
FUNDAMENTALS OF COMPUTER AND INTERNET FRAUD



Association of Certified Fraud Examiners

GLOBAL HEADQUARTERS • THE GREGOR BUILDING
716 WEST AVE • AUSTIN, TX 78701-2727 • USA

TABLE OF CONTENTS

I. INTRODUCTION

What Is Computer Crime?.....	2
Computer Fraud Versus Computer Crime	3
Computer Fraud.....	3
Computer Crime	4
The Extent Question: How Much Computer Fraud Is There?	5
A Few Statistics	5
The Internet	6
The Perpetrators of Computer Fraud.....	6
The Necessary Skills	6
Inside or Outside.....	7
Securing Information Resources	8
Categories of Computer Fraud	10
Content.....	10
Learning Objectives.....	11

II. THE USE OF COMPUTERS IN OCCUPATIONAL FRAUD

Asset Misappropriation.....	13
Cash Schemes	13
Noncash Schemes	19
Control Weaknesses	20
Internal Control Weaknesses.....	21
Control Activities	24
Review Questions	25

III. EMERGING TECHNOLOGY CONSIDERATIONS

Fragmented Data Storage	27
Video.....	28
Bring Your Own Device.....	28
Video.....	28
Video.....	29
Cloud Computing.....	29
Video.....	29
Video.....	30
Video.....	31
Social Media.....	31
Organizational Risks.....	31
Video.....	32
Video.....	33
Individual Risks.....	34
Video.....	34
Mobile Devices.....	36
Mobile Ad Fraud.....	37
Device Cloning.....	37

III. EMERGING TECHNOLOGY CONSIDERATIONS (CONT.)

Fraudulent Mobile Web Pages	37
Malicious Mobile Applications.....	37
Minimizing Risks with Mobile Devices	38
The Deep Web	38
Video.....	39
Virtual Currencies	39
The Internet of Things.....	40
Video.....	40
Review Questions	42

IV. DATA MANIPULATION AND DESTRUCTION

Data Manipulation	45
Fraud by Input Manipulation	45
Fraud by Program Manipulation.....	45
Fraud by Output Manipulation	45
Computer Forgery.....	45
Data Destruction.....	46
Malware	47
Drive-by Downloads	47
Types of Malware.....	48
Malware Carriers	59
Malware Symptoms.....	60
Preventing Infection	61
What to Do if Infected.....	62
Antivirus and Other Security Software.....	62
Investigating Malware Infections.....	62
Malware Information Resources.....	63
Laws Used to Combat the Manipulation and Destruction of Data	63
The Computer Fraud and Abuse Act	64
The Electronic Communications Privacy Act	66
Wire Fraud	68
Review Questions	70

V. UNAUTHORIZED ACCESS TO COMPUTER SYSTEMS AND SERVICES

Categories of Security Attacks	74
Interception.....	74
Interruption.....	75
Modification.....	75
Fabrication	75
Passive and Active Attacks	75
Passive Attacks	75
Active Attacks.....	76
Common Methods of Attack.....	79
Social Engineering.....	80
Reverse Social Engineering.....	81
Hacking.....	81

V. UNAUTHORIZED ACCESS TO COMPUTER SYSTEMS AND SERVICES (CONT.)

Anti-Intrusion Legislation	86
Preventing Unauthorized Access.....	87
Basic Prevention Measures	87
Warning Screens.....	87
Security Policies.....	87
Firewalls.....	87
Security Software.....	88
Encryption.....	88
Protecting Wireless and Remote Access.....	88
Wi-Fi Security	89
Video.....	90
Usernames.....	90
Passwords.....	91
Multifactor Authentication	91
Hacker Publications and Communications.....	91
Review Questions	92

VI. SOFTWARE PIRACY AND THE THEFT OF TRADE SECRETS

Introduction.....	95
Software Piracy.....	95
The Effects of Software Piracy	95
Anti-Piracy Measures	95
Costs of Software Piracy	96
Types of Software Piracy	96
Copyright Laws	97
Anti-Piracy Resources	99
Theft of Trade Secrets.....	99
Digital Data.....	100
Economic Espionage.....	101
Identifying and Protecting Proprietary Information.....	102
Sample Designations of Confidentiality	103
Sample Employee Manual Information.....	105
Legislation Used to Protect Proprietary Information.....	107
Economic Espionage Act of 1996 (18 U.S.C. §§ 1831–1839).....	107
Disclosing Government Trade Secrets (18 U.S.C. § 1905)	110
Interstate Transportation of Stolen Property (18 U.S.C. § 2314)	110
The Wire Fraud Statute (18 U.S.C. § 1343).....	111
The Computer Fraud and Abuse Act (18 U.S.C. 1030)	111
The Uniform Trade Secrets Act.....	111
Review Questions	113

VII. INTERNET AND E-COMMERCE FRAUD

Introduction.....	115
Internet Fraud Scams	115
Identity Theft.....	116
Video.....	119

