

College Guild
PO Box 6448, Brunswick ME 04011

INVENTIONS

Unit 3 of 5

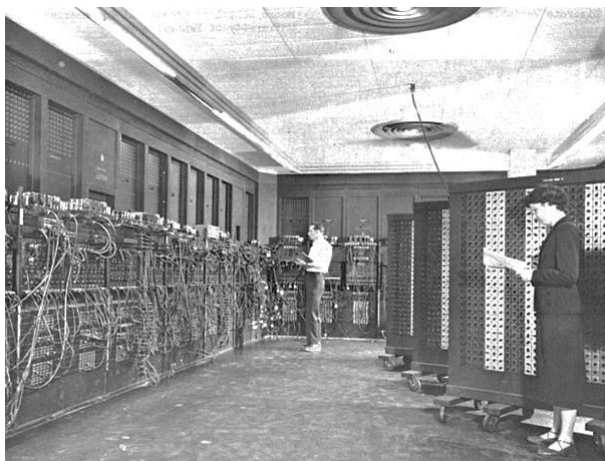
Computers and the Internet

You may have wondered where the computer was in the modern inventions Unit. This invention is so important that it deserves its own Unit! We understand that students are coming into this Unit with different levels of experience, so if you need it you will find a picture of a keyboard and a glossary of terms in the back. If a term has a star next to it, it is defined in the glossary.

Early Computers

A computer is a machine that humans can use to store, retrieve and manipulate data. The first computers took up entire rooms. ENIAC, which was the first fully functional computer, was completed at the University of Pennsylvania in 1946. It was designed to do calculations for the US army. It weighed almost 50 tons, which is as heavy as 10 elephants. People had to move around switches and cables to operate the machine, sometimes even crawling inside to find problems with it. They would give the machine instructions by punching holes in paper cards and inserting these cards into the machine. It was a long and frustrating process. Women often were hired to do this because they could be paid less money than men for the same work.

1. The press called ENIAC a “Giant Brain.” How is this description accurate and how might it be misleading?

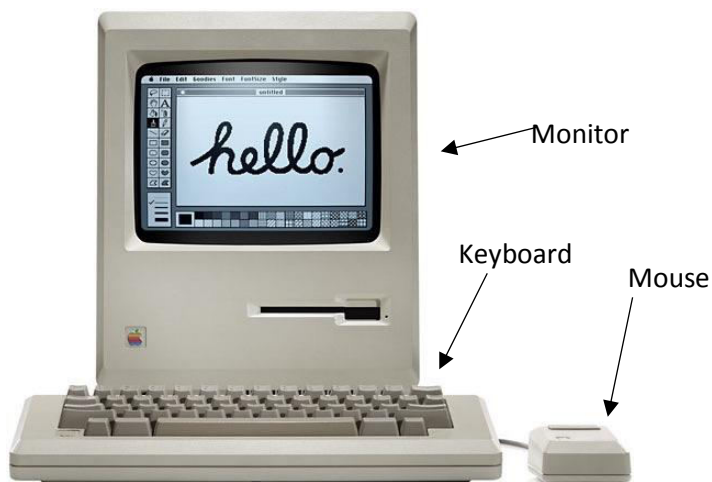


2. The picture above shows a programmer going through huge storage bins of punched cards. The cards had to be well organized. What are three things that could go wrong when all this information is stored on paper cards?

3. Imagine you are sent in from a newspaper to cover the story of ENIAC and you have an interview with one of the programmers. Make a list of five questions to ask her about the job.

Personal Computers

The development of the personal computer was revolutionary. Bill Gates, in 2018 the second richest man in the world, was at the forefront of this revolution. People could now have their own “desktop” computer in their office or in their home. The computer consisted of a monitor*, keyboard and mouse*. Desktop computers still exist in offices and homes today, though they are much sleeker looking now.



or in addition to a desktop computer. A laptop is portable. It has a touchpad* instead of a mouse and folds closed so it can be carried around in a backpack.



4. Why do you think desktops still exist? Why would people want them instead of or in addition to laptops when laptops are more portable?

