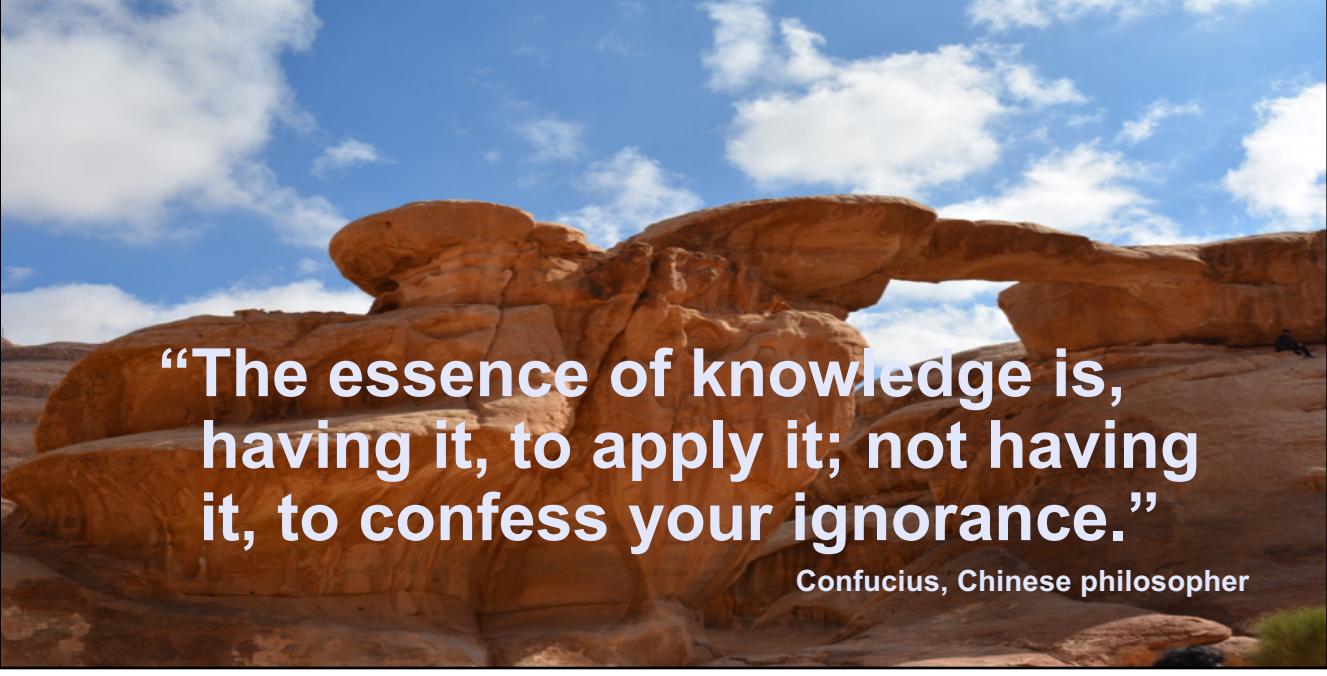


Welcome



**“The essence of knowledge is,
having it, to apply it; not having
it, to confess your ignorance.”**

Confucius, Chinese philosopher

1

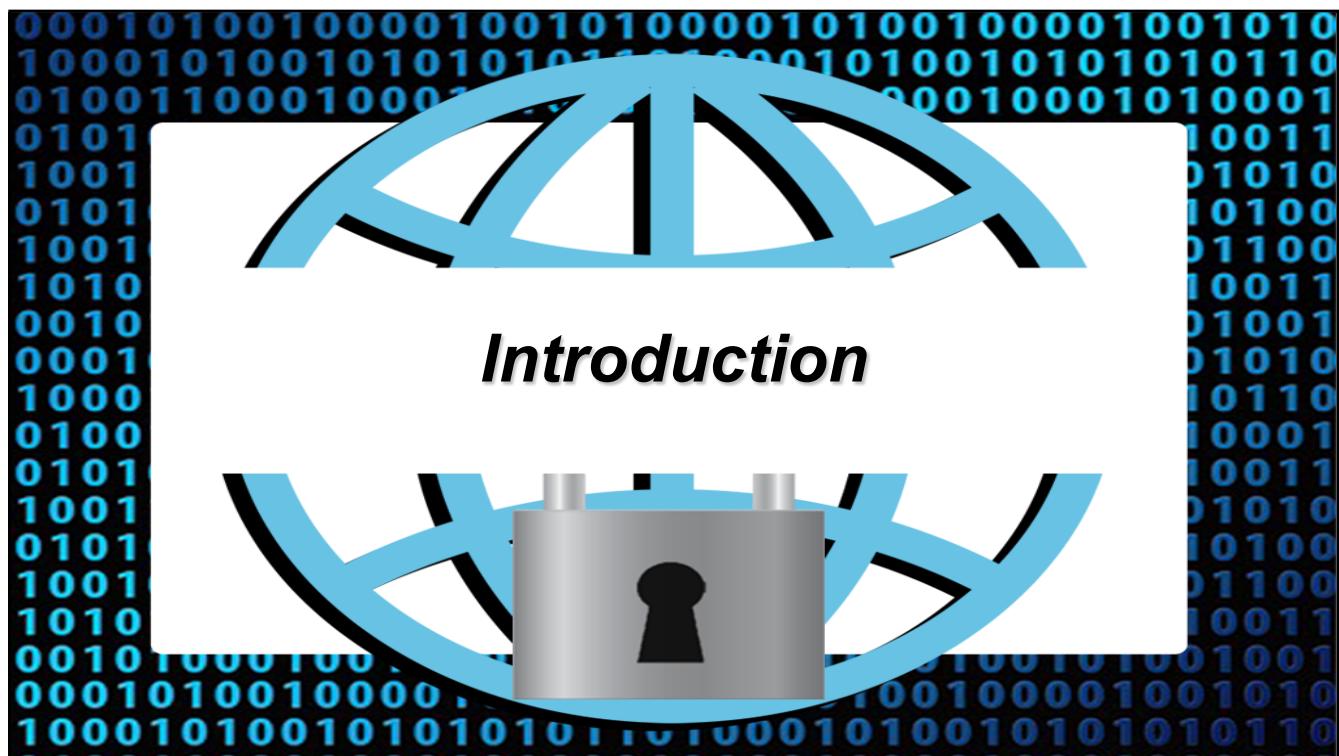
Human-Computer Interaction in Cyber Security

Abbas Moallem, Ph.D.

