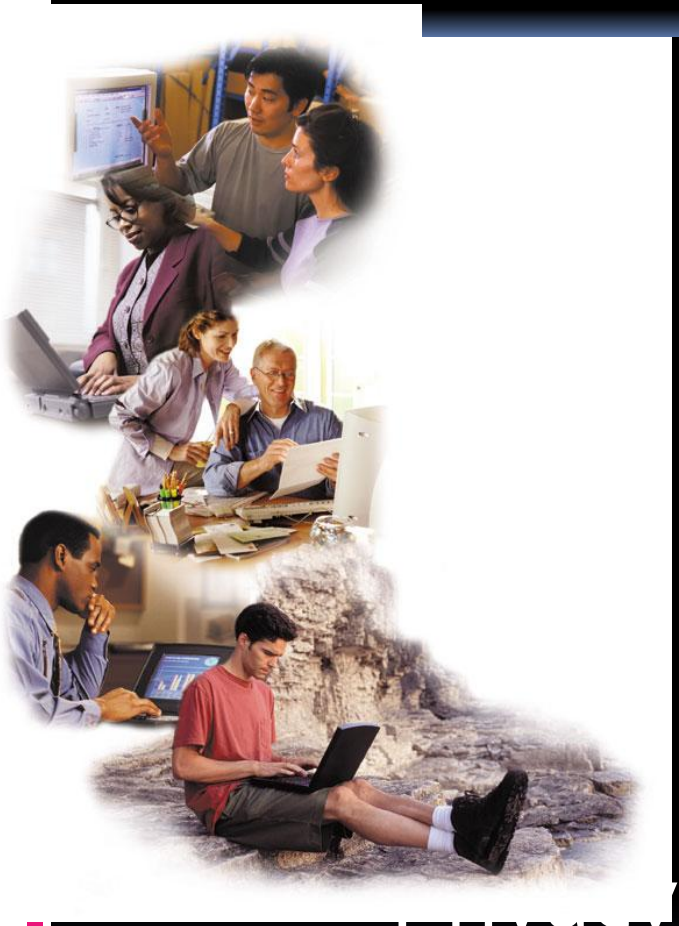
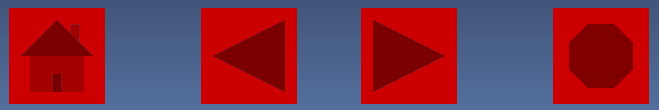


Privacy, Crime, and Security

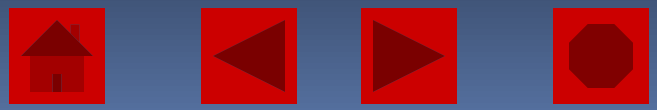
What You Will Learn About

- How technical developments are eroding privacy and anonymity
- Types of computer crime and cybercrime
- Types of computer criminals
- Security risks
- How to protect computer system and yourself
- How encryption makes online information secure
- US government's key recovery plan



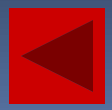
Privacy in Cyberspace

- Privacy refers to an individual's ability to restrict the collection, use, and sale of confidential personal information
- The Internet is eroding privacy through the selling of information collected through registration forms on Web sites
- Few laws regulate selling personal information
- Technology is not only making it easier to invade someone's privacy, but it is also providing a means to protect against privacy invasion



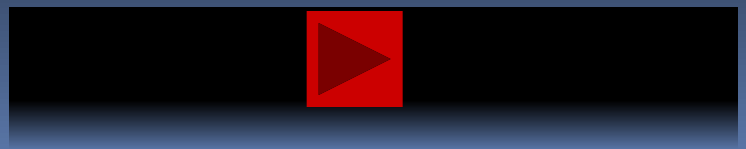
Technology and Anonymity

- **Anonymity** is the ability to convey a message without disclosing one's identity
- It can be abused because it frees people from accountability
- Computers and the Internet enable others to collect information in ways that are hidden from the user's view
- Information technologies used on the Internet are:
  - Cookies
  - Global Unique Identifiers (GUIDs)

