

MARK EDWARD SOPER

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CompTIA® IT Fundamentals+ FC0-U61 Cert Guide

Mark Edward Soper

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Glossary

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Mark Edward Soper has been working with PCs since the days of the IBM PC/XT and AT as a salesperson, technology advisor, consultant, experimenter, trainer, technology writer, and content creator. Since 1992, he has taught thousands of students across the country how to repair, manage, and troubleshoot the hardware, software, operating systems, and firmware inside their PCs. He has created many versions of his experimental computer known as “FrankenPC” for this and previous books.

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Dedication

For Kate, Ed, Ian, and Jeremy.

Acknowledgments

After more than 19 years as a full-time technology content provider, I realize more than ever how richly I have been blessed by God in my family and in the team of technology experts I get to work with.

Thanks first and foremost to Almighty God, who created the laws of Nature that enable us to create technology and use it to help each other. Thanks also to my family, PC and Mac users alike, who agree to disagree about the best technology, but work and play well with each other. Thanks especially to Cheryl for her love and patience.

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Introduction

CompTIA IT Fundamentals+ is designed to be the gateway to help you decide which paths to follow in your information technology (IT) career. Whether you are planning to specialize in PC or mobile device hardware, operating systems, applications support, software development, database management, or security, the CompTIA IT Fundamentals+ exam measures the fundamental knowledge you need to begin your journey toward greater responsibilities and achievements in IT.

CompTIA IT Fundamentals+ is designed to be a “vendor-neutral” exam that measures your knowledge of industry-standard technology.

Goals and Methods

The number-one goal of this book is simple: to help you pass the 2018 version of the CompTIA IT Fundamentals+ FC0-U61 exam.

Although IT Fundamentals+ is an entry-level exam with a single type of question, multiple choice, our goal is to help you apply the terms and facts you learn to problem solving and reasoning tasks. We want to help you master and understand the required objectives for each exam.

To aid you in mastering and understanding the IT Fundamentals+ objectives, this book uses the following methods:

- The beginning of each chapter defines the topics to be covered in the chapter; it also lists the corresponding CompTIA IT Fundamentals+ objective numbers.
- The body of the chapter explains the topics from a hands-on and a theory-based standpoint. This includes in-depth descriptions, tables, and figures that are geared to build your knowledge so that you can pass the exam. The chapters are broken down into several topics each.
- The key topics indicate important figures, tables, and lists of information that you should know for the exam. They are interspersed throughout the chapter and are listed in table format at the end of the chapter.
- Each chapter covering an objective has a list of practice questions. The correct answers are found in Appendix A, “Answers to Practice Questions.”
- Key terms without definitions are listed at the end of each chapter. Write down the definition of each term and check your work against the complete key terms in the glossary.
- At the end of each chapter covering an objective, you will find a section called “Your Next Step (More Certs).” The certification descriptions and links in this section help you go deeper into the topics covered in that chapter.



A computer must perform four major tasks:

- Input
- Processing
- Output
- Storage

In this chapter, you learn the basics of these essential tasks. This chapter covers CompTIA IT Fundamentals+ exam Objective 1.3: Illustrate the basics of computing and processing.

Input, Output, and More: The Basics of Computing and Processing

Foundation Topics

Input

In technology terms, an *input* is a command or information that is made available to a computer. Before information can be processed by a computer, it must be input.

Any of the following activities can be considered inputs:

- Typing text or numbers into a computer program
- Selecting menu options with a mouse, touchpad, or touchscreen
- Transferring photos or videos from a digital camera, tablet, or smartphone
- Retrieving a file from a storage device
- Recording audio
- Capturing an image with a scanner or a webcam

An input device is a device that is used only for input (some devices are used for both input and output). Input devices include the following:

- Keyboard
- Mouse
- Touchpad
- Touchscreen
- Webcam
- Image scanner
- Barcode reader
- Microphone or audio-in
- Digital camera or camcorder

Some of these input devices are illustrated in Figure 4-1.

