Introduction to the Internet

Presented by the
MC-NPL Computer Lab

Class Lesson Plans available at:
www.mc-npl.org/class-resources

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# Objectives

- What is the Internet & how does it work?
- Who controls the Internet?
- What is the World Wide Web (aka "the Web")?
- What do I need to access the Web?
- Terminology

What is the Internet?

The Internet is a **global network of computers**. It is millions of computers around the world, all connected, that share information with each other.

People often think of the Internet as a cloud in space. In reality, every computer in the Internet, is connected by **actual wires** -- Ethernet cables, phone lines, and fiber optic wiring on the ocean floor to connect the continents!

Submarine Cable Map 2016 — TeleGeography / PCCW Global
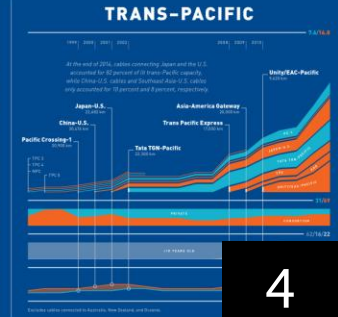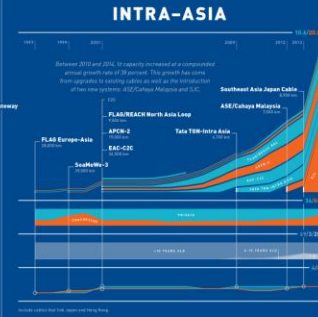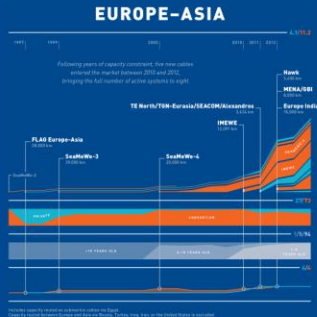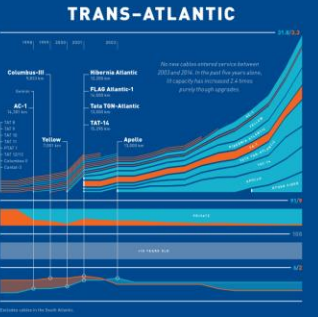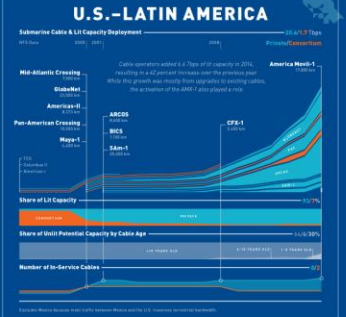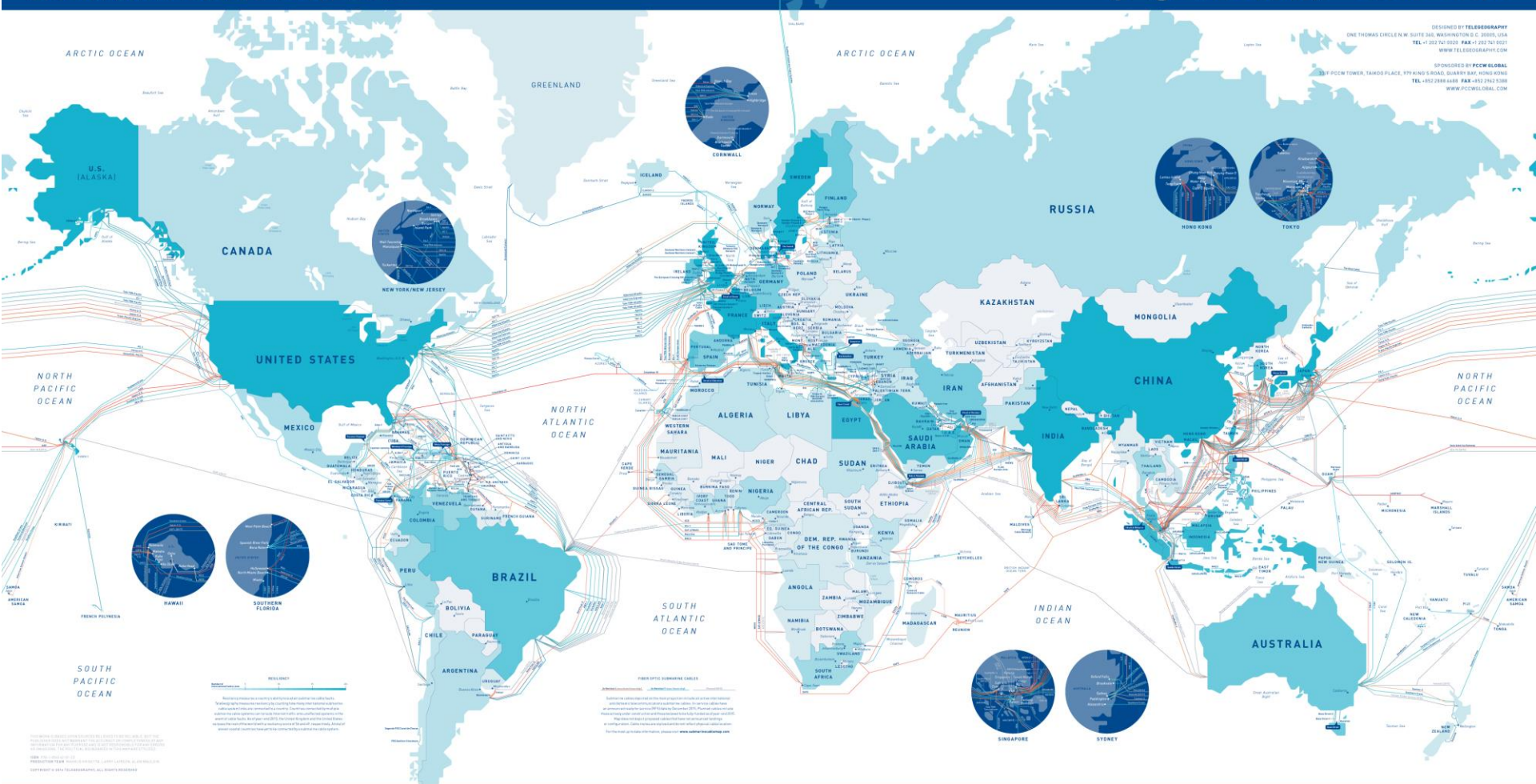
What is a server?