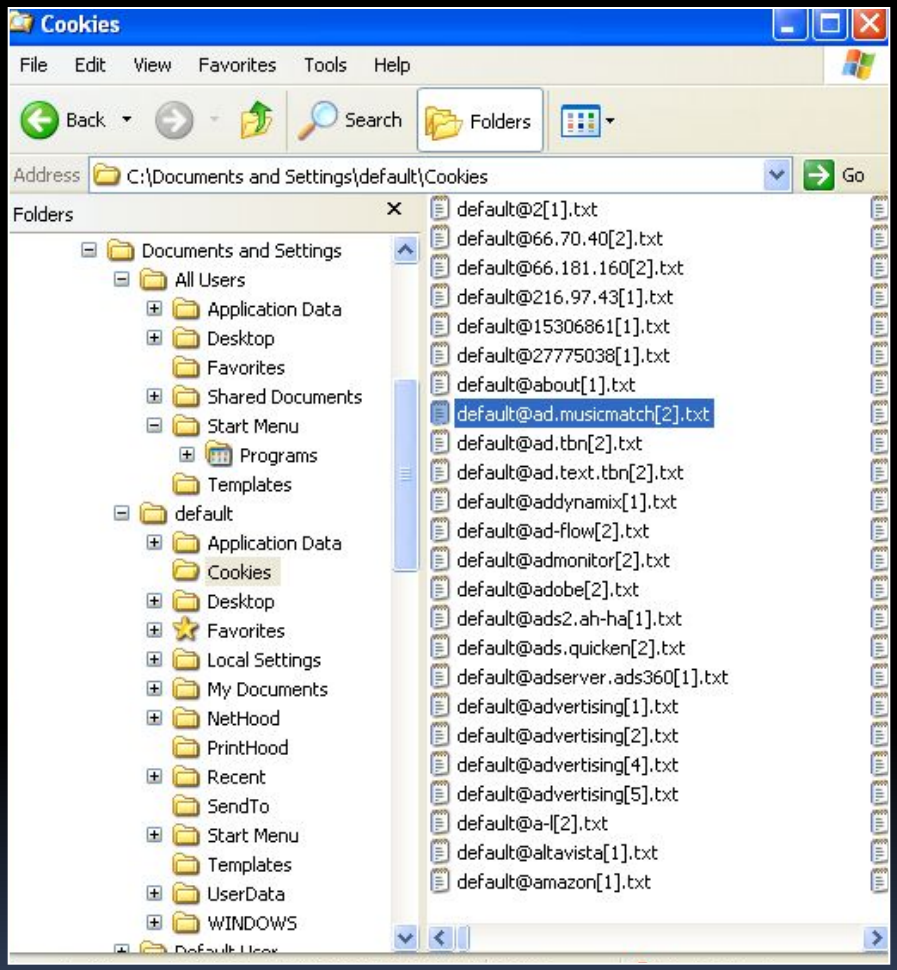



Cookies

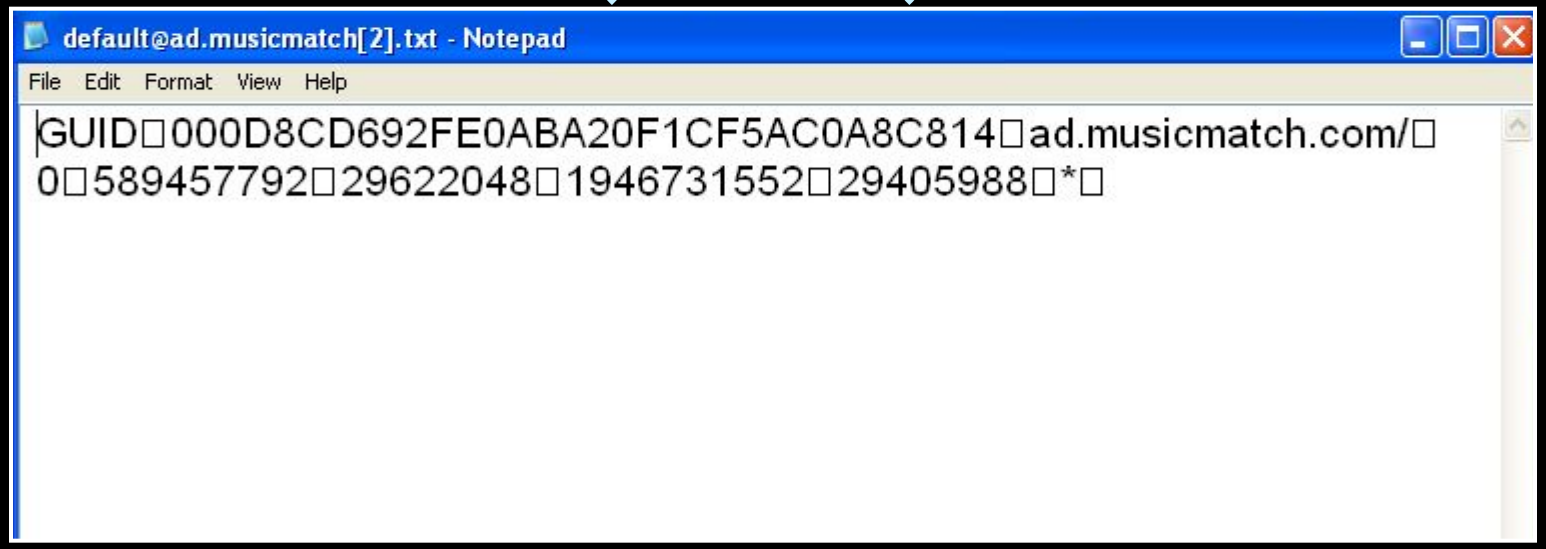
- **Cookies** are small files that are written to an individual's hard drive whenever a Web site is visited
- Legitimate purposes of cookies include recording information for future use; example: retail sites using "shopping carts"
- Questionable practices include banner ad companies tracking a user's browsing actions and placing banner ads on Web sites based on those actions



Example of Cookies



Global Unique Identifiers (GUIDs)



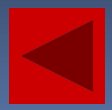
- A **GUID** is a unique identification number generated by hardware or a program
- It is used to send user information back to the site that created it

Global Unique Identifiers (GUIDs)

- Example of GUIDs
  - Intel Corporation placed a GUID in its Pentium III processors
  - RealNetworks' RealJukeBox player sent information back to the company
  - Microsoft Word 97 and Excel 97 embedded GUID information in every document

Protecting Your Privacy Online

- Browse anonymously by using Web sites such as www.anonymizer.com or www.the-cloak.com
