

# Operating Systems & Networking

- Student Notes

*Directions:*

Fill in the blanks.

## **Operating Systems Segment**

### **1. Computers**

- Are \_\_\_\_\_ able to store, retrieve and process information
- Can be classified by size and power
- Include the following characteristics:
  - respond to specific instructions in a precise manner
  - can perform a \_\_\_\_\_ set of instructions
  - able to store and retrieve large amounts of information
  - use operating systems to function effectively

### **2. Computers**

- Break down into the five main following types:
  - personal computer (PC): small, single-user computer; used in homes and businesses; based on a \_\_\_\_\_
    - desktop, laptop
  - work station: \_\_\_\_\_, single-user computer; more powerful microprocessor than PCs

Microprocessor: the master control circuit of a computer

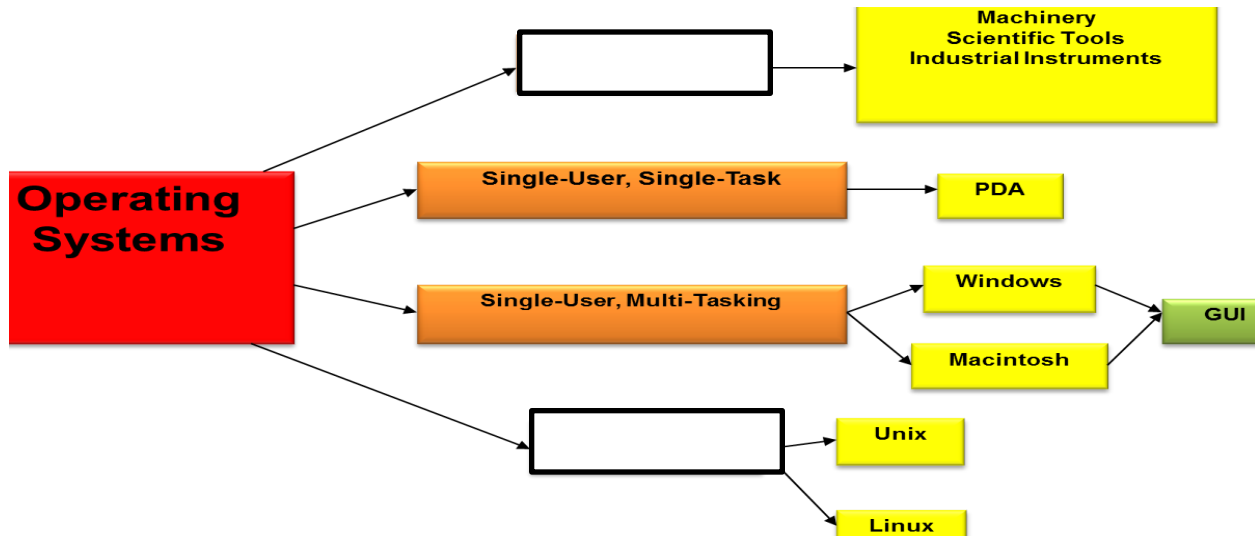
### **3. Computers**

- Break down into the five main following types:
  - minicomputer: a multi-user computer designed to handle hundreds of users at the same time
  - mainframe: a powerful, multi-user computer; can support hundreds or thousands of users \_\_\_\_\_
  - supercomputer: an extremely fast computer; can perform hundreds of millions of \_\_\_\_\_ every second

# Operating Systems & Networking

- Student Notes

## 4. Overview



## 5. Operating Systems

- Are programs acting as \_\_\_\_\_ between a computer user and the computer itself
- Control and manage all other programs a computer contains
- Are the master program making everything else run
- Can be considered the \_\_\_\_\_ on a computer linking the hardware, software and the computer user

Hardware: the physical and mechanical components of a computer such as: monitor, mouse, chips, keyboard, etc.

