

# CSC 170 - Introduction to Computers and Their Applications

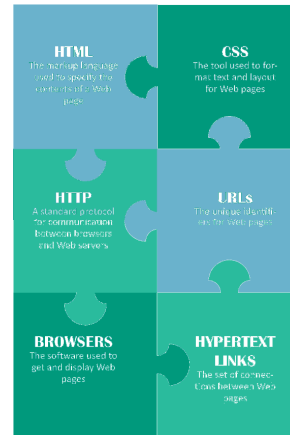
Lecture 8 – The World Wide Web

## What is the World Wide Web?

- The Web is not the Internet
- The Internet is a global data communications network
- The Web is just one of the many technologies that use the Internet to distribute data

# What is the World Wide Web?

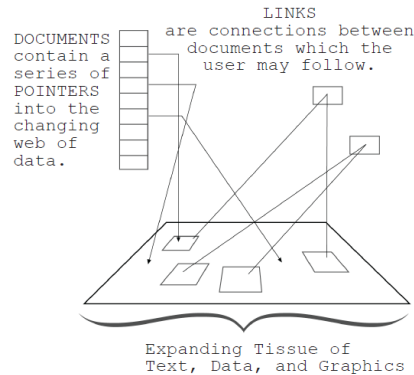
- The World Wide Web (usually referred to simply as the Web) is a collection of HTML documents, images, videos, and sound files that can be linked to each other and accessed over the Internet using a protocol called HTTP.



# Evolution of the Web

- In 1993 there were a total of 130 Web sites; by 1996 there were 100,000 Web sites.
- Today, there are more than a billion Web sites and new sites appear every day.
- Ted Nelson coined the term *hypertext* to describe a computer system that could store literary documents, link them in logical relationships, and allow readers to comment and annotate on what they read.

## Evolution of the Web

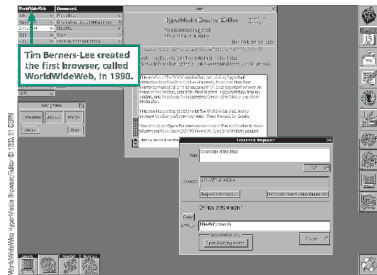


- Ted Nelson sketched his vision for project Xanadu in the 1960s. Notice his use of the terms web and *links*, which are now familiar to everyone who uses the World Wide Web.

## Evolution of the Web

- In 1990 British scientist Tim Berners-Lee developed specifications for URLs, HTML, and HTTP — the foundation technologies of today's Web.
- Berners-Lee created the Web browser software Nexus.
- In 1993 Marc Andreessen at the University of Illinois created the Web browser Mosaic that led to the development of the popular browser Netscape.

# Evolution of the Web



Netscape Navigator was the first browser in widespread use. Can you recognize elements of the Netscape window that are similar to elements of the browser you use today?

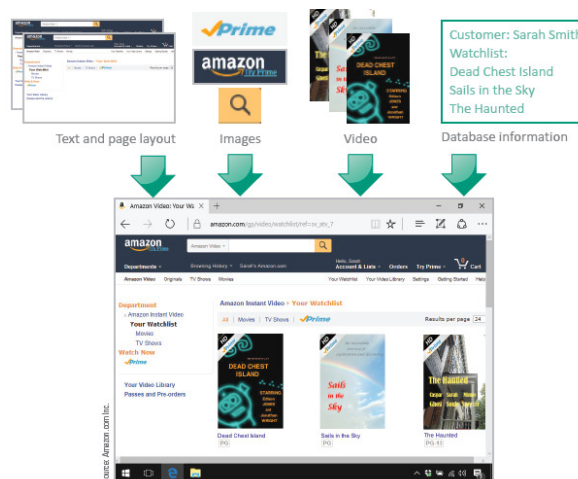
# Web Sites

- A **Web site** typically contains a collection of related information organized and formatted so it can be accessed using a browser
- A **Web server** is an Internet-based computer that stores Web site content and accepts requests from browsers

# Web Sites

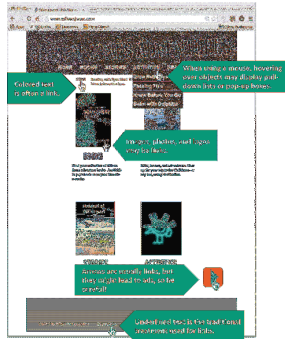
- A *Web page* is based on an HTML source document that is stored as a file on a Web server

