

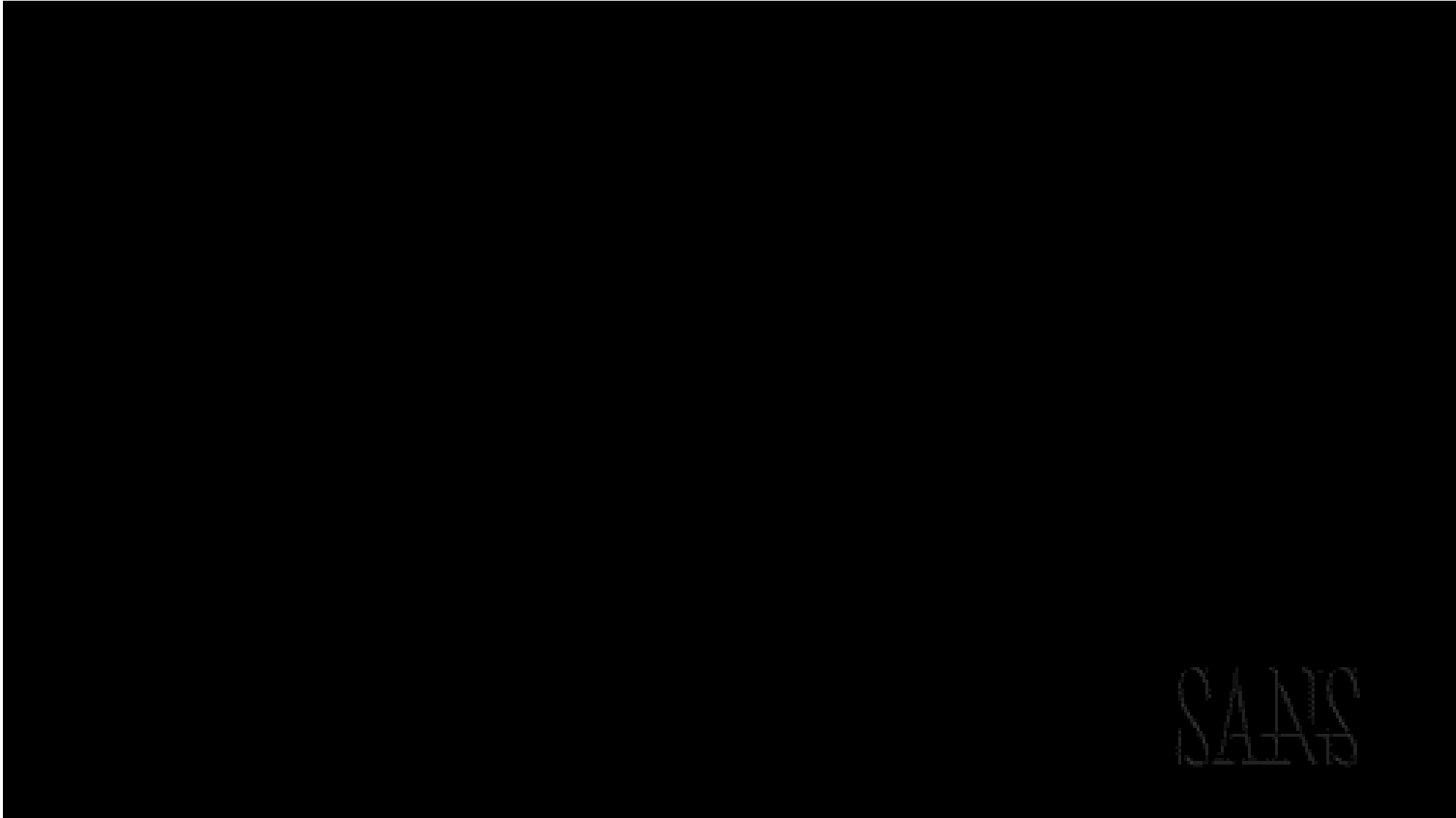
PASSWORDS

DOES IT MATTER?

- Is your email password the same as your Facebook password?
- Is that Good? Bad? Why?



PROTECT YOUR PASSWORD



WHAT SHOULD YOU DO?

- Same password everywhere?
 - PLEASE, NO!!!
 - If one is compromised, all are compromised
 - Different systems have different pw rules
 - Violates K-State policy about eID passwords
- Rely on your memory?
 - Value is inversely proportional to your age!
 - You'll often click on "Forgot Your Password?" links!
- Write 'em down?
 - Risky, but not out of the question if you keep the note in a safe place (NOT your desk pencil drawer)
 - Bigger issue is quantity of passwords you have to remember
 - Generally considered a bad idea



LET YOUR BROWSER STORE THEM ALL?

