

Subject Index

A

- AAA (American Accounting Association), 3-23
- ABC (activity-based cost accounting), 11-19-11-21
- Access (Microsoft), 4-6, 4-12, 5-8, 5-12, 5-16
- Access, user. *See* User access
- Access attacks
 - cybersecurity for, 16-15-16-20
 - defined, 16-15
 - logical, 16-17-16-20
 - physical, 16-15-16-17
- Access control vestibule, 14-17
- Accidental tailgating, 16-16
- Accountants. *See* Accounting professionals
- Accounting
 - clustering in, 17-10
 - cost, 11-14-11-21, 13-20-13-21, 17-18
 - data analytics and, 1-23-1-26, 5-15-5-23
 - decision making based on, 1-2-1-3
 - financial, 1-4, 5-18-5-19, 7-33
 - information importance in, 1-2-1-4
 - managerial, 5-19-5-21, 11-14-11-15, 13-20-13-24, 13-26, 17-17. *See also* Cost accounting
 - overview of, 1-1
 - responsibility, 13-21-13-22
 - software for startups, 4-13-4-15
 - stereotypes and misconceptions about, 1-2
 - subdisciplines in, 1-4
 - tax, 5-22, 7-33, 14-28, 14-30
- Accounting equation, 13-6, 13-43
- Accounting information systems (AIS)
 - complexity of, 1-4
 - cost accounting in, 11-14-11-21
 - defined, 1-4, 4-2
 - evolution of, 1-12-1-17
 - financial reporting role of, 13-2-13-5
 - financial statement generation in, 13-6-13-15
 - internal controls. *See* Internal controls
 - management and business process iterative relationship with, 1-19-1-20
 - process-based, 1-12-1-17, 4-4
 - risk management importance to, 3-1. *See also* Risk management
 - terminology, 1-3
 - as transaction processing system, 4-3
 - transaction-based, 1-12-1-17, 4-4
- Accounting professionals
 - accounting support services, 1-27
 - audit data analyst, 17-24-17-25
 - auditors as. *See* Auditors
 - Big Four external auditor, 8-24
 - blockchain relevance to, 7-30-7-34
 - career skills. *See* Career skills
 - chief financial officer, 13-32
 - conversion process roles, 11-1, 11-31
 - critical thinking skills, 1-3, 7-21
 - cybersecurity roles, 16-1, 16-4-16-6, 16-28-16-29
 - data analytics roles, 17-1-17-4, 17-24-17-25
 - data use and management, 5-1, 5-15-5-23
 - data visualization roles, 18-1, 18-3, 18-34
 - director of innovation, public accounting firm, 7-35
 - director of SOX compliance, 9-35-9-36
 - disruptive technology interfaces, 7-9, 7-30-7-35
 - documentation roles, 8-1, 8-24
 - finance digital transformation analyst, 6-38-6-39
 - finance transformation manager, 12-44-12-45
 - financial reporting roles, 13-1-13-2, 13-32
 - fraud analytics specialist, 15-31
 - fraud management roles, 15-1, 15-8-15-13, 15-31
 - health insurance business analyst, 18-34
 - human resources and payroll roles, 9-1, 9-6
 - IT system roles, 14-34
 - job postings for. *See* Job postings
 - marketing, sales, and collections roles, 12-1, 12-44-12-45
 - MBA business analytics and management information systems, 5-23
 - nontraditional CPA firm, 2-22-2-23
 - program manager, electric vehicle manufacturer, 11-31
 - public accounting cybersecurity director, 16-28-16-29
 - purchasing and payments processes roles, 10-1
 - risk management firm managing partner, 3-28
 - risk management roles, 2-1-2-2, 2-18, 2-22-2-23, 3-1, 3-28. *See also* risk-related entries
 - robotic process automation benefiting, 7-12-7-22
 - senior accountant at local startup, 4-28
 - senior associate, internal audit analytics, 10-37-10-38
 - software and information systems roles, 4-1
 - systems and database interactions, 6-1, 6-38-6-39
- Accounts payable
 - billing schemes, 15-21
 - blockchain effects, 7-33
 - continuous fraud monitoring, 10-28
 - credit payments processes and, 10-25-10-26
 - defined, 10-25
 - overview of, 10-6
 - reporting and analytics, 10-35-10-37
 - robotic process automation, 7-17-7-18, 7-20
- Accounts receivable
 - business-to-business sales, 12-12-12-13, 12-19, 12-21-12-22, 12-29-12-30, 12-32-12-33
 - maturity model, 12-34-12-35
 - reporting and analytics, 12-44
 - risks and controls, 12-29-12-35
 - skimming, 15-16-15-17
 - subsidiary ledgers, 13-10
- Accrued payroll, 9-33
- ACFE. *See* Association of Fraud Examiners (ACFE), *Report to the Nations*
- ACH (Automated Clearing House) Network, 12-33
- Acquisitions. *See also* Acquisitions and payments processes; Purchasing processes
 - acquisition-based growth, 4-15-4-16
 - defined, 4-16
 - mergers vs., 4-16
 - systems integration with, 4-17-4-18
- Acquisitions and payments processes
 - in accounting information systems, 1-12-1-17
 - in basic business model, 1-9, 1-12, 2-3, 9-2
 - business events in, 1-13
 - human resources and payroll as, 9-2, 9-25
 - purchasing and payments processes as, 10-2
 - risks in, 2-4
- Activity-based cost accounting (ABC), 11-19-11-21
- Actual residual risk, 2-20, 3-2
- Adjusted trial balance, 13-12
- Administrator role, 14-7-14-8
- Advance payments, 12-29, 12-32
- AFL-CIO, 15-3
- Agile methodology
 - defined, 6-10
 - real-world example, 6-13
 - scrum, 6-11-6-13
 - selection of, 6-13-6-14
 - for systems development, 6-10-6-14
- AI. *See* Artificial intelligence (AI)
- AIS. *See* Accounting information systems
- American Accounting Association (AAA), 3-23
- American Institute of Certified Public Accountants (AICPA), 3-3, 3-6, 3-23, 7-30
- Analysis stage, of SDLC, 6-3, 6-5
- Analytics. *See* Data analytics
- Anomaly detection, 17-7-17-8, 17-14, 18-4, 18-22
- Antivirus software, 4-6
- Application software, 4-6
- Applications
 - defined, 3-9
 - IT application controls, 3-8-3-10
 - wallet, 7-24-7-25
- AR (augmented reality), 7-9-7-10, 11-25
- Artifacts, scrum, 6-12-6-13
- Artificial intelligence (AI). *See also* Robotics
 - automated controls, 3-12-3-13
 - data analytics with, 1-26, 17-5-17-6
 - defined, 7-13
 - machine learning, 14-12, 17-5-17-6, 17-9-17-13, 17-23
 - robotic process automation vs., 7-13
- Asset misappropriation
 - defined, 15-14
 - fraud and, 15-5, 15-14-15-21
 - fraudulent disbursements as, 15-18-15-21
 - larceny as, 15-17
 - skimming as, 15-15-15-17
- Assets
 - fixed. *See* Fixed assets
 - misappropriation of, 15-5, 15-14-15-21
 - overstatement of, 10-21, 15-23-15-26

- Association of Fraud Examiners (ACFE),
Report to the Nations, 15-2-15-5, 15-7,
 15-11-15-14, 15-22
- Audit committees, 3-20
- Audit trail, 13-9
- Auditors
 blockchain use, 7-31-7-32
 external, role of, 3-17
 independence of, 3-20
 misperceptions about, 1-2
 skills required, 1-6-1-7
- Audits
 blockchain applications, 7-31-7-32
 data analytics for, 5-17-5-18
 documentation for, 8-6-8-8, 8-11, 8-24
 external. *See* External audits
 for fraud, 13-11, 15-6, 15-8, 15-13
 internal. *See* Internal audits