There is a LOT of information on the Internet, but all of it comes from **another computer somewhere**. Special computers designed for transmitting information on the Internet are called **servers**.

Big Internet companies often own **thousands** of servers so that their websites are fast. To the right is a picture of one of Google's many **server rooms**, located in Georgia. A server room is a large, air-conditioned room filled with thousands of servers. When you do a Google web search, your computer just might be "talking" to one of the servers in this server room.

Google server room in Georgia
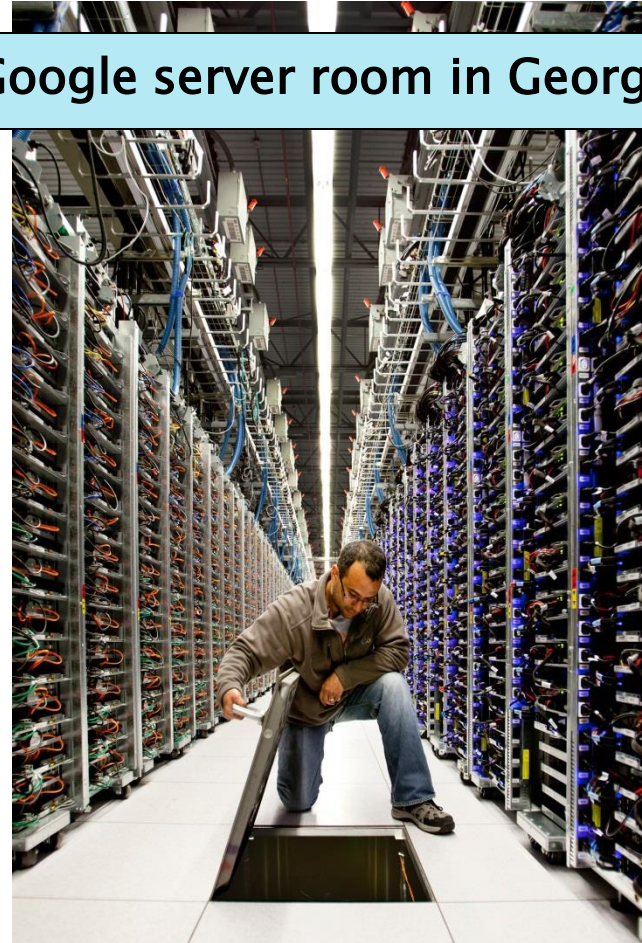
Who Controls the Internet?

- The Internet is a **cooperative endeavor** –no organization is "in charge" of it.
- The Internet is an inherently **participative** medium. Anybody can publish information or create new services.
- When you connect your computer to the Internet, you become **part** of the Internet.

What is the Web?

Many people use the words "**the Internet**" and "**the Web**" interchangeably, but they do not mean the same thing.

The "**Web**" (short for "World Wide Web") is just one of the services that runs on the Internet. It is a collection of interconnected webpages, documents and other resources.

The "**Internet**" includes the web, e-mail, instant messaging, multiplayer gaming, and streaming media (like videos and music).

What do I need to access the Internet?

#1 A computer device such as:

Desktop Computer

Laptop Computer

Tablet

Smartphone

What do I need to access the Internet?

