



NONRESIDENT TRAINING COURSE

August 1997



Information Systems Technician Training Series

Module 2—Computer Systems

NAVEDTRA 14223

NOTICE

Any reference within this module to "Radioman" or the former "Radioman rating" should be changed to "Information Systems Technician" and the "Information Systems Technician (IT) rating". The subject matter presented relates to the occupational standards for the IT rating.

Although the words “he,” “him,” and “his” are used sparingly in this course to enhance communication, they are not intended to be gender driven or to affront or discriminate against anyone.

PREFACE

By enrolling in this self-study course, you have demonstrated a desire to improve yourself and the Navy. Remember, however, this self-study course is only one part of the total Navy training program. Practical experience, schools, selected reading, and your desire to succeed are also necessary to successfully round out a fully meaningful training program.

COURSE OVERVIEW: In completing this nonresident training course, you will demonstrate a knowledge of the subject matter by correctly answering questions on the following subjects: Computer Hardware Startup, Computer Center Operations, and Data Management.

THE COURSE: This self-study course is organized into subject matter areas, each containing learning objectives to help you determine what you should learn along with text and illustrations to help you understand the information. The subject matter reflects day-to-day requirements and experiences of personnel in the rating or skill area. It also reflects guidance provided by Enlisted Community Managers (ECMs) and other senior personnel, technical references, instructions, etc., and either the occupational or naval standards, which are listed in the *Manual of Navy Enlisted Manpower Personnel Classifications and Occupational Standards*, NAVPERS 18068.

THE QUESTIONS: The questions that appear in this course are designed to help you understand the material in the text.

VALUE: In completing this course, you will improve your military and professional knowledge. Importantly, it can also help you study for the Navy-wide advancement in rate examination. If you are studying and discover a reference in the text to another publication for further information, look it up.

*1997 Edition Prepared by
DPC(SW) Walter Shugar, Jr. and
RMCS(SW/AW) Deborah Hearn.*

Published by
NAVAL EDUCATION AND TRAINING
PROFESSIONAL DEVELOPMENT
AND TECHNOLOGY CENTER

NAVSUP Logistics Tracking Number
0504-LP-026-8620

Sailor's Creed

"I am a United States Sailor.

I will support and defend the
Constitution of the United States of
America and I will obey the orders
of those appointed over me.

I represent the fighting spirit of the
Navy and those who have gone
before me to defend freedom and
democracy around the world.

I proudly serve my country's Navy
combat team with honor, courage
and commitment.

I am committed to excellence and
the fair treatment of all."

CONTENTS

CHAPTER	PAGE
1. Computer Hardware Startup	.1-1
2. Computer Center Operations.	2-1
3. Data Management	.3-1
APPENDIX	
I. Glossary	AI-1
II. Glossary of Acronyms and Abbreviations	AII-1
III. References Used to Develop the TRAMAN	AIII-1
INDEX	INDEX-1

NONRESIDENT TRAINING COURSE follows the index

CREDITS

Trademark Credits

Microsoft is a registered trademark of Microsoft Corporation.

WordPerfect is a registered trademark of WordPerfect Corporation.

SUMMARY OF THE RADIOMAN TRAINING SERIES

MODULE 1

Administration and Security—This module covers Radioman duties relating to administering AIS and communication systems. Procedures and guidance for handling of classified information, messages, COMSEC material and equipment, and AIS requirements are discussed.

MODULE 2

Computer Systems—This module covers computer hardware startup, including peripheral operations and system modification. Other topics discussed include computer center operations, media library functions, system operations, and troubleshooting techniques. Data file processes, memory requirements, and database management are also covered.

MODULE 3

Network Communications—This module covers network administration, LAN hardware, and network troubleshooting. Related areas discussed are network configuration and operations, components and connections, and communication lines and nodes.

MODULE 4

Communications Hardware—This module covers various types of communications equipment, including satellites and antennas. Subjects discussed include hardware setup procedures, COMSEC equipment requirements, distress communications equipment, troubleshooting equipment, satellite theory, and antenna selection and positioning.