- OK for some passwords, but not others
- Too risky for accounts with access to sensitive information
- Easy for someone to view the stored passwords, unless you...
- Use Chrome or Firefox and password-protect viewing stored passwords... and don't forget THAT password!
- DON'T do it with your eID password, financial accounts, anything with access to personal identity info (like SSN)
- Never do this on a shared, lab, or public computer
- IE stores browser ("AutoComplete") passwords in Registry
 - Free tools readily available to recover them.
 - Delete in IE8 with Tools->Internet Options->General->Browsing history->Delete, check the "Passwords" box
- Chrome or Firefox had built-in tool to view them and delete them (Tools->Options->Security->Saved Passwords); be sure to use a "Master Password" to protect the stored passwords



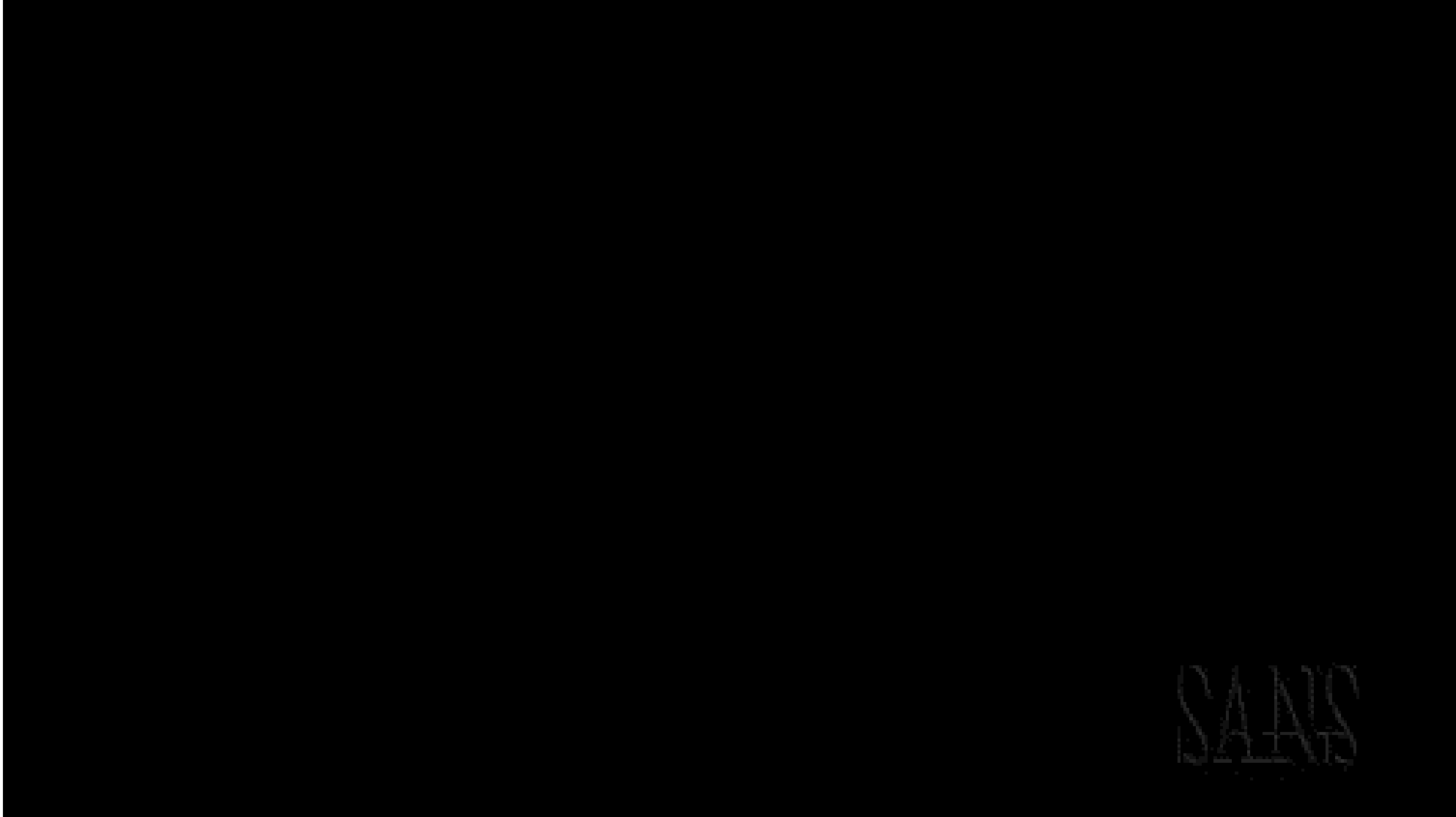
WHY PASSWORDS ARE IMPORTANT?

- They are the entry point to your
 - Email, Twitter, Instagram, SnapChat, Facebook, Myspace ← Ha Ha Myspace...
 - Online Banking
 - Amazon, eBay, and other sites where you spend \$\$\$\$
- IT and other enterprise resources.
- They provide access to the VPN, e-mail servers, and the network.
- Misused or stolen passwords can give intruders access to your personal info.

INTERNAL PASSWORD THEFT IS EASY

- “Social engineering” is one of the easiest ways for intruders to compromise networks and other organizational systems.
- Others can hear you give a password to someone you trust.
- Someone looking over your shoulder can discover a password.
- Don’t keep a copy of your password in a desk drawer, on a monitor, or under a keyboard.