The Internet

After the computer came the internet, a way to use computers to connect to an enormous amount of information and communicate with people around the world. The World Wide Web, an important part of the internet, became available to the public in 1991 and has been improving as a resource ever since as people continue to add information and websites to it.

People used to only be able to access the internet from home by plugging their computers into a modem. The modem turned computer signals into signals that could be sent over the telephone lines to an ISP, or Internet Service Provider. Then, the information from the ISP would come back through the telephone wires and modem to the computer. This was dial up internet. Then something called Wi-Fi was invented that allowed people to connect their computers to the internet without a cord. To have Wi-Fi in your home, you still have to pay an internet service provider. Some businesses like cafes have free Wi-Fi for customers.

Websites

The World Wide Web is made up of websites, pages containing information in the form of photos, videos, text and links to other pages. Businesses and organizations often have their own websites. College Guild's website is found at the URL*: <https://collegeguild.org>. The page you see at this URL is pictured here.

Search Engines and Google

When you open a browser*, you can use a search engine like Google to look for information. Google is named for a very large number called a googol, which is written out as a 1 followed by 100 zeroes. True to its name, the Google search engine returns pages and pages of results for broad searches. For the search "squirrel," Google finds over 66 million results in less than half a second. It puts links to websites that it thinks will be most relevant at the top of the list, but you can continue scrolling through pages and pages of links. With each link, Google includes a little preview from the website so you can see if it is what you are looking for.

The image shows a Google search for "squirrel". The search bar contains "squirrel" and the results show "About 66,700,000 results (0.43 seconds)". The top results include:

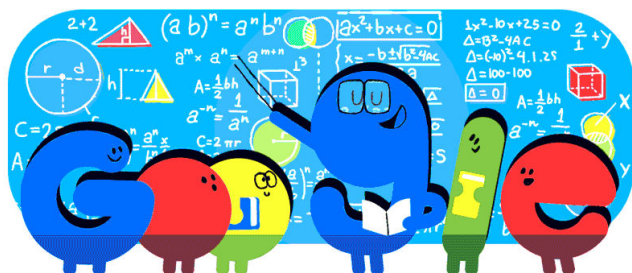
- Squirrel - Wikipedia**: <https://en.wikipedia.org/wiki/Squirrel>. Squirrels are members of the family Scuridae, a family that includes small or medium-size rodents. The squirrel family includes tree squirrels, ground squirrels, ...
- 22 things you may not know about squirrels | MNN - Mother Nature ...**: <https://www.mnn.com> > Earth Matters > Animals. Nov 20, 2017 - Squirrels get lots of attention from humans, but not always much appreciation. We tend to dwell on the stolen birdseed or the occupied attics, ...
- People also ask**:
 - Can you have a squirrel as a pet?
 - Is a squirrel a herbivore or omnivore?
 - How can I get rid of squirrels?
 - Can you get rabies from a squirrel?
- Squirrels | National Geographic**: <https://www.nationalgeographic.com/animals/mammals/group/squirrels/>. The tiniest squirrel is the aptly named African pygmy squirrel—only five inches long from nose to tail. Others reach sizes shocking to those who are only familiar ...
- 15 Reasons You Should Appreciate Squirrels | Mental Floss**: mentalfloss.com/article/524608/15-reasons-you-should-appreciate-squirrels

On the right side of the search results, there is a video player titled "THINKING OUTSIDE THE CELL" from College Guild. The video description reads: "Offering Free Non-Traditional Correspondence Courses to Prisoners. Our mission is to stimulate in prisoners an interest in life long learning by providing a selection of free, non-traditional correspondence courses. College Guild is not affiliated with any religious or political group. Our courses are designed to be both thought provoking and fun while encouraging objectivity and creativity. They relieve the boredom of prison life with an opportunity to spend time constructively. For many inmates, our courses are the only contact they have beyond the prison walls." The video player also includes a Vimeo logo and a play button.

Doing research on Google is an art. If your question is specific, your search should reflect that. For example, if you are looking to learn what state George Washington was born in and you type "Washington state" into the search bar, you will get a lot of information about the state of Washington and about Washington State University. If you type "President Washington birthplace," you will immediately find that he was born in Virginia.

