Reading Assignment

September 25, 2018 2:31 PM

Reading Assignment

- us.ccli.com - CCLI - Christian Copyright Licensing, Inc.
- Go to the about-copyright page
- Write about copyright law, what they think about it, and why it even exists
- Optionally allowed to make an opinion or summary
- Have a copy of the article that you got your article from and a copy of your summary with it
- Remember to print only the information that you have selected
- Your summary should summarize all of the main points that the article is trying to convey
- Optionally, you can use multiple articles to get more information about a certain point
- Don't just take what is already there and paraphrase it
- The point is to accurately understand what the article is trying to present and to write about you think is the idea behind the article

Discovering Computers 1

August 30, 2018 12:21 PM

Computers

- The **computer** is an electronic device, operating under the control of instructions stored in its own memory, that can accept data according to specified rules, produce information, and store information for future use
- **Key numbers: A=65, a=97**
- Of course, there are many different definitions for a computer and there are many different kinds of computers
- The machine language or **binary code** of a computer consists of 1s and 0s
- The **server** is a computer dedicated to providing one or more services to other computers or devices on a network
- A server doesn't need much **video processing** capability, meaning that it doesn't need the most powerful **processor**
- **IoT** means the "**Internet of Things**"
- An **input device** can be a keyboard
- A **pointer device** can be a computer mouse or a touchpad
- A **voice input device** can be a microphone
- A **scanner** can be a camera
- Some examples of **output devices** could be a printer or a display
- **Media ecology** is the study of how new technology and media affects society
- **HDD** is a **Hard Disk Drive**
- **SSD** is a **Solid State Drive**

Internet

- **1969** - The internet started out as **ARPANET** and consisted of **four main computers**
- The main principle of the internet was to **decentralize** the communications network in case of failure of one main server
- A **dongle** is an attachable device that you can plug into your computer and it will give it a new or better functionality for the computer
- The word **modem** is made of two words: **modulate** and **demodulate**
- **WAN** - Wide Area Network
- **LAN** - Local Area Network
- A **static** IP address is an address that the ISP gives you that will not changed, and a **dynamic** IP address is an address that will change
- **DNS - Domain Name System** - a system that allows us to connect to a domain
- www is a **host name**
- The DNS associates the name with the IP address
- **TLD - Top Level Domain**
- .com/.edu/.net/.org/.biz/.gov/.pro/.name - these are all TLDs
- **nslookup** - is a command that allows you to look up the addresses for other websites
- **HTML - Hypertext Markup Language -** specifies heading, paragraphs, images, links, and other content elements
- **CSS - Cascading Style Sheets -** used to change the style of the webpage
- **JavaScript (ECMAscript) -** used to add interactivity to the webpage
- **Web address - URL** - Uninform Resource Locater
- **Protocol -** http://
- **Host name -** www.
- **Domain name -** facebook.com
- **Path -** /profile/
- **Webpage name -** my-profile.htm
- The **slashes - /** are essentially folders
- Protocol: GET / HTTP/1.1
- **VOIP** - Voice Over Internet Protocol
- **FTP** - File Transfer Protocol
- **FTTP** - Fiber to the Premises
- CYBER SQUATTERS ARE JERKS

Security

- **2FA** - Two-Factor Authentication
- **FIDO** - Fast ID Online
- Viruses can be activated by simply connected a flash drive
- A server can be any machine that can hosts a network connections
- **NFC** - Near Field Communication - close proximity network
- A surge protector will cut the power supply to the device if there is a surge in the circuit
- **UPS** - Uninterruptible power supply

Servers

- **Virtualization** - the practice of sharing or pooling computer resources, such as servers and storage devices
- Virtualization uses software to enable a physical server to emulate the hardware and computing capabilities of one or more servers, known as **virtual servers**
- **AWS** - Amazon Web Services - sometimes appears in the URL on some websites
- **Mainframe** - one big centralized computer
- **Supercomputer** - the fastest most powerful computer designed to process trillions of instructions in a second, usually for a specific task or field of work
- **Rack server** - servers that fit onto a rack and could possibly share one display, keyboard, and mouse
- **Blade Server** - Each server fits onto a single circuit board that acts as one big unit

Embedded Computers

- A computer that's in your car would be an embedded computer
- A computer inside a robot would also be an embedded computer
- Regular USB - has transfer speeds of up to 5Gbps
- Thunderbolt 3 - has transfers speeds of up to 40Gbps

Ports

- HDMI
- Ethernet
- USB type A
- USB type B
- USB type C
- Thunderbolt 2
- Thunderbolt 3

Health Concerns

- Repetitive strain injuries
- Headphones and earbuds can cause hearing loss if the volume is set too high
- Eyestrain
- Ergonomics - designed to bring more comfort and health while using devices
- Behavioural health risks
- Media ecology

Interactive Tech

- **VR** - Virtual Reality
- **AR** - Augmented Reality
- **Push notification** - the server on the device is ready to receive notifications
- **Pull notification** - the device goes to another server to receive that notification