SOCIAL ENGINEERING



PROTECT YOUR PASSWORD

- Your password is yours alone.
- Don't share it with anyone, including supervisors, personal assistants, or IT personnel.
- Never write down your password.
 - You wouldn't write your PIN number for your ATM card, would you?
- Do NOT:
 - Say your password aloud.
 - E-mail your password to a co-worker.
 - Offer anyone hints about what your password might be.

EXAMPLES OF BAD PASSWORDS

- Sports teams or terms: LouvilleSlgr
- Number sequence: *12345*
- Letter string: AAAAAA
- Mixed-case sequence: ABcdEFgh
- Company name: AcmeIT
- Keyboard sequence: QwERty or ASdFgh

LETS LOOK AT SOME
BAD PASSWORDS

CREATE A STRONG PASSWORD

- Are eight characters or longer... Mine are at least 13 and more likely 21 characters
- Can't contain any part of a user's full name or username
- Don't use any term that could easily be guessed by someone who is familiar with you
- Should not include any personal information, e.g., the name of a spouse or a street address
- Should not contain personal identification numbers, including those on a license plate, your telephone number, birth date, or any part of your Social Security number.
- Contain characters from three of the four classes of characters

STRONG PASSWORD SHOULD CONTAIN?

- **THE FOUR CHARACTER CLASSES ARE:**

- English uppercase letters (A, B, C).
- English lowercase letters (a, b, c).
- Arabic numerals (1, 2, 3).
- Special characters (!, *, \$, or other punctuation symbols).

What is Entropy?

□□□□□□□□□□□□□□□□

UNCOMMON (NON-GIBBERISH) BASE WORD

ORDER UNKNOWN

Tr0ub4dor &3

CAPS? □

COMMON SUBSTITUTIONS □□□

NUMERAL □□□

PUNCTUATION □□□□

(YOU CAN ADD A FEW MORE BITS TO ACCOUNT FOR THE FACT THAT THIS IS ONLY ONE OF A FEW COMMON FORMATS.)

~28 BITS OF ENTROPY

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$2^{28} = 3 \text{ DAYS AT } 1000 \text{ GUESSES/SEC}$

(PLAUSIBLE ATTACK ON A WEAK REMOTE WEB SERVICE. YES, CRACKING A STOLEN HASH IS FASTER, BUT IT'S NOT WHAT THE AVERAGE USER SHOULD WORRY ABOUT.)

DIFFICULTY TO GUESS: **EASY**

WAS IT TROMBONE? NO, TROUBADOR. AND ONE OF THE 0s WAS A ZERO?

AND THERE WAS SOME SYMBOL...



DIFFICULTY TO REMEMBER: **HARD**

xkcd.com

[xkcd 936 explained](#)

correct horse battery staple

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FOUR RANDOM COMMON WORDS

~44 BITS OF ENTROPY

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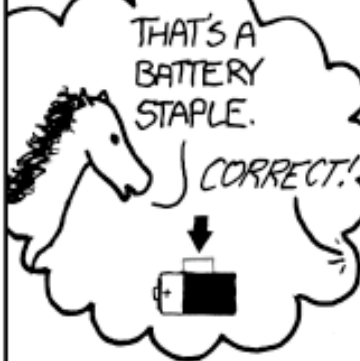
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$2^{44} = 550 \text{ YEARS AT } 1000 \text{ GUESSES/SEC}$

DIFFICULTY TO GUESS: **HARD**

THAT'S A BATTERY STAPLE.



CORRECT!



DIFFICULTY TO REMEMBER: YOU'VE ALREADY MEMORIZED IT

THROUGH 20 YEARS OF EFFORT, WE'VE SUCCESSFULLY TRAINED EVERYONE TO USE PASSWORDS THAT ARE HARD FOR HUMANS TO REMEMBER, BUT EASY FOR COMPUTERS TO GUESS.

SAME PASSWORD FOR SIMILAR CATEGORIES OF ACCOUNTS?

- Have at least four categories:
 - Financial
 - eID and other important K-State accts
 - Shopping accts that store your credit card info
 - Innocuous accts w/ no sensitive information
- #1 and #2 should be long, complex, and changed regularly
- #3 not as long, less complex, changed less often
- #4 can be short, simple, never changed
- Differing password rules may pose a challenge



What is your most important Password?

- SnapChat?
- Bank?
- School?
- Email?
- MySpace?

HERE IS WHAT I DO

- Use A Strong Password
 - Longer than 8 Characters
 - Mix CAPITAL, lower, number & characters
- Use Different Types Of Passwords For Deferent Situations
 - My Email ← Strongest
 - Banks / Credit Cards
 - School
 - Any Account that has a Credit card
 - Any Account that has my PayPal
 - Account I care about, but don't have \$\$ attached (facebook, Instagram, etc)
 - Account that are just because I had to sign up...

HERE IS WHAT I DO

Phrase with a few words 1234\$%#@+4 letters of CONText

Correct battery horse staple + Numbers + Characters + "+" ABCD

LAST WORDS

- A password is the key to your Online presence & resources.
- A strong password can protect your personal account.
- Take strides to make strong passwords that are not obvious to someone familiar with you.
- Remember to change your password on a regular basis.
- [Ellen's Password minder protector minder...](#)

Season 10

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