



Technology in Action

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Ninth Edition

Technology in Action

Chapter 8

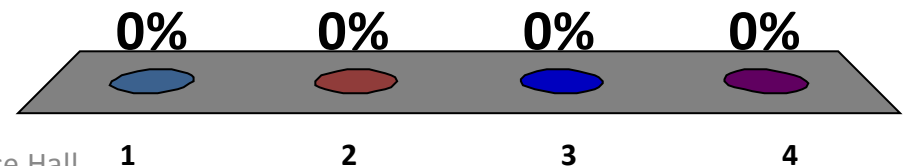
Digital Lifestyle: Managing Digital Data and Devices

Chapter Topics

- A digital lifestyle
- Digital telephony
- Digital media and information

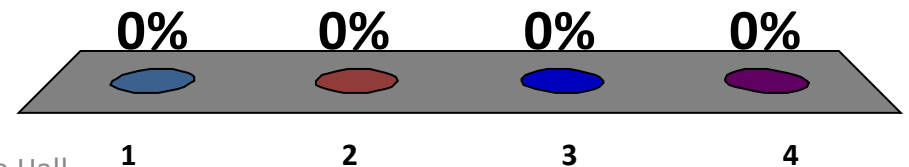
When making a cell call, the request is first picked up by the:

1. Mobile Switching Station
2. Receiver's Handset
3. Base Transceiver Station
4. Base Switching Station



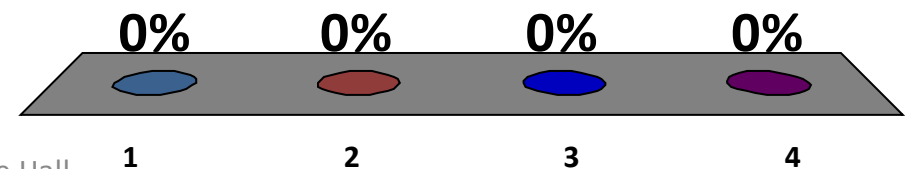
is the process of updating your data so all the files on your smartphone and computer are the same:

1. Coordinating
2. Synchronizing
3. Orchestrating
4. Organizing



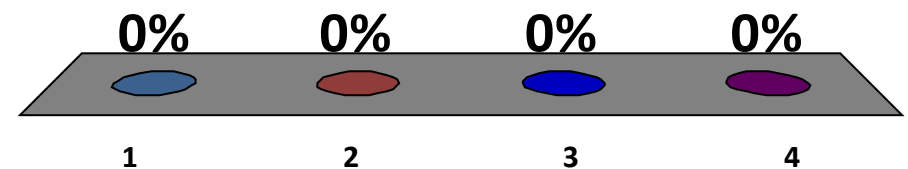
Which of the following is a device that displays etext and includes tools such as note taking, bookmarking, and dictionaries?

1. eReaders
2. Text messaging
3. VOIP
4. MiFI



Prior to digital cameras, most people used what type of camera?

1. Polaroid
2. Single Lens Reflex
3. Double Lens Reflex
4. Charge-coupled device



A Digital Lifestyle

- All forms of entertainment have migrated to digital domain
 - Phone systems
 - Television signals
 - MP3 files
 - Digital cameras and video cameras
 - Feature films
 - Satellite radio systems

Advantages of Digital Format

- Describe signals as long strings of numbers
- Simple way to describe sound and light waves
 - Sounds and images can be reproduced perfectly
 - Easy to distribute digital information
- Huge advantages over analog format

Analog versus Digital

- Switch from analog to digital introduced new products with new capabilities
- Small devices can hold huge collections of information
- We can interact with our information any time we like
- Implications of shift to digital media are continually evolving

Digital Telephony

- Communication has changed radically
- Hardware devices that support communication have evolved because of digital technologies
- Telephony is the use of equipment to provide voice communication over a distance
 - Cell phones and smartphones
 - Voice over Internet Protocol (VoIP)

Cell Phones and Smartphones

- Cell phone features include automatic redial, call timers, and voice mail
 - Most also feature voice-activated dialing
 - Many offer Internet access, text messaging, personal information management (PIM), voice recording, GPS services and digital image and video capture
- Smartphones extend power of cell phone
 - Require data plan from cell phone provider

Cell Phone/Smartphone Components

- Cell phones and smartphones have same components as any computer
 - Processor
 - Memory
 - Input and output devices
 - Operating system
 - Application software



How Cellular Works

- Sound enters microphone as sound wave
- Analog-to-digital converter chip converts voice sound waves into digital signals
- Digital signal processor compresses the signal so it will transmit more quickly
- Digital signal processor decompresses incoming message
- Amplifier boosts signal to make it louder and passes it to speaker

How Cellular Works (cont.)