MODULE 5

Communications Center Operations—This module covers center operations, including transmit message systems, voice communications, center administration, quality control, and circuit setup/restorations. Guidelines for setting EMCON and HERO conditions and cryptosecurity requirements are also discussed.

INSTRUCTIONS FOR TAKING THE COURSE

ASSIGNMENTS

The text pages that you are to study are listed at the beginning of each assignment. Study these pages carefully before attempting to answer the questions. Pay close attention to tables and illustrations and read the learning objectives. The learning objectives state what you should be able to do after studying the material. Answering the questions correctly helps you accomplish the objectives.

SELECTING YOUR ANSWERS

Read each question carefully, then select the BEST answer. You may refer freely to the text. The answers must be the result of your own work and decisions. You are prohibited from referring to or copying the answers of others and from giving answers to anyone else taking the course.

SUBMITTING YOUR ASSIGNMENTS

To have your assignments graded, you must be enrolled in the course with the Nonresident Training Course Administration Branch at the Naval Education and Training Professional Development and Technology Center (NETPDTC). Following enrollment, there are two ways of having your assignments graded: (1) use the Internet to submit your assignments as you complete them, or (2) send all the assignments at one time by mail to NETPDTC.

Grading on the Internet: Advantages to Internet grading are:

- you may submit your answers as soon as you complete an assignment, and
- you get your results faster; usually by the next working day (approximately 24 hours).

In addition to receiving grade results for each assignment, you will receive course completion confirmation once you have completed all the

assignments. To submit your assignment answers via the Internet, go to:

<http://courses.cnet.navy.mil>

Grading by Mail: When you submit answer sheets by mail, send all of your assignments at one time. Do NOT submit individual answer sheets for grading. Mail all of your assignments in an envelope, which you either provide yourself or obtain from your nearest Educational Services Officer (ESO). Submit answer sheets to:

COMMANDING OFFICER
NETPDTC N331
6490 SAUFLEY FIELD ROAD
PENSACOLA FL 32559-5000

Answer Sheets: All courses include one “scannable” answer sheet for each assignment. These answer sheets are preprinted with your SSN, name, assignment number, and course number. Explanations for completing the answer sheets are on the answer sheet.

Do not use answer sheet reproductions: Use only the original answer sheets that we provide—reproductions will not work with our scanning equipment and cannot be processed.

Follow the instructions for marking your answers on the answer sheet. Be sure that blocks 1, 2, and 3 are filled in correctly. This information is necessary for your course to be properly processed and for you to receive credit for your work.

COMPLETION TIME

Courses must be completed within 12 months from the date of enrollment. This includes time required to resubmit failed assignments.

PASS/FAIL ASSIGNMENT PROCEDURES

If your overall course score is 3.2 or higher, you will pass the course and will not be required to resubmit assignments. Once your assignments have been graded you will receive course completion confirmation.

If you receive less than a 3.2 on any assignment and your overall course score is below 3.2, you will be given the opportunity to resubmit failed assignments. **You may resubmit failed assignments only once.** Internet students will receive notification when they have failed an assignment--they may then resubmit failed assignments on the web site. Internet students may view and print results for failed assignments from the web site. Students who submit by mail will receive a failing result letter and a new answer sheet for resubmission of each failed assignment.

COMPLETION CONFIRMATION

After successfully completing this course, you will receive a letter of completion.

ERRATA

Errata are used to correct minor errors or delete obsolete information in a course. Errata may also be used to provide instructions to the student. If a course has an errata, it will be included as the first page(s) after the front cover. Errata for all courses can be accessed and viewed/downloaded at:

<http://www.advancement.cnet.navy.mil>

STUDENT FEEDBACK QUESTIONS

We value your suggestions, questions, and criticisms on our courses. If you would like to communicate with us regarding this course, we encourage you, if possible, to use e-mail. If you write or fax, please use a copy of the Student Comment form that follows this page.