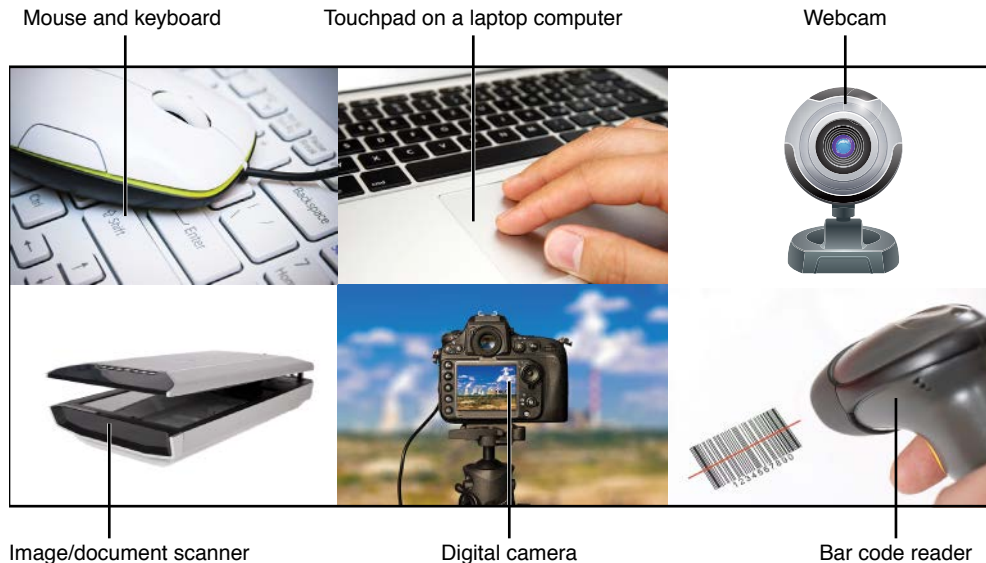
**Key
Topic**

Figure 4-1 Some Common Input Devices

Any information a computing device works with began with some type of input. With some types of devices, such as an image scanner, digital camera, or camcorder, the input is in the form of a file. With others, the input must be processed before it can be saved (output).

NOTE Common input/output devices include touchscreens, storage devices, network adapters, all-in-one devices (printer, scanner, copier with optional fax), and sound cards.

Most external input and input/output devices connect to a USB port. Internal storage devices typically connect to a SATA port.

NOTE To learn more about USB ports, cables, and versions, see Chapter 8, “I/O: Input/Output Device Interfaces.” To learn more about SATA ports, cables, and versions, see Chapter 10, “Explain the Purpose of Common Internal Computer Components.”

Processing

Key Topic

Processing refers to the retrieval and modification of inputs from input devices or storage devices. The components involved in processing include the following:

- Random access memory (RAM). See Figure 4-2.
- Central processing unit (CPU). See Figure 4-3.
- Graphics processing unit (GPU). See Figure 4-4.

