

INTRODUCTION TO COMPUTER SCIENCE

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Ch.4: Networking and the Internet

- *Network Fundamentals*
- *The Internet*
- The World Wide Web
- Internet Protocols
- Security

Network Fundamentals

The Internet

The World

Wide Web

Internet Protocols

Security

- **hypertext** — text documents containing hyperlinks.
- **hypermedia** — more than text (audio and/or video)
- A hypertext document on the World Wide Web is often called a **Web page**
- A collection of closely related Web pages is called a **Web site**.

Network Fundamentals

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- S/w packages that allow users to access hypertext on the Internet fall into 1 of 2 categories:
 - packages that play the role of **clients**, and
 - packages that play the role of **servers**
- Hypertext documents are normally transferred between browsers and Web servers using a protocol known as the **Hypertext Transfer Protocol (HTTP)**.

Network Fundamentals

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- **URL** = Uniform Resource Locator — address

Example: `http://imada.sdu.dk/~joan/intro/13slides5.pdf`

protocol://host with document/
directory path/file (document)

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- **HTML** — Hypertext Markup Language — can include JPEG, etc.

My Web Page

Click [here](#) for another page.

Network Fundamentals

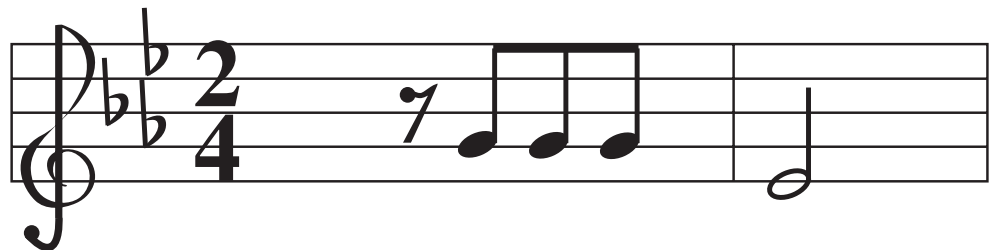
The Internet

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- **XML** — more general than text
 - standardized style
 - organizing and making searching easy
 - for mathematics, one markup language — for music another



Network Fundamentals

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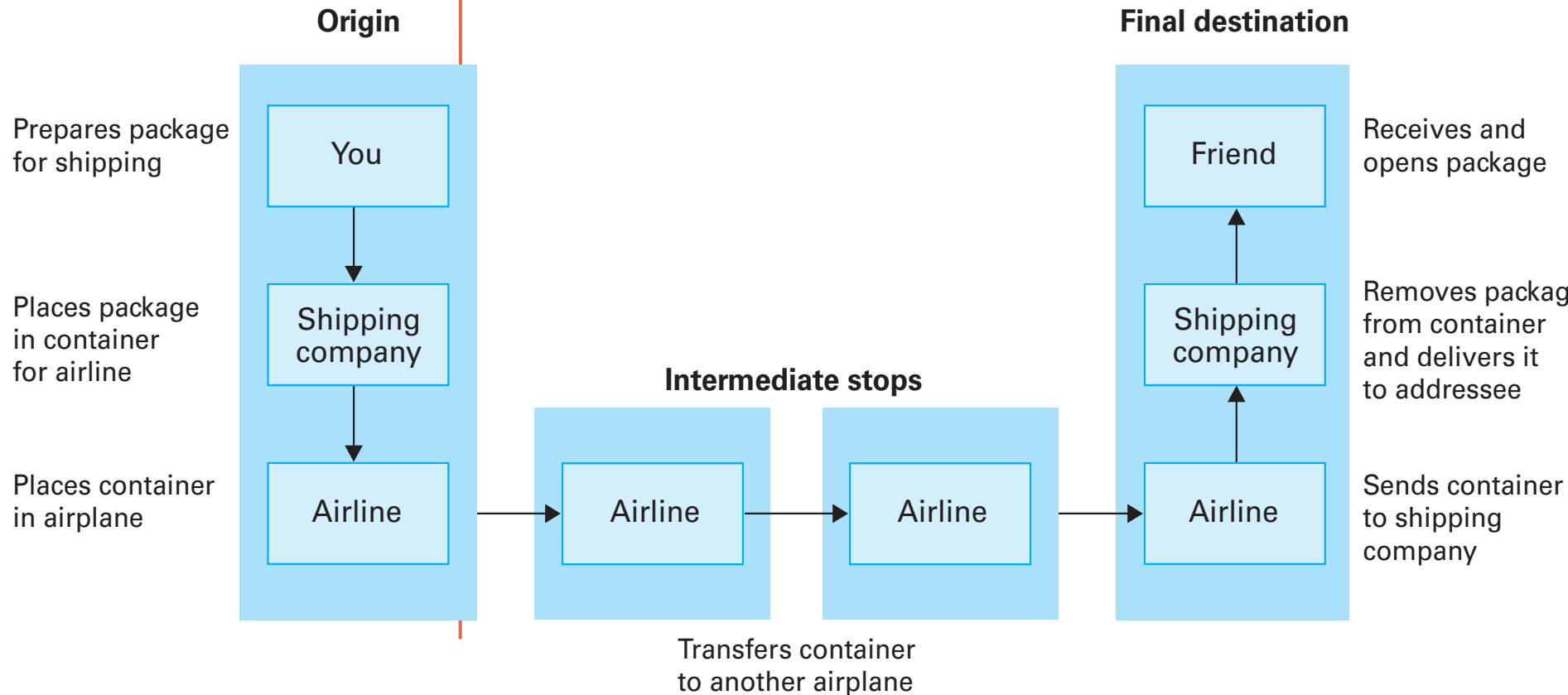
Internet Protocols