Overview

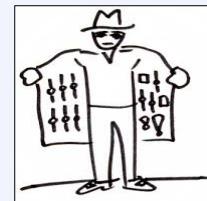
- **Introduction**
- **What is Cybersecurity?**
- **Faculty General Cybersecurity Awareness**
- **Students' Secure and Unsecured Behaviors**
- **How to Improve Awareness**
- **Training Students**
- **Conclusion**
- **Questions and Answers**

3



4

Human Society and Crime



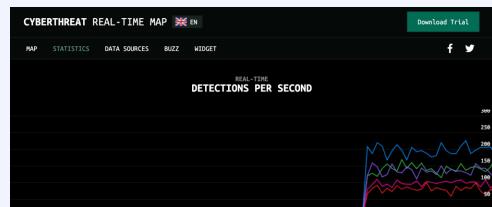
Abbas Moallem, Ph.D.

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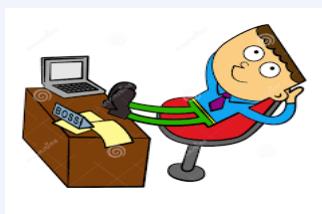
5

5

Digital Age and Crime



Scale



Volume

Ease

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What is Cybersecurity?



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What is Cybersecurity?

Cybersecurity, also referred to as information technology security, focuses on protecting **computers, networks, programs** and data from unintended or unauthorized access, change or destruction.

<http://www.umuc.edu/cybersecurity/about/cybersecurity-basics.cfm>

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Hackers

A young boy is arrested by the U.S. Secret Service for writing a computer virus and is banned from using a computer until his 18th birthday. Director Iain Softley and writer Rafael Moreu incorporated many of the more common cyber-attack scenarios into this movie. From breaking into a super computer and dumpster-diving phone taping, to changing the record on databases, the movie portrays a good overview of the new era of cyber security. Also, to some degree, it illustrates how the hacker community operates.



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Hacking in the News..

A composite screenshot showing several news articles about hacking. At the top left is a mobile version of The Washington Post with a headline about Capital One being hacked. In the center is USA Today's homepage with a story about T-Mobile disclosing a data breach. To the right is a snippet from Kaiser Health News (KHN) about patients' records being hacked. A sidebar on the right shows a Facebook feed with a story from TechCrunch about Capital One's data breach being added to Top Stories. The bottom right corner includes the copyright notice © ISE217 and the page number 10.

10



**Cyber attacks
affects each of us**

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**Within the last year, more than
978 million adults in 20 countries
globally experienced cybercrime**

According to



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44% of consumers were impacted by cybercrime in the last 12 months.

According to



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Victims of cybercrime globally lost \$172 billion – an average of \$142 per victim – and nearly 24 hours globally dealing with the aftermath.

According to



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Common Cybercrimes

The most common cybercrimes experienced by consumers or someone they know include:

- Having a device infected by a virus or other security threat (53%)
- Experiencing debit or credit card fraud (38%)
- Having an account password compromised (34%)
- Encountering unauthorized access to or hacking of an email or social media account (34%) o Making a purchase online that turned out to be a scam (33%)
- Clicking on a fraudulent email or providing sensitive (personal/financial) information in response to a fraudulent email (32%)

According to 

Example

They're more likely to use the same online password across all accounts and share their device or online account passwords with others than non-cybercrime victims.

20%

of cybercrime victims globally use the same online password across all online accounts

58%

of cybercrime victims shared at least one device or account password with others

According to Norton

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Fact

The FTC's Consumer Sentinel Network, which collects data about consumer complaints including identity theft, found that 18% of people who experienced identity theft in 2014 were between the ages of 20 and 29.