 natural language processing for, 17-24
- Augmented reality (AR), 7-9-7-10, 11-25
- Authorization, 3-4
- Automated Clearing House (ACH) Network,
 12-33
- Automated controls
 automated sales process, 12-26
 change to, management of, 14-27
 defined, 3-12
 examples, 3-11, 3-12
 manual combined with, 3-13
 manual vs., 3-11
 overview of, 3-12-3-13
 user access review as, 14-12
- Automation
 artificial intelligence as, 7-13. *See also*
 Artificial intelligence
 barriers to, 11-25
 brute-force attacks using, 16-17-16-18
 business process, 7-13, 7-21
 ERP system, 4-23
 real-world example, 7-22
 robotic process, 7-12-7-22, 14-12, 14-27
 types of, 7-13-7-14
- Autonomous Things (AuT), 7-11-7-12
- B**
- B2B sales. *See* Business-to-business (B2B)
 sales
- B2C sales. *See* Business-to-consumer (B2C)
 sales
- Background checks, 9-10
- Backups
 backup cycles, 14-25
 backup sites, 14-21-14-22
 data backup, defined, 14-22
 differential, 14-23-14-24
 full, 14-22-14-23
 grandfather-father-son redundant, 14-25
 incremental, 14-24
 software for, 4-6
 strategies for, 14-22-14-24
- Balance sheets
 accounting equation for, 13-43
 defined, 13-29
 ratios of accounts, 13-30
- Balanced scorecard, 13-22-13-24
- Ballesteros, Catalina, 8-24
- Bank deposits, 12-30-12-31
- Bank remittance reports, 12-30-12-31
- Banking, data analytics for, 17-7, 17-21, 17-23
- Bar charts, 18-16-18-18, 18-26-18-27,
 18-29-18-30, 18-32
 stacked, 18-17-18-18, 18-22
- Batch processing, 4-4-4-5, 9-22
- Baumann, Alana, 18-34
- BCP. *See* Business continuity planning
- Behavioral red flags, 15-7-15-8
- Benchmarks, 1-19, 3-18
- Benefits. *See* Employee benefits
- Bezos, Jeff, 2-2
- Bid-rigging schemes, 10-21-10-22, 15-4
- Big data
 characteristics of, 5-11-5-15
 data summarization of, 17-9
 defined, 5-12
 geotags for, 5-20
 Internet of Things creating, 7-7-7-8
 mobile technologies and, 5-15
 real-world example, 5-14
 value of, 5-12, 5-15, 7-8
 variety of, 5-12-5-13, 7-8
 velocity of, 5-12-5-13, 7-8
 veracity of, 5-12, 5-14, 7-8
 volume of, 5-12-5-13, 7-8
- Bill of materials (BOM), 11-4-11-5
- Bill of operations (BOO), 11-4-11-6
- Billing, 12-21-12-22
- Billing schemes, 15-21
- Binary code, 5-2
- Bins, 18-19
- Biometric access controls, 14-6, 14-9
- Bitcoin, 7-23-7-25, 7-27-7-28
- Bits, data, 5-2-5-3, 5-13
- Block coding, 13-6-13-7
- Blockchain
 accounting profession relevance, 7-30-7-34
 for audits, 7-31-7-32
 basics of, 7-24
 bitcoin, 7-23-7-25, 7-27-7-28
 career opportunities with, 7-31-7-33
 consensus or proof of work, 7-24, 7-27-7-29
 consortium, 7-29
 cryptology in, 7-24-7-26
 data quality with, 7-31, 7-33
 decentralization with, 7-28
 defined, 7-23
 as disruptive technology, 7-23-7-34
 double-entry general ledgers vs., 7-32-7-33
 fundamental principles, 7-28-7-29
 hash strings, 7-31-7-32
 immutability of, 7-28, 7-31-7-32
 ledgers, 7-25-7-28
 miners, 7-24-7-25, 7-28
 nodes, 7-24-7-25, 7-28
 private, 7-29
 public, 7-29
 small business use of, 7-33
 smart contracts, 7-24, 7-33
 transaction process, 7-23, 7-25
 transparency of, 7-28
 wallet applications, 7-24-7-25
- Board of directors
 internal control accountability, 3-16-3-17
 IT system strategies, 14-4-14-5
 risk response responsibilities, 2-18
- Bolus, Miriam, 1-27
- BOM (bill of materials), 11-4-11-5
- BOO (bill of operations), 11-4-11-6
- Botnets, 16-22
- Box plots, 18-20-18-21
- BPMN (business process model and notation),
 8-9-8-10
- Break-even analysis, 17-17
- Bribery, commercial, 15-5
- Brute-force attacks, 16-17-16-18, 16-20, 16-22
- Bureau of Labor and Statistics, U.S., 2-18
- Business activities, 1-10. *See also* Business
 events
- Business analysts, 17-3
- Business continuity planning (BCP)
 as corrective control, 3-10
 defined, 14-19
 disaster recovery, 11-9, 14-19-14-20. *See also*
 Backups
 for IT systems, 14-19-14-21, 14-26
 plans included in, 14-19
 risks and controls, 14-26
- Business disruptions
 planning for. *See* Business continuity
 planning
 software access and, 4-7
 as technology risk, 7-4
- Business events
 in acquisitions and payments processes, 1-13
 data from, 1-20, 1-26
 defined, 1-4, 1-8
 financing events, 1-10, 10-24, 12-29
 information events, 1-10, 1-13
 investing events, 1-10, 10-24, 12-29
 operating events, 1-10, 10-24, 12-29
 terminology and language for, 1-10
- Business functions, 2-3-2-4
- Business intelligence analysts, 17-3
- Business models
 basic, 1-8-1-10, 1-12, 2-3, 9-2, 10-2, 11-2, 12-2
 business processes in, 1-8-1-10, 1-12, 2-3, 9-2,
 10-2, 11-2, 12-2
 defined, 1-7
 direct-to-consumers, 1-8
 franchise, 1-8
 freemium, 1-8
 peer-to-peer, 1-8
 retailer, 1-8
 social responsibility in, 1-7-1-8
 subscription, 1-8
- Business operations. *See also specific topics*
below
 business events, 1-10-1-11
 business models, 1-7-1-8
 business processes, 1-8-1-10
 extended reality technologies for, 7-10
 internal controls for, 3-16-3-20, 3-24
 Internet of Things products for, 7-7-7-8
 purpose of business, 1-7
 risk with, 2-8-2-9
- Business process automation, 7-13, 7-21. *See*
also Robotic process automation (RPA)
- Business process model and notation (BPMN),
 8-9-8-10
- Business processes
 acquisitions and payments processes, 1-9,
 1-12-1-17, 2-3-2-4, 9-2, 9-25, 10-2. *See*
also Acquisitions; Payments processes;
 Purchasing processes
 automation of, 7-13, 7-21. *See also* Robotic
 process automation (RPA)
 in basic business model, 1-8-1-10, 1-12, 2-3,
 9-2, 10-2, 11-2, 12-2

- Business processes (*continued*)
 business events combined for, 1-11
 business functions implementing, 2-3–2-4
 changing and improving, 1-19
 conversion processes, 1-9, 1-12, 1-15–1-16,
 2-3–2-4, 11-1–11-31. *See also* Conversion
 processes
 defined, 1-8, 2-3, 9-2
 documentation of, 8-8–8-23. *See also*
 Documentation
 flowcharts of. *See* Flowcharts
 human resources. *See* Human resources
 improvements to, 8-6, 8-17
 management and information system
 iterative relationship with, 1-19, 1-20
 management responsibilities for, 1-18–1-19
 marketing, sales, and collections processes,
 1-9, 1-12, 1-16–1-17, 2-3–2-4, 12-1–12-45,
 17-7. *See also* Marketing, sales, and
 collections processes
 maturity model, 3-18–3-20
 payroll. *See* Payroll
 risks in, 2-3–2-4
 Business rules, 6-26
 Business-to-business (B2B) sales
 accounts receivable, 12-12–12-13, 12-19,
 12-21–12-22, 12-29–12-30, 12-32–12-33
 customer evaluation, 12-14–12-15
 defined, 12-2
 inventory management, 12-19
 marketing, 12-13
 opportunities and challenges, 12-16
 pricing and contracts, 12-13–12-16