Software: programs directing the operation of computers; instructions for a computer

## 6. Operating Systems

- Performs basic \_\_\_\_\_ to make sure the computer works correctly, most importantly include:
  - process management
  - \_\_\_\_\_ management
  - file management
  - hardware management
  - security management

# Operating Systems & Networking

- Student Notes

## 7. Process Management

- Requires the operating system to complete the following tasks:
  - process creation and \_\_\_\_\_
  - process suspension and resumption
  - process \_\_\_\_\_ and communication

## 8. Memory Management

- Requires the operating system to:
  - keep track of which parts of \_\_\_\_\_ are currently being used and who is using them
  - determine which processes to load when memory space becomes available
  - allocate and \_\_\_\_\_ memory space when necessary

## 9. File Management

- Requires the operating system to:
  - create and delete files
  - create and delete \_\_\_\_\_
  - support primitives for manipulating files and directories
  - map files onto \_\_\_\_\_ storage
  - backup files on stable storage media

## 10. Hardware Management

- Requires the operating system to:
  - monitor the status of each device
  - enforce \_\_\_\_\_ to determine which process will get device time and how long for
  - allocate and de-allocate \_\_\_\_\_

## 11. Security Management

- Requires the operating system to:
  - distinguish between authorized and \_\_\_\_\_ users
  - only allow authorized users to access the files and resources
  - provide a means of \_\_\_\_\_
  - specify the controls to be imposed

# Operating Systems & Networking

- Student Notes

## 12. Operating Systems

- Include the following \_\_\_\_\_ general types:
  - real-time operating systems (RTOS)
  - single-user, single task operating systems
  - single-user, \_\_\_\_\_ operating systems
  - multi-user operating systems

## 13. Real-Time Operating Systems

- Are used to control the following:
  - machinery
  - \_\_\_\_\_ tools
  - industrial instruments
- Do not allow the user to have much control over the system
- Are used for real-time applications such as: \_\_\_\_\_, mobile phones, spacecrafts, etc.

## 14. Single-User, Single Task Operating Systems

- Allow users to do only one thing at any given time
- Include Personal Digital Assistants or \_\_\_\_\_
  - small, \_\_\_\_\_ computers only allow users to operate one application at a time

## 15. Single-User, Multi-Tasking Operating Systems

- Are the most \_\_\_\_\_ type of system found on PCs
- Allow the user to run several computer \_\_\_\_\_ at the same time
- Include Windows® (Microsoft®) and Macintosh® (Apple®) platforms

## 16. Windows®

- Was created by the \_\_\_\_\_® Corporation for use on PCs
- Is a single-user, multi-tasking operating system
- Previously needed to be downloaded after a computer was purchased
- Pre-installed on almost all new personal computers
- Is estimated to run on around \_\_\_\_\_ of all PCs
- Utilizes a graphical user interface so users do not have to learn difficult demands

# Operating Systems & Networking

- Student Notes

## 17. Graphical User Interface (GUI)

- Allows users to operate computers without knowing the language used to \_\_\_\_\_ with an operating system
- Makes computers much more \_\_\_\_\_
- Eases the complications of operating a computer

## 18. Graphical User Interface (GUI)

- Utilizes the following tools:
  - pointer: a \_\_\_\_\_ (usually an arrow) on a computer screen used to select objects
  - pointing device: an object such as a mouse used for pointing
  - icons: small pictures on a computer screen representing programs and applications
  - desktop: an area on a \_\_\_\_\_ screen where icons are displayed
  - windows: divide the screen into different areas so several programs can run at the same time
  - menus: allow users to select commands from a list of choices

## 19. Macintosh® (Mac OS)

- Is an operating system created by \_\_\_\_\_®
- Is a single-user, multi-tasking operating system
- Also uses \_\_\_\_\_ to help ease the difficulty level for users
- Allows users to run old Macintosh® applications through the system