5. For each of the following questions, first explain why the proposed search might not get you what you're looking for. Then rewrite the proposed search so that it is more clear:
 - a. On what date does Thanksgiving fall this year? Proposed search: "Thanksgiving Day"
 - b. What is "Cats" the musical about? Proposed search: "Cats"
6. Can you think of a question that Google would not be able to answer?

7. Google often replaces their logo with a “Google Doodle” to celebrate a holiday. Draw your own “Google Doodle” for the holiday of your choice. Be creative and have fun with it! See below for some examples.



Teachers' Day 2017



Father's Day 2016

Computers at Work and in School

Computers are finding their way into every aspect of peoples' day-to-day lives. More and more jobs involve at least some computer time. People communicate with their bosses and coworkers via email*. They type reports. Doctors keep track of medical records with computer software. Most stores and organizations have websites that people create, update and refer to. Computers make life more efficient.

However, there are reasons to be concerned about increasing computer use in the workplace. Spending all day in front of a computer can be bad for peoples' health. Staring at a computer all day can cause eye strain and headaches. Typing too much on a keyboard can cause a painful wrist condition called carpal tunnel syndrome. Sitting all day is also harmful.



8. What might workers do in order to stay healthy in this type of job?

Computers are also increasingly being used in the classroom. Students use computers to type essays. They play math and reading games. They watch videos. They learn to use the internet to do research. People argue over whether computers really help students learn better. Of course, it is important for students to learn computer skills as they will likely need them in their future careers. However, some people worry that computers are replacing teachers and hands-on learning.



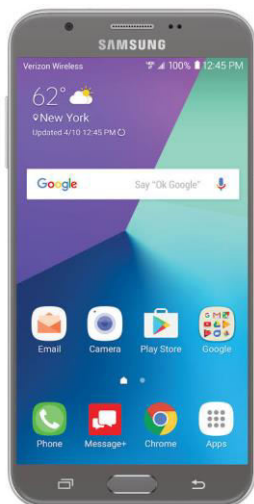
9. If you were a Kindergarten teacher, how might you incorporate computers into your classroom? What if you were a high school teacher?

Children growing up in the age of the internet have more information at their fingertips than children have ever had. They have exciting new ways to learn and connect with the world. However, they also have problems that past generations didn't have. Cyberbullying is a new form of bullying that happens through the internet. In 2015, a survey found that about 16 in every 100 high school students had been cyberbullied in the past year. Cyberbullies may post* embarrassing or hurtful comments, rumors, pictures or videos

online about or of the victim. They may pretend to be someone else online to get information from the victim and then use it against them. They may create a hurtful website or profile about the victim. This type of bullying can be hard for adults to spot and can have a very damaging impact on its victims, who may not even know the identity of the cyberbully because they hide behind a screen.

10. What would you say to a child who came to you about being cyberbullied?

11. What are some actions schools could take to prevent cyberbullying?



Other Ways to Access the Internet

People can now stay connected to the internet when they are not with their computers and are on the go. Smartphones are cell phones that function like mini computers. Smartphones usually have touchscreens* and can run apps and access the internet using Wi-Fi or cellular data*.

Smartwatches are a new kind of computer that you can wear on your wrist. One example of a smartwatch is the Apple Watch. In addition to making calls, texting*, playing music, displaying the weather forecast and giving GPS directions, the Apple Watch also can track your steps, heart rate and sleep habits because it is attached to your wrist. The Apple Watch 3 is waterproof.



Apps

An app, or application, is a piece of software that you can choose to put on your smartphone or smartwatch. Some apps are free and some cost money. Here are some examples of apps:

- Weather: shows you the weather forecast in your current location and any other location you choose
- Domino's Pizza: Allows you to order pizza from your phone and receive alerts like "Caleb put your pizza in the oven at 6:04pm" and "Your order is ready for pickup."
- Snapchat: Allows you to send pictures and videos back and forth with your friends and post to a "story" of your day that disappears after 24 hours.
- Venmo: Allows you to send and receive money from your friends.
- Afterlight: Helps you edit photos you take on your phone to improve their quality.

