

# Unit 1: Introduction to the Internet and Web Design with Visual Studio

## Overview

### Objectives and Resources

Unit 1 presents an overview of the Internet and introduces the Visual Studio environment.

#### Objectives

After completing Unit 1, you will be able to

1. compare web applications, stand-alone applications, and other networked applications. (Unit Introduction)
2. provide an overview of e-Commerce applications. (Unit Introduction)
3. explain the terminology of World Wide Web communications. (Section 1)
4. install and register Visual Studio. (Section 1; Hands-On Activity 1.1)
5. describe the structure of a simple web application. (Section 1; Video 1.1)
6. use Visual Studio to build a simple web application. (Section 2; Video 1.2a; Video 1.2b; Video 1.2c)

#### Resources

- Murach textbook: Chapters 1 and 2
- CMIS 314 Student Files (.zip file on the [Learning Materials](#) page)

### Unit 1: At a Glance

**Unit Introduction** Getting Started, Introduction to Web Applications

#### Section 1

- An overview of internet technology
- Installing Visual Studio
- The structure of a simple web application
- [Hands-On Activity 1.1](#): Download and Install Visual Studio
- [Video 1.1](#): Shopping Cart Demo (Halloween Superstore)

#### Section 2

- Using Visual Studio to build a simple web application
- [Videos 1.2a, 1.2b, 1.2c](#): Creating a Website (builds the Future Value application, textbook exercise 2-1, pp. 74–76)

## Getting Started, Introduction to Web Applications

This unit introduces the concepts of e-commerce and internet applications. You will also be introduced to Visual Studio and the structure of a simple web application. This unit is designed to give you enough background to understand the technology of web programming introduced in this course. There is a wealth of technical material available on the World Wide Web (WWW) if you wish to explore these topics further.

The course follows *CMIS 214: Custom Applications with Visual Basic* and so assumes you already have some background in developing applications using C# or similar tools.

### Course Resources and References

The main resources for this course are this online study guide and accompanying video materials. The main reference text is *Murach's ASP.NET 4.5 Web Programming with C# 2015*. As a background reference, this text goes into much greater technical detail than needed in the course. This unit draws on material from chapters 1 and 2 of the Murach text.

There is an abundance of multimedia training material freely available online from Microsoft. The software needed for the course is Microsoft Visual Studio (Community Edition). This is freely available as a download from Microsoft. As part of this unit you will install and start to explore Visual Studio.

**Note:** This course uses Visual Studio 2019 but the Murach text refers to Visual Studio 2015. The differences between the versions of Visual Studio are mainly with advanced concepts that are beyond the scope of this course.

## Web Applications and e-Commerce

In *CMIS 214* we looked at using C# on a desktop computer to build stand-alone applications for a Windows environment. This works well for home and small businesses, such as a shop that keeps financial records on a single computer. However, as businesses grow, applications may need to span multiple computers at different locations. For example, a shop may have three departments, each with a computerized till, that need to share a single sales application. The terminals will be connected together as a network, and each terminal may be managed by the application that runs off a dedicated computer. This is a closed (private) network that is only connected to the computers within the network. The application and related operating systems software, like Windows, completely control the network.

With the advent of the Internet as a publicly accessible network, computers are now able to share applications. The World Wide Web (WWW) is one service of the Internet. The WWW is accessed by using a browser like Chrome or Safari, just as you are viewing this commentary through a browser. The Internet enables businesses to provide shared applications to computers, anywhere in the world. This type of business application is known as e-commerce; the following are the sorts of online business transactions that e-commerce comprises.

- Businesses that directly sell products and services directly over the Internet are known as business-to-consumer (B2C) enterprises. An example is [Amazon](#), where people can buy books and other products over the Internet.
- Business that use the Internet as part of their business processes are engaged in business-to-business (B2B) activities. Examples include businesses that use the Internet for processing orders and those that provide web hosting services.
- Consumer-to-consumer activities (C2C) that use the Internet include online auctions such as [eBay](#) and classified advertisement sites such as [craigslist](#).

Some of these activities are also available on mobile devices such as cell phones that provide wireless access to the Internet.

e-Commerce is a large and growing subset of the e-business marketplace. e-Business includes electronic systems that work over private dedicated networks, for activities such as electronic marketing, soliciting consumer feedback, e-mail, electronic product distribution, and distributed inventory control.

Global online sales between businesses and consumers is expected to reach almost \$6 trillion by 2022 (McKee, 2018).

This course focuses on e-commerce systems that are built using Microsoft .NET technology and Active Server Pages (ASP).

#### Reference

McKee, J. (2018, September 11). Global digital commerce sales to near \$6 trillion by 2022. *Forbes*. <https://www.forbes.com/sites/jordanmckee/2018/09/11/global-digital-commerce-sales-to-near-6-trillion-by-2022/#67d7026c4c5a>

## Learning Activities

### Internet Technology: Networks and the WWW

This section introduces the concepts behind Internet technology. The use of custom-built networks is contrasted with the use of the Internet and browsers to facilitate networking. You will install Visual Studio and use it to explore the structure of a simple one-page application.

#### What is a network of computers?

A computer network consists of a number of computers connected together. The connection may be by physical wires or using wireless technology. A network enables computers to communicate with each other and share resources. For example, a home user may use a wireless network to allow all computers in the house to share files and a printer, and to provide common access to the Internet.

In a business situation, computers may be connected together to use the same application.

For example, a large retail store may have four or five computers in different departments, all recording sales transactions and updating a shared inventory system. In *CMIS 214* we explored stand-alone business applications in which the application works on a single computer. A networked application may use custom-built applications software to communicate within the network. This is sometimes called a “thick” client network application because it requires a substantial layer of custom-built software on all the computers to facilitate communications among the computers or terminals on the network.

Increasingly, applications use Internet Protocols (IP) to communicate with each other and with the application stored on a host computer (a server). This is sometimes called a “thin” client network, because a standard web browser is all that’s required to talk to the application. This course looks at building applications that use IP to communicate with multiple users via an internet connection. The connection may be within the confines of a local area network (LAN) using IP, or across the world connecting to computers with access to the WWW. The application may also be available to the public, as with [Amazon.ca](https://www.amazon.ca). Alternatively, access may be restricted to specific computers. In this case, the application still uses the WWW to provide access to the application, but is set up as a Virtual Private Network (VPN), with the data transmitted across the network encrypted and available only to pre-identified computers.

### **What is the World Wide Web (WWW) or Internet?**

The Internet is a public network, connecting other networks together. When you sign up with an Information Service Provider (ISP) you gain access to the Internet, becoming part of your ISP’s network. You may connect by phone, cable modem, or by using a wireless modem. The ISP is a gateway or on-ramp to the Internet, enabling you to communicate with any other computer that also has access to the Internet through their ISP.

All Internet applications follow a two-tier client/server model. One computer acts as a server to serve information (web pages) to clients (i.e., any computer using the application). If the pages you as a client need are on a computer connected to another ISP, your ISP gets these pages and routes them to you.

Your ISP is the intermediary between you, the client, and all the resources on the Internet. The Internet is called the *backbone* —the communications network that connects the computers together.