 process flowchart for, 12-22–12-23
 revenue recognition, 12-19
 risks and controls, 12-13–12-15, 12-17,
 12-19–12-20
 sales, 12-13, 12-17
 shipping, 12-13, 12-18–12-20
 Business-to-consumer (B2C) sales
 cash collections, 12-3, 12-6, 12-29
 defined, 12-2
 delivery, 12-3, 12-6–12-8
 inventory management, 12-10
 marketing, 12-3–12-4
 process flowchart, 12-8–12-9
 risks and controls, 12-4, 12-6–12-8
 sales, 12-3–12-5
 supply chain management, 12-10–12-11
 Bytes, data, 5-2–5-3, 5-12–5-13
- C**
 C#, 4-5, 6-19
 C++, 4-5
 Calculated fields, database, 11-28
 Capacity utilization rate, 11-30
 Capital expenditures (CAPEX), 10-17
 Capitalization of expenses, 15-27
 Capitalized costs, expensing, 15-29–15-30
 Cardinality, 6-25–6-27
 Career skills. *See also* Skills
 accounting and information systems, 1-11,
 1-17, 1-22, 1-24
 conversion processes, 11-1, 11-4, 11-17,
 11-24, 11-27, 11-31
 cybersecurity, 16-5–16-6, 16-13, 16-19,
 16-21
 data analytics, 17-2–17-4, 17-6, 17-9, 17-18,
 17-22
 data knowledge and analysis, 5-6, 5-10, 5-14,
 5-17
 data visualization, 18-5, 18-9, 18-15, 18-31
 documentation, 8-2, 8-10, 8-14
 emerging and disruptive technologies, 7-5,
 7-11, 7-16, 7-28, 7-31
 financial reporting, 13-4, 13-10, 13-17, 13-21,
 13-29
 fraud prevention, 15-4, 15-12, 15-15, 15-31
 human resources and payroll, 9-4, 9-7, 9-14,
 9-20, 9-29
 internal controls for risk management, 3-3,
 3-13, 3-17, 3-23
 IT systems, 14-4, 14-11, 14-14, 14-26, 14-29
 marketing, sales, and collections processes,
 12-12, 12-24, 12-33, 12-38
 purchasing and payments processes, 10-3,
 10-11, 10-19, 10-25, 10-32
 risk identification and assessment, 2-4–2-5,
 2-17, 2-19
 software and information systems, 4-3, 4-13,
 4-17, 4-26
 systems and database use, 6-7, 6-11,
 6-20–6-21, 6-32, 6-38–6-39
 Case studies. *See* Tableau case studies
 Cash
 larceny, 15-17
 skimming, 15-15–15-16
 Cash collections
 bank deposits of, 12-30–12-31
 business-to-consumer sales, 12-3, 12-6,
 12-29
 receipt of payments, 12-29–12-30
 recording, 12-32–12-33
 reporting and analytics, 12-43–12-44
 risks and controls, 12-6, 12-29–12-35
 Cash disbursements journals, 10-25
 Cash disbursements processes. *See* Payments
 processes
 Cash flow statements, 10-24, 12-29, 13-29,
 13-43
 Categorical values of data, 17-7–17-8,
 18-15–18-19
 Centers of excellence (COEs)
 defined, 7-6
 emerging technology, 7-4, 7-6
 robotic process automation, 7-14
 Tableau, 18-3
 Centralized ledgers, 7-26
 Centralized systems, 4-18–4-19
 Certified Fraud Examiners (CFEs), 15-10
 CFO (chief financial officer), 13-2
 Chandiwala, Hafiz, 13-32
 Change management
 defined, 14-28
 emergency changes, 14-32–14-33
 for IT systems, 14-27–14-33
 management responsibility for, 1-19
 in model environment, 14-28–14-31
 normal changes, 14-32–14-33
 process, 14-28–14-32
 in production environment, 14-28–14-29,
 14-31
 risks and controls, 14-33
 in test environment, 14-28–14-31
 user acceptance testing, 14-30
 Channel stuffing, 12-27–12-28, 12-40,
 15-24–15-25
 Chart of accounts, 13-6–13-7
 Checklists, 8-8
 Chief executives. *See* Management
 Chief financial officer (CFO), 13-2
 CISA (Cybersecurity and Infrastructure
 Security Agency), 16-3–16-4
 Classes, in databases, 6-18–6-19
 Classification
 in data analytics, 17-6, 17-11–17-13,
 18-22–18-23
 of internal controls, 3-8–3-15
 misclassification of revenue, 15-28–15-29
 Cloud computing
 defined, 4-8
 deployment models, 4-8
 hybrid clouds, 4-8
 Internet of Things and, 4-13
 overview of, 4-7–4-9
 private clouds, 4-8
 public clouds, 4-8
 risks of, 4-9–4-10
 service models, 4-8–4-10
 Clustering, 17-6, 17-10–17-11, 18-22–18-23
 Clusters, defined, 17-10
 COBIT framework
 Align, Plan, and Organize (APO) objective,
 14-4–14-5
 Build, Acquire, and Implement (BAI)
 objective, 14-4–14-5
 COBIT 2019 version, 14-3–14-5
 COSO frameworks compared, 14-3
 cybersecurity controls, 16-6–16-8
 Deliver, Service, and Support (DSS) objective,
 14-4–14-5
 domains of control objectives, 14-4–14-5
 Evaluate, Direct, and Monitor (EDM)
 objective, 14-4–14-5
 for IT systems, 14-1–14-5
 Monitor, Evaluate, and Assess (MEA)
 objective, 14-4–14-5
 name of, 14-2
 Codes of conduct, 15-12
 Coding system, 13-6–13-7
 COEs. *See* Centers of excellence
 Cold backup sites, 14-21–14-22
 Collections. *See also* Accounts receivable;
 Cash collections; Marketing, sales, and
 collections processes
 bank deposits, 12-30–12-31
 business-to-business sales, 12-21–12-22,
 12-29–12-30, 12-32–12-33
 business-to-consumer sales, 12-3, 12-6, 12-29
 process flowcharts, 12-33–12-34
 receipt of payments, 12-29–12-30
 recording cash receipts, 12-32–12-33
 reporting and analytics, 12-43–12-44
 risks and controls, 12-6, 12-29–12-35
 Collusion
 bid rigging and, 10-21–10-22, 15-4
 blockchain risk of, 7-28
 defined, 3-6
 fraud and, 12-14, 12-40, 15-11–15-12
 Color
 accessibility of, 18-9–18-10
 cool, 18-7
 in data visualization, 18-7–18-10, 18-18–18-19
 pairings of, 18-7–18-8
 psychology and emotional response to,
 18-8–18-9
 warm, 18-7

- Color vision deficiency (CVD)/color blindness, 18-9–18-10, 18-18
- Columns, database, 6-16–6-17
- Commands
 - JOIN operators, 6-34–6-38
 - Select, 6-29–6-32, 6-36–6-38
 - SQL, 6-29–6-38
 - Where clause, 6-32–6-34, 6-36–6-38
- Commercial bribery, 15-5
- Committee of Sponsoring Organizations of the Treadway Commission (COSO)
 - Enterprise Risk Management Framework, 3-26–3-28, 14-3
 - Internal Control–Integrated Framework, 3-23–3-26, 14-3
 - control components, 3-24–3-25
 - control objectives, 3-24
 - cube illustration, 3-26
 - members of, 3-23
 - role of, 3-23
- Communication
 - COSO ERM Framework on, 3-27
 - COSO Internal Control Framework on, 3-25
 - data communication software, 4-6
 - plans, for business continuity, 14-19
- Comparability of information, 1-21, 13-3
- Comparison of data, 18-14–18-19
- Compensating controls, 4-13
- Compensation. *See* Payroll
- Competitive advantage, 13-20
- Compliance
 - data analytics for, 5-17–5-18
 - internal control objectives for, 3-24
 - risk management through, 3-1
 - risks of noncompliance, 2-8, 2-10, 3-1
- Compliance risks, 2-8, 2-10, 3-1
- Composition of data, 17-7, 18-14–18-19
- Conceptual designs, 6-6
- Conceptual entity relationship diagrams, 6-21–6-22, 8-11
- Conditional statements, 7-14–7-21
- Confidence intervals, 17-16
- Configurable ERP systems, 4-26
- Confirmation bias, 5-14
- Conflicts of interest, 15-5
- Connector shapes, 8-13
- Consolidated financial statements, 13-5–13-6
- Consortium blockchain, 7-29