#2 An Internet connection, obtained through:

Internet Service Provider (ISP)

- Home & office computers
- Fastest speed
- Via: fiber, cable, DSL

Wi-Fi Hotspot

- Public place (library, coffee shop, hotel)
- Often free, but sometimes costs money or requires password

Cell Phone Carrier

- Smart phones only
- Technologies: 3G, 4G, LTE
- Cost and usage limits vary depending on cell phone **data plan**
- Accessible anywhere phone has signal
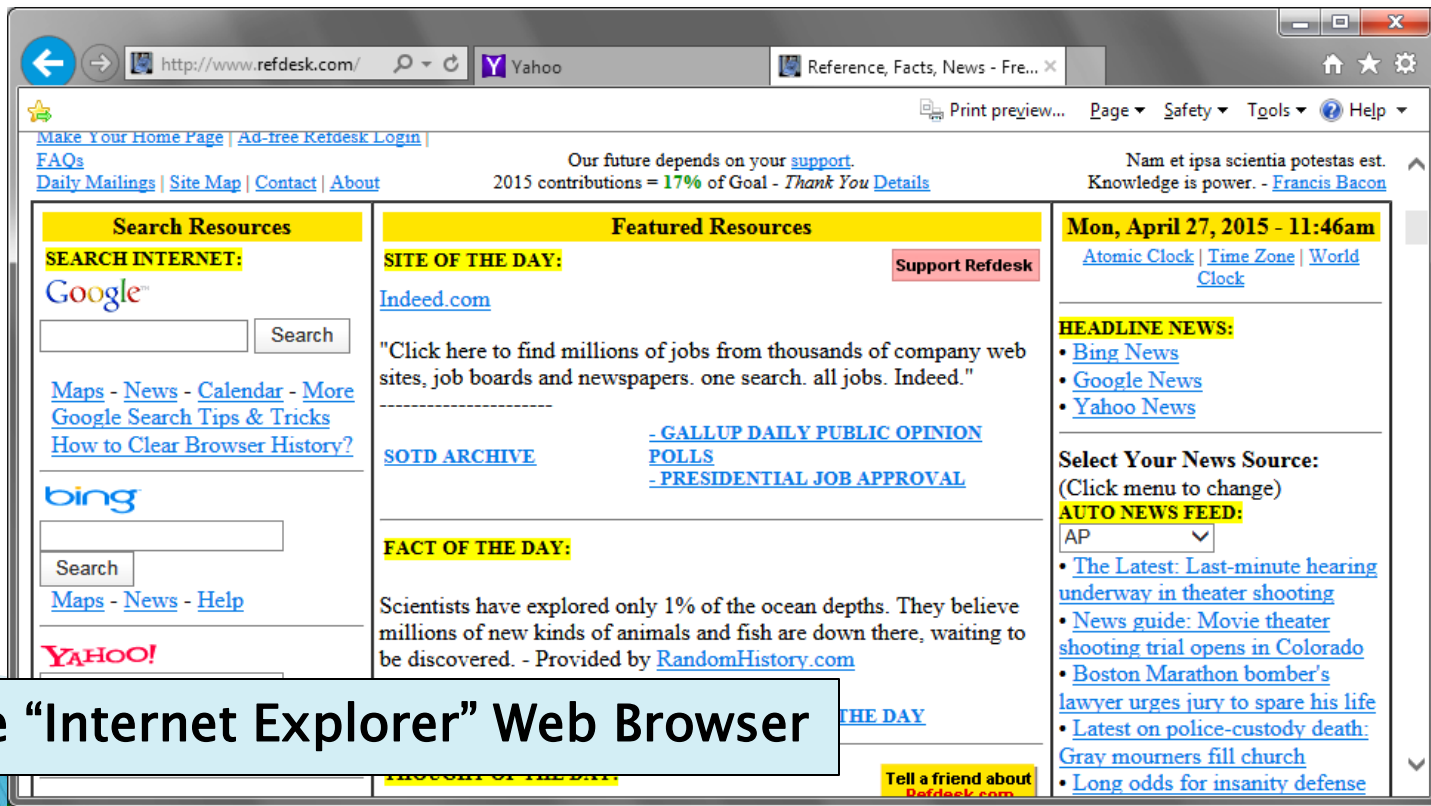- Speed varies depending on signal strength

What do I need to access the Internet?

#3 A web browser

▸ A web browser is computer software that allows you to view **webpages**.

The "Internet Explorer" Web Browser

Common Web Browsers

Chrome

▶ **Creator**: Google
▶ **Cost**: Free
▶ **U.S. Usage**: 48%
▶ Very good overall.

Internet Explorer

▶ **Creator**: Microsoft
▶ **Cost**: Free
▶ **U.S. Usage**: 14%
▶ Comes with Windows.
▶ Only available on Windows.

Common Web Browsers

Safari

- **Creator**: Apple
- **Cost**: Free
- **U.S. Usage**: 19%
- Comes with iMacs, iPhones, and iPads.
- Only available on Apple products.