# Web Sites



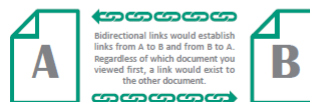
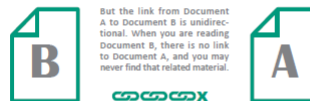
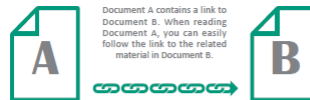
# Hypertext Links

- Web pages are connected by **hypertext links** (commonly referred to simply as links).
- Links are commonly indicated by the underlined or colored text, a photo, button, tab, or object.



# Hypertext Links

- Web pages have **unidirectional links**; Document A links to Document B, but not vice versa.
- **Bidirectional links** connect two documents using a two-way link that can be followed from either document.



## Uniform Resource Locators (URLs)

- Every Web page has a unique address called a **URL** (**U**niform **R**esource **L**ocator, pronounced “you are ELL”).
- Most URLs begin with `http://` to indicate the Web’s standard communications protocol
- The file name of a specific Web page always appears last in the URL.

**http://www.cnn.com/showbiz/movies.htm**

Web  
protocol

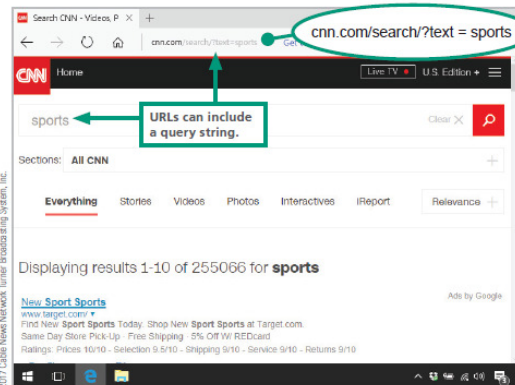
Web server  
name

Folder  
name

File name and  
extension

## URLs

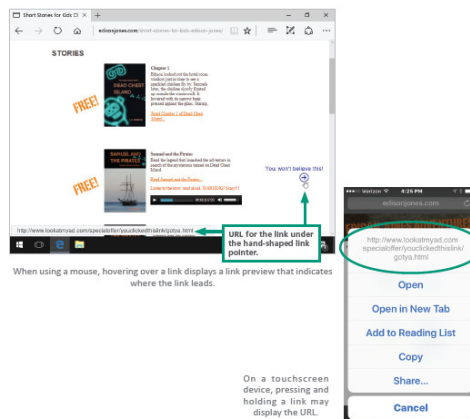
- Some URLs contain a search string rather than the name of an HTML document.



# URLs

- **Rules for correctly typing a URL:**
  - A URL never contains spaces
  - The http:// can be omitted
  - Always use a forward slash (/)
  - Duplicate the URL's capitalization exactly —some Web servers are case sensitive
  - Links aren't URLs, but a link contains the URL that “links” to another Web page

# URLs





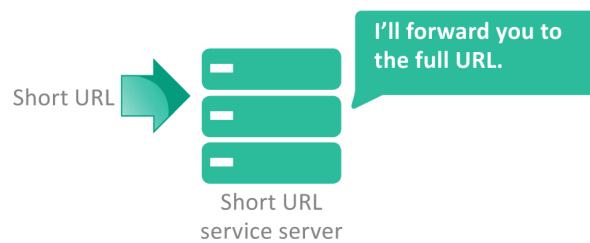
## URLs

- Many URLs are long and complex; this can be a problem
- Several services, such as Bitly and Goo.gl, create **short URLs**
  1. Copy and paste the full URL into the box provided by a short URL service such as Goo.gl.
  2. The service produces a short URL.
  3. The short URL is stored on the server along with the full URL.
  4. Links to the short URL are directed to the server, which forwards the link to the full URL.