- Disable cookies on your Web browser
- Use free e-mail addresses for information placed on Web sites
- Tell children not to divulge personal information to online strangers
- Make sure registration forms have a privacy policy statement

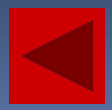



Protecting Your Privacy At Home

- Cell phones have GPS capability
  - Parents, EMS can find people
  - Intrusive if employer tracks employee

Protecting Your Privacy at Work

- Laws do not protect employees from being monitored by their employers
- Companies are concerned about employees:
  - Giving trade secrets to competitors
  - Creating sexual harassment lawsuits by circulating offensive jokes via e-mail
- Three-quarters of large corporations monitor employees' phone calls, e-mail, Web browsing habits, and computer files

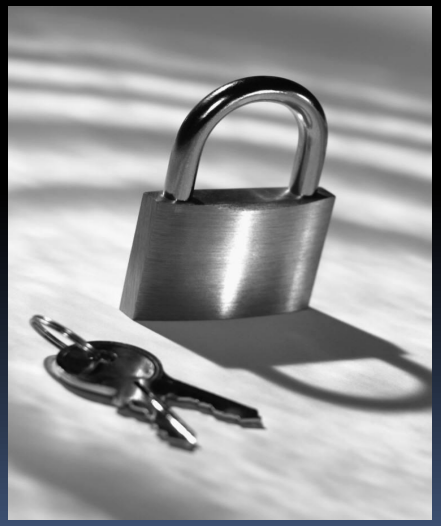



Protecting Privacy at Work

- Rules to follow while at work:
  1. Do not use the employer's phone for personal calls
  2. Do not use the employer's e-mail for personal messages
  3. Assume everything you do at work is being monitored