Firefox

- **Creator**: Mozilla
- **Cost**: Free
- **U.S. Usage**: 11%
- Non-profit company.
- Open source (you can see the computer code, makes them more accountable to their users).
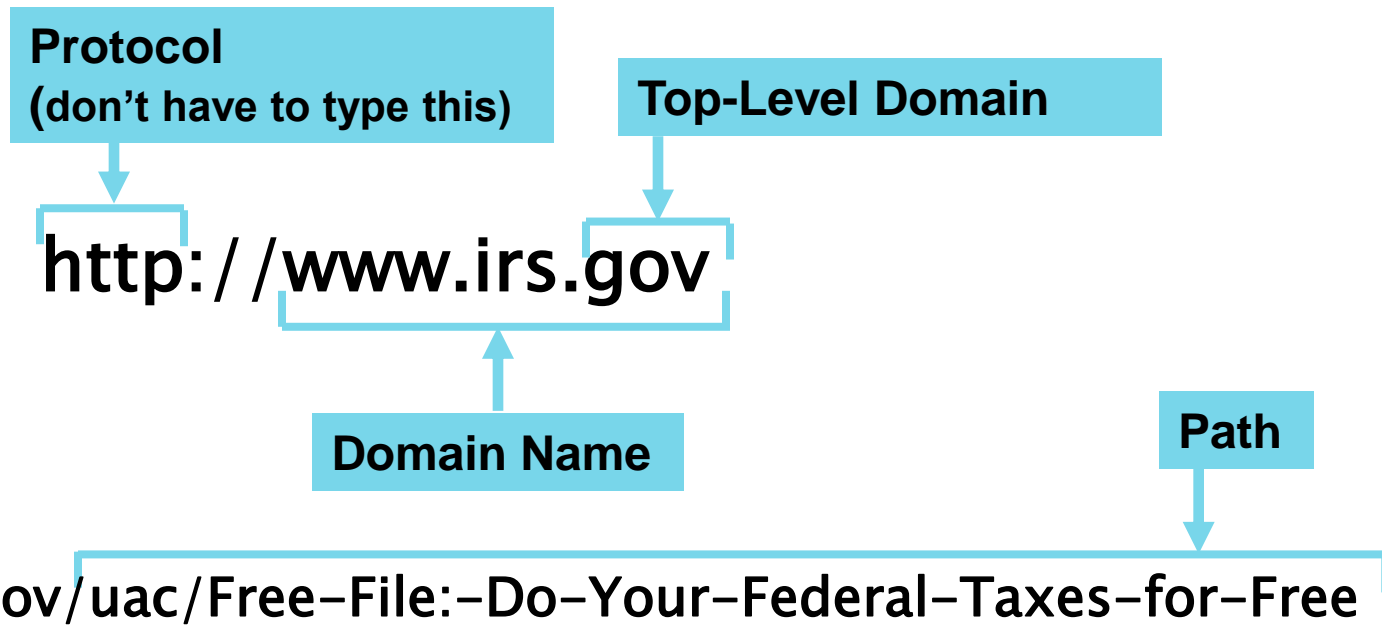
Common Web Browsers

Edge

- **Creator:** Microsoft
- **Cost:** Free
- **U.S. Usage:** 5%
- New browser, only available on Windows 10.
- Meant to replace Internet Explorer.

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What's a URL?

(Uniform Resource Locator)

A URL is the Internet address of a particular site or document available via the World Wide Web. Just like you have an address for your house, there is an address for each website.

**Protocol
(don't have to type this)**

Top-Level Domain

http://www.irs.gov

Domain Name

Path

http://www.irs.gov/uac/Free-File:-Do-Your-Federal-Taxes-for-Free

Samples of _invalid_ Internet addresses:

www.computers
myname@computer.com
computer/net.com

Common Top-Level Domains

This is an indication of the type of organization that is hosting the web page. It's a __category__ of sorts.

.com	Commercial (for-profit business)	www.google.com
.net	Originally for network providers, now used as an alternative to ".com"	www.comcast.net
.org	Organization (non-profit)	www.mc-npl.org
.gov	Government agency	www.irs.gov
.edu	Educational institution	www.mc3.edu
.mil	Military	www.army.mil
Web sites located in other countries have a __two-letter country code__ for their top-level domain. Each country has its own list of __second-level domains__ (comes before the top-level domain)		www.bbc.co.uk .uk = "United Kingdom" (top-level domain) .co = "commercial" (second-level domain)

What is a hyperlink?

- A hyperlink is a graphic or a piece of text in a webpage that, when clicked, will send the reader to another webpage or document.
- Hyperlinks often look like blue underlined text but can also appear as icons or other graphics.
- Whenever you place your mouse cursor over a hyperlink, it will change into a pointing hand.

What can you do on the Internet?

Send and receive email	`www.gmail.com`
Read newspaper	`www.philly.com`
Get driving directions	`www.mapquest.com` `maps.google.com`
Search for a job	`www.monster.com`
Shop or Sell	`www.amazon.com` `www.ebay.com`
Research	`www.wikipedia.com`
Watch videos	`www.youtube.com`
Watch TV shows	`www.hulu.com` `www.netflix.com`
Check Train/Bus Schedules	`www.septa.org`
Communicate with government	`www.state.pa.us`
Get free credit reports	`www.annualcreditreport.com`
Fact-check rumors	`www.snopes.com`

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Time to Practice!

- Locate your handout for today's class
- Your instructor will show you how to open Internet Explorer

Let's start browsing!