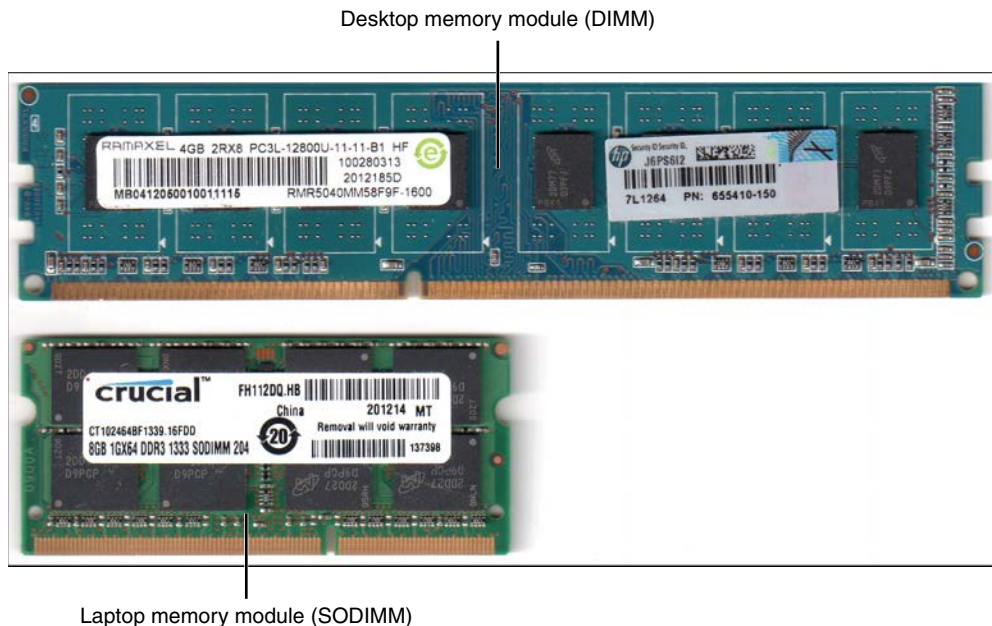


Figure 4-2 Typical Memory Modules

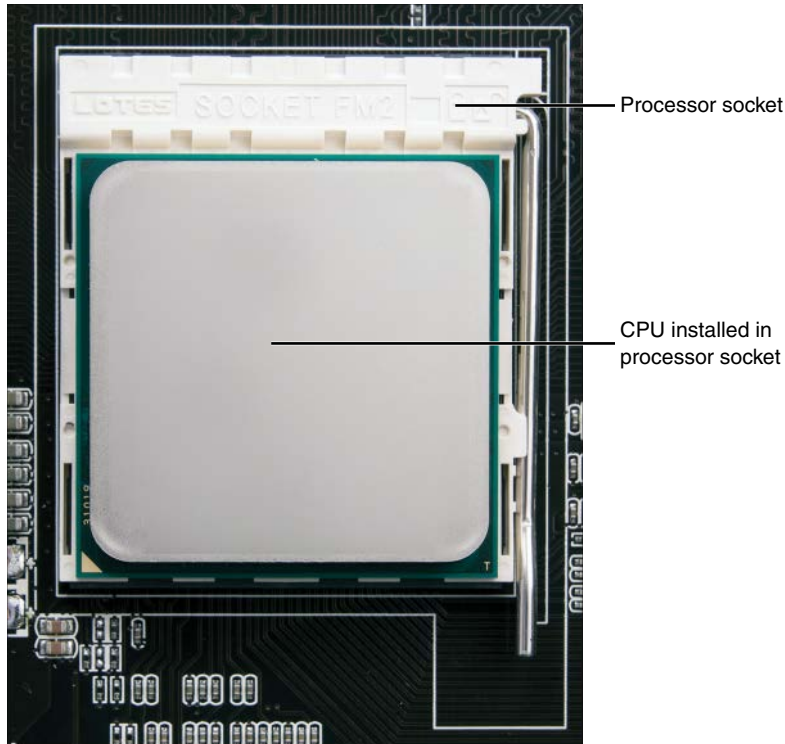


Figure 4-3 An Installed CPU

An app and inputs from the user or storage reside in RAM until changes are stored or the app is closed without changes being saved. Changes to the inputs are performed primarily by the CPU, such as calculations made with a worksheet program such as Microsoft Excel or color filters or special effects applied to a photo with a photo editor such as Adobe Photoshop. Changes that involve graphical calculations such as 3D rendering, motion video, or 2D image manipulation may be performed in whole or in part by the GPU.

NOTE Learn more about RAM, CPU, and GPU in Chapter 10.