Security

- Client-Side and Server-Side Activities
 - Examples
 - Search engine
 - E-mail
 - Client side implemented by:
 - JavaScript, Flash
 - Server side implemented by:
 - ASP, PHP

Internet Protocols

- Message-passing on the Internet is accomplished by means of a hierarchy of software units,



Network Fundamentals

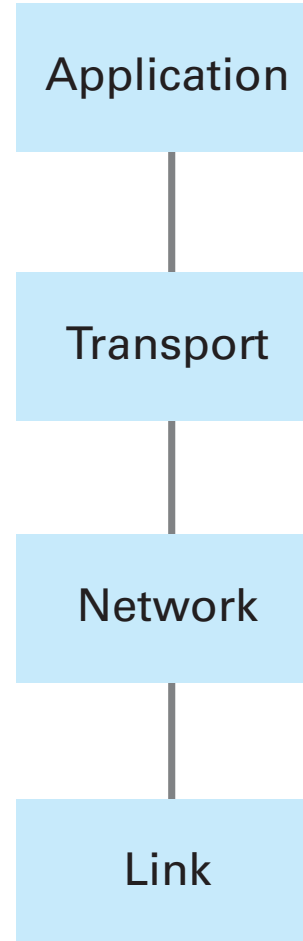
The Internet

World Wide Web

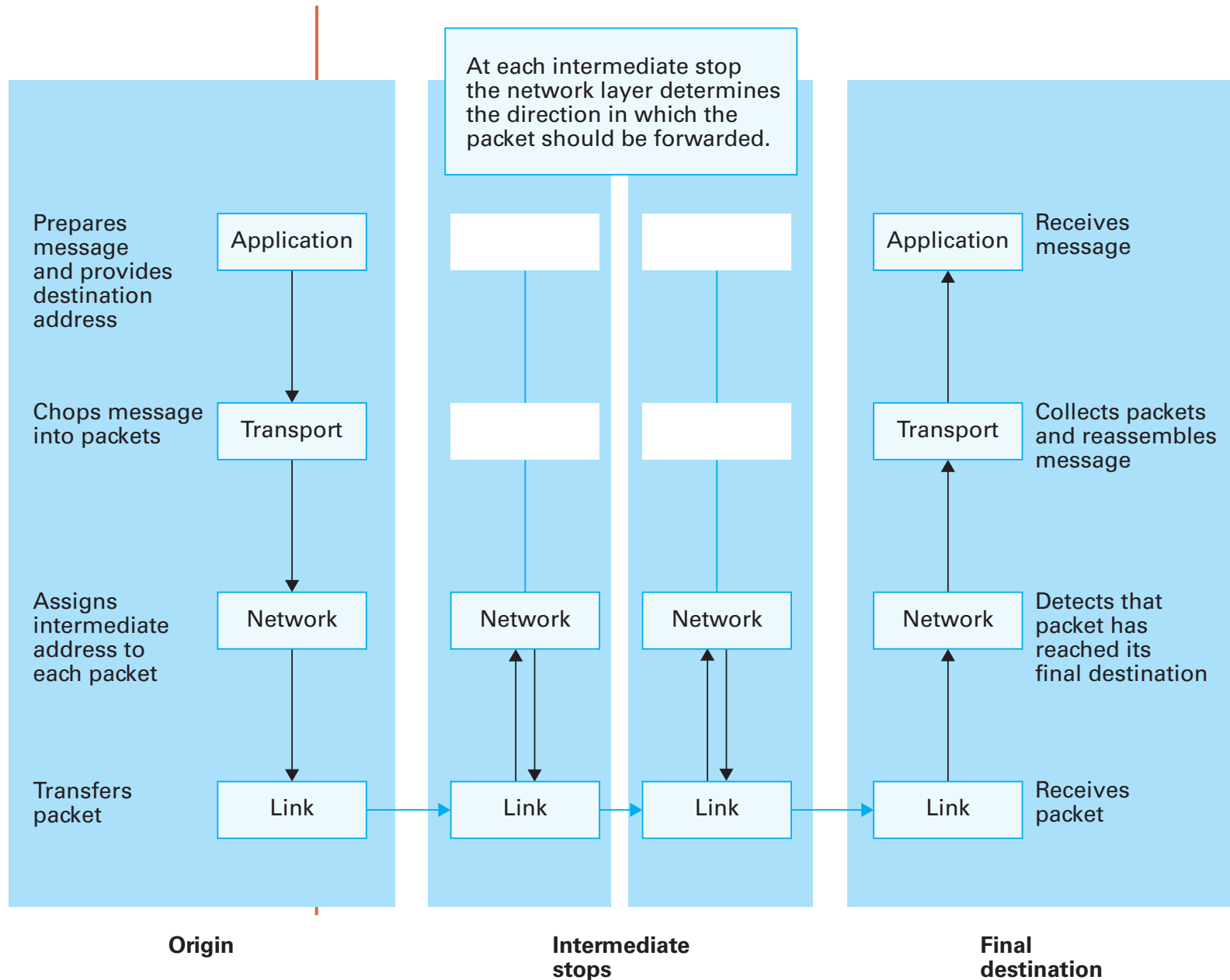
Internet
Protocols

Security

- The Internet s/w layers



Following a message through the Internet



Network Fundamentals

The Internet

World Wide Web

Internet Protocols

Security

- When a computer is connected to a network, it becomes subject to unauthorized access and vandalism
- Forms of Attack
 - **Virus**
 - **Worm**
 - **spyware**
 - **denial of service (DoS) attack**

Network Fundamentals

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Security

- Protection and Cures
 - A primary prevention technique is to filter traffic passing through a point in the network, usually with a program called a **firewall**.
 - **antivirus software**
 - never opens email attachments from unfamiliar sources,
 - do not download software without first confirming its reliability,
 - do not respond to pop-up ads,
 - do not leave a PC connected to the Internet when such connection is not necessary

