How to Keep Your Computer and Phone Secure

David J. Malan malan@harvard.edu

Secure

passwords

1. 123456

- 1. 123456
- 2. 123456789

- 1. 123456
- 2. 123456789
- 3. qwerty

- 1. 123456
- 2. 123456789
- 3. qwerty
- 4. password

- 1. 123456
- 2. 123456789
- 3. qwerty
- 4. password
- 5. 1234567

- 1. 123456
- 2. 123456789
- 3. qwerty
- 4. password
- 5. 1234567
- 6. 12345678

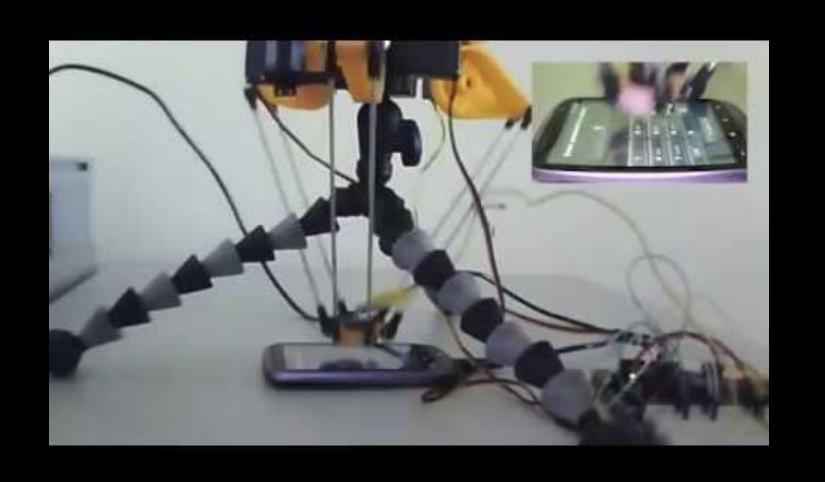
- 1. 123456
- 2. 123456789
- 3. qwerty
- 4. password
- 5. 12345676. 12345678
- 7. 12345

- 1. 123456
- 2. 123456789
- 3. qwerty
- 4. password
- 5. 1234567
- 6. 12345678
 7. 12345
- 8. iloveyou

- 1. 123456
- 2. 123456789
- 3. qwerty
- 4. password
- 5. 1234567
- 6. 12345678
- 7. 12345
 8. iloveyou
- 9. 111111

- 1. 123456
- 2. 123456789
- 3. qwerty
- 4. password
- 5. 1234567
- 6. 12345678
 7. 12345
- 8. iloveyou
- 9. 11111110. 123123

brute-force attacks



4-digit passcode

 $10 \times 10 \times 10 \times 10$

10,000

4-letter passcode

$52 \times 52 \times 52 \times 52$

7,311,616

4-character passcode

$94 \times 94 \times 94 \times 94$

78,074,896

8-character passcode

94 × 94 × 94 × 94 × 94 ×

6,095,689,385,410,816





9:41 Tuesday, July 24

iPhone is disabled try again in 1 minute

Emergency



⊶ Ф **▼**⊿ № 60%

11:27

<u></u>

Thu, May 28 ● 24°C

s. Try again later.



o4 ⊕ **▽**⊿ № 60%

11:27

Thu, May 28 ● 24°C

Too many attempts. Try again later.



two-factor authentication



2-step Verification

Use your device to sign in to your Google Account.



Enter verification code

Get a verification code from the "Google Authenticator" app

Enter the 6-digit code

Done

■ Don't ask again on this computer

password managers

1password.com lastpass.com

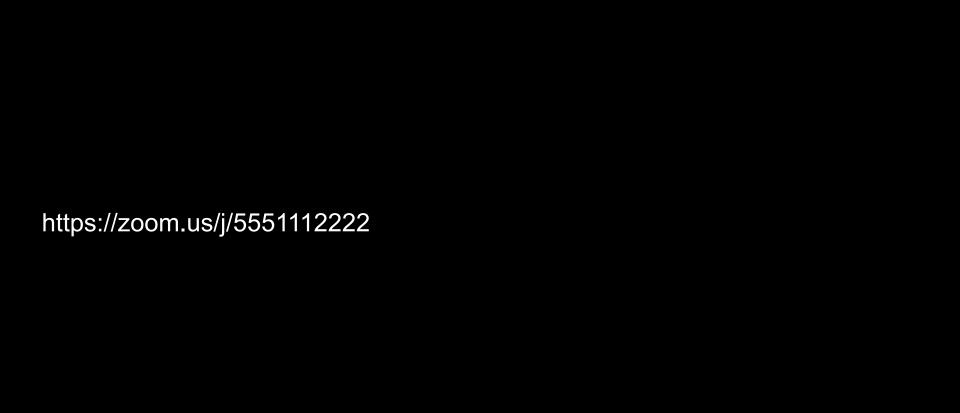
encryption

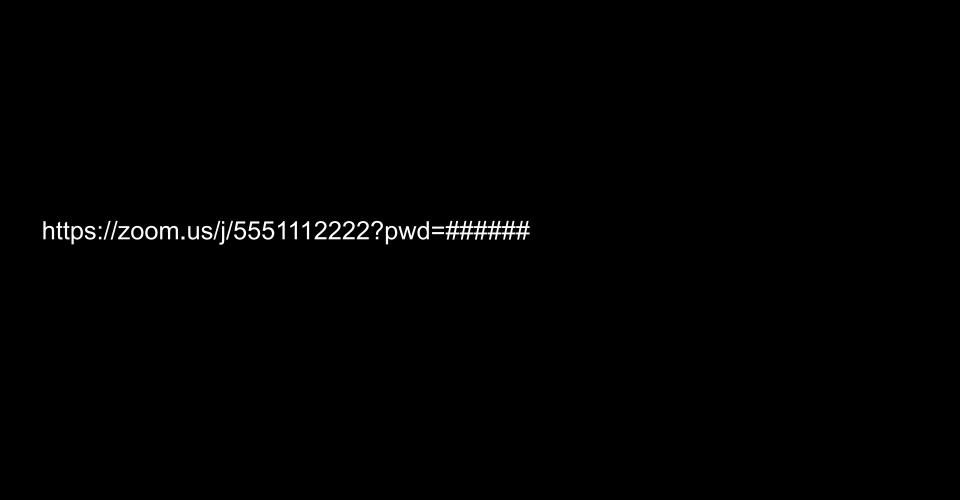
https://

end-to-end encryption









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