Internet Terms and Concepts

Computer Science 1

1

- Internet History
  - ARPA (*Advanced Research Projects Agency*) funded projects in the 1970s to explore network technology
  - ARPANET was a result
- Internet
  - A worldwide collection of networks that connects all sectors (*Business, Education, Government, etc*)
- World Wide Web
  - A "service" on the Internet
  - Contains billions of documents = Web Pages
  - Website is a collection of related pages

2

Web Browser

- A software application that allows the user to send, receive, and navigate through information resources
- Explorer, Firefox, Safari, *and others*
  - Web pages can appear differently on each browser
- URL (Uniform Resource Locator)
  - The web address of information resources
  - These are entered into the address bar of the browser application

3

Web Page Extensions

- These are the factors in deciding the "type" of website and information you are viewing
- .edu = Education
- .com = Commercial
- .gov = Government
- .org = Non-Profit Organization
- .mil = Military
- .net = Network *(most commonly used by Internet Service Providers)*
- .ca or.uk = Specific Country

4

Search Engine

- A software application that allows the user to find information resources based on KEY TERMS
- Google, Yahoo, Bing, Alta Vista *and others*
- Learning to use specified search terms is crucial
  - Boolean *(Search this topic when done with notes so you understand what it is and how it works)*

5

Wiki's

- A website that allows users to add and update content using their own Web browser
  - Made possible by Wiki software that runs on the Web server
  - Wikis end up being created mainly by a collaborative effort of the site visitors
  - Not always valid and reliable information

6

Blogs

- A web page that serves as a publicly accessible personal journal for an individual or group.
  - Aka web logs (*abbreviation of the 2 words*)
  - Entries are commonly in reverse chronological order (*most recent first*) about a particular topic
  - Reflect the personality of the author(s) (*biased*)

7

Connection Speeds

- **Bandwidth**
  - The amount of data a given technology or infrastructure can transmit at one time
  - Usually expressed in kilobits per second (Kbps) or megabits per second (Mbps): **kilo < mega**
- **Dial Up** = 2400 bps – 56 Kbps (*phone lines*)
- **DSL** = 128 Kbps – 8 Mbps (*twisted pair*)
- **Cable** = 512 Kbps – 20 Mbps (*coaxial cables*)
- **Wireless** = 30 Mbps + (*airwaves*)
- **T1** = 1.544 Mbps (*twisted pair, coaxial, or optical fiber*)
- **T3** = 44.736 Mbps (*optical fiber used*)

8

Security

- Passwords
  - Use a combination of letters, numbers, & symbols
  - Don't used words, names, or numbers associated with you
    - Last name, parent/child name, phone #, house #, etc
  - Don't use text or numeric patterns
    - qwerty, asdf, 12345, 2468, etc

9

Security (*cont.*)

- Websites
  - Need to be aware of this when:
    - Making payments
    - Buying products or services online
    - Checking financial Information
    - Providing personal information
  - Ensure the http:// displays https://
  - Ensure the lock is fully connected

10

Security (*cont.*)

- **Anti-Virus Software**
  - computer software meant to protect a computer against hostile programs, such as a virus, spyware, Internet worm
- **Firewall**
  - will stop connections to and from the internet that YOU have not given permission for: *even, at first, your own internet connection*
  - It will **not** give you protection against virus'/trojans/spyware
  - A *hardware firewall* - physical device used to protect a network
  - A *software firewall* – a program installed either directly onto a computer it is meant to protect, or onto a computer serving as a firewall for other computers on the same network.

11

Email Etiquette
(*know 3-5 of these*)

- Be concise and to the point
- Answer all questions
- Don't type an email how you would type a text message
- Use proper grammar, punctuation, & spelling
- Answer promptly
- Do not type in ALL CAPS
- Proofread before you send
- Use proper structure & layout
- Do not overuse emoticons
- Do not attach unnecessary files
- Do not forward chain letters to work emails
- Do not use email to discuss confidential information
- Don't send/forward emails containing defamatory, offensive, or discriminatory substance

12

Attaching A File to an Email

- The file you want to attach **MUST BE FULLY CLOSED** on your computer - - Once in your email account:
1. Click 'Compose' or 'New Message'
2. Click on 'Attach File' – usually combined with an icon of a Paperclip
3. Click 'Browse' in the Attach File window
   - Can attach up to 5 files in most programs
   - File size should be NO MORE than 20MB
4. Ensure recipient email address is correct
5. Type message and click 'Send'

