

Introduction Computer Systems

Lecture 8 & 9

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The Internet

- The **Internet** is an increasingly important part of everyday life for people around the world. But if you've never used the Internet before, all of this new information might feel a bit confusing at first.



What is the Internet?

- The Internet is a **global network** of billions of computers and other electronic devices. With the Internet, it's possible to access almost any information, communicate with anyone else in the world, and do much more.
- You can do all of this by connecting a computer to the Internet, which is also called **going online**. When someone says a computer is online, it's just another way of saying it's connected to the Internet.

What is the Web?

- The **World Wide Web**—usually called the **Web** for short—is a collection of different **websites** you can access through the Internet. A **website** is made up of related text, images, and other resources. Websites can resemble other forms of media—like newspaper articles or television programs—or they can be interactive in a way that's unique to computers.
- The purpose of a website can be almost anything: a news platform, an advertisement, an online library, a forum for sharing images,
- Once you are connected to the Internet, you can access and view websites using a type of application called a **web browser**. Just keep in mind that the web browser itself is not the Internet; it only displays websites that are stored on the Internet.

How does the Internet work?

- At this point you may be wondering, **how does the Internet work?** The exact answer is pretty complicated and would take a while to explain. Instead, let's look at some of the most important things you should know.
- It's important to realize that the Internet is a global network of **physical cables**, which can include copper telephone wires, TV cables, and fiber optic cables. Even wireless connections like Wi-Fi and 3G/4G rely on these physical cables to access the Internet.
- When you visit a website, your computer sends a request over these wires to a **server**. A server is where websites are stored, and it works a lot like your computer's hard drive. Once the request arrives, the server retrieves the website and sends the correct data back to your computer. What's amazing is that this all happens in just a few seconds!

Other things you can do on the Internet

- One of the best features of the Internet is the ability to communicate almost instantly with anyone in the world. Email is one of the oldest and most universal ways to communicate and share information on the Internet, and billions of people use it. Social media allows people to connect in a variety of ways and build communities online.
- There are many other things you can do on the Internet. There are thousands of ways to keep up with news or shop for anything online. You can pay your bills, manage your bank accounts, meet new people, watch TV, or learn new skills. You can learn or do almost anything online.

Data Production and Security

- **Data Production**

What it is: Refers to the live, real-world data used in day-to-day business operations, software testing, or manufacturing processes.

- **Data Security Meaning And Definition**

Data security is the process of safeguarding digital information throughout its entire life cycle to protect it from corruption, theft, or unauthorized access. It covers everything—hardware, software, storage devices, and user devices; access and administrative controls; and organizations' policies and procedures.

- Data security uses tools and technologies that enhance visibility of a company's data and how it is being used. These tools can protect data through processes like data masking, encryption, and redaction of sensitive information. The process also helps organizations streamline their auditing procedures and comply with increasingly stringent data protection regulations.
- A robust data security management and strategy process enables an organization to protect its information against cyberattacks. It also helps them minimize the risk of human error and insider threats, which continue to be the cause of many data breaches.

Benefits Of Data Security

- What is data security? In a way, data security is easier to define by looking at the benefits, which are explained in more detail below:
- **Keeps your information safe:** By adopting a mindset focused on data security and implementing the right set of tools, you ensure sensitive data does not fall into the wrong hands. Sensitive data can include customer payment information, hospital records, and identification information, to name just a few. With a data security program created to meet the specific needs of your organization, this info stays safe and secure.
- **Helps keep your reputation clean:** When people do business with your organization, they entrust their sensitive information to you, and a data security strategy enables you to provide the protection they need. Your reward? A stellar reputation among clients, partners, and the business world in general.

- **Gives you a competitive edge:** In many industries, data breaches are commonplace, so if you can keep data secure, you set yourself apart from the competition, which may be struggling to do the same.
- **Saves on support and development costs:** If you incorporate data security measures early in the development process, you may not have to spend valuable resources for designing and deploying patches or fixing coding problems down the road.

Data Security vs Data Privacy

- Data security and data privacy both involve protecting data, but they are different. Data security entails controlling access to data using stark, black-and-white terms. For example, a data security policy may dictate that no one other than someone troubleshooting a database issue is allowed to see customer payment information—period. In that way, you reduce your chances of suffering a data security breach.

- Data privacy, on the other hand, involves more subtle, strategic decisions around who gets access to certain kinds of data. Using the same example, another organization may say, “Well, it may help the development team to know if a lot of customers have been paying using PayPal. Then they could decide whether it would be wise to start accepting Payoneer, Skrill, or Stripe, too. Let’s give them access to payment info for the next two weeks.”
- When it comes to data security in cloud computing or on-premises environments, these kinds of decisions fall more under the purview of data privacy.
- Learn more about Cloud Data Protection: Secure what you store in the cloud.