12. If you could develop your own app, what would it do?

YouTube

YouTube is a website where people can share videos. There are both entertaining and informative videos on YouTube, as well as videos of people sharing their stories, thoughts and opinions. Some "YouTubers" are famous personalities that make a lot of money from advertisements before and during their videos. They do YouTube as a full-time career. Others do YouTube just for fun. One popular type of video is the how-to video, in which people create videos teaching others how to do things they are skilled at, like playing the guitar or fixing a car.



How To Tie A Bow Tie - The SIMPLEST Bow Tie Method Ever

26,276 views

379 likes 5 comments SHARE

13. What is something that you are interested in that you would enjoy making a video about?

14. What is something that you would like to watch a YouTube video to learn how to do?

Social Media

Another important part of the internet is social media, websites where people share ideas, updates and feelings. There are many social media platforms*. Some of the most popular are Facebook, Twitter, Instagram* and LinkedIn*. These platforms can be accessed on computers as websites or on smartphones as apps.

Facebook: As of April 2018, Facebook had over 2.2 billion active users. That's more than a quarter of the world's population. Facebook lets users add other users as "friends." Each user can create a profile with their name, photo, hometown, occupation, birthday and so on. People share "status updates" telling their friends what they are up to, as well as photos, articles and videos. They can create groups and events to organize their social and professional lives.

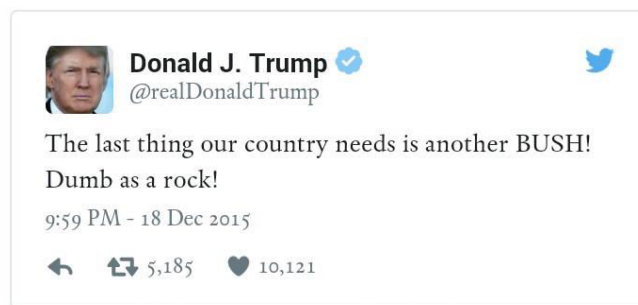


15. Some people think that we should be concerned that our lives are becoming less and less private due to the sharing of personal information on websites like Facebook. What are your thoughts on this? What information should be kept private, and what might not be as big a deal?

Twitter: Twitter is based on a "follow" system. Users of twitter can follow other users ranging from their high school classmates to the President. They post tweets, or messages up to 280 characters long, which may be accompanied by photos or videos. Some tweets are silly while some are serious.



In 2016, social media played a larger role than it ever had before in an election. Donald Trump was especially known for his Twitter account, in which he often called people names and started fights. He continued behaving this way online after he became president.



16. What do you think about politicians having a presence on social media like Twitter? Do you think that Trump's behavior is presidential? Is there a way to be presidential on Twitter? Explain.

Since tweets are only 280 characters, tweeters must think about making their comments short and to the point. A character is a letter, number, space or punctuation mark.

17. Write a tweet of 280 characters or fewer in length from the point of view of:

- a. a zookeeper
- b. a squirrel
- c. a shoe

18. Write a tweet of 280 characters or fewer in length about what you've learned in this Unit.

Programming

While we perceive computers to be very smart, they are actually very dumb. They only understand two things: off and on. In computer language, off is represented with a zero and on is represented with a one. Everything computers do is based on this “binary.” Computers follow instructions that humans give to them made out of zeroes and ones. Giving computers instructions is called programming or coding.

Humans have used zeroes and ones as building blocks to create their own computer languages that are closer to the language that we speak. They use these languages to build websites and apps, do calculations and create inventions that continue to change the world.