Computer Crime and Cybercrime

- Computer crimes occur when intruders gain unauthorized access to computer systems
- Cybercrime is crime carried out over the Internet
- Cyberlaw tracks and combats computer related crime

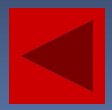


Computer Crime and Cybercrime

- Types of Computer Crime
  - Identity Theft
  - Computer Viruses
  - More Rogue Programs
  - Fraud and Theft
  - Forgery
  - Blackmail

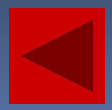
Identity Theft

- **Identity theft** is one of the fastest growing crimes in the United States and Canada
- Identity theft occurs when enough information about an individual is obtained to open a credit card account in their name and charge items to that account
- Examples of information needed are name, address, social security number, and other personal information
- Laws limit liability to $50 for each fraudulent charge
- An individual's credit report is affected by identity theft

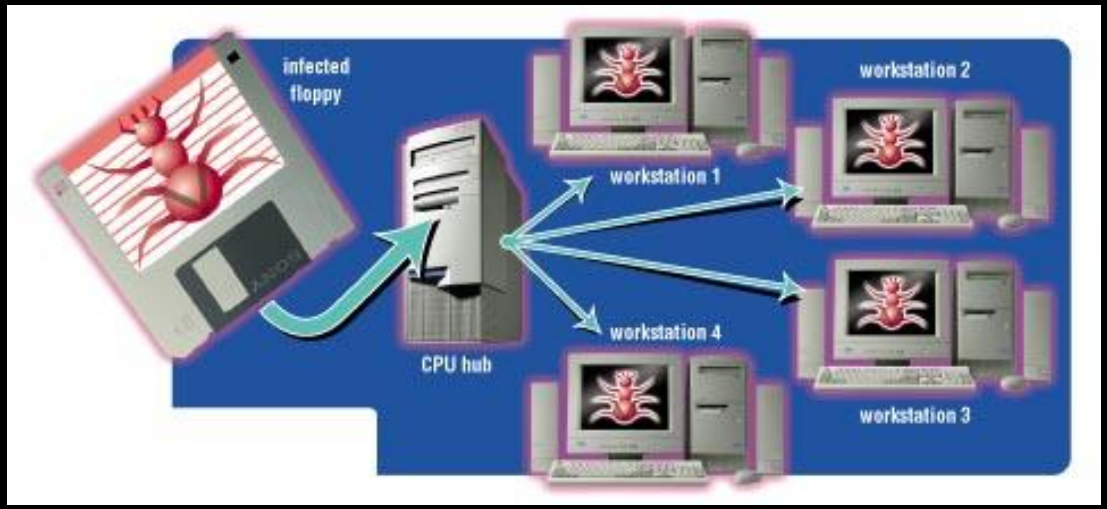



Computer Viruses

- **Computer viruses** are malicious programs that infect a computer system causing various problems with its use
- Viruses replicate and attach themselves to programs in the system
- There are more than 20,000 different computer viruses with the number growing daily

How Virus Infections Spread



- Virus Infections spread by:
  - Inserting a disk with an infected program and then starting the program
  - Downloading an infected program from the Internet
  - Being on a network with an infected computer
  - Opening an infected e-mail attachment

Types of Viruses

- **File Infectors**
  - Attach themselves to program files
  - Spread to other programs on the hard drive
  - Are the most common type of virus

- **Boot Sector Viruses**
  - Attach themselves to the boot sector of a hard drive
  - Execute each time the computer is started
  - May lead to the destruction of all data

Types of Viruses

- **Macro Viruses**
  - Infect the automatic command capabilities of productivity software
  - Attach themselves to the data files in word processing, spreadsheet, and database programs
  - Spread when the data files are exchanged between users