Network Fundamentals

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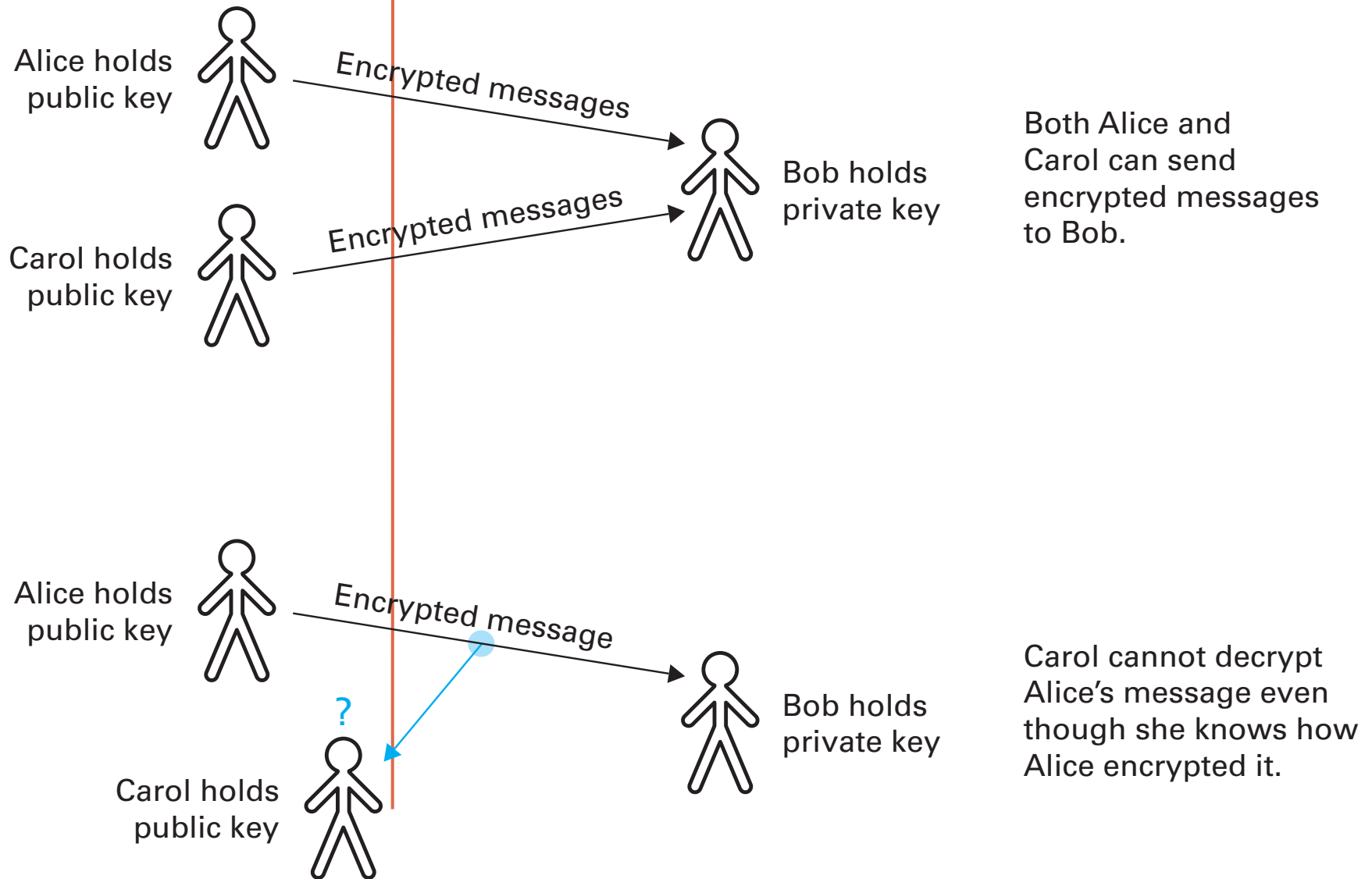
Internet Protocols

Security

Encryption

- protecting information through the use of passwords.
 - of little value when data are transferred over networks
- secure version of HTTP, known as **HTTPS**
 - The backbone of HTTPS is the protocol system known as **Secure Sockets Layer (SSL)**

Public key encryption



Assignment

- Chapter Review Problems
- 3, 8, 11, 23, 40