- Continuous monitoring controls, 3-13–3-14, 10-28
- Contracts
 - sales, 12-15
 - smart, 7-24, 7-33
- Controller, 13-2
- Controls
 - automated, 3-11–3-13, 12-26, 14-12, 14-27
 - classification of, 3-8–3-15
 - compensating, 4-13
 - continuous monitoring, 3-13–3-14, 10-28
 - control activities, 3-2, 3-25
 - corrective, 3-5–3-7, 3-10
 - defined, 3-2
 - detective. *See* Detective controls
 - implementing, 3-10–3-13
 - internal. *See* Internal controls
 - IT application, 3-8–3-10
 - IT general, 3-8–3-9, 14-2–14-34
 - manual, 3-10–3-11, 3-13, 14-12, 14-27
 - overview of, 3-15
 - physical, 3-8, 3-10
 - preventive. *See* Preventive controls
 - time-based model of, 3-6–3-7
 - user access, 4-14, 14-16–14-18, 16-16, 16-20
 - weaknesses of, 3-5–3-6
- Conversion processes
 - in accounting information systems, 1-12, 1-15–1-16
 - in basic business model, 1-9, 1-12, 2-3, 11-2
 - cost accounting of, 11-14–11-21
 - dashboards, 11-30
 - data analytics, 11-30
 - data collection and use, 11-26–11-30
 - databases, 11-27–11-28
 - defined, 11-2
 - digital manufacturing in, 11-22–11-25
 - in ERP system, 11-26–11-30
 - inventory management and, 11-3, 11-12–11-14
 - manufacturing operations in, 11-3, 11-8–11-9
 - overview of, 11-1, 11-3–11-12
 - product development in, 11-3–11-6
 - production planning in, 11-3, 11-6–11-8
 - production process flowchart of, 11-10–11-12
 - production scheduling in, 11-3, 11-6–11-8
 - quality management in, 11-3, 11-9–11-10
 - real-world example, 1-16
 - reporting and insights on, 11-29–11-30
 - risks in, 2-4, 11-6, 11-8–11-10
 - supply chain management and, 11-3, 11-13–11-14
- “Cooking the books.” *See* Financial statement fraud
- Cool colors, 18-7
- Copyrights, software, 4-7
- Corrective controls, 3-5–3-7, 3-10
- Corruption schemes, 15-5
- COSO. *See* Committee of Sponsoring Organizations of the Treadway Commission
- Cost accounting
 - activity-based, 11-19–11-21
 - of conversion processes, 11-14–11-21
 - defined, 11-15, 13-20
 - financial reporting for, 13-20–13-21
 - job-order costing, 11-15
 - labor costs, 11-16–11-17
 - Monte Carlo simulations in, 17-18
 - process costing, 11-15
 - purchasing process costs, 11-17
 - risks and controls, 11-21
 - standard costing, 11-15–11-16
 - traditional, 11-15–11-19
- Cost of goods sold, 11-18
- Cost-benefit analysis
 - of dashboards, 18-28
 - data processing and storage, 5-12
 - emerging and disruptive technology risks, 7-5
 - ERP system, 4-23
 - information usefulness, 1-22, 13-4
 - risk response based on, 2-21
- Cost-effectiveness of financial reporting, 13-4
- COVID-19 pandemic
 - Agile methodology during, 6-14
 - business continuity in, 3-10, 14-19–14-20
 - contact tracing as network analysis in, 17-20
 - corrective controls in, 3-10
 - cyberattacks during, 16-10, 16-17
 - fraud during, 15-3
 - payroll impacts, 9-25
 - remote work during, 3-10, 6-14, 9-7, 14-20, 18-22
 - risk mitigation in, 3-10
- Credit criteria, 12-14
- Credit payments processes, 10-25–10-26. *See also* Accounts payable
- Credit sales. *See* Business-to-business (B2B) sales
- Creditworthiness, customer, 12-14–12-15
- Crisis reaction plans, 14-19
- CRM (customer relationship management) software, 12-3–12-4
- Crow’s foot notation, 6-26–6-27
- Cryptocurrencies, 7-23–7-25, 7-27–7-28, 7-33
- Cryptology, 7-24–7-26
- Cullen, Jonathan, 9-35–9-36
- Culture. *See* Organizational culture
- Cumulative payroll journal, 9-33
- Custody, segregation of duties, 3-4
- Customer evaluation, 12-14–12-15
- Customer profile data, 6-17
- Customer Relationship Management module (ERP system), 4-23–4-24, 12-36
- Customer relationship management (CRM) software, 12-3–12-4
- Customizable ERP systems, 4-27
- CVD (color vision deficiency), 18-9–18-10, 18-18
- Cyberattacks
 - access, 16-15–16-20
 - botnets for, 16-22
 - brute-force, 16-17–16-18, 16-20, 16-22
 - cyber-kill chain of, 16-8–16-9
 - denial-of-service, 16-22–16-23, 16-26
 - dictionary, 16-17
 - disruptive, 16-21–16-28
 - distributed denial-of-service, 16-22–16-23
 - Dumpster diving for, 16-12–16-13
 - eavesdropping, 16-12–16-13, 16-18
 - internal controls to avoid, 16-7, 16-13–16-16, 16-20, 16-23, 16-28
 - IP spoofing, 16-19–16-20, 16-22
 - logic bombs, 16-25–16-26
 - logical access, 16-17–16-20
 - logical reconnaissance, 16-9, 16-13–16-15
 - malware, 16-3, 16-23–16-28
 - on-path, 16-18–16-20
 - phishing, 16-9–16-13
 - physical access, 16-15–16-17
 - physical reconnaissance, 16-9–16-13
 - ping sweeps, 16-14
 - planning methods for, 16-8–16-15
 - port scans, 16-14
 - ransomware, 16-3, 16-24, 16-26
 - real-world examples, 16-3–16-4, 16-13, 16-15, 16-21, 16-25–16-26
 - reconnaissance, 16-8–16-15
 - red flags for, 16-10–16-11
 - sources of, 16-2
 - Trojan horses, 16-26
 - user access and, 14-12
 - viruses, 16-24–16-25
 - worms, 16-25
- Cyber risks, 2-9, 11-24
- Cyber-kill chain, 16-8–16-9

- Cybersecurity. *See also* Data security
 for access attacks, 16-15-16-20
 accounting professional roles in, 16-1,
 16-4-16-6, 16-28-16-29
 anomaly detection in, 17-7
 COBIT framework for, 16-6-16-8
 defined, 16-3
 for disruptive attacks, 16-21-16-28
 governance and policies for, 16-6-16-7,
 16-27
 internal controls for, 16-7, 16-13-16-16, 16-20,
 16-23, 16-28
 job postings for careers in, 16-0, 16-5-16-6
 NIST framework for, 16-6-16-8
 overview of, 16-1
 real-world threats to, 16-3-16-4, 16-13, 16-15,
 16-21, 16-25-16-26
 for reconnaissance attacks, 16-8-16-15
 sources of threats to, 16-2
- Cybersecurity and Infrastructure Security
 Agency (CISA), 16-3-16-4
- D**
- Dashboard views, 18-28-18-29
- Dashboards
 accounts payable, 10-37
 accounts receivable, 12-44
 balanced scorecard, 13-23
 channel stuffing, 12-40
 characteristics of, 18-28-18-30
 colors in, 18-8
 continuous monitoring controls, 3-14
 conversion processes, 11-30
 data analytics using, 5-16, 9-31-9-34, 11-30,
 12-40, 12-42, 12-44, 13-30, 18-28-18-30
 defined, 5-16, 18-28
 exit interview, 9-32-9-33
 explanatory analysis with, 18-28-18-30
 financial statement, 13-30
 interactive, 18-28-18-30
 landing page of, 18-28-18-29
 new hire, 9-31
 purchasing metrics, 10-34
 revenue recognition, 12-42
 salary, 9-34
 static, 18-28
 use cases, 18-28
 viewing preferences, 18-28-18-29
- Data
 accounting professional use of, 5-1, 5-15-5-23
 analysis of. *See* Data analytics
 backups of, 14-21-14-25
 big. *See* Big data
 binary code, 5-2
 bits of, 5-2-5-3, 5-13
 bytes of, 5-2-5-3, 5-12-5-13
 career opportunities with, 5-0-5-1
 categorical values of, 17-7-17-8, 18-15-18-19
 comparison of, 18-14-18-19