For subject matter questions:

E-mail: n311.products@cnet.navy.mil
Phone: Comm: (850) 452-1501
DSN: 922-1501
FAX: (850) 452-1370
(Do not fax answer sheets.)
Address: COMMANDING OFFICER
NETPDTC N311
6490 SAUFLEY FIELD ROAD
PENSACOLA FL 32509-5237

For enrollment, shipping, grading, or completion letter questions

E-mail: fleetservices@cnet.navy.mil
Phone: Toll Free: 877-264-8583
Comm: (850) 452-1511/1181/1859
DSN: 922-1511/1181/1859
FAX: (850) 452-1370
(Do not fax answer sheets.)
Address: COMMANDING OFFICER
NETPDTC N331
6490 SAUFLEY FIELD ROAD
PENSACOLA FL 32559-5000

NAVAL RESERVE RETIREMENT CREDIT

If you are a member of the Naval Reserve, you may earn retirement points for successfully completing this course, if authorized under current directives governing retirement of Naval Reserve personnel. For Naval Reserve retirement, this course is evaluated at 5 points. (Refer to *Administrative Procedures for Naval Reservists on Inactive Duty*, BUPERSINST 1001.39, for more information about retirement points.)

Student Comments

Course Title: *Information Systems Technician Training Series*
Module 2—Computer Systems

NAVEDTRA: 14223 **Date:** _____

We need some information about you:

Rate/Rank and Name: _____ SSN: _____ Command/Unit _____

Street Address: _____ City: _____ State/FPO: _____ Zip _____

Your comments, suggestions, etc.:

Privacy Act Statement: Under authority of Title 5, USC 301, information regarding your military status is requested in processing your comments and in preparing a reply. This information will not be divulged without written authorization to anyone other than those within DOD for official use in determining performance.
--

NETPDTC 1550/41 (Rev 4-00)

CHAPTER 1

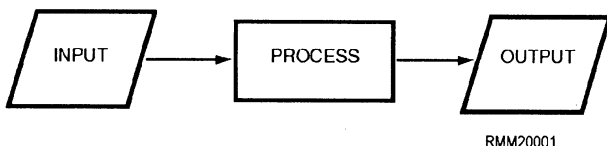
COMPUTER HARDWARE STARTUP

LEARNING OBJECTIVES

Upon completing this chapter, you should be able to do the following:

- *Describe the different components of a computer system.*
 - *Describe how to startup a computer system.*
 - *Describe how to set parameters for operation and how to perform and interpret diagnostic tests.*
 - *Explain what is involved in inspecting components, running system checks and troubleshooting error conditions.*
 - *Explain how to perform computer interface changes, CMOS changes and configuration changes.*
 - *Describe how to inspect, repair and install cables.*
 - *Explain how to install computer equipment and prepare computers for shipment.*
-

We receive information in many different forms, from our eyes, ears, nose, mouth, and even sensory nerves. Our brains receive and accept this information, work with it in some form or fashion, and then store it away somewhere in the back of our minds (memories) for future use. If what we are processing at the time requires immediate attention, our minds direct us to respond with words or actions. The computer's brain (the central processing unit) is designed to do basically the same thing. That is, it receives information (input data), works with this information (processes data), and transmits this information (output data) to some form of output media. This is often shown graphically as:



Computers do nothing more than what we instruct them to do. They simply follow a set of internally stored instructions (called a *program* or *software*) we provide and process the data we feed into them.

The design of fifth-generation computers is such that they will actually learn from previous experiences and apply what they have learned. This is called *artificial intelligence*. Artificial intelligence computers manipulate data more efficiently, with parallel processing, and understand written and spoken human language. Ultimately, we may have a computer similar to the human brain.

COMPUTER SYSTEM HARDWARE

All electronic digital computer systems consist of a central processing unit (CPU) and one or more peripheral devices for inputting and outputting data and

programs. Figure 1-1 shows the CPU and the types of peripheral (input and output [I/O]) devices you will find in a computer system. The devices are interconnected by electrical cables thru a bus to allow communications between them. The CPU communicates with the peripheral devices through input/output (I/O) channels.

The brain of a computer system is the central processing unit, which we refer to as the *CPU*. **THE CPU IS THE COMPUTER.** It receives the data transferred to it from one of the various I/O devices. It

processes the data and transfers the intermediate or final results to an I/O device for storage or distribution.

The CPU executes stored programs and does all the processing and manipulating of data. It contains the circuits that control and perform the execution of instructions using various types of memories. The I/O devices simply aid the computer by providing and receiving data and programs.

