

Fundamental Concepts in Computers and Information Technology:

**Special English for Students of Computer, IT and
Instructional Technology**

By:

Hassan Rashid



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Preface

This book is a concise textbook on Computers and Information Technology. It is designed as a reference book for Senior Students of Computer, Information and Instructional Technology, who want to learn the most important terminologies and concepts in the Special English course.

I have been teaching Special English for Students of Computer science and IT for several years at universities in Iran. Many students have registered for this course as a General Course to improve their average score. Some of them have complained that the course helps them in neither teaching English nor learning technical information. They expressed that today's references are out-of-date and do not support other courses. I had several discussions with my colleagues on teaching this course. The lecturers had the same opinions on the matter. Some students and lecturers asked for up-to-date and off-the-shelf material to be prepared as a supporter of other courses.

I, therefore, decided to collect and codify information in this field to provide students with the most important terminologies in computers and information technology. This book is focused on the most important concepts and terminologies, and explains their application in an Information Technology environment.

Structure of this book

This book is structured into 13 chapters. Chapter 1 provides an abstract on the essential concepts and terminology related to working with windows, popular software applications, Networks, the Internet and Internet access. This chapter may be used to assess the student's knowledge and to give them a quick start on personal computing adventure.

Chapter 2 discusses our global village, achieving IT competency, the Internet and its challenges, the past, present, and future of IT, as well as categories, capabilities, disadvantages and generation of computers.

Chapter 3 provides students with the computer software. This chapter describes the Operating system purposes, the Windows concepts, the Software suite applications and applications for personal computers such as Graphics and Multimedia.

Chapter 4 discusses the Internet and going online. The focus of the content is the Internet and the World Wide Web and the many opportunities that they offer. It also

addresses the basic concepts of entering a Web site address, how Internet browsers work, and the scope of Internet resources that are available.

Chapter 5 provides students with an understanding of the internal components of a computer system. It discusses the costs of various components of a PC, as well as what it takes to purchase a new computer

system with all the bells and whistles. This chapter discusses how data is stored and represented in a computer, the functions and relationships between internal computer components, the characteristics of processors such as word size, speed, and memory capability. Some new processor design approaches including Parallel processing, Massively Parallel processing and Grid computing are also briefly described in this chapter.

Chapter 6 focuses on electronic storage media and input/output devices. Media used for storage of data and various forms of information can be classified as disk, tape, or optical, each with its own advantages and disadvantages. Input and output devices come in a broad array, giving the computer user many options to choose from. This chapter discusses the various types of magnetic disk storage, the various types of optical laser disc storage and the common input/output devices.

Chapter 7 introduces data communication and networking concepts that will be helpful at home and at work. These concepts cover communications-related hardware and various delivery alternatives, including transmission options over traditional voice-grade telephone lines, cable TV lines, and wireless alternatives. This chapter discusses the concepts of connectivity in our lives, data communications hardware, data transmission services, various network topologies and potential of home networking.

Chapter 8 discusses information technology issues, such as workplace ergonomics, IT ethical considerations, healthy computing environments, IT security, and IT computer crimes. This chapter also discusses the information technology code of ethics and its importance, the ethics, ergonomics, and environmental concerns in the workplace, the privacy of your information, the types and scope of computer crime and IT crime.

Chapter 9 explores the future directions of our information society and the current trends of e-commerce and it entails e-tailing, e-money,

business-to business, consumer-to-consumer applications, electronic publishing, Web marketing, and much more. This chapter also explores the importance of the database to all levels of information technology activity and especially to ecommerce applications as well as the importance of security in the world of ecommerce.

Chapter 10 discusses different kinds of information systems and their importance and applications within the business world. This chapter explains the four basic functions of an information system and how those functions support an organization's information needs. Specific applications of information systems, including executive information system (EIS), decision support systems (DSS), management information system (MIS), and knowledge base System (KBS), are also discussed in this chapter.

Chapter 11 covers the life cycle of a system, and how the end-of-life phase of one system usually precipitates the "birth" of a new one to replace it. This chapter also explains how computer-aided system engineering (CASE) applications provide a set of tools that help automate and streamline prototype and development efforts. This chapter discusses programming languages that are being used to develop information systems.

Chapter 12 discusses the impact of information technology on society today and predicted trends for the future. It begins with a discussion of the jobs that information technology has created, both for IT specialists and for people who do not specialize in IT but who need to use a computer to perform their job tasks. It also covers job hunting via the Internet, as well as licensing and certification issues.

Chapter 13 discusses social networks and described benefits of social networking, the hazards and limitations of social networking, privacy in social networks, what social networking dos and don'ts are, how to use

the social networking in businesses and the future of social networking.

How to use this book

The contents of this book are designed to be taught in one semester. All chapters, except Chapter 6, are prepared into approximately the same size in the number of pages so that each one could be taught in a week. Chapters 1, 12 and 13 are organized into a shorter text. Since these chapters are taught at the beginning and the finishing sessions of the semester, they make some opportunities for assessment of students and answering their questions on the subjects discussed in the book, respectively. A couple of weeks may be considered adequate for teaching Chapter 6.