Application: a computer program performing a specific task

## 20. Multi-User Operating Systems

- Allow multiple users to \_\_\_\_\_ use the programs on a single computer
- Should only allow users who have the necessary knowledge to use the system
- Are complex systems requiring a lot of upkeep and \_\_\_\_\_
- Include Unix® and Linux® operating systems

# Operating Systems & Networking

- Student Notes

## 21. Unix®

- Is a multi-user, multi-tasking operating system
- Designed to be a small, \_\_\_\_\_ system for use by computer programmers
- Not very user-friendly for the average, everyday user
- GUIs have recently been created to help make it easier to use for \_\_\_\_\_ users

Computer Programmer: a person who designs, writes and installs computer programs and applications

## 22. Linux®

- Is a variation of the Unix operating system
- Originally created by a student at the University of \_\_\_\_\_ named Linus Torvalds
- Is a multi-user, multi-tasking operating system
- Allows source code to be free to the public so it can be re-created by others with necessary \_\_\_\_\_

Source Code: the tags and instructions developed by the creator explaining how the system was created

## **Networking Segment**

### 1. Network

- Is a system for communication between two or more computers
- Enables users to share \_\_\_\_\_ and devices through the system
- Allows users to exchange software, hardware and other data
- Uses a cable or \_\_\_\_\_ connection to run

### 2. Wireless Connections

- Connect computers without the use of wires and cables
- Uses \_\_\_\_\_ waves to transmit information
- Are also used for telephones not \_\_\_\_\_ to the wall
  - example: cordless phones and cellular phones

Electromagnetic Waves: a method of travel for information from computer to computer; consists of light waves, radio waves, etc.

# Operating Systems & Networking

- Student Notes

## 3. Networks

- Break down into the following main types:
  - Local Area Network
  - Wide Area Network
  - \_\_\_\_\_Area Network
  - Controlled Area Network
  - \_\_\_\_\_Area Network

## 4. Local Area Networks (LAN)

- Are local, privately owned networks
- Have a high speed and low error rate
- Are able to be measured in meters because of their small \_\_\_\_\_size
- Typically means the computers in the \_\_\_\_\_are within the same building or office

Error Rate: The number of times an area network does not function properly compared to the total number of times the network is accessed

## 5. Wide Area Networks (WAN)

- Are networks providing \_\_\_\_\_between computers in multiple locations
- Cover a significantly larger area than \_\_\_\_\_
- Can be used to connect different office locations of a large company
- Consist of several LANs linked together to create a larger network

## 6. Metropolitan Area Networks(MAN)

- Cover an area the size of an average to large city
- Are high-speed networks designed to link together \_\_\_\_\_size areas, campuses or school districts
- Fall \_\_\_\_\_the size of LANs and WANs
- Cover about 80 kilometers worth of distance

## 7. Controller Area Networks (CAN)

- Are used for real-time control operations
  - temperature, time, etc.
- Was originally developed for use in \_\_\_\_\_
- Has excellent error protection to prevent problems
- Sends shorter \_\_\_\_\_than other networks

# Operating Systems & Networking

- Student Notes

## 8. Personal Area Networks (PAN)

- Usually cover the small area around a user's \_\_\_\_\_
- Allow users to transfer files and gain access to printers and other nearby hardware
- Cover a range of up to \_\_\_\_\_ in distance
- Used to connect devices a single person uses with their computer

## 9. Internet

- Is a worldwide, publicly accessed network
- Allows interconnected computer networks to \_\_\_\_\_ data back and forth
- Enables contact between companies, individuals, academic institutions, etc.
- Consists of approximately 60,000 independent networks and 350 million active users
- Is \_\_\_\_\_ in size each year

## 10. Network Messaging

- Allows users to send \_\_\_\_\_ from one computer to another through the Internet
- Is a quick, easy and efficient way to send and retrieve data
- Utilizes programs such as
  - instant messaging programs
  - online \_\_\_\_\_
  - e-mail