More Rogue Programs

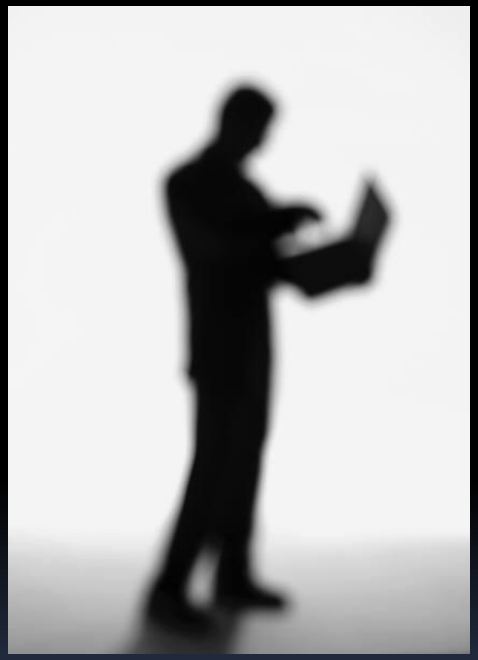
- **Time Bombs**
  - Also called **logic bombs**
  - Harmless until a certain event or circumstance activates the program
- **Worms**
  - Resemble a virus
  - Spread from one computer to another
  - Control infected computers
  - Attack other networked computers

More Rogue Programs

- **Denial of Service Attack (DoS)**
  - Syn flooding
  - Overload an Internet server with a large number of requests
- **Trojan Horses**
  - Disguise themselves as useful programs
  - Contain hidden instructions
  - May erase data or cause other damage

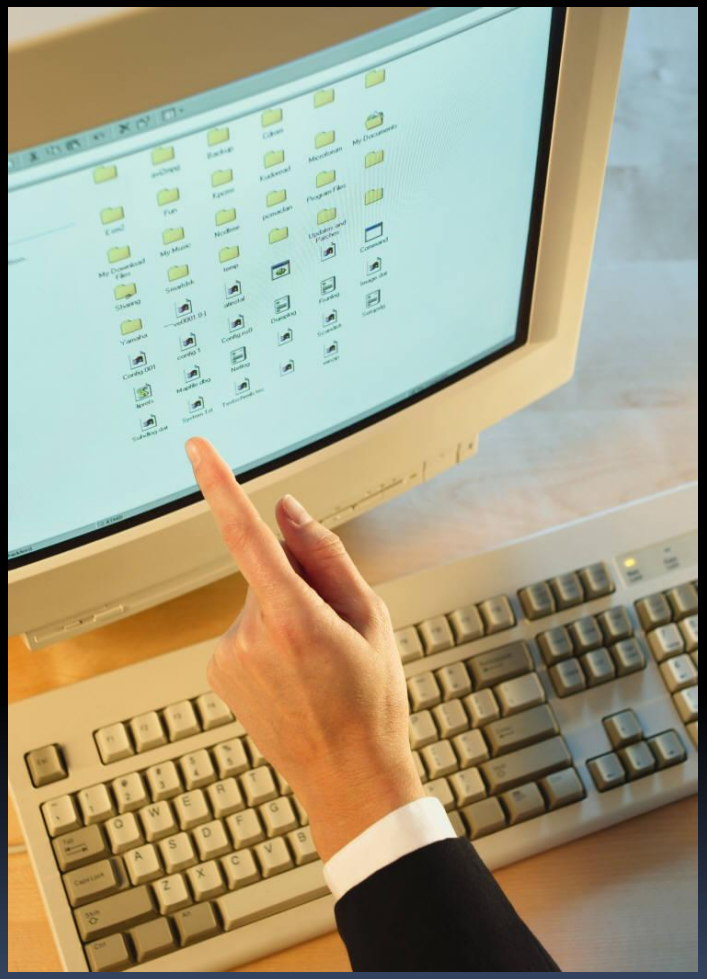
Fraud and Theft

- **Selling social security numbers**
- **Memory shaving – taking RAM chips from computers**
- **Salami Shaving**
  - Programmer alters a program to take a small amount of money out of an account
- **Data Diddling**
  - Data is altered to hide theft



Techniques to Obtain Passwords

- Password guessing
- Shoulder surfing
- Packet sniffing
- Dumpster diving
- Social engineering
- Superuser status