- Set of connected “cells” make up cellular network
- Base transceiver station
 - Picks up the request for service and passes it to central location
- Mobile switching center
 - Monitors the strength of the signal
 - When signal is weak, it orders the next base station to take charge of the call

Cell/Smartphone Processors

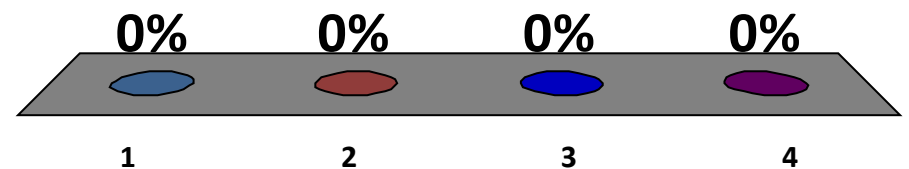
- Processor coordinates sending all data among other electronic components
- Runs the cell/smartphone's operating system which provides user interface
- Popular processors include:
 - Qualcomm Snapdragon
 - Apple A4
 - Marvel XScale

Cell/Smartphone Operating Systems

- Each manufacturer makes own small changes and designs own user interface
- Number of operating systems available
 - Windows Phone 7
 - Apple's iOS for iPhone
 - webOS for HP Pre
 - Android by Google
 - Open source systems

What stores the operating system on a cell phone?

1. ROM
2. RAM
3. Flash Card
4. CPU



Cell/Smartphone Memory

- Operating system is stored in read-only memory (ROM)
- Other phone data is stored in internal memory chips
- Micro SD flash cards



Cell/Smartphone Input & Output Devices

- Input devices
 - Microphone
 - Keypad
 - Touch-screen
 - Digital camera
- Output devices
 - Speaker
 - LCD display

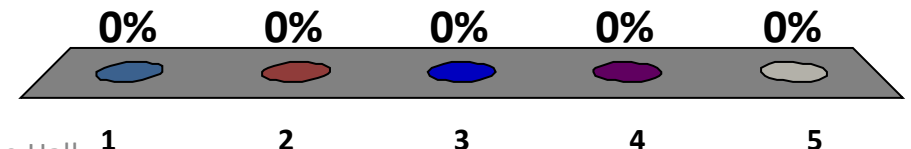


Cell/Smartphone Software

- Most devices come with standard software
 - To-do list
 - Contact manager
 - Calendar
- Other software
 - Modified versions of application software
 - Games and tools
 - Reference applications

I synchronize my phone using a:

1. Wireless Connection
2. Cable
3. Cradle
4. Cloud
5. I don't synchronize my phone



Synchronizing

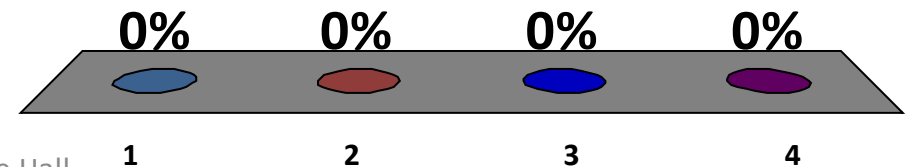
- Process of updating your data so files on cell/smartphone and computer are the same
- Wired solutions
 - Remove flash card and insert it into flash card reader on computer
 - Use USB data cable to connect phone to standard USB port

Synchronizing (cont.)

- Wireless synchronization
 - Bluetooth uses radio waves
 - Wi-Fi or 3G connection through cloud
 - SugarSync
 - Apple's iOS 5
- Other providers of wireless synchronization
 - Google Sync
 - Amazon Kindle

Which of the following is another name for text messaging?

1. Multimedia message service
2. Text message service
3. Short message service
4. Message switching service



Text Messaging

- Short message service (SMS)
 - Allows you to send short text messages
 - Up to 160 characters
 - Convenient and quicker than e-mail
- SMS uses cell phone network to send messages to any SMS device in world
- MMS is an extension that allows you to send messages that include, text, sound, images, and video

Mobile Internet

- Wireless Internet service provider
 - Phone companies double as wireless ISPs
- Data plan
 - Charges are separate from phone charges
 - Provided at different rates for different levels of texting usage and data transfer
- Smartphone connection is much slower than Internet connection at home

Data Transfer Technologies

- 3G networks
 - Transfer rates as high as 1.4 Mbps
 - Blankets most major urban areas with connectivity
- 4G networks
 - Promises connection speeds up to 100 Mbps
 - Currently speeds are 3 Mbps to 6 Mbps
 - Will usher in new generation of mobile devices