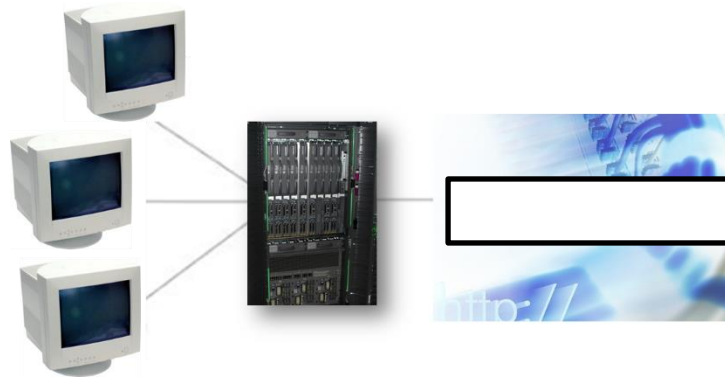
## 11. Servers

- Allow multiple users to access the same equipment such as fax machines, printers or common \_\_\_\_\_ stored in one central place
- Are used so several people can access the Internet and other computer programs simultaneously
- Can be used interchangeably with the names \_\_\_\_\_ or network servers
- Store an abundant amount of information
- Manage the resources of a network of computers

# Operating Systems & Networking

- Student Notes

## 12. Servers



## 13. Server Size

- Depends on the size of a home or \_\_\_\_\_ in which it will run
- Increases in size as the speed also increases and vice versa
- Increases and decreases along with the number of users
- Can be as small as a \_\_\_\_\_ or as large as a whole room

## 14. Firewalls

- Serve as a security device between a computer and Internet sites or between multiple \_\_\_\_\_ networks
- Inspect network traffic passing between computer networks
- Shield networks from unauthorized visits
- Can also restrict unwanted \_\_\_\_\_ from flowing outside of a network

## 15. Transmission Control Protocol/Internet Protocol (TCP/IP)

- Serves as a unique identification for a computer on a network
- Helps \_\_\_\_\_ individual computers
- Is a 32 bit code made up of four subsets of numbers
- Determines where \_\_\_\_\_ needs to be delivered
- Serves the same purpose as a street address
  - example: (172.16.122.204)

## 16. Network Hardware

- Includes:
  - network router
  - network \_\_\_\_\_ card
  - network switches
  - network \_\_\_\_\_

# Operating Systems & Networking

- Student Notes

## 17. Network Router

- Is a hardware device connected to multiple \_\_\_\_\_ for different networks through an interface
- Is a type of device which acts as the central point to direct \_\_\_\_\_ on the Internet
  - it not only selects the best path to route a message, but also translates information form one network to another

## 18. Network Interface Card

- Is a device which provides the \_\_\_\_\_ connection between the network and the computer workstation
- Is a major factor in determining the speed and performance of a network
- Can be internal or external
  - most network \_\_\_\_\_ are internal and included in the purchase of the computers

## 19. Network Switch

- Is a device providing a central connection point for cable from the \_\_\_\_\_
- Electrically amplifies the signal as it moves from one device to another
- Can immediately \_\_\_\_\_ network traffic in most networks

## 20. Network Bridge

- Is a device dividing traffic on a local area network
- Separates the LAN into several different \_\_\_\_\_
- Is also responsible for filtering data by determining the data \_\_\_\_\_ or discarding unnecessary data

## 21. Network Troubleshooting

- Involves:
  - verifying the network adapter is properly installed and detected by the computer with no conflicts
    - open the \_\_\_\_\_ and verify there are no errors
    - if conflicts exist, try letting the operating system re-detect and install the network card
    - if the operating system re-detects the card but does not find the drivers, \_\_\_\_\_ the latest network card driver