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Cyber Attackers

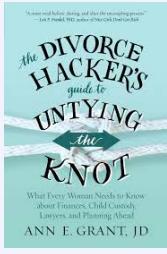
Spies



FBI Files:
Most Wanted Hackers

Total Reward: \$4.2 Million

Criminals



Litigators

Cyber War Actors



Marketers



People Around

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20

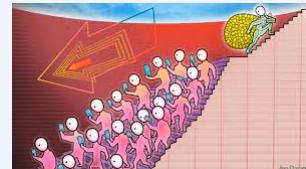
Motivation



Financial Gain



Political Influence



Trade Secret



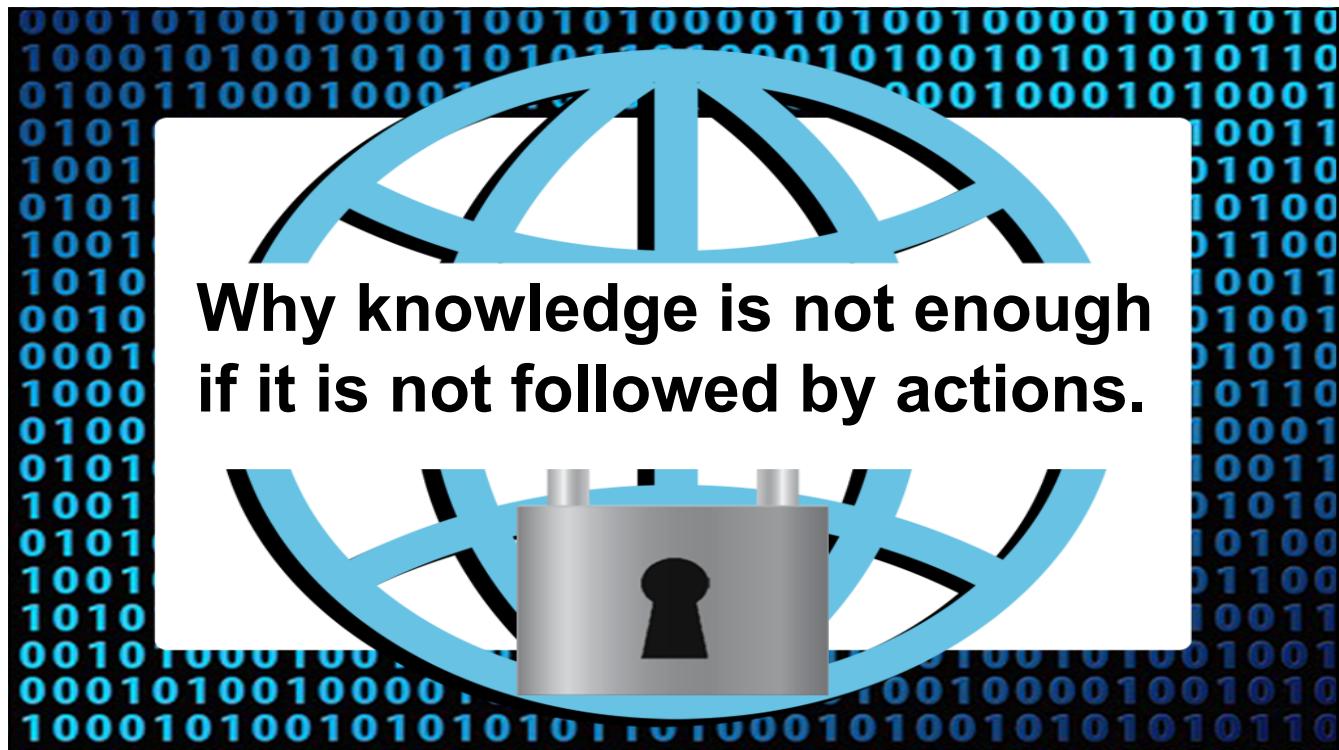
Intellectual Property



Revenge



Fun-Curiosity



Digital World Change Our Life



Shopping



Banking



Information



Government Affairs



Meeting



Socializing

will be done through network and computer interfaces.

Knowledge on Cybersecurity

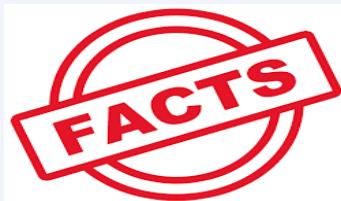
Cyberattacks evolve and grow much faster than technical solutions to protect against them.

Thus,

People should where they are at risk and how to protect themselves.

Fact

- In September 2017, Equifax, one of three major credit-reporting agencies in the United States, revealed that highly sensitive personal and financial information for about 143 million American consumers was compromised in a cyber security breach that began in late spring that year.



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Recent News



Capital One hacked, over 100 million customers affected

TechCrunch · 1h · Gregg Kumparak
Capital One was hacked earlier this month, the company has disclosed. A notice about the data breach is currently being broadcast from the company's home page. Capital One believes the breach exposed credit card application data for those who'd applied between 2005 and 2019...



Forbes

Billionaires Innovation Leadership Money Consumer Industry Lifestyle Brand

14,919 views | Jul 27, 2019, 11:43am

Apple Contractors Hear "Sexual Acts" On Accidental Siri Recordings



Jay McGregor Senior Contributor
Consumer Tech



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Human Behavior

We have police and security all over place



However we still lock our doors or put our valuable in the safe box.

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Modern Time

All individuals not only must be aware and knowledgeable about the cybersecurity but also, they must have practical skills and abilities to protect themselves on cyberspace.



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Awareness

Users' understanding of risks and how to protect themselves from cyber-attacks is fundamental in modern life.

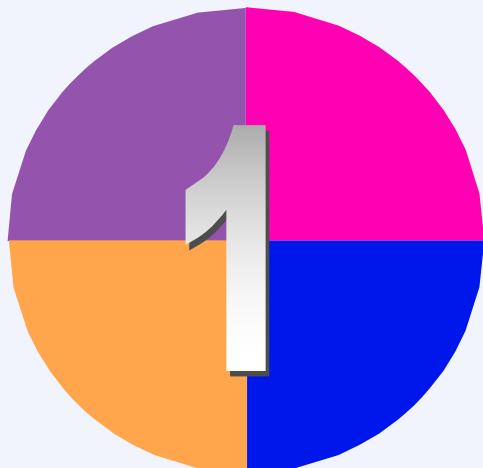


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Trust



Defining Trust

- “willingness to be vulnerable to the actions of another party”
- Trust is based on a set of beliefs about trustworthiness

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Do you trust this site?

The screenshot shows a faculty profile page for Abbas Moallem, Ph.D., on the San Jose State University website. The page includes a photo of Dr. Moallem, his contact information, office hours, education background, and a bio. The URL in the browser bar is https://www.sjsu.edu/people/abbas.moallem/

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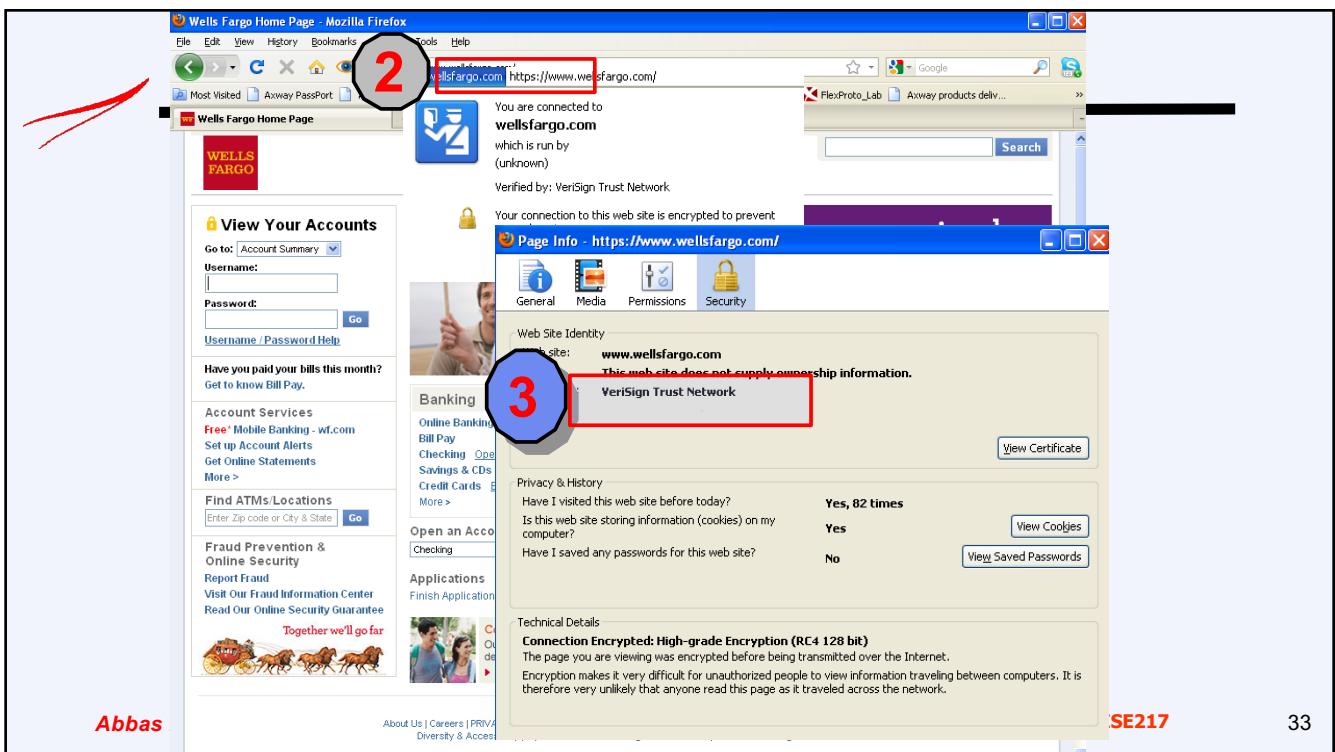
The screenshot shows the Wells Fargo Home Page in Mozilla Firefox. A red circle highlights the URL bar, which displays https://www.wellsfargo.com/. The page features various banking services like Bill Pay, Banking, and Investments, along with promotional banners for simplifying savings and managing money.