## URLs

Paste your long URL here: Google

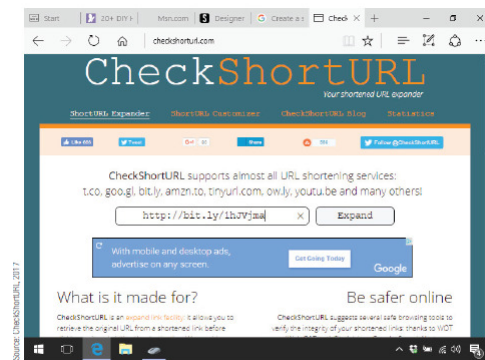
<http://goo.gl/EegwZ2>



# URLs

- Short URL services may lead consumers to believe that all short URLs will last forever
- Short URLs are sometimes used to disguise the real address of a Web site that is illegitimate
- Short URL services may be blocked by Web hosts and ISPs
- Web surfers should be aware that short URLs may lead to questionable Web sites and scams.

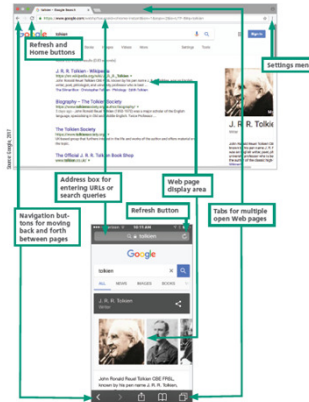
# URLs



Online services such as checkshorturl expand short URLs and display the original, full URL.

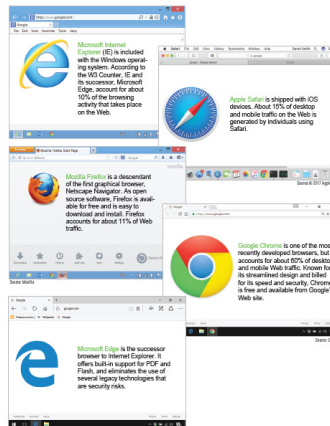
# Browser Basics

- **The essential elements of a browser include:**
  - An entry area for URLs and searches
  - Navigation controls
  - A refresh button
  - A home button
  - A settings menu
  - And a display area



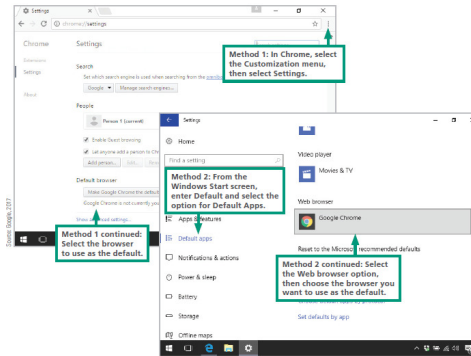
# Browser Basics

- **Today's most popular browsers are:**
  - Apple Safari
  - Google Chrome
  - Microsoft Internet Explorer (IE)
  - Microsoft Edge
  - Mozilla Firefox



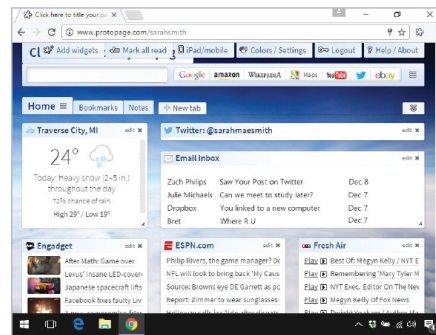
# Browser Basics

- You can designate a default browser so that it is automatically used when you click a link in an email message or PDF file.



# Customization

- You can customize your browser by doing the following:
  - Change your home page
  - Customize bookmarks and favorites
  - Control tab behavior
  - Select predictive services
  - Adjust password settings



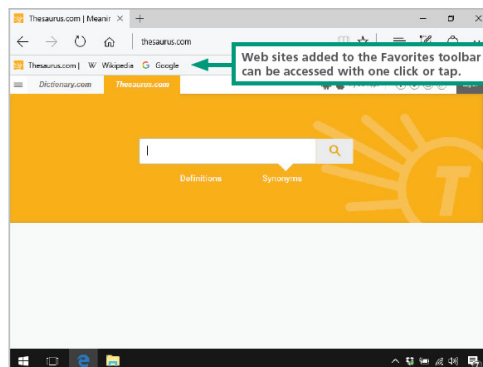
Using a service such as Protopage, you can create a customized home page that helps you easily access the sites you use most frequently and the information you want at your fingertips.

## Customization

- The **browser home page** is the first page displayed when the browser starts.
- If your primary use of the Web is seeking information, then a search engine site, such as Google, makes a good home page.
- You can also use services such as Protopage, My Yahoo, or uStart to design your own start page.