It is assumed that students have some experience from passing the fundamentals of Computer and Programming and the advanced programming courses. The questions in Section 1.6 are given initially to assess students' present knowledge. The students can use the index and the table of contents to find a specific concept/subject. Based on the students' knowledge and the result of these tests, lecturers may select or skip some parts of this book as their class textbook. It is suggested that the lecturers follow the subsequent guidelines for teaching this book:

- **Key Terminologies:** Each chapter is preceded by some key terminologies. The students must study these terminologies before being taught the material of each chapter. Although explaining some terminologies is necessary, it is not recommended that the lecturers spend too much time on the terminologies.
- **The End-of-Chapter Questions:** After teaching each chapter in a session/week, the students must answer the questions as homework. Their answers can be reviewed and checked by the lecturers at the

beginning/end of next session/week. Answering some questions may need using the Internet.

- **Assessment:** The questions at the end of the first chapter can be used to assess students' basic knowledge of concepts in Computers and Information Technology.
- **Useful Web Sites:** Some useful Web Sites are provided at the end of the book. Depending on the level of students, lecturers may find some specific texts from the web sites for discussion with the students in the class.

I would be most grateful if students or lecturer would send me their suggestions about this material.

My Email Address: hrashi@gmail.com

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Contents

Chapter 1: Introduction	1
1.1 The Computer System	4
1.2 Working with Windows	6
1.3 Applications Software	8
1.4 Going Online	10
1.5 Chapter Summary	13
1.6 Multiple-Choice Questions	13
Chapter 2: Global Village, Information Technology and Computers	21
Key Terminologies	24
2.1 The Global Village: An Information Society	26
2.2 Information Technology Competency	28
2.2.1 What is Information Technology Competency?	28
2.2.2 IT Competency Assessment	29
2.3 The Challenge in the 21st Century	30
2.4 Impact of Information Technology	31
2.4.1 Impact of IT: Today	31
2.4.2 Impact of IT: Future	32
2.5 From Personal Computers to Supercomputers	33

2.5.1 Personal Computers: Up Close and Personal	33
2.5.2 Handheld Computers: A Computer in Hand is better than...	36
2.5.3 Workstations: Hot Rods	37
2.5.4 Server Computers: Corporate Workhorses	37
2.5.5 Supercomputers: Processing Giants	38
2.5.6 The Computer's Generations	39
2.6 Computer System Capabilities	40
2.6.1 The Computer's Strengths	41
2.6.2 Disadvantages of Computers	43
2.7 Chapter Summary	44
2.8 End-of-Chapter Questions	45
2.8.1 True/False Questions	45
2.8.2 Multiple-Choice Questions	46
Chapter 3: Computer Software	49
Key Terminologies	52
3.1 The Operating System	56
3.1.1 Operating System Functions	56
3.1.2 The User Interface	58
3.1.3 PC Operating Systems and Platforms	59
3.2 Working with Windows	60
3.2.1 Desktop	61
3.2.2 Working with Files	64
3.2.3 Help: F1	65
3.2.4 Sharing information among applications	66
3.3 Productivity Software: The Software Suite	66
3.4 Cornucopia of PC Software	68
3.5 Chapter Summary	70
3.6 End-of-Chapter Questions	71
3.6.1 True/False Questions	71
3.6.2 Multiple-Choice Questions	72

Chapter 4: Internet and Going Online	75
Key Terminologies	78
4.1 The Internet	83
4.1.1 Connecting to the Internet: Narrowband and Broadband	84
4.1.2 Retrieving and Viewing Information on the Internet	86
4.2 Internet Browsers	88
4.3 Internet Resources and Applications	89
4.4 Internet Issues	94
4.5 Chapter Summary	94
4.6 End-of-Chapter Questions	95
4.6.1 True/False Questions	95
4.6.2 Multiple-Choice Questions	96
Chapter 5: Computer Hardware-The System Unit	99
Key Terminologies	102
5.1 Digital: The Language of Computers	106
5.1.1 Binary Digits: 1 and 0	107
5.1.2 Character Encoding Systems: Bits and Bytes	107
5.2 The PC System Unit	109
5.2.1 The Motherboard: The Central Nervous System	109
5.2.2 The Processor: Computer on a Chip	109
5.2.3 The Memory: Digital Warehouse	111
5.2.4 Putting It All Together with Buses and Ports	114
5.2.5 PC Growth: Adding Capabilities	116
5.3 Describing the Processor and Its Performance	117
5.4 Processor Design	118
5.5 Chapter Summary	119
5.6 End-of-Chapter Questions	120
5.6.1 True/False Questions:	120
5.6.2 Multiple-Choice Questions	121