 composition of, 17-7, 18-14-18-19
 conversion process, 11-26-11-30
 customer profile, 6-17
 databases of. *See* Databases
 decision making driven by, 1-20-1-23
 defined, 1-3, 5-2
 distribution of, 18-14, 18-19-18-21
 documentation of, 8-10-8-11, 8-19-8-23
 dynamic, 5-6-5-7
 elements of, 5-2-5-3
 event log, 17-19
 fields of, 5-2-5-3, 6-16-6-17
 calculated, 11-28
 files of, 5-2-5-3, 6-16
 financial accounting, 1-4
 geospatial location of, 18-14. *See also*
 Geospatial analytics
 geotags for, 5-20
 input, 1-3-1-4
 integrity of, 1-20-1-21, 4-4, 6-24, 7-31, 7-33
 labeled, 17-6, 17-11-17-13
 latency of, 5-14
 meta tags for, 5-4
 output, 1-3-1-4
 patterns of, 17-7
 prioritizing importance of, 14-20-14-21
 purchasing and payments processes,
 10-28-10-37
 quantitative values of, 17-7-17-8, 18-15-18-19
 queries to interact with, 6-29-6-38
 records of, 5-2-5-3, 6-16-6-17
 redundancy of, 6-24
 relationship between points of, 18-14,
 18-21-18-23
 relevant, selecting, 1-23
 retention of, 7-33
 scraped, 5-4
 security of. *See* Data security
 static, 5-6
 storage of. *See* Data storage
 structured, 5-4-5-5
 summarization of, 17-6, 17-8-17-9
 time series, 17-13-17-15, 17-19, 18-21-18-22
 transforming into information, 1-3-1-4, 1-20,
 5-2, 9-4
 transparency of, 4-23, 7-33
 types of, 5-2-5-6
 unstructured, 5-4-5-7, 6-18-6-20
 validity of, 7-33
 variety of, 6-15
 visualization of. *See* Data visualization
 volume of, 6-15
 Web 2.0 effects on, 5-5-5-6
- Data analysts, 17-2
- Data analytics
 accounting and, 1-23-1-26, 5-15-5-23
 accounting professional roles, 17-1-17-4,
 17-24-17-25
 anomaly detection in, 17-7-17-8, 17-14, 18-4,
 18-22
 for audits and compliance, 5-17-5-18
 channel stuffing, 12-40
 classification in, 17-6, 17-11-17-13,
 18-22-18-23
 clustering in, 17-6, 17-10-17-11, 18-22-18-23
 collections and accounts receivable,
 12-43-12-44
 conversion processes, 11-30
 dashboards in, 5-16, 9-31-9-34, 11-30, 12-40,
 12-42, 12-44, 13-30, 18-28-18-30
 data summarization in, 17-6, 17-8-17-9
 database queries for, 6-38
 defined, 1-24, 5-16
 descriptive, 5-16, 5-18-5-22, 17-4-17-5,
 18-14
 diagnostic, 5-16, 5-18-5-20, 5-22, 17-4-17-5,
 17-15, 18-14
 employee onboarding, 9-30-9-31
 employee termination, 9-32-9-33
 explanatory, 18-25-18-34
 exploratory, 17-7-17-13, 18-13-18-25
 for financial accounting, 5-18-5-19
 financial statement, 13-30
 for forecasting, 17-6, 17-16-17-17, 18-21
 for fraud detection, 15-13, 15-20, 15-25,
 15-29, 15-31, 15-39, 17-12-17-13, 17-16
 geospatial, 17-6, 17-22-17-23, 18-14,
 18-23-18-24, 18-29-18-30
 human resources and payroll data, 9-28-9-35
 internal controls, 3-14
 linear regression in, 17-6, 17-14-17-16, 18-21
 machine learning and, 17-5-17-6, 17-9-17-13,
 17-23
 for managerial accounting, 5-19-5-21, 17-17
 Monte Carlo simulations in, 17-6, 17-17-17-18
 natural language processing in, 17-6,
 17-23-17-24
 network analysis in, 17-6, 17-20-17-21
 outlier analysis in, 17-7-17-8, 17-14
 overview of, 17-1
 popular techniques in, 17-18-17-24
 predictive, 5-16, 5-18-5-20, 5-22, 17-4-17-6,
 17-15-17-17
 prescriptive, 5-16, 5-18-5-20, 5-22, 17-4-17-5
 process mining in, 17-6, 17-19-17-20
 production, 11-30
 purchasing and payments processes,
 10-31-10-37
 real-world examples, 17-3
 regression in, 17-6, 17-14-17-16, 18-21
 reporting vs., 1-24-1-25
 revenue recognition, 12-42
 sales, 12-39-12-40, 17-16
 skills for, 1-26-1-27, 5-16-5-17
 social responsibility, 1-35-1-36
 software, 4-11-4-12
 for tax accounting, 5-22
 time series, 17-13-17-15, 17-19, 18-21-18-22
 types or categories of, 17-4-17-5
 veracity of data for, 5-14
 visualization of. *See* Data visualization
- Data centers
 backup sites, 14-21-14-22
 defined, 14-13
 inside environment, 14-15-14-16
 onsite vs. offsite, 14-13
 outside environment, 14-14-14-15
 physical access controls, 14-13-14-17
 physical security, 14-16-14-17
 real-world example, 14-15
- Data communication software, 4-6
- Data composition, 17-7, 18-14-18-19
- Data control language (DCL), 6-29
- Data definition language (DDL), 6-29
- Data dictionaries, 6-23
- Data engineers, 17-2
- Data flow diagrams (DFDs)
 defined, 8-10
 for documentation, 8-10, 8-19-8-23
 examples, 8-20-8-22
 Level 0, 8-20-8-21
 Level 1, 8-21-8-23
 Level 2, 8-22
 shapes in, 8-19-8-20
- Data flow lines, 8-19
- Data integrity
 blockchain, 7-31, 7-33
 defined, 1-20, 6-24

- FASB standards, 1-20–1-21
 - in relational databases, 6-24
 - transaction processing ensuring, 4-4
- Data lakes, 5-9–5-11
- Data manipulation language (DML), 6-29
- Data mart, 5-10
- Data modeling, 6-20
- Data Query Language (DQL)
 - database queries, 6-29–6-38
 - defined, 6-29
 - JOIN operators, 6-34–6-38
 - SELECT command, 6-29–6-32, 6-36–6-38
 - Where clause, 6-32–6-34, 6-36–6-38
- Data redundancy, 6-24
- Data retention, 7-33
- Data scientists, 17-2
- Data security. *See also* Cybersecurity
 - blockchain, 7-33
 - cloud risks, 4-9
 - internal controls and, 3-23
 - logical access controls, 14-6–14-12
 - physical access controls, 14-6, 14-13–14-18
 - regulatory requirements, 3-23
 - software vendors', 4-7
- Data storage
 - backups as, 14-21–14-25
 - cloud-based, 4-7–4-10
 - data centers for, 14-13–14-17, 14-21–14-22
 - data lakes for, 5-9–5-11
 - data warehouses for, 5-10–5-11
 - databases for, 5-1, 5-8–5-9. *See also* Databases for digital manufacturing, 11-24
 - onsite vs. offsite, 14-13
 - risks and controls, 14-26
 - software, 4-12
 - tax data hubs for, 5-22
 - terminology, 6-16
- Data store shape, 8-19
- Data summarization, 17-6, 17-8–17-9
- Data transparency, 4-23, 7-33
- Data validity, 7-33
- Data visualization. *See also* Visualizations
 - accounting professional roles in, 18-1, 18-3, 18-34
 - audience for, 18-5
 - bar charts as, 18-16–18-18, 18-22, 18-26–18-27, 18-29–18-30, 18-32
 - box plots as, 18-20–18-21
 - of business value, 18-4
 - color in, 18-7–18-10, 18-18–18-19
 - comparison in, 18-14–18-19
 - composition of data in, 18-14–18-19
 - dashboards as. *See* Dashboards
 - for data analytics, 5-16, 5-21, 9-31–9-34, 11-30, 12-40, 12-42, 12-44, 13-30, 17-17, 17-19–17-20, 17-22, 18-1–18-34
 - data flow diagrams as, 8-10, 8-19–8-23
 - defined, 18-3
 - design concepts for, 18-5, 18-7–18-13
 - distribution of data in, 18-14, 18-19–18-21
 - explanatory, 18-25–18-34
 - for exploratory analysis, 18-13–18-25
 - of fixed asset data, 10-35
 - for geospatial analytics, 17-22, 18-14, 18-23-18-24, 18-29–18-30
 - geospatial maps as, 18-23-18-24, 18-29–18-30
 - heat maps as, 18-18–18-19
 - histograms as, 18-19–18-20