Pop up Blockers

pvlibrary.net/popup-demo

Internet Explorer blocked a pop-up from **www.foodnetwork.com**. | Allow once | Options for this site ▼ | ✕

) PM

Allow once | Options for this site ▼

Always allow
More settings
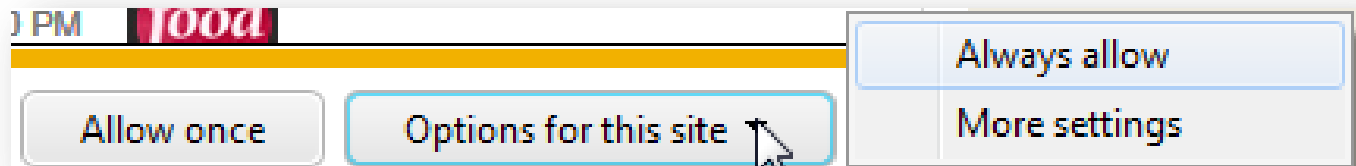
Secure Websites

- There are times when you need to share **personal information** on the Internet.
  - Online shopping
  - Job applications
  - Bank account
  - Doing your taxes
- Only enter your personal information on **secure** websites.
- Secure websites **encrypt** your information so cyber criminals can't intercept it when it travels across the Internet.

How do I know if a website is secure?

Look at the website's URL in the Address Bar. If the protocol is **http****s**, then it is a secure website.

Note the "s". Websites that use the "__http__" protocol (without the s) are __NOT__ secure!

https://www.wellsfargo.com/   Wells Fargo - Personal & B...

A "padlock" icon may also appear

Passwords

- In order to use many of the services on the Internet, you need to create **accounts**, each of which require you to create a **password**.
- Examples of such services include:
  - Email
  - Facebook
  - Amazon
  - Bank Account
- If someone guesses your password, they can access your information, so your passwords should be **hard to guess**.

Characteristics of a **strong** password (most important)

⭐ Is significantly different from your other passwords

⭐ Is at least 8 characters long—the longer, the better (a character is anything you can type on the keyboard)

⭐ Is NOT a word from the dictionary

⭐ Is NOT a proper noun (person, place or thing—real **OR** fictional!)

⭐ Does NOT contain personal information (user name, real name, address, mother's maiden name).

⭐ Does NOT contain characters from adjacent keys (e.g. "zxcvb")

Characteristics of a **strong** password

- Does NOT contain professions of love ("ilovedogs")—a lot of people do this
- Does NOT **start** with an uppercase letter or **end** with numbers.
- Does NOT contain "clever" substitutions for letters or words ("@" instead of "a", "4" instead of "for")
- Mix of different types of characters, though this does not always increase the strength of your password. For example, "rosebud16" is less secure than "rosebudgu"

Passwords are case-sensitive!

Category	Examples
Uppercase letters	A B C
Lowercase letters	a b c
Numbers	1 2 3
Special characters	# % – (space)

Some **good** passwords

rOses21forEver
"roses forever"

giraffeeats75diced*peArs
4 random words from the dictionary formed into a sentence with capitals, numbers & symbols
"giraffe eats 75 diced pears"

there are 100 speCies of roses
passwords don't have to be words—they can be phrases

qaH5RbM1ib
random letters and numbers

Some **bad** passwords

elephant	Just a word from dictionary
f8#Za	Too short
1qaz2wsx	Adjacent keys
ilovemusic64	Profession of love Ends in numbers
$uperm@n	Proper noun "Clever" substitutions
BillClinton	Proper noun Starts with capital letter
4-13-1970	Birthdate (personal info)
143mapleln	Address (personal info)

What if I forget my password?

- Most websites provide an option for **resetting** your password via **email** if you forget it.
- Therefore, you should **never forget your email password**. Spend time to make it is both **secure** and **easy to remember**.
- Your email account is like your **ID card for the Internet**—most services will ask you for your email address in order to create accounts with them.
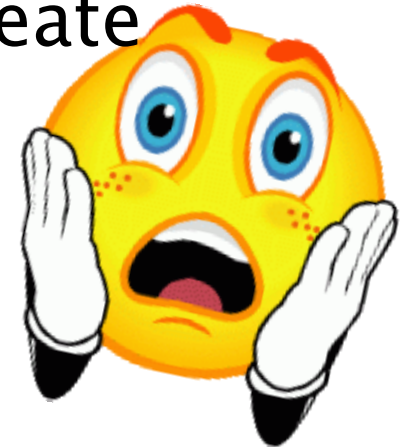
What if I forget my *email* password??

- Most email services provide ways of resetting your email password so you can regain access to it.
  - Cell phone: They will send you a text message with a code that allows you to reset your password.
  - Alternate email address
  - Security questions ("What was the name of my first pet?")
- **BUT**: In order for these things to work, you must enter this additional information **before** you lose your password!

Extra Security…

▸ Many websites with personal information such as e-mail & banking now offer an extra layer of security to verify it's really you.