Discovering Computers 2

October 18, 2018 3:03 PM

Computer Hardware

- **CPU** - Central processing unit
  - The CPU holds all of the following components
  - The control unit and ALU are main parts of the CPU
- **ALU** - Arithmetic logic unit
- **Fetch - decode - execute**(ALU**) - store**
  - The control unit handles the fetch, decode, and store parts of processing
  - The ALU handles the execute part of processing
- **Registers** are small high-speed processors used as storage - fastest type of memory
  - **Cache memory** has different levels of cache. The lowest level is the fastest
    - This memory is also stored on the CPU
      - **L1**
      - **L2**
      - **L3**
      - **System RAM**
        - This type of memory is the slowest
  - Cache can be stored in either the CPU or motherboard
  - **Clock speed** (Giga-hertz) is the standard unit of measurement for the speed of processors
- **Bit** - binary digit
- 8 bits
  - 1 **byte** - represents 256 different characters
- **Heat sink**
  - Drains heat away from the processor or any other component that generates heat
  - Pulls in cold air to cool the processor
- Read the next **octet** - read the next byte (8-bit)
- **Firmware** - in the middle between hardware and software midpoint

Memory

- **Sequential access memory** - tape recorders; old film discs
- **RAM** - random access memory - changeable memory
- **ROM** - read only memory - unchangeable memory
- **Flash** - non-volatile memory that can be erased electronically
- **CMOS** - complementary metal-oxide semi - system configuration information
- **DRAM** - must be energized constantly
- **SRAM** - must be energized less often
- **BIOS** - Basic Input Output Services

Security

- **Botnet** - a group of compromised computers or mobile devices connected to a network that are used to attack other networks
- **DDoS attack** - Distributed Denial of Service attack
- **Backdoor** - a program that allows users to bypass security controls when accessing a program
- **Spoofing** - a technique intruders use to make their network or Internet transmissions appear legitimate to a victim computer or network
  - IP spoofing - when an intruder computer fools a network into believing its IP address is associated with a trusted source
  - Email spoofing - when the sender's address or other components of an email header are altered so that it appears that the email message originated from a different sender
- **Authentication** - who you are (verify)
- **Authorization** - what you can do
- **Two-factor authentication** (2FA) (U2FA) - an authentication that requires two forms of identification or two passwords
- **Dictionary attack** - someone using a list of commonly used passwords to access and account
- **Passphrase** - a long password phrase that is meaningful and more secure to the user
- **Possessed object** - an item that you must carry with you in order to gain access to a device
- **Bio metric** - fingerprint readers, face recognition, hand geometry, voice verification, signature verification, iris recognition (retina scan)
- **Keygen** - a key generator; usually a set of numbers or letters randomly generated
- **Encryption** - the process of converting data that is readable by humans into encoded characters
- **Ciphertext** - translation of individual characters or groups of characters to decode or encode something
- **Symmetric encryption algorithm** - uses the same key from the password every time (secret)

    - Both the sender and recipient use the same secret encryption key
- **Asymmetric encryption algorithm** - uses a different key for the same password every time (public/private)
    - Uses a **private** key to decrypt data
    - Has an **advantage** over the symmetric system
    - Key-pair - uses a **public** key and a private key
        - Public/private key-pair
- Secret message (recipient's public key)

Copyrights

- **Uncanny valley** - something that looks "too" real and makes someone feel uncomfortable
- **Intellectual property** - IP; Intellectual property rights - IPR
- **Cookies** - are used to remember your identification on websites previously visited

Technology Timeline

- 1943 - **Alan Turing**
    - **Turing test** - measure of machine intelligence
    - Uncanny valley - something that looks "too" real and makes someone feel uncomfortable
    - **Tommy Flowers** created the very first **colossus computer**
    - Alan Turing created the first public colossus computer
- 1945 - **Jon von Neumann**
    - Created the **main architecture** of the computer we use today
- 1946 - First Generation
    - **Vacuum tubes** were used like transistors today
- 1947 - Second Generation
    - **Transistors** were invented and used to replace vacuum tubes
- 1958 - Third Generation
    - **Integrated circuit** was invented
        - Takes a bunch of transistors and puts them into one circuit
- 1957 - **FORTRAN -** FORmula TRANslation
    - cards were used for programming
- 1960 - **COBOL**
    - **Grace Hopper** invented COBOL
- 1964-1970 - Fourth Generation
    - **Microprocessor (LSI)** was invented
    - LSI/VLSI - Large Scale Integration
- **Artificial Intelligence** - Fifth generation
- 1972 - **C language**
    - Developed by **Dennis Ritchie**
- **WYSIWYG** - What You See Is What You Get
- **WordPerfect** - early text application
- **Office suite** - a group of programs that all work together
- **Integrated Software** - multipurpose devices
- **Tim Berners-Lee** - wrote the first web browser **WorldWideWeb**
- **Netscape Navigator**
- **Mozilla Firefox** (phoenix)
- **Internet Explorer**
- **Opera**
- **Google chrome**

Input/Output

- **RFID** - radio frequency identification
- **MICR** - magnetic-ink character recognition
- **Optical scanner** - a light-sensing input device that reads printed text and graphics and then translates the results into a form the computer can process
- **OCR** - optical character recognition
- **OMR** - optical mark recognition
- **Bar code reader** - an optical reader that uses laser beams to read bar codes
- **CRT** - cathode ray tube
- **LCD** - liquid crystal display
- **CCFL** - cold cathode fluorescent lamp
- **LED** - light-emitting diode

- **OLED** - organic LED
- **Dot-matrix printe**r - impact
- **Ink-jet printer** - non-impact
- **Photo printer** - may use ink-jet technology - non-impact
- **Laser printer** - non-impact
- **3D printer** - non-impact
- **Thermal printer** - no ink