19. Write a poem or short story from the point of view of a computer.

Remember: First names only & please let us know if your address changes

Sources

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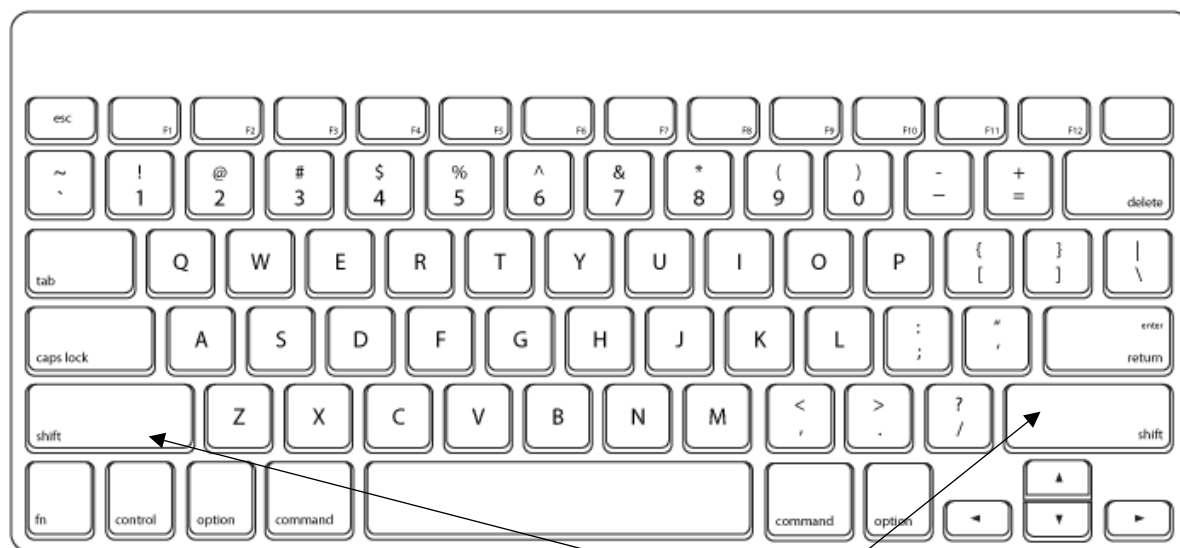
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If you examine the picture of a keyboard on the previous page, you'll notice that some keys have two characters on them. When you hit one of these keys, you'll get the bottom of the two characters. When you hit any of the letter keys, you'll get a lowercase letter. To get the upper characters or uppercase letters, hold down either “shift” key while you type. The big key on the bottom row is the space. There are variety of keyboard shortcuts that change depending on what computer you are using, for example, pressing

“command” and “z” at the same time might undo the last thing you typed. The arrow keys in the bottom right corner are a handy way to navigate around a website or document.

Glossary

Computers

Monitor: The part of a desktop computer with a screen. It displays information in a visual form.

Mouse: A way to put information into the computer without using the keyboard. You move the mouse on a flat surface and click it to make something happen on the screen.

Touchpad: Performs the same function as a mouse but you move your finger on a touch sensitive panel and click or tap with your finger.

Internet

URL: Uniform Resource Locator. The address of a website.

Browser: An application on your computer that allows you to “browse” or search the internet.

Email

Email: Short for “electronic mail.” Email messages are sent instantly and electronically from one computer to another. You can send a message to a single person or to a big group of people all at once. All you need is their email address(es).

Email address: An example of an email address would be: jamesbrown17@gmail.com. Every email account has its own address just like every apartment or house has its own address.

Cell phones

Touchscreen: A screen where you can use your finger as a mouse. Most smartphones and tablets have touchscreens, as do some computers.

Texting: Sending short, typed messages (texts) back and forth between phones.

Cellular Data: A way to access the internet without Wi-Fi on a cellphone. To have data on the go, you must purchase a data plan along with your cellphone plan.

Social Media

Platform: A kind of website. Twitter and Facebook are “social media platforms.”

Post: A contribution on a site like Twitter or Facebook. A tweet is a post on Twitter. A status, set of photos or video could be a post on Facebook. Post can also be used as a verb (action word), as in “Did you post any pictures from your vacation on Facebook?”

Instagram: A social media platform primarily for photo and video sharing. Instagram is owned by Facebook.

LinkedIn: A social media platform meant to help people be successful in their careers. Users can create a profile with their work experience and skills. Then, they can create a network of connections that might help them get a job.