Abbas Mo.

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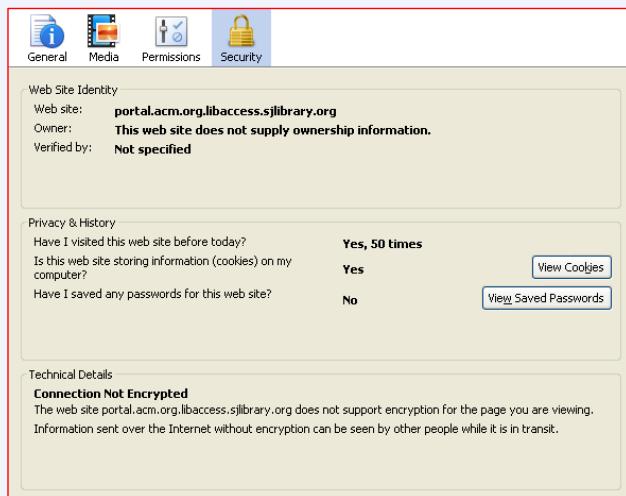
32



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Certificate Information

Example of Certificate Information available through Firefox browser 3.6.3

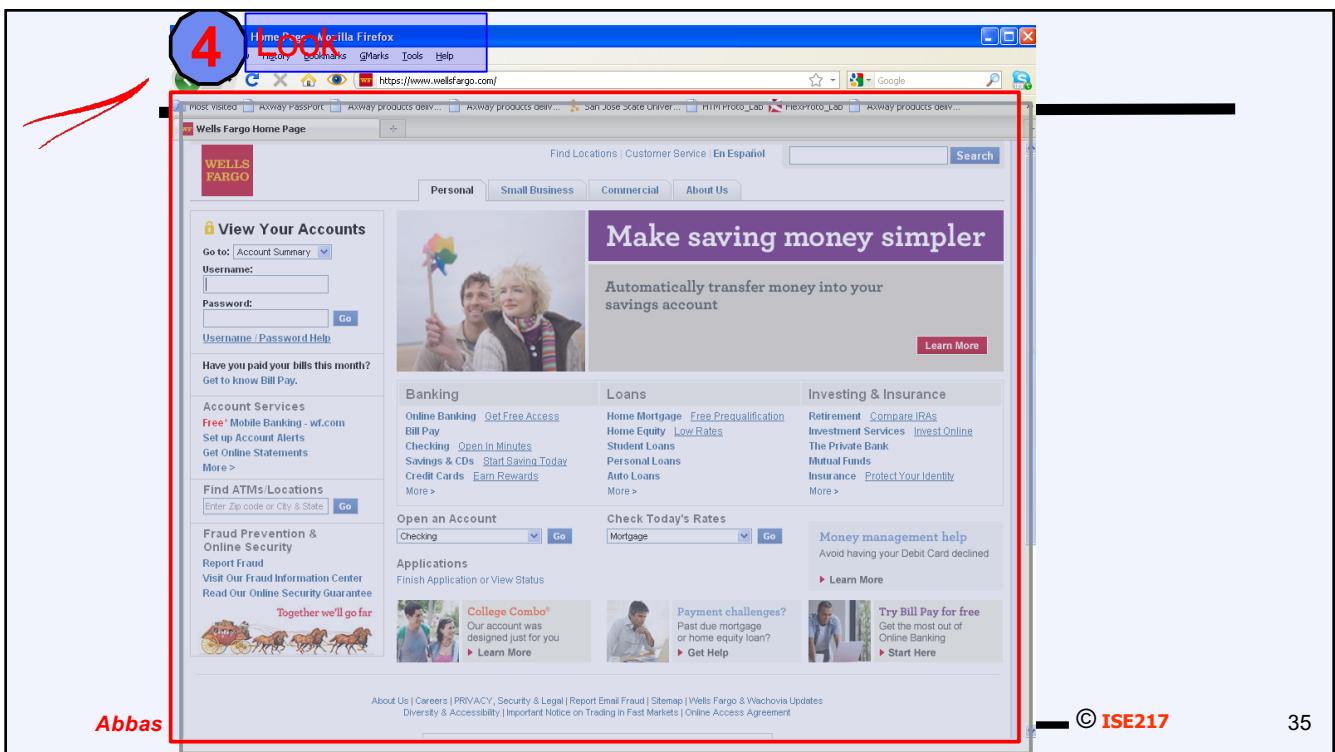