# Operating Systems & Networking

- Student Notes

## 22. Network Troubleshooting

- Involves:
  - verifying connection
    - when working on a wired network, make sure the network cable is properly connected and verify the LEDs next to the network jack are properly \_\_\_\_\_
    - when working on a wireless network, look for the computer's \_\_\_\_\_ and make sure it is on; make sure the correct Wi-Fi hotspot is used

## 23. Network Troubleshooting

- Involves:
  - verifying the network card is capable of \_\_\_\_\_ itself
    - use the ping command and see whether replies from the network card is received
    - if an error is received, or the \_\_\_\_\_ fails, then the network card is not physically installed correctly or it is defective

## 24. Network Troubleshooting

- Involves:
  - making sure the computer can connect to the router correctly
    - determine the router's address by looking at the \_\_\_\_\_ address
    - if no reply is received from the \_\_\_\_\_, either the router is not set up properly, or the connection between the router and the computer is not correct

## 25. Network Troubleshooting

- Involves:
  - making sure the Internet service provider is working properly
    - wait for a few minutes to make sure it is not a \_\_\_\_\_ outage
    - unplug the power cables to the router and modem and leave them disconnected for \_\_\_\_\_, and then see if your router is pinged
    - contact the Internet service provider to make sure there is no problem on their end

# Operating Systems & Networking

- Student Notes

## Information Systems

### 1. Information Systems

- Are often referred to as \_\_\_\_\_ Information Systems (MIS)
- Refer to the entire process from *gathering* to *using* information to be utilized in an \_\_\_\_\_
- Provide information which can then be used in various areas of the organization

### 2. Information

- Is used at various levels within an organization
  - management & operations
    - decision making, business \_\_\_\_\_, goals
  - accounting & finance
    - bookkeeping, financial statements
  - sales & \_\_\_\_\_
    - customer/consumer demographics
  - human resources

### 3. Business Planning

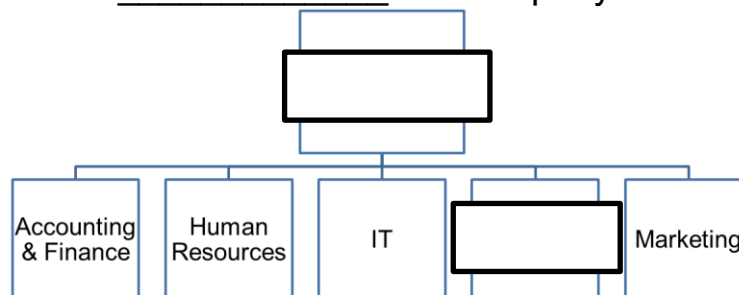
- Will inherently consist of gathering, processing and \_\_\_\_\_ information
- After the \_\_\_\_\_ planning stage information will be more actively USED

### 4. Information System Issues

- Include having to perform the following:
  - increasing security on computers
  - decreasing \_\_\_\_\_/costs
  - decreasing complexity of \_\_\_\_\_

### 5. Equipment & Supplies

- Are used in each \_\_\_\_\_ of a company



- Also will vary depending upon company industry type and/or size

# Operating Systems & Networking

- Student Notes

## 6. Equipment & Supplies

- Are \_\_\_\_\_ on the purpose of the business
- Will include both \_\_\_\_\_ and software

## 7. Equipment & Supplies

- Hardware examples include:
  - computers/monitors
  - printers
  - copiers
  - \_\_\_\_\_
  - telephones/mobile phones
  - wireless \_\_\_\_\_ devices
  - external storage devices

## 8. Equipment & Supplies

- Software examples include:
  - security software
  - \_\_\_\_\_ system
  - product specific software such as for photo or video editing
  - accounting and \_\_\_\_\_ software
  - business documents software

## 9. Maintenance & Updates

- Software
  - security updates are top priority and should be carried out frequently
  - other software may have free \_\_\_\_\_ available online or updates for a fee
  - some types of software will have to be \_\_\_\_\_ in order to update