Forgery and Blackmail

- Forgery
  - Internet data can appear to be coming from one source when its really coming from another
  - Forged e-mail and Web pages
- Blackmail
  - Adverse publicity fears

Meet the Attackers

- **Hackers**
  - Computer hobbyists
  - Find weaknesses and loopholes in computer systems
  - Rarely destructive
  - Adhere to the hacker's code of ethics
- **Cyber Gangs**
  - Bring crackers together by way of the Internet and meetings

Meet the Attackers

- **Crackers**
  - Also called black hats
  - Obsessed with entering secure computer systems
  - Rarely destructive
  - Leave calling cards on the systems they enter
- **Virus Authors**
  - Usually teenage males
  - Push the boundaries of antivirus software
  - Create viruses that are very damaging

More Attackers

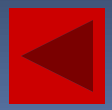
- **Disgruntled Employees**
  - Sabotage their company's computer system
  - Create security holes called trap doors
  - May divulge trade secrets or destroy data
- **Swindlers**
  - Use the Internet to scam money from people
  - Use scams like **rip and tear**, **pumping and dumping,** and **bogus goods**
- **Spies**
  - Participate in corporate espionage
  - Are hackers or former employees
  - Involved in industrial espionage in 125 countries

More Attackers

- **Shills**
  - Use Internet auctions
  - Secret operatives who bid on a seller's item to drive up the bid
- **Cyberstalkers and Sexual Predators**
  - Using the Internet to repeatedly harass or threaten
  - Children are at risk from sexual predators

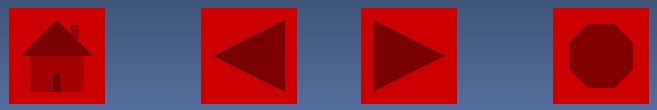
Security Risks

- **Computer security risk** is any event, action, or situation that leads to the loss of computer systems or their data
- **Wireless Networks**
  - Inherently insecure
  - Information sent over airwaves
  - Individual can drive around looking for a signal
- **Corporate Espionage**
  - On the rise
  - Often ex-employees
  - Trap doors

Information Warfare

- **Information warfare** is the use of information technologies to corrupt or destroy an enemy's information and industrial infrastructure
- An enemy attack would include:
  - Electronic warfare
  - Network warfare
  - Structural sabotage
- Information terrorism is a mounting threat

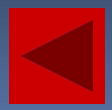


Protecting Your Computer System

- To protect a computer from power-related problems you should:
  - Use programs that have an auto save/auto recovery function
  - Equip the system with an uninterruptible power supply, a battery-powered device that automatically turns on when the power

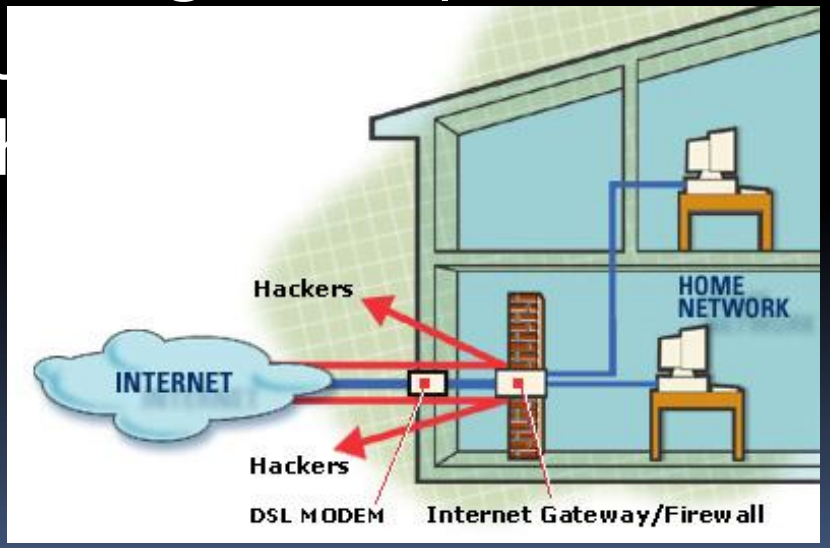
Controlling Access

- To control access to a computer:
  - Use **authentication** passwords
  - Use **callback systems**
  - Use **"know & have" authentication**
    - Tokens – Electronic devices that generate a logon code
    - Smartcards – Credit card-sized devices with internal memory
    - Biometric authentication – Voice recognition, retinal scans, thumbprints, and facial recognition