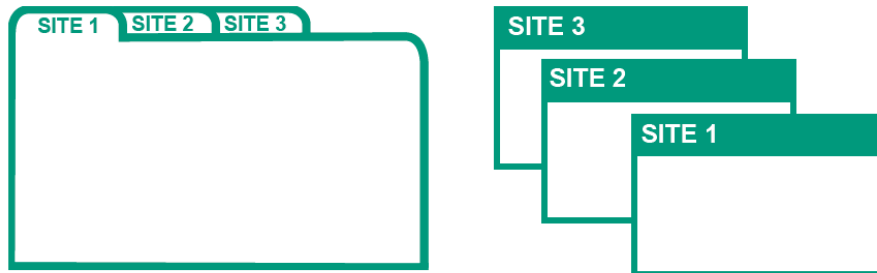
## Customization

- **Bookmarks** (or *Favorites*, as they are called in Microsoft browsers) link to pages that you use frequently.



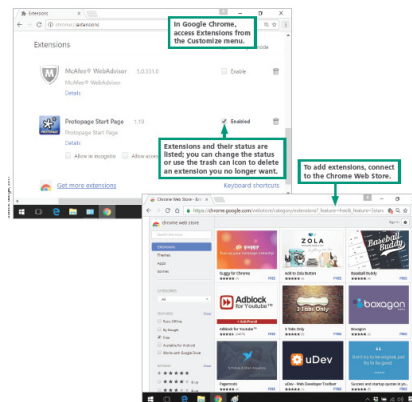
## Customization

- **Browser tabs** allow your browser to queue up multiple Web pages so that you can easily switch between them.



## Customization

- A **browser extension** adds features to a browser.
- Browsers provide a list of installed extensions and provide tools for disabling, enabling, or deleting them.



## Customization


- A **plugin** is a program that extends a browser's ability to work with file formats. Popular plugins include Adobe Reader for viewing PDF files, Adobe Flash Player for animations, and QuickTime Player for videos.
- Plugins have been exploited by hackers to access computers without authorization and plant malware.

## Customization

- In Chrome, Safari, and Firefox, plugins are managed from the browser. In Internet Explorer, plugins are managed along with other installed software through the Control Panel.

**Google Chrome:** Enter `Chrome://plugins/` in the address bar.

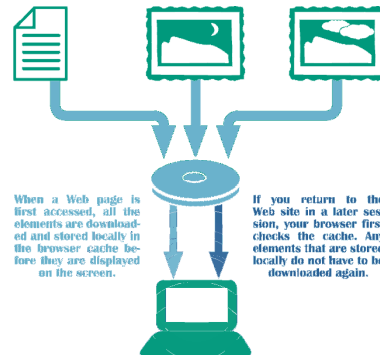
**Apple Safari:** Select **Safari Preferences**, then select the  icon.

**Microsoft Internet Explorer:** Open the Control Panel and select the icon for  Programs and Features .

**Mozilla Firefox:** Enter `www.mozilla.org/en-US/plugincheck/` in the Firefox address bar.

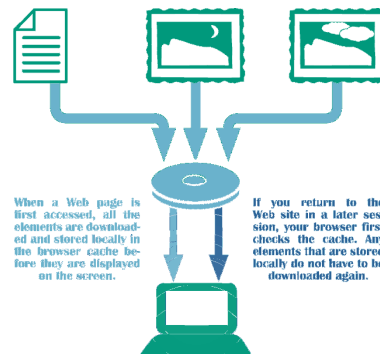
## Browser Cache

- Browsers pull HTML documents, images, and other Web page elements to your local device; ads are pulled down too.
- When your browser fetches pages and graphics to form a Web page, it stores that material on your device in temporary files referred to as a **browser cache**, Web cache, or browser history.



## Browser Cache

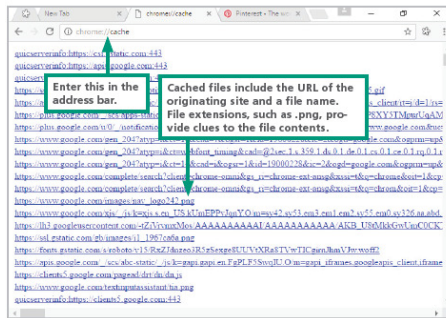
- Browsers pull HTML documents, images, and other Web page elements to your local device; ads are pulled down too.
- When your browser fetches pages and graphics to form a Web page, it stores that material on your device in temporary files referred to as a **browser cache**, Web cache, or browser history.