 - iconography in, 18-12–18-13
 - infographics as, 18-27–18-28
 - line charts as, 18-21–18-22
 - of Monte Carlo simulations, 17-17
 - overview of, 18-1
 - pie charts as, 18-15–18-16
 - of population, 18-2
 - power of, 18-2
 - real-world example, 18-3
 - relationships between data points in, 18-14, 18-21–18-23
 - scatter plots as, 18-22–18-23
 - selection of techniques, 18-25
 - setting tone with, 18-6–18-7
 - stacked bar charts as, 18-17–18-18, 18-22
 - storyboards as, 18-30–18-34
 - storytelling with, 18-2–18-4, 18-25–18-34
 - tree maps as, 18-16
 - typography in, 18-11–18-12
 - user-focused design for, 18-5
 - white space in, 18-10–18-11
- Data warehouses, 5-10–5-11
- Database management systems (DBMS), 4-6, 4-9, 4-12, 5-8
- Databases
 - accounting professional use of, 6-1
 - classes in, 6-18–6-19
 - cloud-based, 4-9
 - columns in, 6-16–6-17
 - conversion processes, 11-27–11-28
 - as data element, 5-2–5-3
 - data interaction in, 6-29–6-38
 - data storage in, 5-1, 5-8–5-9
 - database management systems, 4-6, 4-9, 4-12, 5-8
 - database shapes, 8-14
 - defined, 5-2, 5-8, 6-16
 - entity relationship diagrams of, 6-20–6-28, 8-10–8-11, 9-29, 10-29–10-30, 11-27, 12-37, 13-27
 - field names in, 6-16–6-18
 - human resources, 6-16–6-17, 9-29
 - marketing, sales, and collections processes, 12-37–12-38
 - NoSQL, 6-19–6-20
 - object-oriented, 6-18–6-19
 - objects in, 6-18–6-19
 - overview of, 5-8–5-9, 6-1
 - production, 5-9
 - purchasing and payments processes, 10-29–10-31
 - purpose of, 6-15
 - queries in, 5-8, 6-29–6-38
 - querying languages for, 5-8, 6-29–6-38
 - relational, 5-8, 6-15–6-18, 6-20–6-38, 8-10–8-11, 11-27–11-28, 12-37–12-38, 13-27
 - scalability of, 5-9, 6-15, 6-19–6-20
 - schema for, 5-9, 8-10–8-11
 - selection of, 6-15–6-18
 - tax data hubs as, 5-22
 - types of, 6-15–6-20
 - variables in, 6-18–6-19
- Data-driven decision making, 1-20–1-23
- DBMS (database management systems), 4-6, 4-9, 4-12, 5-8
- DCL (data control language), 6-29
- DDL (data definition language), 6-29
- DDoS (distributed denial-of-service) attacks, 16-22–16-23
- Debt-to-equity ratio, 1-20
- Decentralization, with blockchain, 7-28
- Decentralized ledgers, 7-26–7-28
- Decentralized systems, 4-19
- Decision context, 1-22
- Decision making
 - context for, 1-22
 - data-driven, 1-20–1-23
 - decision support systems, 4-3
 - financial reporting for, 13-3, 13-25–13-31
 - information for, 1-2–1-3, 1-18, 1-20–1-23, 13-3
- Decision shapes, 8-13
- Decision support systems (DSS), 4-3
- Decryption, 7-24–7-25
- Delivery
 - business-to-business sales, 12-13, 12-18–12-20
 - business-to-consumer sales, 12-3, 12-6–12-8
 - delivery receipts, 12-6–12-7
 - geospatial analytics for, 17-22
 - risks and controls, 12-7–12-8
- Denial-of-service (DoS) attacks, 16-22–16-23, 16-26
- Dependent variables, 17-14–17-16
- Deposit slips, 12-30–12-31
- Depreciation of fixed assets, 10-17–10-18
- Descriptive analytics
 - for audits and compliance, 5-18
 - data visualization of, 18-14
 - defined, 5-16, 17-4–17-5, 18-14
 - for financial accounting, 5-19
 - for managerial accounting, 5-20–5-21
 - for tax accounting, 5-22
- Design concepts
 - color in, 18-7–18-10
 - defined, 18-7
 - fundamental, 18-7–18-13
 - iconography in, 18-12–18-13
 - typography in, 18-11–18-12
 - user-focused, 18-5
 - white space in, 18-10–18-11
- Design stage, of SDLC, 6-3, 6-6
- Detective controls
 - for asset misappropriation, 15-16–15-17, 15-20–15-21
 - continuous monitoring controls as, 3-13–3-14, 10-28
 - defined, 3-5
 - examples, 3-6–3-7
 - for financial statement fraud, 15-24–15-25, 15-27–15-30
 - overview of, 3-5
 - in time-based model, 3-7
- Development stage, of SDLC, 6-3, 6-7
- DFDs. *See* Data flow diagrams (DFDs)
- Diagnostic analytics
 - for audits and compliance, 5-18
 - data visualization of, 18-14
 - defined, 5-16, 17-4–17-5, 18-14
 - for financial accounting, 5-19
 - linear regression as, 17-15
 - for managerial accounting, 5-20
 - for tax accounting, 5-22
- Dictionary attacks, 16-17
- Differential backups, 14-23–14-24
- Digital manufacturing, 11-22–11-25
- Digital twins, 11-22–11-23
- Direct cutover implementation, 6-8
- Direct labor, 11-16–11-17
- Direct material costs, 11-17

- Direct-to-consumers business models, 1-8
- Disaster recovery (DR), 11-9, 14-19-14-20. *See also* Backups
- Discrepancy reports, 10-6
- Disruptive attacks
- cybersecurity for, 16-21-16-28
 - denial-of-service, 16-22-16-23, 16-26
 - malware, 16-3, 16-23-16-28
 - real-world examples, 16-21, 16-25-16-26
- Disruptive technologies
- Autonomous Things as, 7-11-7-12
 - blockchain as, 7-23-7-34
 - defined, 7-3
 - emerging technologies distinguished, 7-3
 - extended reality as, 7-9-7-10, 7-12
 - gamification as, 7-10
 - Internet of Things as, 7-7-7-9, 7-12
 - opportunities with, 7-7-7-12, 7-21-7-22
 - overview of, 7-1
 - risk assessment and mitigation, 7-4-7-6
 - robotic process automation as, 7-12-7-22
- Distributed denial-of-service (DDoS) attacks, 16-22-16-23
- Distributed ledgers, 7-26. *See also* Blockchain
- Distributed systems, 4-20
- Distribution
- conversion processes including, 11-13
 - of data, 18-14, 18-19-18-21
- DML (data manipulation language), 6-29
- Document flowcharts
- defined, 8-9
 - for fixed asset purchasing processes, 10-19-10-21
 - for inventory purchasing processes, 10-9-10-11
 - for payments processes, 10-26
- Document shapes, 8-14
- Documentation. *See also* Recording; Reporting
- accounting professional role, 8-1, 8-24
 - for audit effectiveness, 8-6-8-8, 8-11, 8-24
 - business process model and notation for, 8-9-8-10
 - checklists for, 8-8
 - of data, 8-10-8-11, 8-19-8-23
 - data flow diagrams for, 8-10, 8-19-8-23
 - defined, 8-2
 - for efficient knowledge transfer, 8-6
 - entity relationship diagrams for, 8-10-8-11
 - flowcharts for, 8-9, 8-12-8-18
 - goals of, 8-2-8-5
 - of internal controls, 8-2, 8-17
 - narratives for, 8-8-8-9
 - operator, 8-3-8-4
 - of organizational charts, 8-6-8-8
 - of overall business, 8-6-8-8
 - overview of, 8-1
 - for process improvements, 8-6, 8-17
 - of processes and systems, 8-8-8-18
 - program, 8-3-8-4
 - questionnaires for, 8-8
 - source documents as, 10-3-10-4, 13-9
 - for standardization, 8-6
 - systems, 8-3, 8-8-8-23
 - user, 8-3-8-5
- Dormant access, 14-11
- DoS (denial-of-service) attacks, 16-22-16-23, 16-26
- Double dipping, 15-18, 15-20
- DQL. *See* Data Query Language
- DR (disaster recovery), 11-9, 14-19-14-20. *See also* Backups
- Drones, 3-12-3-13, 7-11
- DSS (decision support systems), 4-3
- Dumpster diving, 16-12-16-13