In this section, you'll learn about the control unit, the arithmetic-logic unit, primary storage, secondary storage, peripheral devices, I/O channels, and modems.

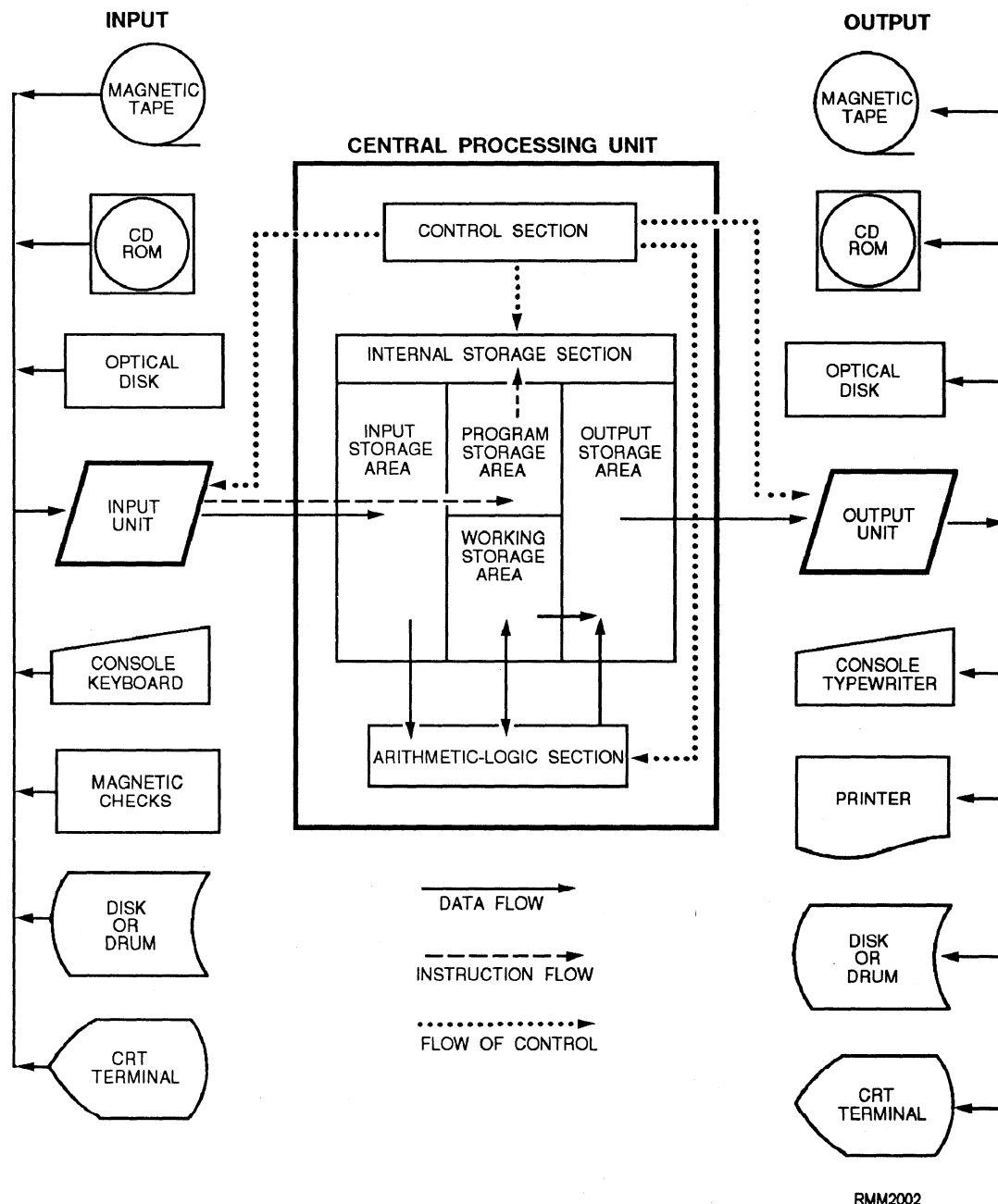


Figure 1-1.—Units/devices of a computer system.