Intro to Cybersecurity

1.1.2 - Authentication

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A A A = tools used to achieve CIA

Authentication

Prove who you are

Access Control

What you are allowed to see or get to
aka: *authorization* or *permission*

Accounting

Keep track of what you've done and what has happened (aka Auditing)

Authentication

- Prove who you are so that you are given access

Authentication

"Prove that I am who I say I am"

Authentication is very basically *the establishment of trust between two parties.*

- If we can't trust each other, then how can we share information or participate in activities together?

3 ways to authenticate:
- something you know - a password

- something you have - a SmartCard or Code

- something you are - a fingerprint

What are some ways to prove who you are?

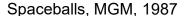**These can be methods to use in person OR online**

Passwords – what you know

- A password is just a *combination* of characters and numbers

- Even **Dark Helmet** can tell a bad password!

Clip Source: https://vimeo.com/521239024   Spaceballs, MGM, 1987

Password Attacks

#1 method = steal the password

- *looking over a user's shoulder, a keylogger, password written down, etc. These will be covered in later units.*

#2 method = guess the password

- **Brute Force** – software programs which automate the process of rapidly testing all possible combinations of characters.

- **Stupid User** – guess the password based on knowledge of the user (dates, pet names, etc).

Test the Strength of Your Passwords

This is an educational tool that can be very beneficial in helping students understand why complex passwords are used. It is never recommended that real passwords be used.

Type a password

Enter A Password

N/A

Number of Characters	Numbers Only	Lowercase Letters	Upper and Lowercase Letters	Numbers, Upper and Lowercase Letters	Numbers, Upper and Lowercase Letters, Symbols
4	Instantly	Instantly	Instantly	Instantly	Instantly
5	Instantly	Instantly	Instantly	Instantly	Instantly
6	Instantly	Instantly	Instantly	1 sec	5 secs
7	Instantly	Instantly	25 secs	1 min	6 mins
8	Instantly	5 secs	22 mins	1 hour	8 hours
9	Instantly	2 mins	19 hours	3 days	3 weeks
10	Instantly	58 mins	1 month	7 months	5 years
11	2 secs	1 day	5 years	41 years	400 years
12	25 secs	3 weeks	300 years	2k years	34k years
13	4 mins	1 year	16k years	100k years	2m years
14	41 mins	51 years	800k years	9m years	200m years
15	6 hours	1k years	43m years	600m years	15 bn years
16	2 days	34k years	2bn years	37bn years	1tn years
17	4 weeks	800k years	100bn years	2tn years	93tn years
18	9 months	23m years	6tn years	100 tn years	7qd years

TIME IT TAKES A HACKER TO BRUTE FORCE YOUR PASSWORD

-Data sourced from HowSecureismyPassword.net

HIVE SYSTEMS

Source: howsecureismypassword.net

What Hackers Know About Passwords

50% chance that there is a **VOWEL**

HELLO my name is
Women use personal names

Capital letters are usually at the **BEGINNING** and are followed by a vowel

Numbers are usually **1** or **2** and are at the start or end

- ~ ! @ # $ % & ?

Men use their hobbies

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Activity – Testing Password Strength