▸ It combines your password with a unique code that can be texted, sent to your primary (or alternate) e-mail, or even via an automated phone call.

▸ This is called 2-Factor or Multi-Factor Authentication, or sometimes 2-Step Verification.

YOUR
CODE IS:

521093
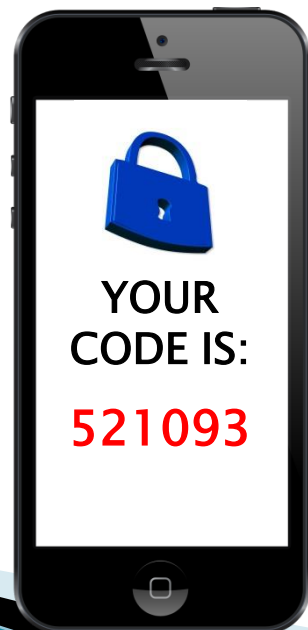
Can I write my passwords down?

- Yes, but store it in a safe place. Do not carry your list around with you so that you don't lose it.
- Write them down in a notebook by hand.
- Password storage programs (e.g. KeePass)
  - Encrypts your password list with a **master password**
  - Saved on your **home computer**
  - Auto-generates secure passwords for you.
  - Don't forget the master password or else you're **out of luck**!
- Secure cloud storage (Google Drive, Dropbox)
  - Store your password list on the cloud, so you can access it anywhere
  - But make sure your cloud password is secure!

Scams – Phishing

- Emails that look like they are from legitimate organizations (like your bank).
- Trick you into entering your personal information.
- Video:

https://www.commoncraft.com/video/phishing-scams

Scams – Phishing

Best regards!

This mail may be a surprise to you because you did not give me t[...]
before I tell you about myself I want you to please forgive me for [...]
letter in confidence believing that if it is the will of God for you to [...]
reward you abundantly. I need an honest and trust worthy person like you to entrust this huge transfer project unto.

My name is Mr. John Atta, The Branch Manager of a Financial Institution. I got your contact through a reliable source called database through Ghana chamber of commerce. I am a Ghanaian married with 3 kids. I am writing to solicit your assistance in the transfer of US$10,500,000.00 Dollars. This fund is the excess of what my branch in which I am the manager made as profit last year (i.e. 2015 financial year). I have already submitted an annual report for that year to my head office in Accra-Ghana as I have watched with keen interest as they will never know of this excess. I have since, placed this amount of US$10,500,000.00 Dollars on an Escrow Coded account without a beneficiary (Anonymous) to avoid trace.

As an officer of the bank, I cannot be directly connected to this money thus I am impelled to request for your assistance to receive this money into your bank account on my behalf. I agree that 40% of this money will be for you as a foreign partner, in respect to the provision of a foreign account, and 60% would be for me. I do need to stress that there are practically no risk involved in this. It's going to be a bank-to-bank online transfer. All I need from you is to stand as the original depositor of this fund so that the fund can be transferred to your account.

If you accept this offer, I will appreciate your timely response to me. This is why and only reason why I contacted you, I am willing to go into partnership investment with you owing to your wealth of experience, So please if you are interested to assist on this venture kindly contact me back for a brief discussion on how to proceed.

Best regards,
Mr. John Atta

🚩 **Red flag:** Offering to give you large amounts of money!

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Scams – Phishing

United Nations <LindaTutu.@wine.ocn.ne.jp>   May 25 (1 day ago)

to

⚠ **Why is this message in Spam?** It's similar to messages that were detected by our spam filters. Learn more

This is to inform you that we have been working towards the eradication of fraudsters and scam Artists in Africa with the help of the Organization of African Unity (OAU) United Nations (UN), European Union (EU) and FBI.

We have been able to track down some scam artist in various parts of African countries which includes (Nigeria, Republic of Benin, Ghana and Senegal with cote d'ivoire) and they are all in Government custody now, they will appear at International Criminal Court (ICC) soon for Justice.

During the course of investigation, they were able to recovered some funds from these scam artists and IMF organization have ordered the funds recovered to be shared among the 10 Lucky people listed around the World as a compensation. This notice is been directed to you because your email address was found in one of the scam Artists file and computer hard-disk while the investigation, maybe you have been scammed. You are therefore being compensated with sum of ($10.7 Million) US Dollars valid into an (ATM Card Number 2354 3456 0952 4204).

Since your email address is among the lucky beneficiaries who will receive a compensation funds, we have arranged your payment to be paid to you through ATM VISA CARD and deliver to your postal address with the Pin Numbers as to enable you withdrawal maximum of $5,000 on each withdrawal from any Bank ATM Machine of your choice, until all the funds are exhausted.

The ATM Card with Security Pin Numbers shall be delivered to you via courier Service, depending your choice.

In order to proceed with this transaction, you will be required to contact the agent in-charge (MR.STEVE JOHNSON) via e-mail. Kindly look below to find appropriate contact information:

CONTACT AGENT NAME: MR.STEVE JOHNSON

Phone Number: +229-6897-0405

You will be required to e-mail him with the following information:

FULL NAME:
ADDRESS:
CITY:
STATE:
ZIP CODE:
DIRECT CONTACT NUMBER:
OCCUPATION:

We advice you to stop all the communications with everyone regarding your payment as we have short listed to de
you and now urge you to comply and receive your ATM Card funds.