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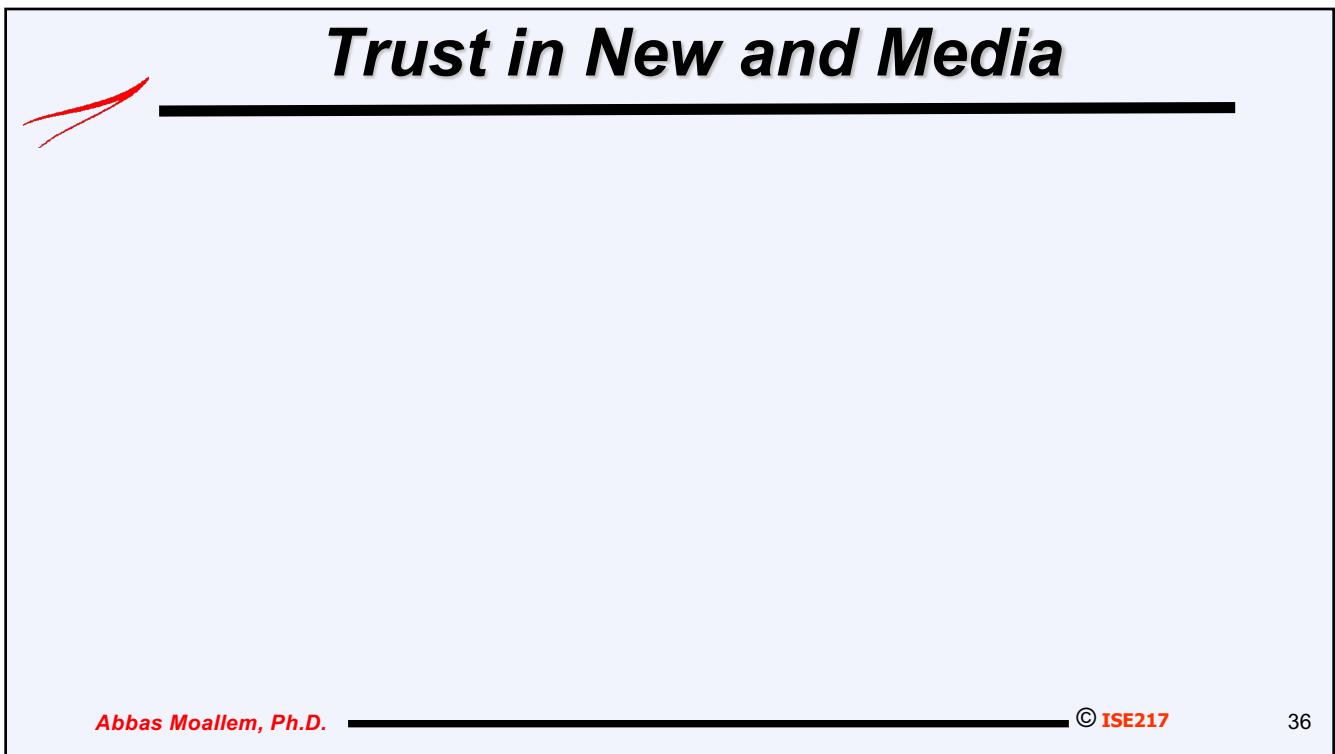
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34

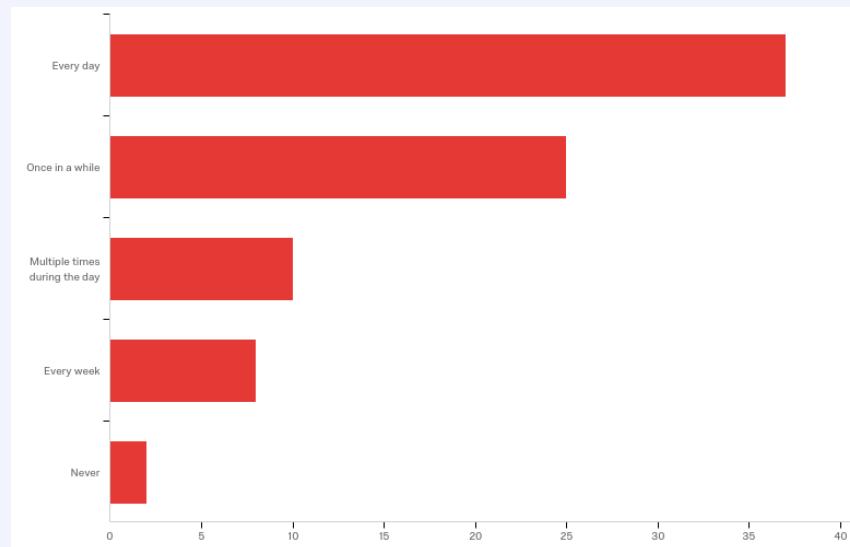


35

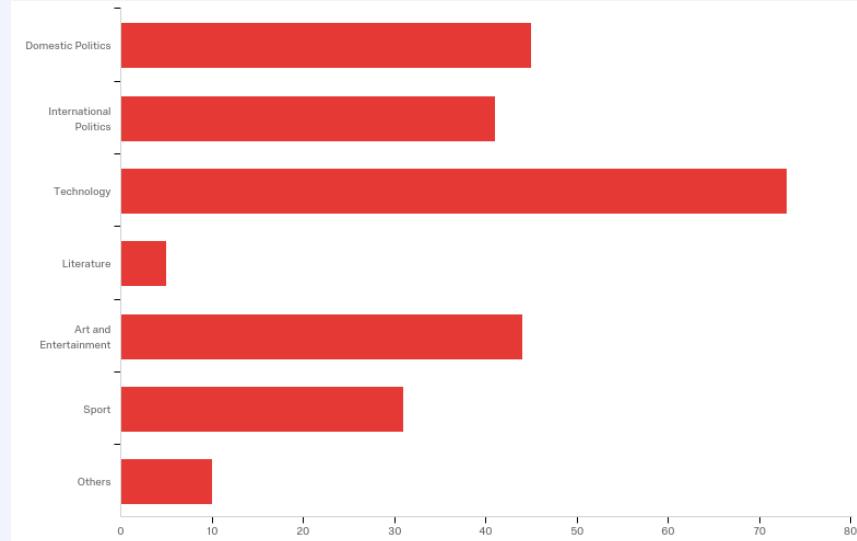


36

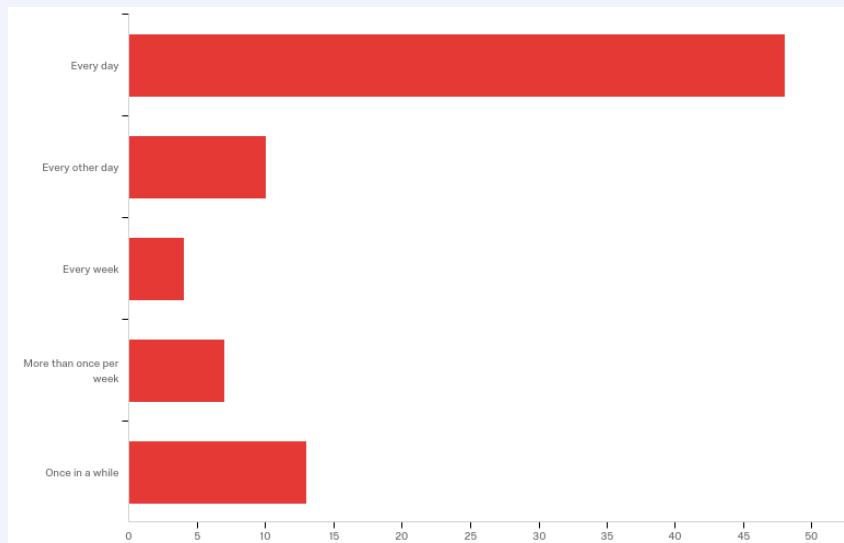
Q1 - How frequently do you listen, watch or read news using any available channels?