## Browser Cache

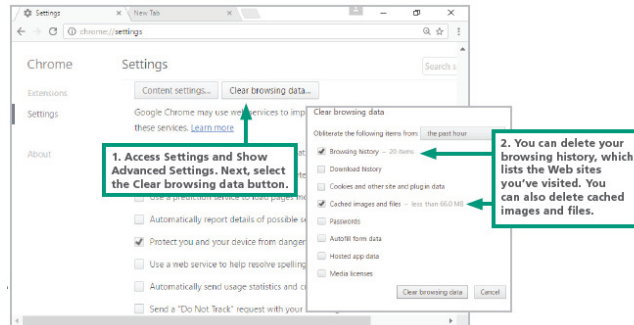
- The information in a browser cache can be seen with browsers, such as Google Chrome, and used to see a listing of files in the browser cache and even retrieve them .



## Browser Cache

- Browsers include settings for limiting the time cached files remain on your device, limiting the amount of space they can use on the hard disk and deleting all the cached files.

# Browser Cache



# Browser Cache

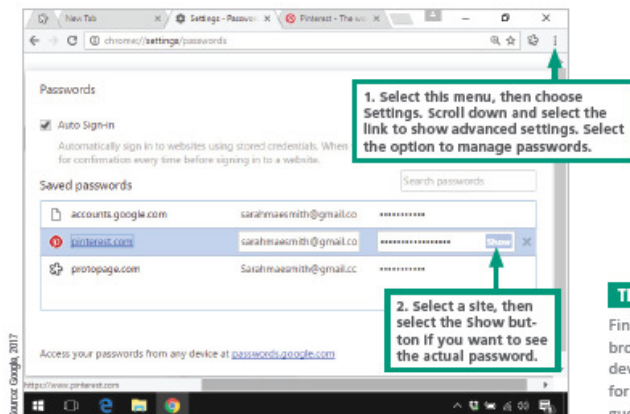
- In addition to the cache, your browser maintains a **History list** of sites that you've visited; you can delete the History list, usually using a process similar to clearing a browser cache.



## Browser Cache

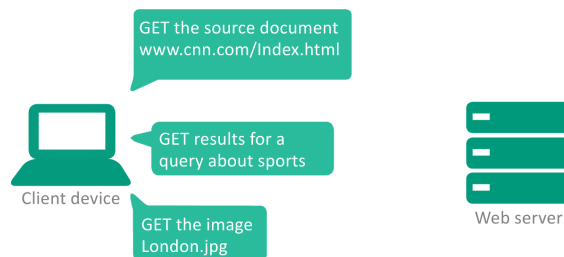
- Browsers ask to save passwords when you log in to sites.
- The potential risk of stored passwords is that anyone who gains access to your device can easily log in to your password-protected sites because the passwords are supplied by your browser.

## Browser Cache



# HTTP

- **HTTP** is a communication protocol that works with TCP/IP to get the elements for Web pages to a local browser.
- A set of commands called **HTTP methods** help your browser communicate with Web servers.



# Cookies

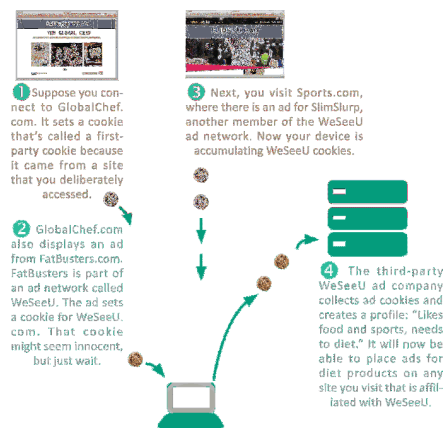
- A **cookie** (technically an HTTP cookie) is a small chunk of data generated by a Web server and stored as a text file in memory or on disk.
- Web sites use cookies to:
  - Monitor your path through a site
  - Gather information
  - Collect personal information
  - Verify that you have logged into a site using a valid ID.