Thanks for your understanding as you follow instructions while I wait to hear from you today.

Yours in Services

Story: United Nations caught scam artists, and are giving away the money they stole.

🚩 **Red flag:** Offering you free money

🚩 **Red flag**: Asking for personal information

Scams – Phishing

Google Service <francis.s@sparksco.com>   May 18 (8 days ago)

🔒 to me ▾

Google

Molly Matthews (Google Support) has sent you a message:

5/19/2016
Returned email message.

Learn more

View messages

Don't want occasional updates about Google activity? Change what email Gmail Team sends you.

🚩 **Red flag**: This email claims to be from Google, but the email address doesn't have "google" in it.

Scams – Phony Error Messages

Red flag: Asking you to call a phone number.

Message from webpage

Dear customer,

A serious malfunction has been detected with Windows 7 / Server 2008 R2 7 and your IE 11.0. Please call the toll-free number below for a Microsoft-Certified technician to help you resolve the issue:

(855) 572-9520

For your safety, closing the IE browser has been disabled without support of the Microsoft-Certified technician to avoid corruption to the registry of your Windows 7 / Server 2008 R2 64-bit operating system

Please contact support at the toll-free Helpline (855) 572-9520

DO NOT SHUT DOWN OR RESTART THE COMPUTER, DOING THAT MAY LEAD TO DATA LOSS AND POSSIBLE FAILURE OF THE OPERATING SYSTEM AND POTENTIAL NON BOOTABLE SITUATION RESULTING IN COMPLETE DATA LOSS, CONTACT MICROSOFT CERTIFIED TECHNICIANS TO RESOLVE THE ISSUE CALLING TOLL FREE - (855) 572-9520

A serious malfunction has been detected with Windows 7 / Server 2008 R2 7 and your IE 11.0. Please call the toll-free number below for a Microsoft-Certified technician to help you resolve the issue:

(855) 572-9520

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Scams – Phony Websites

http://goo.gl/KYHS3p

Product ad on next slide
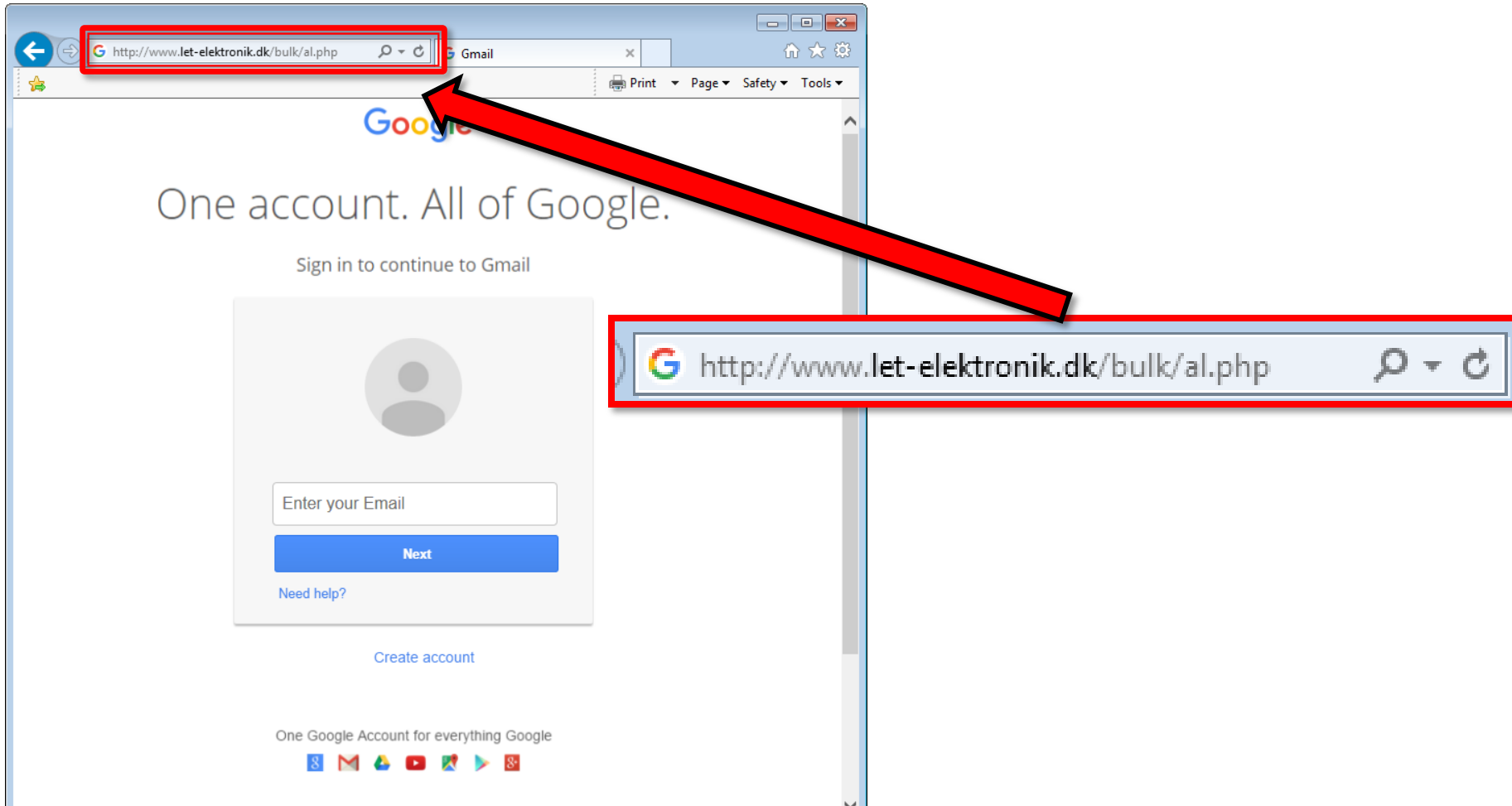
Scams – Phony Websites

