the vulnerability began when the systems of the Starwood hotels group were compromised in 2014. Marriott subsequently acquired Starwood in 2016, but the exposure of customer information was not discovered until 2018. The ICO's investigation found that Marriott failed to undertake sufficient due diligence when it bought Starwood and should also have done more to secure its systems.	link
FRANCE	French Data Protection Authority (CNIL)	2019-01-21	50,000,000	Google Inc.	Art. 13 GDPR, Art. 14 GDPR, Art. 6 GDPR, Art. 5 GDPR	Insufficient legal basis for data processing	The fine was imposed on the basis of complaints from the Austrian organisation "None Of Your Business" and the French NGO "La Quadrature du Net". The complaints were filed on 25th and 28th of May 2018 - immediately after the GDPR became applicable. The complaints concerned the creation of a Google account during the configuration of a mobile phone using the Android operating system. The CNIL imposed a fine of 50 million euros for lack of transparency (Art. 5 GDPR), insufficient information (Art. 13 / 14 GDPR) and lack of legal basis (Art. 6 GDPR). The obtained consents had not been given "specific" and not "unambigous" (Art. 4 nr. 11 GDPR).	link
ITALY	Italian Data Protection Authority (Garante)	2020-01-15	27,800,000	TIM (telecommunications operator)	Art. 5 GDPR, Art. 6 GDPR, Art. 17 GDPR, Art. 21 GDPR, Art. 32 GDPR	Insufficient legal basis for data processing	Between January 2017 and 2019, the data protection authority received hundreds of notifications, in particular concerning the receipt of unsolicited commercial communications made without the consent of the data subjects or despite their registration in the public register of objections. Furthermore, irregularities in data processing in connection with competitions were also complained about. In addition, incorrect and non-transparent information on data processing was provided in Apps provided by the Company and invalid methods of consent were used. In some cases, paper forms requesting one single consent were used for various purposes, includind	link

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PCI DSS

> PCI DSS is the global data security standard adopted by the payment card brands for all entities that process, store or transmit cardholder data and/or sensitive authentication data.

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PCI DSS Requirements

Goals	Requirements
Secure Network and Systems	Firewall; No default credentials
Protect Cardholder Data	Protect stored data; encrypt transmissions
Vulnerability Management	Anti-Malware/-Virus; Secure Development
Strong Access Controls	Need-to-know access; Authentication; Restrict physical access
Monitoring & Testing	Monitor network and data access; Test systems/processes
Security Policy	Maintain Information Security policy for all personnel

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Sensitive Data Exposure

- **Failure to determine the protection needs of data**
- Transmitting data in clear text (e.g. HTTP, SMTP, FTP)
- Employing old or weak cryptographic algorithms
- Using default or weak generated crypto keys
- Lack of proper key management/rotation
- Not enforcing encryption through browser directives/HTTP headers
- Lack of certificate verification

⚠️ *External Internet traffic is especially dangerous!*

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Risk Rating

Sensitive Data Exposure

Exploitability	Prevalence	Detecability	Impact	Risk
🔸 Average	🔴 Widespread	🔸 Average	🔴 Severe	A3
(2	+ 3	+ 2) / 3	* 3	= 7.0

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Prevention

- **Classify data in system** and determine sensitivity level
- **Don't store sensitive data unnecessarily**
- Encrypt data at rest
- Ensure up-to-date and strong
  - Standard algorithms
  - Protocols
  - Keys
- Encrypt data in transit (e.g. TLS) and enforce encryption (e.g. HSTS)

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Information Classification

Class	Description	Examples
Public	Information without any confidentiality requirements.	User documentation, news, press releases, lunch menus
Internal	Common information inside an organization.	Memos, system documentation or meeting minutes
Confidential	Information or compartmental data with restricted access. Disclosure might induce damage.	Customer, HR, financial or PII data; source code, credentials, logfiles
Secret	Highest confidentiality and integrity requirements. Damaging to organization if	Business secrets, secret formulae, planned mergers/acquisitions

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Exercise 6.1

For each classification level decide if the listed practices should be allowed (✓) or strictly forbidden (❌). Use footnotes to describe preconditions (if necessary).

Practice	Public	Internal	Confidential	Secret
Publish on Internet				
Publish on Intranet				
Print on 🖨️				
Share with third parties				
Copy to USB key				

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Exercise 6.2

For each classification level define restrictions (🔴) and/or recommendations (⭕) for the listed lifecycle phases.

Phase	Public	Internal	Confidential	Secret
Permanent storage				
Transfer (internal network)				
Transfer (public network)				
Disposal				

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HTTP Strict Transport Security (HSTS)

> HTTP Strict Transport Security (HSTS) is an opt-in security enhancement that is specified by a web application through the use of a special response header. Once a supported browser receives this header that browser will prevent any communications from being sent over HTTP to the specified domain and will instead send all communications over HTTPS. It also prevents HTTPS click through prompts on browsers.

Example

```
Strict-Transport-Security: max-age=16070400; includeSubDomains
```

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Secure Cryptographic Storage Design

- Only store sensitive data that you need
- Use strong approved Authenticated Encryption
- Store a one-way and salted value of passwords
- Ensure that the cryptographic protection remains secure even if access controls fail
- Ensure that any secret key is protected from unauthorized access
- Follow applicable regulations on use of cryptography

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Perfect Forward Secrecy (PFS)

> Perfect forward secrecy means that a piece of an encryption system automatically and frequently changes the keys it uses to encrypt and decrypt information, such that if the latest key is compromised, it exposes only a small portion of the user's sensitive data. Encryption tools with perfect forward secrecy switch their keys as frequently as every message in text-based conversation, every phone call in the case of encrypted calling apps, or every time a user loads or reloads an encrypted web page in his or her browser.

ℹ️ Examples of crypto protocols (used for instant messaging conversations) providing PFS are OTR (Off-the-record) Messaging and Double Ratchet (used within Signal).

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Best Practices

Scenario	Practice	🔑 Length
Key exchange	Diffie-Hellman	2048+ bits
Message Integrity	HMAC-SHA2	-
Message Hash	SHA2	256 bits
Asymetric encryption	**ECC** (Curve25519), RSA	2048 bits (RSA)
Symmetric-key algorithm	AES	128-**256** bits
Password Hashing	**Bcrypt**, Argon2, PBKDF2	-

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Exercise 6.3 (🏠)

1. Access a confidential document (⭐)
2. Retrieve as many clear text user passwords as you can (⭐⭐⭐⭐)
3. Visit the Token Sale page before it officially goes live (⭐⭐⭐⭐⭐)

Bonus exercises on cryptography (*optional*)

4. Retrieve both the 🐇 easter eggs (⭐⭐⭐⭐)
5. Solve the steganography challenge (⭐⭐⭐⭐)
6. Solve the non-existent challenge #999 (⭐⭐⭐⭐⭐⭐)

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