13

History of Computers

Computer Science I
Miss Lindsay

14

Mechanical Era

- "*Computer*" used to be a job title for a human
  - The job entailed performing repetitive calculations
- Computers (as devices) were originally created to help aid in calculating ; therefore the 1st computer was an **abacus**
- 1642
  - Blaise Pascal designed the 1st gear-driven counting/calculating machine; called the *Pascaline*
  - To help aid his tax collector father
- 1834
  - Charles Babbage proposed the *Analytic Engine*
  - Had it been completed, it would've been considered the 1st programmable computer

15

Electro-Mechanical Era

- 1890
  - *Herman Hollerith*: created a device that used gears and wheels **but** was powered by electricity; called *Hollerith's Desk*
  - was created to help tabulate the Census; used Punched Cards
  - Hollerith's machine cut census tabulation time from 7.5 years to 3 years, which save approximately $5 million dollars
  - Hollerith's company (*the Tabulating Machine Company*) became a part of IBM, after a few buyouts
- 1944
  - IBM, along with Harvard, created the *Mark I*
  - This was the 1st programmable digital computer made in the U.S., **BUT IT WAS NOT SOLELY ELECTRONIC**

Electronic Era

- **1946** – "ENIAC" was developed/finalized
  - was one of the 1st computers without mechanical parts
  - it used *VACUUM TUBES* instead of gears and switches
  - 1000 times faster than "Mark I"
- **1950s** – Transistors replaced Vacuum Tubes
  - they were smaller, faster, and more reliable
- **1960s** – Integrated Circuit
  - small silicon chip that encases hundreds of transistors
  - performs a single electronic function
- **1970s** – Microprocessor/CPU (Central Processing Unit) – chip that can perform multiple functions

**Microcomputers became manufactured and sold
**Has our society "gone away" from the microprocessor?

Moore's Law

- Determined by Intel co-founder Gordon Moore
- States that the number of transistors on a chip roughly doubles every 18-24 months
- Why is this important??
  - As transistor counts increase, so does the ability for device complexity and to integrate more capabilities onto a chip

18

3

2 "Categories" of Computers

- **Specialized Purpose**
  - Can only perform the task it was created to do
  - Has EMBEDDED SYSTEM PROCESSOR
  - DVD player, VCR, TV, etc
- **General Purpose**
  - Can perform a variety of tasks
  - Has a MICROPROCESSOR
  - Personal Computer (PC), Cell Phone, TV w/apps

19

Main Types of Computers

- **Mainframe**
  - Large, high storage & processing capacity; used in large corporations
  - Used w/ a TERMINAL – keyboard & monitor
- **Mid-Range Server**
  - Similar to a mainframe only smaller capacity
  - Used to be known as a "Minicomputer"
- **Supercomputer**
  - Largest, fastest, most expensive computer
  - Used for scientific research & extensive mathematical calculations
    - IE: nuclear energy research, weather forecasting

20

Main Types of Computers (*cont*.)

- **Microcomputer**
  - Does it's own processing internally (microprocessor)
    - Desktop / Tower
    - Notebook / Laptop
    - All-in-one
    - Handheld
      - Palm Pilot
      - PDA/Blackberry
      - Cell Phones
      - Tablets
      - PSP/DSi

21

Information System
(*Microcomputer*)

HARDWARE   SOFTWARE

22

Hardware

- The physical, electronic components that make up a computer
- Allow for either Input, Processing, Output, or Storage
- Peripheral Devices
  - External devices that allow for input or output

23

Input

- *Raw Data* (*facts or info*) that is entered into the computer
  - Input Devices
    - *Keyboard
    - Mouse
    - Scanner
    - Microphone
    - Digital/Web Camera
    - Joystick

24

Processing

- Takes the Raw Data, that is in *machine language*, and turns it into language the user can use
- Machine Language = Binary Code
  - Combination of 1s and 0s that are used to represent a character
  - Binary Code Chart
  - Binary Breakdown
- Processing Device = Microprocessor

25

Processing (*cont.*)

- Microprocessor is the **MOST** important component to consider when buying a computer
  - It determines the SPEED of your computer
- Microprocessor is measured in HERTZ
  - KiloHertz (KH_Z) = thousand
  - MegaHertz (MH_Z) = million
  - GigaHertz (GH_Z) = billion
  - TeraHertz (TH_Z) = trillion