# Operating Systems & Networking

- Student Notes

## 10. Maintenance & Updates

- Hardware
  - printers (ink)
  - \_\_\_\_\_/scanners
  - phones/phone lines
  - wireless devices
- Should include regularly \_\_\_\_\_ parts, firmware or software updates to keep devices working properly

## 11. Maintenance Schedule

- Keep detailed records to maintain warranties
- Example: printer
  - date of \_\_\_\_\_
  - make and model
  - number of pages printed
  - previous \_\_\_\_\_ calls
  - contact information of service provider

## 12. Information System Tools

- Include:
  - transaction processing system (TPS) – record and document all of a business's recurring and routine \_\_\_\_\_
  - operating information system (OIS) – plan and schedule production and \_\_\_\_\_ functions
  - decision support system (DSS) – make use of computing tools, mathematical and scientific modes of its analysis

## 13. Information System Security

- Involves protecting a business or organization's data assets
- Professionals test, \_\_\_\_\_ and maintain software and hardware used to protect information
- Managers might coordinate system-wide \_\_\_\_\_ to increase security

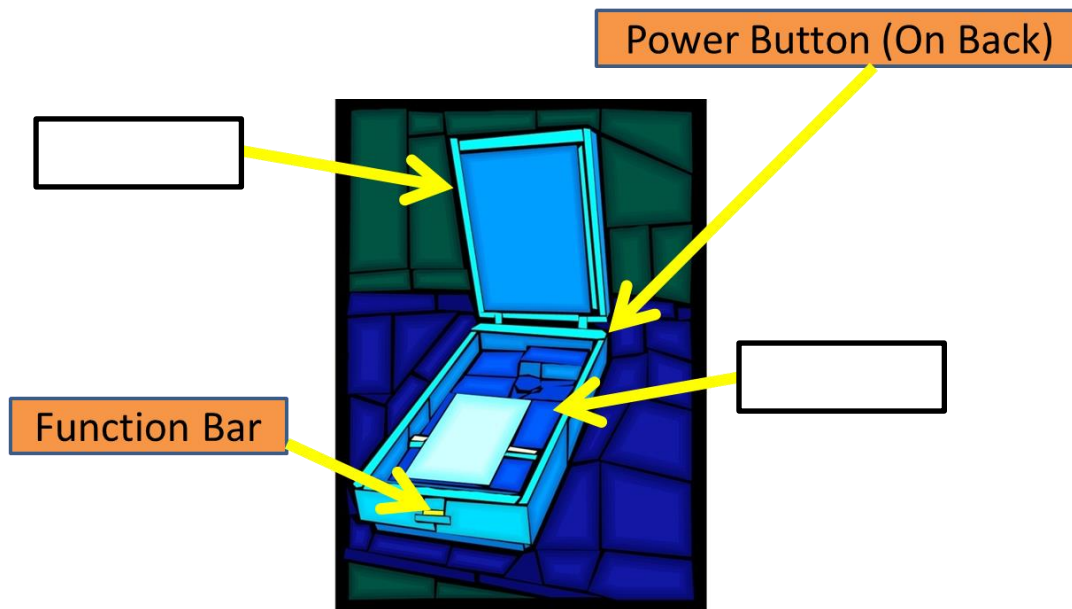
# Operating Systems & Networking

- Student Notes

## 14. Scanners

- Are external devices used to transfer data to a computer in an image form
- Have \_\_\_\_\_ advanced over the past ten years
- Consist of two types:
  - flatbed which scans paper documents, books, and photographs
  - \_\_\_\_\_ which can only scan flat pieces of paper

## 15. Parts of a Scanner



## 16. Steps of Operating a Scanner

- Include the following:
  - turning the scanner on
  - raising the scanner lid
  - placing the image to be \_\_\_\_\_ face down on the bed, aligning properly, and then closing the lid
  - selecting the proper program on your computer, and selecting the 'Scan' or \_\_\_\_\_ function to begin the scan
  - select the location where you want to save your scan