VII. INTERNET AND E-COMMERCE FRAUD (CONT.)

Email Abuse.....	125
Phishing.....	128
Video.....	128
Video.....	128
Video.....	129
Video.....	130
Foreign Trust Schemes.....	131
Investment Schemes	132
Combating Internet Fraud.....	136
Encryption.....	136
Customer Validation.....	137
Internal Network Security.....	137
Firewalls.....	137
Auditing and Intrusion Detection	137
Electronic Commerce	137
Types of E-Commerce.....	138
Types of E-Commerce Scams.....	139
Electronic Commerce and Information Security.....	139
Information Security Goals	139
Consumer Confidence.....	142
Guidelines for E-Commerce Transactions	142
Smart Cards and E-Commerce	143
Review Questions	145

VIII. COMPUTER SECURITY CONSIDERATIONS

Computer Security	149
Computer Security Risk Analysis.....	149
Computer Security Controls.....	151
Frameworks and Standards	152
ISO/IEC 27002:2013	152
COBIT.....	154
Payment Card Industry's Data Security Standard	154
Standard of Good Practice	155
Cloud Security Alliance	156
Security and Privacy Controls for Federal Information Systems and Organizations	156
Physical Security and Controls.....	156
Physical Threats.....	157
Physical Controls.....	158
Video.....	158
Detective Physical Controls.....	164
Technical and Administrative Controls.....	165
Security Policies and Awareness Training	165
Logical Access Controls.....	166
Video.....	168
Network Security.....	169
Operating System Security.....	173

VIII. COMPUTER SECURITY CONSIDERATIONS (CONT.)

Encryption.....	174
Application Security.....	175
Data Classification	177
Review Questions	179

IX. SECURITY AUDITING AND TESTING

Introduction.....	181
Log Management and Analysis	181
Recommendations for Log Management.....	182
Types of Event Logs	182
Event Attributes.....	185
Dynamic Monitoring	185
Log Analysis and Reporting	186
Incident Response Plan.....	187
Security Audits.....	191
Video.....	191
Phases of Security Audits.....	191
Information Examined in Security Audits	192
Event Logs.....	192
External Security Audits.....	193
Penetration Testing.....	194
Review Questions	196

X. LEGAL ISSUES REGARDING COMPUTER AND INTERNET FRAUD INVESTIGATIONS

Avoiding Liability When Conducting Investigations.....	199
Video.....	199
Personal Privacy	199
Employees' Duties and Rights	203
Employees' Duty to Cooperate.....	203
Employees' Rights During an Investigation.....	204
Monitoring and Surveillance.....	210
Video.....	211
Video.....	215
Video.....	217
Surreptitious Recording.....	218
Review Questions	220

XI. DIGITAL FORENSICS

Introduction.....	223
Hiring a Forensic Expert	223
Video.....	225
Conducting Investigations Involving Computers.....	226
Preliminary Investigation	226
Digital Evidence.....	229
Computer Investigations and Computer Forensics.....	235

XI. DIGITAL FORENSICS (CONT.)

Plan.....	235
Seize the Data	239
Imaging.....	247
Processing.....	248
Analyze the Data.....	250
Report and Testify	250
Mobile Forensic Investigations.....	250
Plan.....	252
Seize	252
Extract	253
Analyze	254
Document	255
Report and Testify	255
Review Questions	256
XII. CONCLUSION.....	259

XIII. PRACTICAL PROBLEMS

Practical Problem 1.....	261
Practical Problem 2.....	264
Practical Problem 3.....	265
Practical Problem 4.....	266
Practical Problem 5.....	267
Practical Problem 6.....	269

XIV. APPENDIX A: RESOURCES ON INTERNET AND COMPUTER FRAUD 271

XV. APPENDIX B: VIDEO TRANSCRIPTS 275

XVI. SOLUTIONS TO REVIEW QUESTIONS

II. The Use of Computers in Occupational Fraud.....	285
III. Emerging Technology Considerations	289
IV. Data Manipulation and Destruction	292
V. Unauthorized Access to Computer Systems and Services	298
VI. Software Piracy and the Theft of Proprietary Information.....	303
VII. Internet and E-Commerce Fraud	308
VIII. Computer Security Considerations	315
IX. Security Auditing and Testing.....	320
X. Legal Issues Regarding Computer and Internet Fraud Investigations.....	325
XI. Digital Forensics	329

XVII. SOLUTIONS TO PRACTICAL PROBLEMS

Practical Problem 1.....	335
Practical Problem 2.....	337
Practical Problem 3.....	338
Practical Problem 4.....	339

FUNDAMENTALS OF COMPUTER AND INTERNET FRAUD

XVII. SOLUTIONS TO PRACTICAL PROBLEMS (CONT.)	
Practical Problem 5.....	340
Practical Problem 6.....	342
XVIII. PRACTICAL PROBLEM EPILOGUE	345
XIX. FUNDAMENTALS OF COMPUTER AND INTERNET FRAUD FINAL EXAMINATION	E-1
XX. INDEX	I-1