ASSALAMU'ALAIKUM

Introduction to Information Technology

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Outline

- What is Information Technology?
- Administrator Roles in IT
- Large-Scale IT Users
- Who should study IT?
- IT Skills
- IT Infrastructure

What is Information Technology?

- **Describe several things**
  - The task of gathering data and processing it into information
  - The ability to disseminate information using technology
  - The technology itself that permits these tasks
  - The collection of people who are in charge of maintaining the IT infrastructure (the computers, the networks, the operating system).
- **IT to be the technology used in creating, maintaining, and making information accessible.**
- **IT combines people with computing resources, software, data, and computer networks.**

Administrator Roles in IT

Role	Job/Tasks
System Administrator	Administer the computers in an organization; install software; modify/update operating system; create accounts; train users; secure system; troubleshoot system; add hardware
Network Administrator	Purchase, configure, and connect computer network; maintain computer network; troubleshoot network; secure network from intrusion
Database Administrator	Install, configure, and maintain database and database management system; back up database; create accounts; train users
Web Administrator	Install, configure, and maintain website through web server; secure website; work with developers
Web Developer	Design and create web pages and scripts for web pages; maintain websites
Security Administrator	Install, configure, and administer firewall; create security policies; troubleshoot computer system (including network); work proactively against intrusions

Large-Scale IT Users

Type of Organization	Typical Usage
Business	E-commerce, customer records
Education	Scholastic record keeping, support of teaching
Entertainment	Digital editing, special effects, music composition, advertising
Government	Record keeping, intelligence analysis, dissemination of information
Health/hospitals	Record keeping, medical devices, insurance
Law enforcement	Record keeping, information gathering, and dissemination
Manufacturing	Design, automation/robotics
Research	Computation, dissemination of information

Who should study IT?

- **Much of being an IT person is figuring out what is going wrong in the system.**
- **It must has experience,background knowledge, and instinct.**
- **The ability to write program code**
- **It should also be able to communicate with others**
  - Can understand the problems reported by the clients and in turn describe solutions to them.

IT Skills

Skill	Description	Example(s)
Troubleshooting, problem solving	Detect a problem Diagnose its cause Find a solution (means of fixing it)	Poor processor performance Disk space full Virus or Trojan horse infection
Knowledge of operating systems	Operating system installation Application software installation User account creation System monitoring	Versions of Linux Versions of Unix Windows Mac OS
System level programming	Shell scripts to automate processes Manipulating configuration files for system services	Bash, Csh scripts DOS scripts Ruby scripts C/C++ programs
System security	Ensuring proper system security is in place Following or drafting policies for users Monitoring for threats	Configuring a system firewall Installing antiviral/antimalware software Examining log files for evidence of intrusion and system security holes Keeping up with the latest security patches
Hardware	Installing and configuring new hardware Troubleshooting, replacing or repairing defective hardware	Replacing CPUs and disk drives Connecting network cables to network hubs, switches, routers

IT Infrastructure

- **Have you used a computer today?**
  - A computer to be a piece of electronic equipment that is capable of running programs, interacting with a user (via input–output devices), and storing data.
  - These tasks ➔IPOS (input, processing, output, storage)

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- **The main component of a computer is the processor.**
  - To process and executes the programs
- **Storage**
  - Short-term storage➔Random access memory (RAM)
    - Dynamic RAM (main memory),
    - Static RAM (cache memory and registers)
    - ROM (readonly memory).
  - Long-term storage
    - hard disk drives, optical disk, flash memory, and magnetic tape

❖ Storage Sizes

Size	Meaning	Example
1 bit	A single 0 or 1	Smallest unit of storage, might store 1 black-and-white pixel or 1 true/false value, usually we have to combine many bits to create anything meaningful
1 byte (1B)	8 bits	We might store a number from 0 to 255 or –128 to 127, or a single character (letter of the alphabet, digit, punctuation mark)
1 word	32 or 64 bits	One piece of data such as a number or a program instruction
1 KB	1024 bytes	We might store a block of memory in this size
1 MB	~1 million bytes	A small image or a large text file, an mp3 file of a song might take between 3 and 10 MB, a 50-min TV show highly compressed might take 350 MB
1 GB	~1 billion bytes	A library of songs or images, dozens of books, a DVD requires several gigabytes of storage (4–8 GB)
1 TB	~1 trillion bytes	A library of movies

❖ Peripheral devices

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❖ Software

- A program, also known as software ➔ a list of instructions that detail to the computer what to do

❖ Users

- Without the human, the computer would not have anything to do.

❖ Thank you