Scams – Phony Websites

Seems legitimate...

🚩 **Red flag:**
...but look at the URL! Where is "espn.com"?

Remember the age-old saying:
If it sounds too good to be true...it probably is.

Scams – Phony Websites

Red flag:
This is NOT the Google sign-in page! Look at the address bar!

Scams – Ransomware

▸ Play on words—ransom + software

▸ Uses **modern encryption tech** to lock you out of your files unless you pay money to unlock them

▸ Sometimes make it look like you **broke the law** and the government locked you computer.

▸ Will demand around **$500**

▸ They usually will unlock you computer if you pay because if they didn't, word would get around and nobody would ever pay them!

▸ **Workplaces**, such as hospitals, are often victims. They often will pay because it's a drop in the bucket compared to the money they would loose if their computers are down

Scams – Ransomware

Scams – Ransomware

Scams - Ransomware

How to protect against ransomware:

▸ Avoid downloading suspicious email attachments. This is the most common way ransomware spreads.

▸ Backup your data regularly.

▸ Unplug flash drives and external hard drives as soon as you are done using them.

▸ Have anti-virus software installed on your computer

▸ Avoid clicking links in suspicious emails

▸ Avoid clicking on banner advertisements on websites

▸ More info: **tinyurl.com/je9yzf7**

Scams

If you've been a victim to any of these scams, file a report with the FBI's **Internet Crime Complaint Center (IC3)**

www.ic3.gov

Search Engines

- There are over **4.78 billion** web pages on the Internet.
- If you don't know the URL (address) of the web page that has what you're looking for, how are you supposed to find anything?
- **Search engines** to the rescue!

Search Engines

- Search engines use **thousands** of clustered computers to "**index**" (make searchable) every single webpage on the Internet.
- The programs that do this are called **spiders**, **bots**, or **crawlers**.
- It's a complex process—search engines are **very secretive** about how they decide which websites appear at the top of the search results.
- But generally, websites that are **linked to** by lots of other websites appear at the top of the search results.
- **SEO (Search Engine Optimization)**: Multi-million dollar industry focused on increasing website search engine rankings.
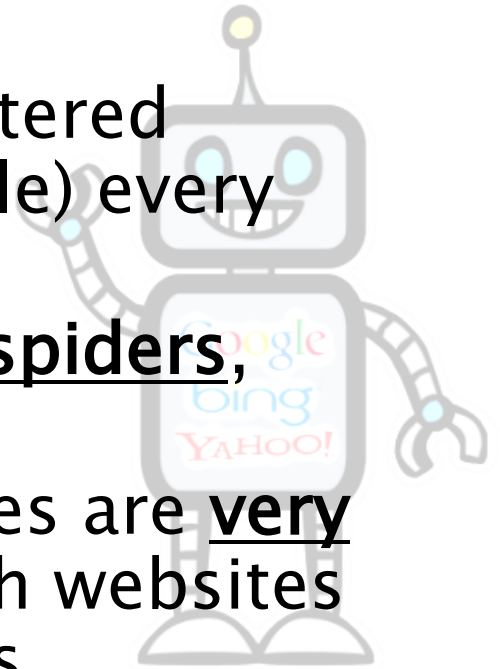
Most Popular Search Engines

1

2

3

4

5

*

Search Tips

- Imagine what words would likely appear on the pages you are looking for
  - Instead of searching for "my head hurts", search for "headache"
- If you do not get useful results, try using other words that mean the same thing.
  - For example, instead of "headache", try "migraine".
- Also: Try using a different search engine if you don't get good results
- Be careful of words with multiple meanings.
  - "penguins": Could mean the **animal** or the **hockey team**
  - "turkey": Could mean the **country**, the **animal**, or the **food**.

Demonstrating "Phrase Search"

"The Internet, referring to the specific global system of interconnected IP networks, is a proper noun and written with an initial capital letter."