26

Output

- The *Processed Data* that is sent back out to the user in a usable language

  - Output Devices
    - *Monitor
    - Printer
    - Speakers

27

- A device that allows for both Input **AND** Output
  - Modem
- Downloading
  - Receiving files from info resources
- Uploading
  - Sending files to info resources

28

Storage

- A holding place for files, data, programs, etc
- Storage is determined by MEMORY
  - RAM and ROM
- Random Access Memory (RAM) stores current running tasks and programs
  - This is the memory that you (*as a user*) access
- Read Only Memory (ROM) stores the files and data that are needed to start up a computer
  - You do not access this memory

29

Storage (*cont.*)

- RAM is the **2nd MOST** important component to consider when buying a computer
  - It determines how many files & programs your computer can open and run at the same time
  - It is a factor in the SPEED of your computer
- RAM & Storage Capacity are measured in Bytes
  - 1 byte = 1 character
  - KiloByte (KB) = thousand
  - MegaByte (MB) = million
  - GigaByte (GB) = billion
  - TeraByte (TB) = trillion
  - PetaByte is next…

30

Storage Devices

- Used for permanent storage/saving
- Hard Drive (C) – Hard Disk
  - **Not mobile; inside the encasement**
- Floppy Drive – Floppy Disk
  - **Stores up to 1.44 MB**
- CD/DVD ROM Drive (D) – CD/DVD
  - **CD=Stores up to 800MB**
  - **DVD=Stores up to 4.7GB**
- Zip Drive – Zip Disk
  - **Stores 100MB/200MB/750MB**
- Jump/Flash Drive (E)
  - **Amount of storage space = cost**
- External Hard Drive - **Amount of storage space = cost**   31

Network

- Group of computers connected together to share files and resources
- Connected together via *Communication Device* and *Communication Media*
  - Device
    - Modem
  - Media
    - Wires, CAT5 cables, cable lines, satellites

32

Network (*cont*)

- 2 "Categories" of Networks
- Local Area Network (LAN)
  - Covers a small geographical area
- Wide Area Network (WAN)
  - Covers a large geographical area
  - The Largest Network is…….
    - Internet

33

Server

- A computer or device on a network that manages network resources
- **File server**
  - A computer & storage device dedicated to storing files on the network
  - Any user on the network can store files on this server
- **Print server**
  - a computer that manages one or more printers

34

Software

- Step-by-step instructions that tells the computer what tasks to perform and in what order
- 2 Categories:
  - System
  - Application

35

System Software

- Controls the computer's operations and manages its resources; includes the Operating System (OS)
- Windows (*Business*)
  - Derived from DOS, which used a Text Based User Interface
- MacOS (*Art, Graphic Design, Media*)
  - 1st to create mouse and Graphical User Interface (GUI)
  - click on **ICONS** – small images that represent a task, program, storage, instruction, etc
- UNIX
  - Commonly used by mainframes/file servers

Software Piracy

- Using/having software that you **DO NOT** have the legal license for

37

"Icky" Terms

- **Bug**
  - An UNINTENDED instruction or error in the set of instructions for a program
- **Virus**
  - Program that gets installed on your computer (*via downloads/updates*) to perform malicious actions - ***intended to harm***

38

Application Software

- Consists of the programs that perform the tasks that YOU want the computer to do

Common Applications

- Word Processing Software
  - **Create and edit text; Word, Works, etc**
- Spreadsheet Software
  - **Analyze numeric data; Excel, Lotus 123, etc**
- Database Management
  - **Store, retrieve, & process data; Access, Oracle, etc**
- Desktop Publishing
  - **Work w/images & text all on 1 screen; Publisher, Adobe**

39

Progression of Software

- Software progression = upgrades; shown using version numbering schemes
  - Numbers along with decimals
    - *Major.minor.revision*
  - **Major Upgrades**: change the whole number
    - Significant changes in functionality
    - Will often change the SPECS required to run it
  - **Minor Upgrades**: change in # after 1st decimal
    - Minor features or significant fixes have been added
  - **Revision Upgrades**: change in # after 2nd decimal
    - When minor bugs are fixed

40

Software Considerations

- Have to consider the specs (*specifications*) of your computer = System Requirements
1. Operating System
2. Processor Speed
3. RAM
4. Hard Drive Storage Space
5. CD-ROM Drive Speed
- Display Capabilities
- Video Card Capabilities
- Sound Capabilities

41