# Cookies

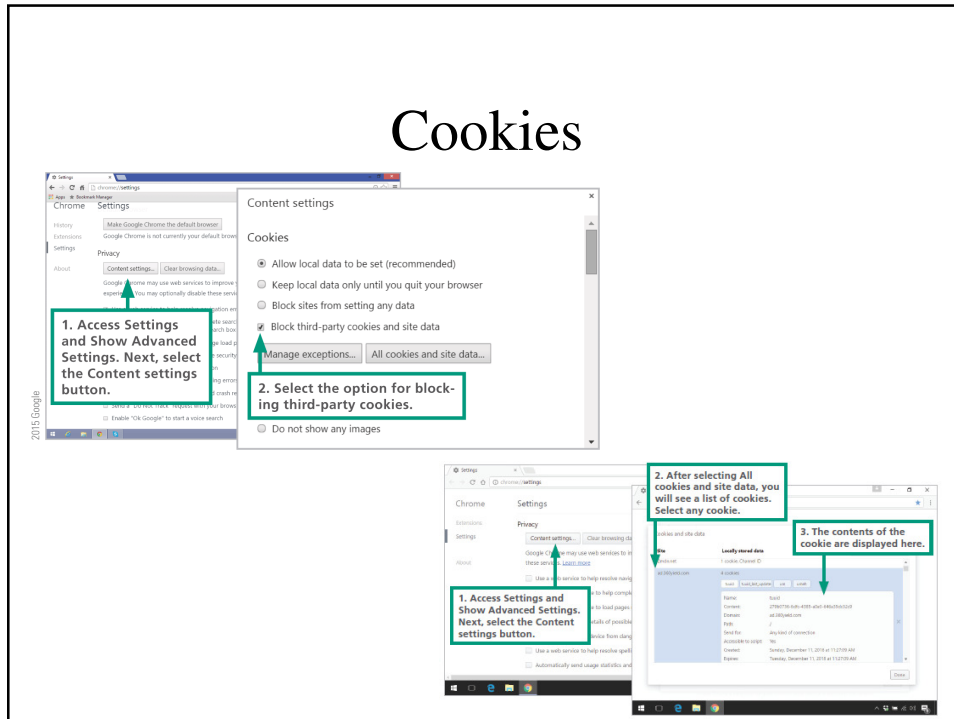
- There are two kinds of cookies: session cookies and persistent cookies
  - **Session cookies** – cookies stored in memory and deleted when the browser is closed
  - **Persistent cookies** – cookies that are stored on a device after a session ends; some are programmed to time out after a designated date

# Cookies

- A ***first-party cookie*** is set by the domain that hosts a Web page.
- A ***third-party cookie*** is set by a site other than the one you connected to.

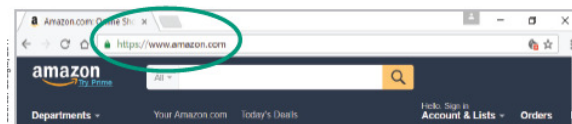


# Cookies

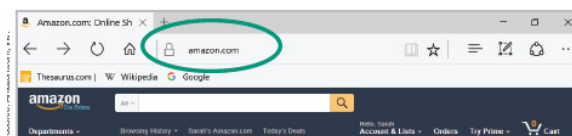


# HTTPs

- The data that you transmit to a Web server can be secured if it is sent over an **HTTP Secure** connection, which encrypts the data stream between client devices and servers.






Google Chrome



Microsoft Edge

## HTTPS

- Sites that use HTTP Secure are required to present an SSL certificate to the browser; this helps the browser verify that the site is not pretending to be another site.
- Look for these certificate icons when you want secure browsing:

ICON	WHAT IT MEANS
	The site's certificate is valid and its identity has been verified by a trusted third-party authority. The data you send to the site will be encrypted. Confirm that the URL is correct to avoid sending data to a fake site.
	The site is using HTTP, not HTTPS, to exchange data with your browser. Data that you send to this site is not encrypted. You might try changing <code>http://</code> to <code>https://</code> in the address bar to see if there is a secure version of the site.
	Google Chrome has detected problems with the site's certificate. Avoid using the site. If you decide to proceed, realize that your private information is at risk.

## HTTPS

- HTTP Secure is based on HTTP and a public key encryption technology called SSL/TLS
- **Public key encryption** is a very clever process that requires one key to encrypt data, but a different key to decrypt it; the encryption key can't be used to decrypt the message.