- Dynamic data, 5-6-5-7
- E**
- Eavesdropping, 16-12-16-13, 16-18
- Economic extortion, 15-5
- Economic feasibility, 6-5
- Electronic funds transfers (EFTs), 12-31
- Email
- data communication software, 4-6
 - phishing, 16-9-16-13
- Emerging technologies
- center of excellence evaluating, 7-4, 7-6
 - defined, 7-3
 - disruptive technologies distinguished, 7-3
 - overview of, 7-1
 - risk assessment and mitigation, 7-4-7-6
 - systems development incompatibility with, 6-2
- Employee benefits, 9-3, 9-5, 9-22-9-23
- Employee hiring
- background checks, 9-10
 - employee personal information collection, 9-10
 - human resources management of, 9-3, 9-5-9-13
 - job postings for. *See* Job postings
 - new hire packages, 9-10
 - offer letters, 9-10
 - onboarding process, 9-6-9-13, 9-30-9-31
- Employee onboarding
- best practices, 9-7
 - defined, 9-6
 - maturity model for, 9-12-9-13
 - process flowchart of, 9-7-9-10
 - reporting and analytics, 9-30-9-31
 - risks and control activities, 9-10-9-11
- Employee reimbursement
- double dipping, 15-18, 15-20
 - expense reports for, 7-21-7-22, 15-2, 15-18-15-20
 - expense tracking system, 9-10
 - fraud in, 15-2, 15-18-15-20, 15-39, 18-23
 - human resources management of, 9-5, 9-10
- Employee termination
- data visualization of, 18-31-18-34
 - defined, 9-13
 - exit interviews, 9-14, 9-32-9-33
 - human resources management of, 9-3, 9-5, 9-13-9-19
 - maturity model for, 9-18-9-19
 - process flowchart of, 9-14-9-16
 - reporting and analytics, 9-32-9-33
 - risks and control activities, 9-17-9-19
 - severance pay, 9-14
 - turnover rates, 9-32
 - user access changes, 14-10
- Employees
- codes of conduct for, 15-12
 - compensation of. *See* Payroll
 - direct labor, 11-16-11-17
 - efficient knowledge transfer between, 8-6
 - employment life cycle of, 9-3
 - fictional, 9-31
 - fraud awareness training, 15-3
 - fraud by, 15-2, 15-4-15-5, 15-7-15-8, 15-18-15-20, 15-39, 18-23
 - fraud disclosure, 15-8, 15-13
 - fraud effects on, 15-3, 15-22
 - ghost, 9-34
 - hiring of new. *See* Employee hiring
 - human resources management. *See* Human resources
 - indirect factory labor, 11-16-11-17
 - labor-leisure trade-off, 9-20
 - in organizational charts, 8-6-8-8
 - payroll for. *See* Payroll
 - remote work by, 3-10, 6-14, 9-7, 14-20, 18-22
 - termination of. *See* Employee termination
 - as transaction processing system users, 4-3
 - transfers of, 14-10
 - turnover rates, 9-32
 - turnover risks, 9-7
 - whistleblowers among, 15-8, 15-13
- Encryption, 7-24-7-26, 16-12
- Engineering bill of materials, 11-4
- Enterprise resource planning (ERP) systems
- activity-based cost accounting for, 11-20
 - benefits of, 4-23
 - bill of materials data from, 11-4-11-5
 - configurable, 4-26
 - conversion processes in, 11-26-11-30
 - costs of, 4-28
 - customizable, 4-27
 - data visualization tools in, 18-3
 - defined, 4-22
 - financial reporting in, 13-25-13-31
 - as ideal state, 4-22
 - implementation of, 4-25-4-28
 - marketing, sales, and collections processes in, 12-36-12-44
 - modules and features, 4-23-4-26. *See also specific modules*
 - need for, 4-22
 - out-of-the-box, 4-26
 - purchasing and payments processes in, 10-28-10-37
 - real-world example, 4-27, 13-26
 - for systems integration, 4-22-4-25
- Enterprise risk management (ERM)
- COSO ERM Framework, 3-26-3-28, 14-3
 - database selection and, 6-15
 - defined, 2-5
 - of emerging and disruptive technology risks, 7-4-7-6
 - human resources and payroll analytics for, 9-28-9-35
 - internal controls for, 3-16
 - overview of, 2-5-2-6
 - risk assessments for, 2-5-2-18
 - risk response for, 2-5, 2-18-2-22
- Entity integrity, 6-24
- Entity relationship diagrams (ERDs)
- conceptual, 6-21-6-22, 8-11
 - of conversion processes database, 11-27
 - defined, 6-21, 8-10
 - for documentation, 8-10-8-11
 - of general ledger database, 13-27
 - of human resources database, 9-29
 - logical, 6-21-6-23, 8-11
 - of marketing, sales, and collections processes database, 12-37
 - physical, 6-21, 6-23-6-28, 8-11, 11-27

- of purchasing and payments processes
 - database, 10-29–10-30
 - of relational databases, 6-20–6-28, 8-10–8-11, 11-27, 12-37, 13-27
 - E-procurement systems, 10-13, 11-13
 - ERDs. *See* Entity relationship diagrams (ERDs)
 - ERM. *See* Enterprise risk management (ERM)
 - ERP systems. *See* Enterprise resource planning (ERP) systems
 - Errors
 - change management to minimize, 14-27–14-33
 - internal controls to avoid, 3-3, 3-5
 - manual controls subject to, 3-10–3-11
 - revenue recognition, 12-26–12-28
 - ESS (executive support systems), 4-3
 - Event log data, 17-19
 - Exabytes, data, 5-13
 - Excel (Microsoft)
 - conditional statements in, 7-14
 - data analytics in, 1-26, 4-11–4-12, 5-16, 17-25
 - data in, 5-1, 5-3, 5-12, 18-3
 - data visualization in, 18-11
 - flowcharts, 8-12
 - formulas and functions, 4-12
 - pivot tables in, 17-9
 - software, 4-6, 4-11–4-12
 - Executive support systems (ESS), 4-3
 - Executives. *See* Management
 - Exit interviews, 9-14, 9-32–9-33
 - Expense reports
 - fraudulent, 15-2, 15-18–15-20
 - robotic process automation examination of, 7-21–7-22
 - Expense tracking system, 9-10
 - Expenses
 - capitalization of, 15-27
 - capitalized costs shown as, 15-29–15-30
 - data visualization of, 18-22–18-23
 - expense cutoff schemes, 15-27–15-30
 - overstatement of, 15-29–15-30
 - understatement of, 15-26–15-28
 - Explanatory analysis
 - dashboards for, 18-28–18-30
 - data visualization of, 18-25–18-34
 - defined, 18-25
 - infographics for, 18-27–18-28
 - storyboards for, 18-30–18-34
 - sweet spot for, 18-26
 - Exploratory data analytics
 - anomaly detection in, 17-7–17-8
 - classification in, 17-11–17-13
 - clustering in, 17-10–17-11
 - data summarization in, 17-8–17-9
 - data visualization of, 18-13–18-25
 - defined, 17-7, 18-14
 - Extended reality (XR), 7-9–7-10, 7-12
 - eXtensible Business Reporting Language (XBRL), 5-19, 13-16–13-19
 - eXtensible Markup Language (XML), 13-16
 - External audits
 - blockchain applications, 7-31–7-32
 - data analytics for, 5-17–5-18
 - documentation for, 8-6, 8-7, 8-11
 - for fraud, 15-8
 - of internal controls, 3-17, 3-22
 - regulatory requirements, 3-22
 - risk mitigation, 3-17
 - External entity shape, 8-19
 - External fraud, 15-4
 - External risks
 - compliance, 2-8, 2-10, 3-1
 - defined, 2-8
 - financial, 2-8
 - physical, 2-8, 2-12
 - strategic, 2-8, 2-11–2-12
 - Extortion, economic, 15-5
- F**
- Faithful representation, information as, 1-21, 13-3