Cellular Connection Speeds

Connection speed will depend on which technology you are using

| Network | Availability | Speed (Mbps) |
|---------|-------------------|--------------|
| 3G | 300 major markets | 0.6 – 2.3 |
| WiFi | WiFi hot spots | 4 – 5 |
| 4G | Major cities | 5 – 12 |

Cell Phone/Smartphone Security

- Viruses can infect cell/smartphones
- It is expected that virus attacks will increase
- Antivirus software for mobile devices
 - Symantec
 - McAfee
 - F-Secure
- Download only from familiar Web sites
- Use a virtual phone number

Voice over Internet Protocol

- Turns standard Internet connection into means to place phone calls
- Uses technology similar to e-mail
- Basic requirements include:
 - Speakers
 - Microphone
 - Internet connection
 - VoIP provider

Voice over Internet Protocol (cont.)

- Skype is well-known free provider
 - Requires callers and receivers to have company's software installed on computers
- Other VoIP services and those provided by major ISPs are not free
- VoIP now available on mobile devices
- Long-distance calls are free or low cost
- Make VoIP calls from any WiFi hot spot

Digital Media and Information

- Entertainment industry has become an all-digital field
- The following are created, processed, and delivered using digital technology:
 - Books
 - Movies
 - Music
 - Photographs

Digital Publishing

- Electronic text (etext) is textual information stored as digital information
- eReaders are devices that can display etext
 - Amazon Kindle
 - Barnes and Noble Nook
 - Sony eReader
 - Tablets

Electronic Text

- Two popular technologies used to represent digital text
 - Electronic ink is very crisp, sharp grayscale representation of text
 - Amazon Kindle and Barnes and Noble Nook
 - High resolution, backlit monitors
 - iPad or Nook Color

Digital Music

- All digital media has the same basis – digitized information
- During the complete recording process, information changes from analog to digital and then back to analog sound waves
- Sampling rate specifies number of times the analog wave is measured each second

Music and Video File Formats

Letters at the end of a file name indicate how the data in the file is organized

Music Formats

- MP3
- AAC
- WMA

Video Formats

- DivX
- MPEG-4
- WMV
- XviD

Portable Media Players

- PMPs are small portable devices that enable you to carry MP3 files anywhere
- Many also handle video and still images
- Can hold as many as 40,000 songs or 200 hours of video

PMP Storage

- Most PMPs use built-in flash memory
 - 1 GB to 32 GB
 - Add storage capacity with flash memory cards
- PMPs that support video use a hard drive
 - As much as 160 GB
- How much music player can hold is determined by quality of MP3 files
 - Size of file depends on digital sampling

Digital Photography

- Digital cameras capture images on electric sensors and then convert them to digital data
- Most cameras also record digital video
- Evaluate quality of camera
 - Point-and-shoot vs. digital SLR
 - Features
 - Image quality
 - Ease of use
 - Value

Image Quality

- Determined by many factors
 - Quality of lenses
 - File format and compression
 - Color management software
 - Resolution
 - Point-and-shoot offer from 10 MP to 15 MP
 - Digital SLRs use resolutions as high as 21.1 MP

Pixel is short for:

1. Picture Elevation
2. Picture Elimination
3. Picture Element
4. Picture Enhancement

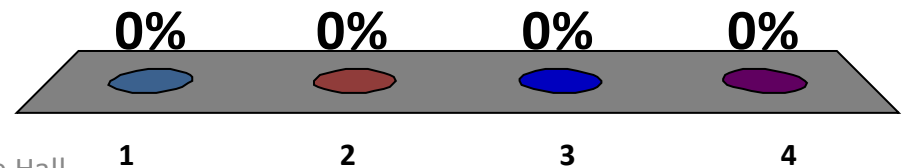


Image File Formats

- Most common formats
 - Raw uncompressed data (RAW)
 - Records all original image information
 - Larger than compressed files
 - Joint Photographic Experts Group (JPEG)
 - Some compression keeping most details
 - Great compression losing some detail

Digital Video

- Digital video comes from several sources:
 - Digital camcorder
 - Cell phones or smartphones
 - Webcams
- Digital video software allows you to
 - Edit digital video
 - Review clips frame by frame
 - Reorder segments
 - Correct color, balance, brightness, or contrast

Digital Video Files

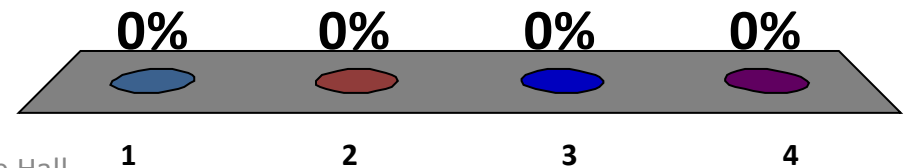
- Common file formats
 - QuickTime
 - MPEG
 - RealMedia
 - Microsoft AVI
- Consider different compression choices
 - Codecs (compression/decompression) are rules that squeeze audio and video information into less space

Digital Video Recorders (DVRs)

- Record digital video from television and store on hard drive
 - Standard
 - HD quality
- Useful features
 - Record two shows at once
 - Download movie purchases or rentals
 - Move stored content to mobile device
- Personal video recording software (PVR)

A is a rule, used in software or hardware, that squeezes the same audio and video information in less space.