Q2 - What kind of news do you generally follow?



Q4 - How often do you check news from social media?

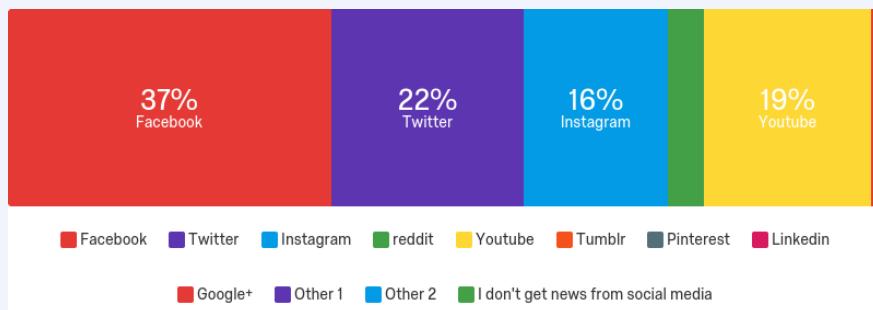


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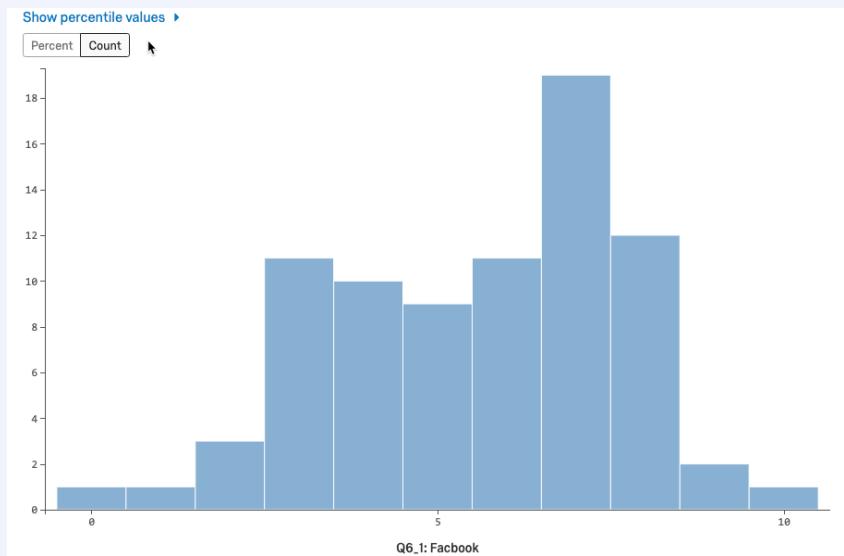
Q5 - Which social media platform do you receive most news from?



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Privacy



Personal Data

Privacy concerns the right of a person to not disclose specific information about himself or herself, or more precisely, to disclose that information only to selected entities, but not to others

Privacy Perception



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Surveillance



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Surveillance

NEWS ARTS & LIFE MUSIC SHOWS & PODCASTS SEARCH NEWSCASTS

NATIONAL SECURITY

With Closed-Circuit TV, Satellites And Phones, Millions Of Cameras Are Watching

February 8, 2018 - 2:27 PM ET Heard on Fresh Air

TERRY GROSS

FRESH AIR

Journalist Robert Draper writes in *National Geographic* that the proliferation of cameras focused on the public has led "to the point where we're expecting to be voyeur and exhibitionist 24/7."

Transcript

TERRY GROSS, HOST:

<https://www.npr.org/2018/02/08/584243140/with-closed-circuit-tv-satellites-and-phones-millions-of-cameras-are-watching>

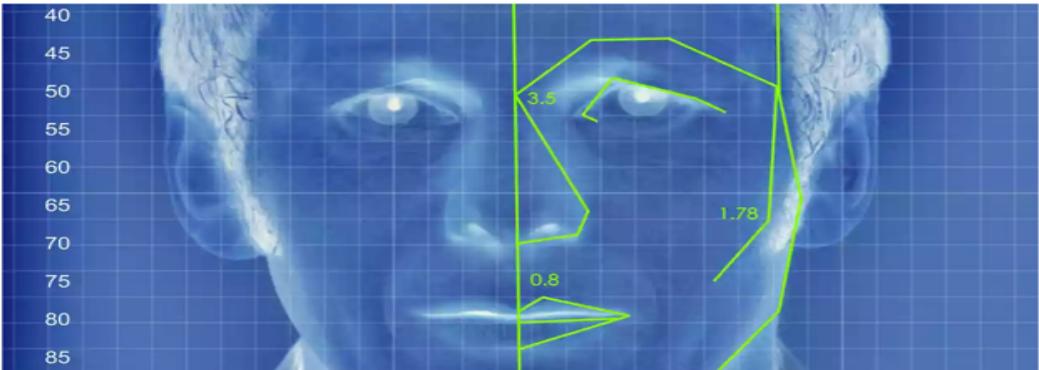
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Social Media

New AI can guess whether you're gay or straight from a photograph

An algorithm deduced the sexuality of people on a dating site with up to 91% accuracy, raising tricky ethical questions



Michal Kosinski

<https://www.theguardian.com/technology/2017/sep/07/new-artificial-intelligence-can-tell-whether-youre-gay-or-straight-from-a-photograph>

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Social Media

S | World | Politics | Business | Opinion | Health | Entertainment | Style | Travel | Sports | Video Live TV • U.S. Edition +

Did big data help sway the 2016 election?

Fareed Zakaria, GPS

On GPS, Stanford's Dr. Michal Kosinski argues that big data analysis can help a campaign if it's the candidates that win elections. Source: CNN

Facebook Twitter More </>

6 watching (15 Videos) <https://www.cnn.com/videos/tv/2017/03/04/exp-gps-michal-kosinski-big-data-us-election-trump.cnn>

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Fake Customer Service

A real customer tweets at a major bank.