Using Firewalls

- **Firewalls** are programs that are designed to prohibit outside sources from accessing the computer system
- A **personal firewall** is designed to protect home computers from unau
being connected to th

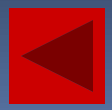


Avoiding Scams

- Only conduct business with established companies
- Read the fine print
- Don't provide financial or personal information to anyone
- Be skeptical about information received in chat rooms

Preventing Cyberstalkers

- Don’t share personal information in chat rooms
- Be extremely cautious about meeting anyone you’ve contacted online
- Contact the police if a situation occurs that makes you feel afraid while online

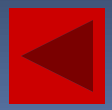



The Encryption Debate

- **Encryption** is the coding and scrambling process by which a message is made unreadable except by the intended recipient
- Encryption is needed for electronic commerce
- The potential for encryption's misuse troubles law enforcement officials

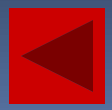
Encryption Basics

- A readable message is called **plaintext** I LOVE YOU
- An **encryption key** is a formula used to make plaintext unreadable
- The coded message is called **ciphertext** V YBIR LBH
- An encryption technique called **rot-13** is used in chat rooms and Usenet discussions

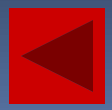
Encryption Basics

- **Symmetric key encryption** are encryption techniques that use the same key to encrypt and decrypt a message
- **Strong encryption** refers to encryption methods that are used by banks and military agencies and are nearly impossible to break

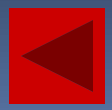
The Problem of Key Interception

- Rot-13 is not a secure encryption system
- Symmetric key encryption systems are vulnerable to **key interception**, or having their key stolen

Public Key Encryption

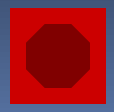
- **Public key encryption** uses two different keys
  - Public key is the encryption key
  - Private key is the decryption key
- They are used in e-commerce transactions
- A secure channel for information is provided when the keys are used

Digital Signatures and Certificates

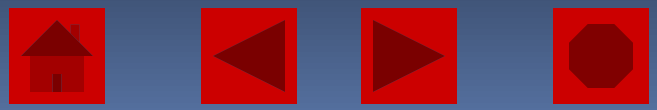
- **Digital signatures** are a technique used to guarantee that a message has not been tampered with
- **Digital certificates** are a technique used to validate one's identity
- **Secure Electronic Transactions** (**SET**) are online shopping security standards used to protect merchants and customers from credit card fraud



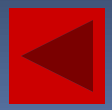
Public Key Infrastructure (PKI)

- A **public key infrastructure** is a uniform set of encryption standards that specify how public key encryption, digital signatures, and digital certificates should be implemented



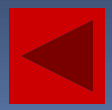
Encryption and Public Security Issues

- Encryption can be used for illegal as well as legitimate means
- Encryption will devastate law enforcement's ability to fight crime
- Law enforcement agencies are asking for laws enabling them to eavesdrop on encrypted messages
  - **Clipper Chip**
  - **Key escrow plan**
  - **Key recovery**

Summary

- Many websites collect and store information about Web users
- Cookies and GUIDs are used to collect data
- Computer crime and cybercrime
  - Identity theft
  - Computer viruses
  - Rogue programs
  - Forgery
  - Blackmail

Summary continued

- Computer criminals
  - Crackers
  - Cybergangs
  - Virus authors
  - Swindlers
  - Shills
  - Cyberstalkers
  - Sexual predators
- A computer security risk is any event, action, or situation that could lead to a loss or destruction of a computer or data

Summary continued

- Prevent security problems
  - Use an uninterruptible power supply to combat power-related problems
  - Use good passwords
  - Avoid scams and prevent cyberstalking
- Encryption refers to coding or scrambling data
- US government's key recovery plan is a new system that allows investigators to decrypt messages