Chapter 6: Computer Hardware-Storage and Input/Output Devices 123

Key Terminologies	126
6.1 Magnetic Disk Storage	132
6.1.1 Storage Technologies	132
6.1.2 Disk Organization	135
6.1.3 Disk Speed	137
6.1.4 Virtual Memory: Disk Imitating RAM	137
6.2 Optical Laser Discs	137
6.3 Input Devices	140
6.3.1 The Keyboard	140
6.3.2 The Mouse and Other Point-and-Draw Devices	141
6.3.3 Scanners	142
6.3.4 Magnetic Stripes and Smart Cards	144
6.3.5 Speech Recognition	144
6.3.6 Digital Cameras: Digicams	145
6.3.7 Handheld and Wearable Data Entry Devices	146
6.4 Output Devices	146
6.4.1 Monitors	146
6.4.2 Data Projectors	147
6.4.3 Printers	148
6.4.4 Sound System	148
6.4.5 Voice-Response Systems	149
6.5 Chapter Summary	149
6.6 End-of-Chapter Questions	150
6.6.1 True/False Questions:	150
6.6.2 Multiple-Choice Questions	151

Chapter 7: Computer Networks and Networking 155

Key Terminologies	158
7.1 The Wired World	164
7.2 Data Communications Hardware	165
7.3 Data Communications Channel	169

7.4 Networks	175
7.5 Home Networking	179
7.6 Chapter Summary	180
7.7 End-of-Chapter Questions	180
7.7.1 True/False Questions:	180
7.7.2 Multiple-Choice Questions	182

Chapter 8: Information Technology- Ethics, Privacy, and Crime..... 185

Key Terminologies	188
8.1 Ethics in Information Technology	190
8.2 Workplace Ethics: Healthy Computing	191
8.3 The Privacy of Personal Information	193
8.4 Computers and IT Crimes	194
8.5 Chapter Summary	199
8.6 End-of-Chapter Questions	200
8.6.1 True/False Questions:	200
8.6.2 Multiple-Choice Questions	200

Chapter 9: E-Commerce, Databases, and Security 203

Key Key Terminologies	206
9.1 E-Commerce: Electronic Commerce	210
9.2 Databases: Information Storage and Retrieval	216
9.3 Security: Concerning Protection of Information	219
9.3.1 Computer Center Security	219
9.3.2 Internet and E-Commerce Security	222
9.3.3 Information Systems Security	222
9.3.4 PC Security	223
9.4 Chapter Summary	223
9.5 End-of-Chapter Questions	225
9.5.1 True/False Questions:	225
9.5.2 Multiple-Choice Questions	226

Chapter 10: Emerging Technologies in Information Systems 229

Key Terminologies	232
10.1 Leveraging Information Technology as a Competitive Strategy	234
10.2 Information Systems and Decision Making	235
10.3 Management Information Systems and Processing Capabilities	237
10.4 The DSS and the Executive Information System	239
10.5 Artificial Intelligence	242
10.6 Virtual Reality	244
10.7 Chapter Summary	244
10.8 End-of-Chapter Questions	245
10.8.1 True/False Questions:	245
10.8.2 Multiple-Choice Questions	246

Chapter 11: Information Systems Development 249

Key Terminologies	252
11.1 The System Life Cycle	257
11.2 System Development Technique and Concepts	258
11.2.1 Data Flow Diagrams	258
11.2.2 Entity Relationship Diagrams	259
11.3 Computer-Aided Software Engineering	260
11.4 Prototyping	262
11.5 System Conversion and Implementation	264
11.6 Programming	266
11.6.1 Types of Programming Languages	266
11.6.2 Writing the Program	268
11.7 Chapter Summary	269
11.8 End-of-Chapter Questions	270
11.8.1 True/False Questions:	270
11.8.2 Multiple-Choice Questions	271

Chapter 12: Careers and Certification in Information Technology 273

Key Terminologies	276
12.1 Career Opportunities for the IT-Competent Minority	277

12.2 Working at Home.....	277
12.3 Opportunities for IT Specialists.....	279
12.4 Licensing and Certification.....	282
12.5 Getting a Job.....	283
12.6 Jobs are Changing.....	283
12.7 Chapter Summary.....	283
12.8 End-of-Chapter Questions.....	284
12.8.1 True/False Questions:.....	284
12.8.2 Multiple-Choice Questions.....	285
Chapter 13: Social Networking.....	287
Key Terminologies.....	290
13.1 Understanding Social Networks.....	292
13.2 Benefits of Social Networking.....	296
13.3. Hazards and Limitations of Social Networking.....	297
13.4 Your Privacy.....	298
13.5 How to Participate in Social Networks.....	300
13.6 Businesses in Using Social Networking.....	301
13.7 Future of Social Networking.....	302
13.8 Chapter Summary.....	303
13.9 End-of-Chapter Questions.....	303
13.9.1 True/False Questions.....	303
13.9.2 Multiple-Choice Questions.....	305
References and Some Useful Web Sites.....	309
Index.....	331