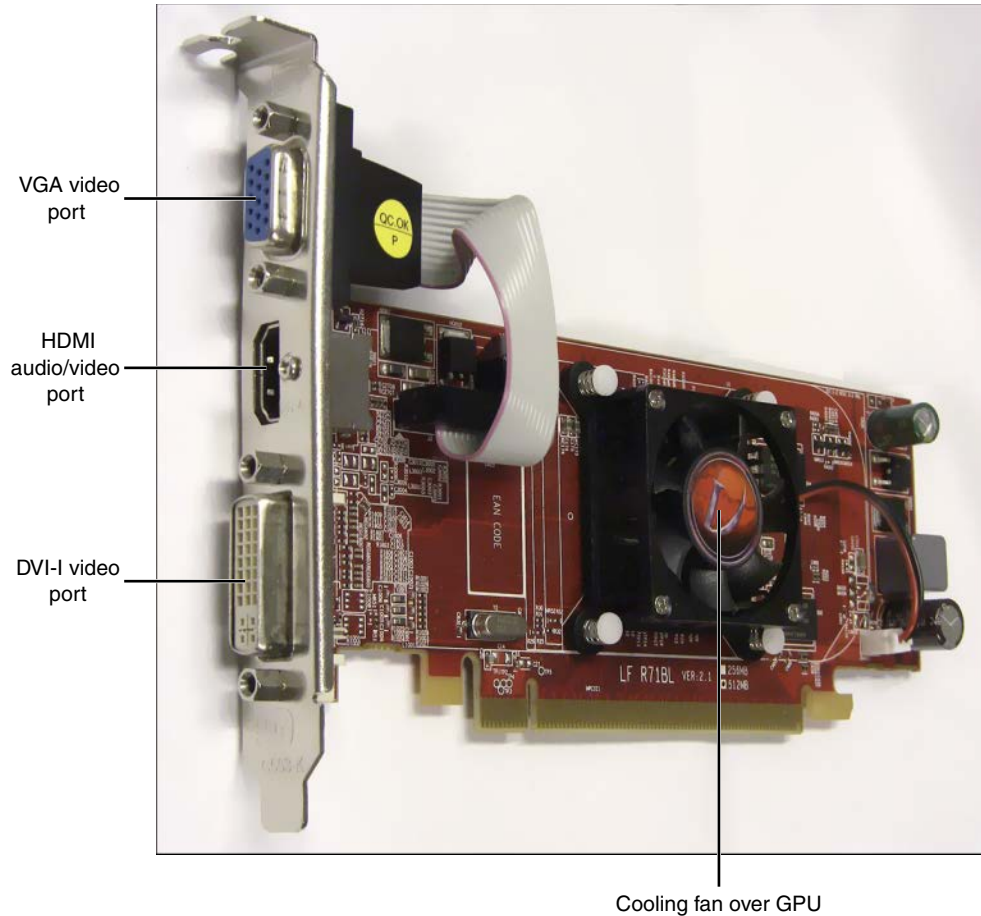


Figure 4-4 A Typical Video Card

Output

Output refers to any activity that sends the results of processing to a device so it can be viewed or stored. Typical output devices include displays (such as monitors, HDTVs, projectors, tablet displays, and smartphone screens), printers, and computer speakers (see Figure 4-5).

**Key
Topic**

Figure 4-5 Some Common Output Devices

Here are some examples of how they work:

- As you work with an app such as Excel, the data you enter is displayed onscreen thanks to the interaction of the graphics processing unit (GPU) and the display device.
- If you make a mistake, a beep might be emitted by your computer speakers or by the built-in speakers in an HDTV, monitor, or projector.
- If you print a worksheet or range of cells, the printer receives the print job and prints the worksheet or selected cells.

NOTE Learn how to connect a printer or speaker in Chapter 9, “Connecting and Configuring Peripherals.”

Storage

A *storage device* is any device that can preserve files or apps for reuse later. Common local storage devices include USB flash drives, internal and external hard drives, and internal solid-state drives (SSDs; see Figure 4-6).

Key Topic

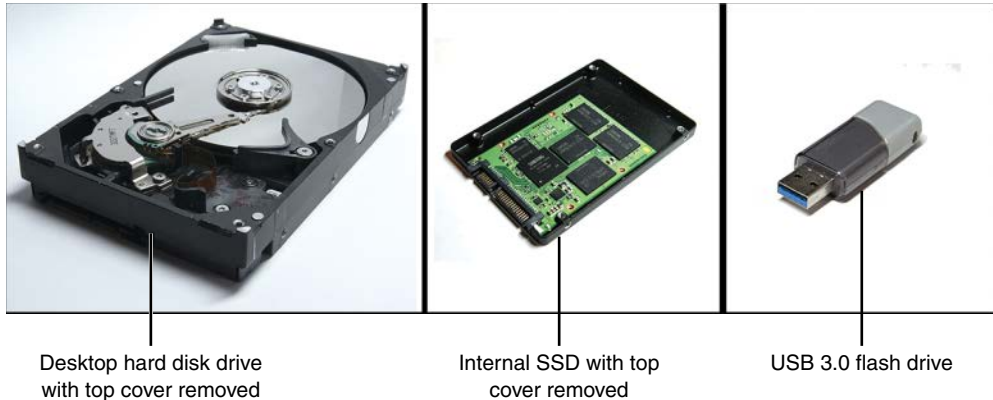


Figure 4-6 Typical Storage Devices

When you open a file, the act of opening it from storage is input. When you save a file, the act of saving it to storage is output. Storage is where the file is located.

NOTE Learn more about how storage devices work in Chapter 12, “Compare and Contrast Storage Types.”

Exam Preparation Tasks

Review All Key Topics

Review the most important topics in this chapter, noted with the Key Topics icon in the outer margin of the page. Table 4-1 lists these key topics and the page number on which each is found.