In reply to: Instant - 6m
@TheUsualStudio Dear Charlee, We sincerely apologize for this. Log into your account via our secure sign on channel

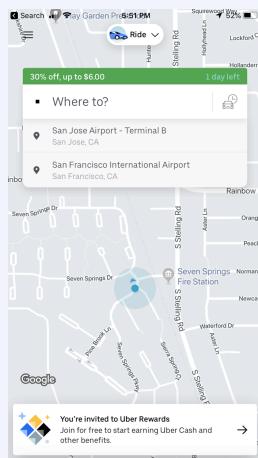
Fraudsters intercept the tweet with a link to a fake support site that tries to steal her actual bank account credentials.

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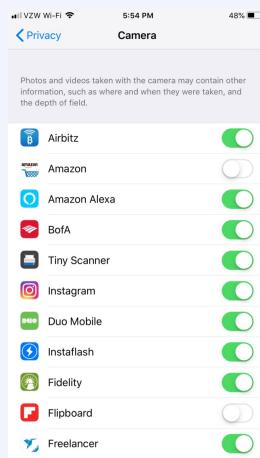
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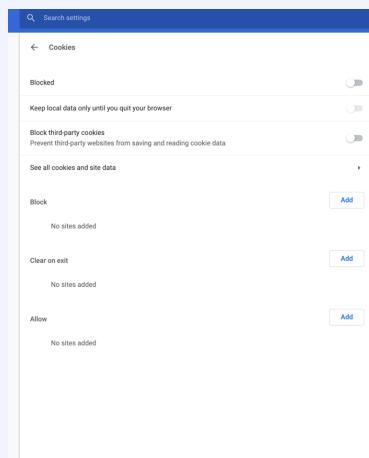
Privacy Issues



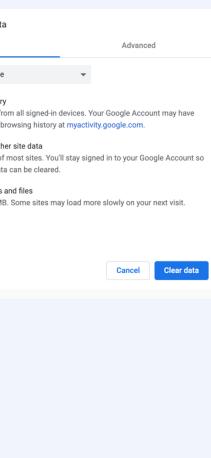
Location Services



App Permission



Cookies



Browser Setting

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Mobile: Application Access



Application access settings determine whether one application can access resources from another application.

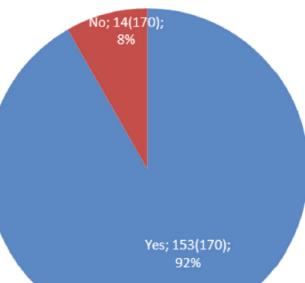
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App Access

Have you ever rejected a mobile app request for accessing your contacts, camera or location?



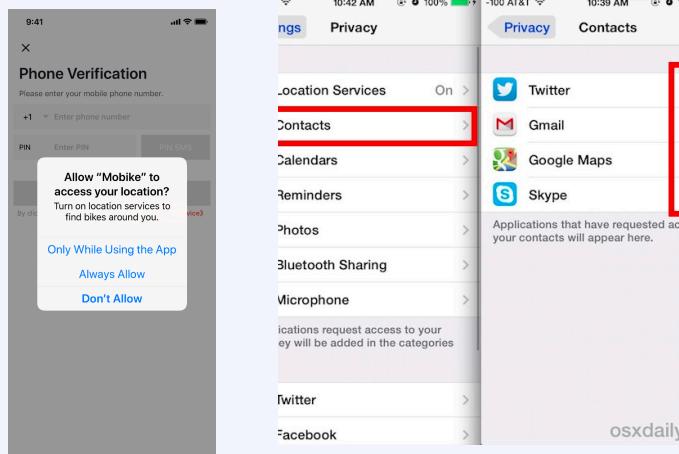
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Access Request



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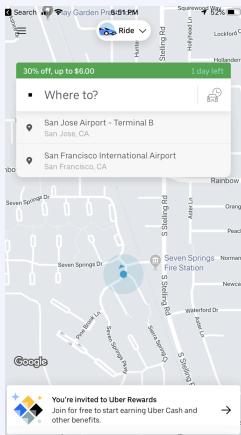
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Location Services

Location Services



Global NEWS

National ▾ Change Location

TV News Programs ▾ Newscasts & Videos

World Canada Local ▾ Politics Smart Living Money Entertainment Health Video Podcast

TECH August 13, 2018 8:01 am Updated: August 13, 2018 11:20 pm

Google tracks your movements on your phone, even if you tell it not to

By Ryan Nakashima The Associated Press

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App Permission

Location Services



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Privacy

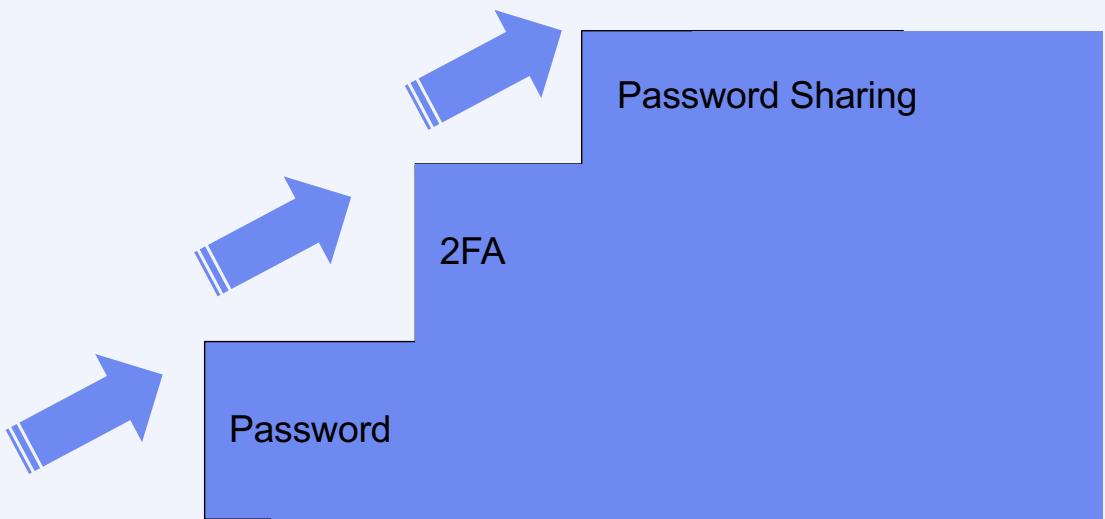
- Despite awareness of importance of Internet privacy, college students are still willing to engage in risky online activities.
- young adults need
 - to be motivated to enact security precautions.
 - take seriously the risks of Internet use or online safety communication.
 - consider cybersecurity as personal responsibility.