1. Aspect Ratio
2. DV
3. QuickTime
4. Codec



Digital Navigation

- Global positioning system (GPS) is a network of 21 satellites that orbit Earth
- GPS devices use antenna to pick up signals
- Use special software to transform signals into latitude and longitude



Digital Convergence

- The use of a single unifying device to handle media, Internet, entertainment, and telephony needs
- Major categories of mobile devices
 - Cell phones and smartphones
 - Portable music players
 - Netbooks and tablets
 - Notebooks



Other Devices to Consider

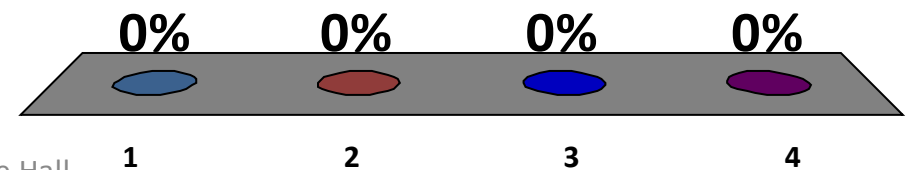
- Lightweight Internet tablets
 - Wi-Fi only
 - Wi-Fi and 3G
- Mobile game systems
- E-readers
 - Amazon Kindle
 - Barnes and Noble Nook
 - Sony Reader Digital Book



Amazon Kindle

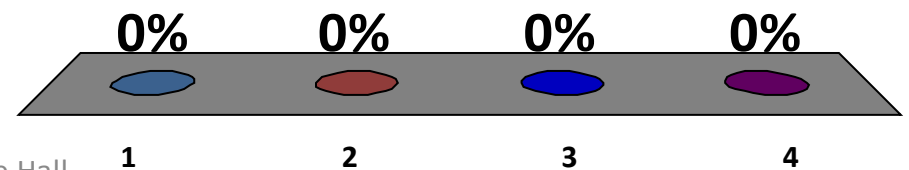
Which of the following technologies allow users to connect to the internet through the 3G wireless phone network?

1. MiFI
2. Tethering
3. Bluetooth
4. Both 1 & 2



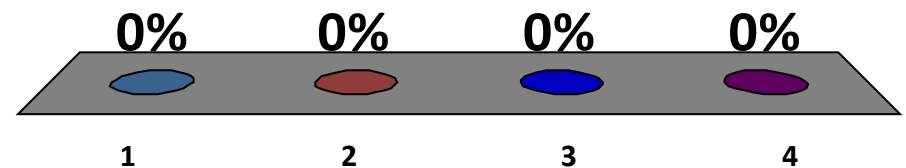
Bluetooth uses _____ to transmit data.

1. Micro waves
2. Blue waves
3. Cellular waves
4. Radio waves



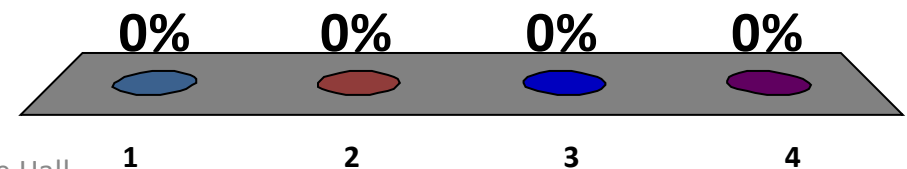
What Does VOIP Stand For?

1. Very Ordinary Information People
2. Voice Over Information Protocol
3. Voice Over Internet Protocol
4. Video Over Internet Protocol



Which technology can be used to create radio or television shows from home?

1. Browsers
2. eReaders
3. Podcasting
4. Blu-ray



Chapter 8 Summary Questions

1. What are the changes that have brought us a digital lifestyle?

Chapter 8 Summary Questions

2. How do cell phone and smartphone components resemble a traditional computer?

Chapter 8 Summary Questions

3. Why would I use VoIP?

Chapter 8 Summary Questions

4. How is digital media different from analog?

Chapter 8 Summary Questions


5. How is digital media created and what changes has it brought?

Chapter 8 Summary Questions

6. How do I create and watch digital video?

Chapter 8 Summary Questions

7. What new kinds of mobile devices are available?



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