Key
Topic

Table 4-1 Key Topics for Chapter 4

Key Topic Element	Description	Page Number
Figure 4-1	Common input devices	38
List	Components involved in processing	39
Figure 4-5	Common output devices	42
Figure 4-6	Typical storage devices	43

Define Key Terms

Define the following key terms from this chapter and check your answers in the glossary:

input, processing, output, storage device

Practice Questions for Objective 1.3

- Which of the following activities is not considered an input?
 - Typing
 - Scanning
 - Printing
 - Recording
- When a file is changed, saving the file is an example of which activity?
 - Output
 - Processing
 - Input
 - Storage
- A graphics processing unit (GPU) helps to process information you see onscreen. What other activity does it do?
 - Output
 - Input
 - Storage
 - No other activity

4. When the user edits a photo, this is an example of which of the following?
 - A. Input
 - B. Storage
 - C. Output
 - D. Processing
5. Where are the changes to a file located before the changes are saved?
 - A. CPU
 - B. RAM
 - C. Storage
 - D. GPU
6. A sound card is an example of which type of device?
 - A. Output
 - B. I/O
 - C. Storage
 - D. Processing
7. You have taken pictures with your digital camera. When you transfer them to your computer directly from your camera, your camera is being used as which of the following types of devices?
 - A. Output
 - B. Input
 - C. Processing
 - D. Storage
8. An all-in-one unit contains a printer and scanner. When printing, the unit is an output device. When scanning, the unit is which of the following?
 - A. Output
 - B. Storage
 - C. Input
 - D. Processing

- 9.** Which of the following devices is an input/output (I/O) device?
- A.** Multifunction device
 - B.** Scanner
 - C.** Barcode reader
 - D.** Projector
- 10.** The location of a file is referred to as which of the following?
- A.** Output
 - B.** Processing
 - C.** Input
 - D.** Storage
- 11.** Connecting a microphone to a sound card prepares it to perform which of the following activities?
- A.** Output
 - B.** Input
 - C.** Storage
 - D.** Processing
- 12.** A network adapter is an example of which type of device?
- A.** Input/output
 - B.** Input
 - C.** Storage
 - D.** Processing
- 13.** As you use a barcode reader to check in new products, you are performing _____. (Fill in the blank.)
- A.** Processing
 - B.** Output
 - C.** Input
 - D.** Storage

14. The microphone/line-in jacks on a sound card are input devices. The speaker jacks are examples of _____ devices. (Fill in the blank.)
- A. Processing
 - B. I/O
 - C. Storage
 - D. Output
15. From the digital camera's perspective, a USB port is an output device. When you connect the USB cable from the camera to transfer pictures to your computer, the USB port on the computer is a(n) _____ device. (Fill in the blank.)
- A. Output
 - B. Input
 - C. Processing
 - D. Storage
16. A USB flash drive performs all but one of the following functions during use. Which one?
- A. Output
 - B. Storage
 - C. Input
 - D. Processing
17. Some multifunction devices have built-in flash card readers. When you insert a memory card and the contents of the card are transferred to your PC, this is an example of _____. (Fill in the blank.)
- A. Storage
 - B. Input
 - C. Output
 - D. Processing
18. You are using a video editor to add slow-motion effects to a video. Which of the following tasks is being performed?
- A. Output
 - B. Processing
 - C. Input
 - D. Storage

19. You are viewing a 3D rendering on a projector. Which of the following components performed the rendering?
- A. SSD
 - B. Projector
 - C. GPU
 - D. Printer
20. You select three copies of the second page of a document for printing. You are preparing to perform which task?
- A. Input
 - B. Storage
 - C. Output
 - D. Processing

Your Next Steps (More Certs)

Depending on which parts of the computing process you like, there are plenty of ways for you to move forward. First, we'd recommend looking at CompTIA's A+ certification for more background into the hardware and software that make computers and mobile devices function.

After that, get your network understanding up to speed with CompTIA's Network+ certification. An extensive understanding of networking is essential if you want to dig deeper into storage, as most product-specific storage certifications (see <http://www.tomsitpro.com/articles/storage-certifications,2-225.html>) assume extensive network knowledge.

For printers, projectors, and other types of devices, check with the vendors for their brand-specific training and certification programs.

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