Password



**Hard to Passwords
Password Sharing
Reuse Passwords
Password Changes**

Password

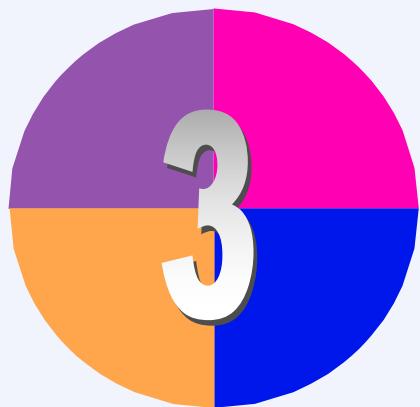


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Two-factor Authentication



**Familiarity
Usage**

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Identity Theft



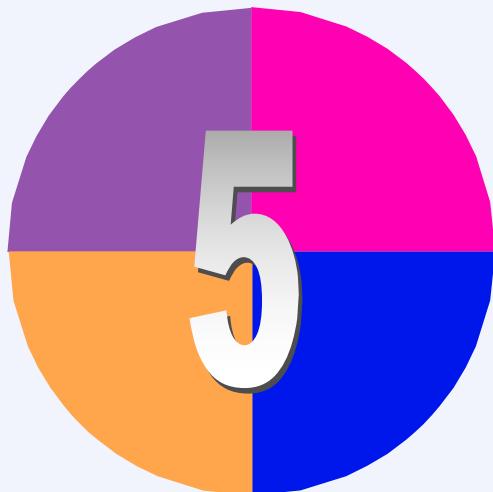
**Hard to Passwords
Password Sharing
Reuse Passwords
Password Changes**

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Ransomware



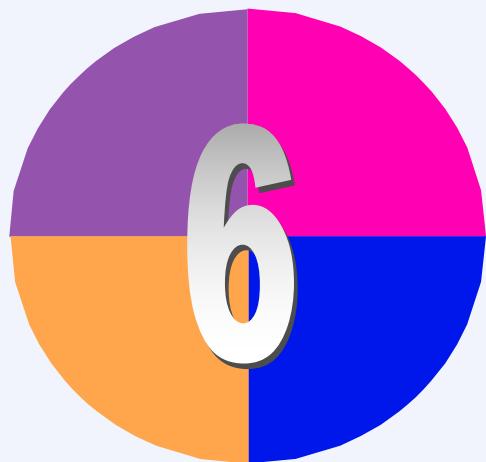
What is it?

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Mobile Phone Protection



App Permission

Internet Cookies



Cookies

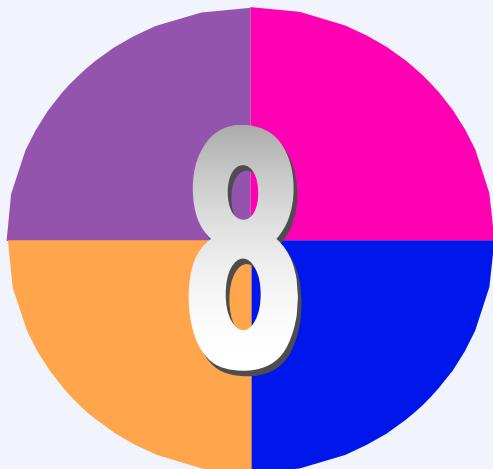
All Cookies and site data		Remove All
1rx.io	1 cookie	▶ ⚡
2013561.fl.doubleclick.net	Local storage	▶ ⚡
254a.com	2 cookies	▶ ⚡
360yield.com	5 cookies	▶ ⚡
3lift.com	3 cookies	▶ ⚡
6sc.co	1 cookie	▶ ⚡
a.ad.gt		▶ ⚡

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Social Networking



**Time Spent of SN
Posting
Reuse Passwords
Password Changes**

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Social Media



Social media are interactive Web 2.0 Internet-based applications. User-generated content, such as text posts or comments, digital photos or videos, and data generated through all online interactions, is the lifeblood of social media.

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Social Networking Usage

79% of American adults say that they use the Internet

59% of Internet users say they use at least one Social Network Site.

Pew Research Center

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Self-revelation & Self Disclosure

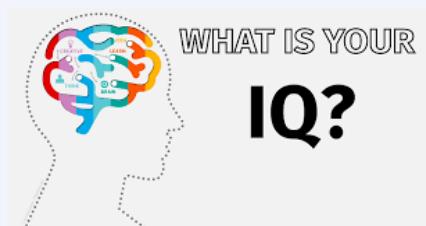


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Self-revelation



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Social Networking Fact Sheet

Who uses social networking sites

% of internet users within each group who use social networking sites

All internet users	74%
a Men	72
b Women	76
a 18-29	89 ^{cd}
b 30-49	82 ^{cd}
c 50-64	65 ^d
d 65+	49
a High school grad or less	72
b Some college	78
c College+	73
a Less than \$30,000/yr	79
b \$30,000-\$49,999	73
c \$50,000-\$74,999	70
d \$75,000+	78

Pew Research Center's Internet Project January Omnibus Survey, January 23-26, 2014.

Note: Percentages marked with a superscript letter (e.g., ^a) indicate a statistically significant difference between that row and the row designated by that superscript letter, among categories of each demographic characteristic (e.g., age).

PEW RESEARCH CENTER

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An Average Day on Facebook...

- 15% of Facebook users update their own Status
- 20% of users “like” another user’s content
- 10% of users send another user a private message

Pew Research Center

http://www.pewresearch.org/?_ga=1.79080852.1486904407.144651218

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Social Network Attacks

According to Symantec's 2014 Internet Security Threat Report, the primary motive behind social networking attacks is monetary gain.

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Training and Education



Formal Education



Training program for IT professionals



Employee Training



Security Education, Training, and Awareness (SETA) Programs



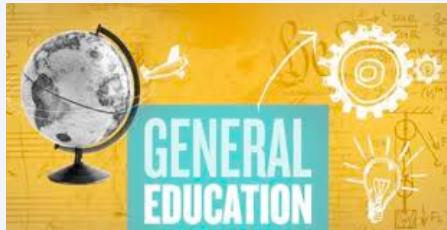
End Users Training

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Solutions



General Education



Games



Cybersecurity Culture

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knowledge is still not sufficient

- to lead to actions to protect themselves in cyberspace.
- Students and faculty that self-evaluate themselves as "strongly knowledgeable" do not take actions that are significantly different from other respondents.



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