

# Encryption & Privacy

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# What is Encryption?

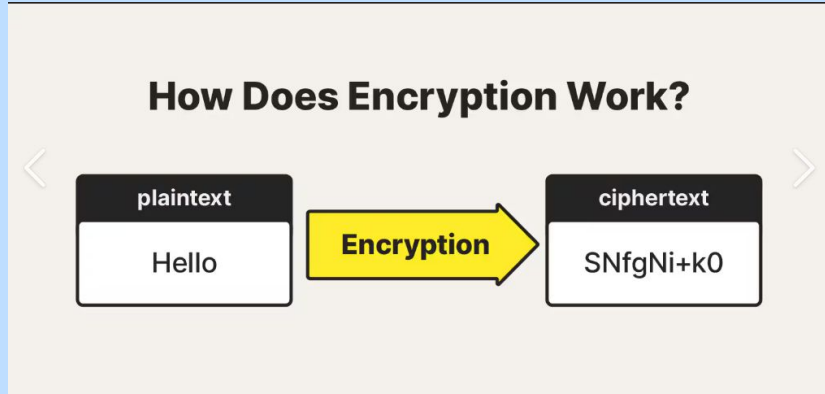
- Encryption is the process of transferring readable text (plaintext), into unreadable text (ciphertext)
- This ensures that only authorized personnel can read certain messages
- Examples:
  - Communication links such as a connection between a website and a browser
  - Filesystems: A hard drive in a computer could be encrypted so you would need a password to access certain files.

# How does Encryption work?

Computer Encryption is based on the science of cryptography (The art/practice of writing/solving codes).

These codes could be as simple as changing a letter in a word to using complex algorithms.

Cryptography has been used for years, mainly by governments, particularly for the military.



# Keys: Prime, Public, & Private

## Prime Numbers

Prime numbers are important in encryption. Prime numbers only have factorization of themselves. (2,3,5,7...)

## Public Keys

Public key encrypts the information and anyone can use the public key.  
Ex: Padlock

## Private Keys

The private key decrypts the information and only the intended personnel should have the private key.  
Ex: Key

# What is a privacy issue?

A privacy issue refers to the ethical concerns surrounding the collection, use, and disclosure of personal information and communications

# Privacy issues people face today

- biometrics: fingerprints, facial recognition, iris recognition
- video surveillance: cameras in public and private places
- online privacy: ensuring your browser history is not known
- wireless tracking: using cell towers to locate a phone
- identity theft: assuming someone else's online identity and exploiting it
- medical records: ensuring their privacy

# Car Insurance Tracking Devices

- Many auto insurance companies offer lower rates if drivers use their electronic tracking devices
- Those devices connect to new vehicle's onboard diagnostics port (OBD)
- The companies may monitor:
  - date driven
  - distance driven
  - trip time
  - hard braking
  - speed
  - location

# iPhone Lockdown Mode

- This mode limits the iPhones features to stop targeted attacks (usually dealing with politicians, reporters, and activist)
- Was introduced with iOS 16 (four years ago) and is available to every iPhone user

# FBI vs. Lockdown Mode

A Washington Post journalist had their iPhone seized by FBI agents. The agents were unable to get any important data off of the iPhone because the Lockdown Mode feature was enabled.

# What happens to an iPhone in Lockdown Mode?

- Blocks message attachments/link previews
- Limits FaceTime calls
- Disables Share Play and Game Center
- Removes shared photo albums
- Strips location data from shared images
- Blocks non secure Wi-Fi networks
- Prevents device management profiles from being installed

# How To Enable:

1. Update device to latest version of iOS
2. Open Settings app
3. Then click on Privacy and Security
4. Scroll and click Lockdown Mode
5. Apple will suggest that the user enable this if they are being targeted
6. Then click “Turn On”