 - FASB (Financial Accounting Standards Board), 1-20–1-21
 - FCPA (Foreign Corrupt Practices Act), 10-12–10-13
 - FDA (Food and Drug Administration), 2-10
 - Feasibility
 - economic, 6-5
 - operational, 6-5
 - risk response based on, 2-21
 - robotic process automation analysis of, 7-17, 7-19–7-21
 - studies, 6-4–6-5
 - technical, 6-5
 - Featured professionals. *See* Accounting professionals
 - Federal Trade Commission, 15-4
 - FEDI (financial electronic data interchange), 12-33
 - FEI (Financial Executives Institute), 3-23
 - Fictitious employees tests, 9-31
 - Fictitious invoices, 15-21
 - Fictitious sales larceny, 15-17
 - Field names, database, 6-16–6-18
 - Fields, data, 5-2–5-3, 6-16–6-17
 - calculated, 11-28
 - File Transfer Protocol (FTP), 4-6, 16-12
 - Files, data, 5-2–5-3, 6-16
 - Financial accounting, 1-4, 5-18–5-19, 7-33
 - Financial Accounting Standards Board (FASB), 1-20–1-21
 - Financial electronic data interchange (FEDI), 12-33
 - Financial Executives Institute (FEI), 3-23
 - Financial information, tagging, 13-16–13-18
 - Financial losses
 - as technology risk, 7-4
 - understatement of, 15-26–15-28
 - Financial module (ERP system)
 - conversion processes in, 11-26
 - defined, 4-23
 - features of, 4-24, 4-26
 - financial reporting in, 13-25–13-26
 - marketing, sales, and collections processes in, 12-36
 - purchasing and payments processes in, 10-29–10-30
 - Financial reporting. *See also* Financial statements
 - accounting information system role in, 13-2–13-5
 - accounting professional roles in, 13-1–13-2, 13-32
 - accounting transaction identification for, 13-9
 - accounting transaction journalization for, 13-9
 - adjusted trial balance for, 13-12
 - for balanced scorecard, 13-22–13-24
 - chart of accounts for, 13-6–13-7
 - consolidated reporting requirements, 13-5–13-6
 - for cost accounting, 13-20–13-21
 - cost-effectiveness of, 13-4
 - decision making with, 13-3, 13-25–13-31
 - defined, 13-2
 - during reporting period, 13-8–13-11
 - end of fiscal year, 13-12–13-13
 - end of reporting period, 13-8, 13-11–13-12
 - in ERP system, 13-25–13-31
 - financial statement generation for, 13-6–13-15
 - financial statement preparation for, 13-12
 - internal controls over, 13-13–13-15
 - journal entries adjusted and posted to ledgers for, 13-12
 - journal entries closed and posted to ledgers for, 13-12
 - journal entries posted to ledgers for, 13-10–13-11
 - journal entry testing for accurate, 13-11, 13-27–13-29, 13-31
 - for managerial accounting, 13-20–13-24, 13-26
 - objectives of, meeting, 13-3–13-4
 - overview of, 13-1
 - post-closing trial balance for, 13-12
 - process flowchart for, 13-7–13-8
 - process of, 13-7–13-13
 - real-world example, 13-26
 - reporting and insights on, 13-29–13-31
 - for responsibility accounting, 13-21–13-22
 - standardized, 13-17–13-18
 - trial balance roll-forward for, 13-27–13-29
 - unadjusted trial balance for, 13-11–13-12
 - XBRL for, 13-16–13-19
- Financial risks, 2-8–2-9
- Financial statement fraud
 - asset misappropriation vs., 15-14
 - assets, revenues, and profits overstatement as, 10-21, 12-26–12-27, 15-23–15-26
 - characteristics of, 15-22–15-30
 - defined, 15-22
 - financial performance overstatement as, 15-23–15-28
 - financial performance understatement as, 15-28–15-30
 - frequency and cost of, 15-22
 - horizontal analysis for, 15-13
 - journal entry testing for, 13-11, 13-31
 - liabilities, expenses, and losses understated for, 15-26–15-28
 - management involvement in, 15-30
 - overview of, 15-5
 - revenue recognition, 12-25–12-28
 - tone at the top affecting, 15-12
 - vertical analysis for, 15-13
- Financial statements. *See also* Financial reporting
 - accounting information system generation of, 13-6–13-15
 - activities impacting, 12-29
 - balance sheet as, 13-29–13-30, 13-43
 - consolidated, 13-5–13-6
 - dashboards of data from, 13-30
 - fraud. *See* Financial statement fraud
 - horizontal analysis of, 13-30, 15-13

I-12 SUBJECT INDEX

- Financial statements (*continued*)
income statement as, 13-29–13-30, 13-43
notes to, 13-29
payroll effects on, 9-21–9-22
regulatory requirements for, 3-22, 15-22
retained earnings statement as, 13-43
risk management with accurate, 3-1
robotic process automation of, 7-21
statement of cash flows as, 10-24, 12-29, 13-29, 13-43
statement of stockholders' equity as, 13-29, 13-43
vertical analysis of, 13-30, 15-13
- Financing events, 1-10, 10-24, 12-29
- Finished goods, 10-3
- Fixed Asset Subsidiary Ledger, 10-19
- Fixed assets
business processes framework for, 10-17
capital expenditures on, 10-17
cost accounting for, 11-17
defined, 10-17
depreciation of, 10-17–10-18
disposal or transfer of, 10-17
document flowcharts for, 10-19–10-21
internal controls for acquiring, 10-21–10-23
PP&E as, 10-2, 10-17
procurement of, 10-17–10-18
purchasing and payments processes for, 10-1–10-2, 10-17–10-23, 10-34–10-35, 11-17
receiving and tagging of, 10-18
reconciliation of, 10-19
recording of, 10-18–10-19
reporting and analytics, 10-34–10-35
- Flowchart shapes
connector, 8-13
database, 8-14
decision, 8-13
document, 8-14
flowline, 8-13
horizontal, 8-14
input/output, 8-14
manual input, 8-14
manual operation, 8-14
merge, 8-13
process, 8-13
terminator, 8-13
vertical, 8-14
- Flowcharts. *See also* Data flow diagrams
for bank reconciliation, 8-15–8-16
for business-to-business sales, 12-22–12-23
for business-to-consumer sales, 12-8–12-9
for collections, 12-33–12-34
defined, 8-9
document, 8-9, 10-9–10-11, 10-19–10-21, 10-26
for documentation, 8-9, 8-12–8-18
examples, 8-12, 8-15, 8-18
process. *See* Process flowcharts
for production process, 11-10–11-12
program, 8-9
real-world applications, 8-17
shapes in, 8-12–8-16
swim lanes, 8-17–8-18, 13-7–13-8
systems, 8-9, 8-12–8-18
- Flowlines, 8-13
- Fonts, 18-11–18-12
- Food and Drug Administration (FDA), 2-10
- Forecasting, 17-6, 17-16–17-17, 18-21. *See also* Predictive analytics
- Foreign Corrupt Practices Act (FCPA), 10-12–10-13
- Foreign keys, 6-24–6-25
- Form W-2, 9-33
- Form W-3, 9-33
- Frameworks
COBIT, 14-1–14-5, 16-6–16-8
COSO Enterprise Risk Management Framework, 3-26–3-28, 14-3
COSO Internal Control–Integrated Framework, 3-23–3-26, 14-3
defined, 3-21
fraud triangle, 15-8–15-11
internal control, 3-21–3-28
IT governance, 14-2
NIST Cybersecurity Framework, 16-6–16-8
- Franchise business models, 1-8
- Fraud
accounting professional defense against, 15-1, 15-8–15-13, 15-31
anti-fraud culture as deterrent, 15-3, 15-12
asset misappropriation and, 15-5, 15-14–15-21
audits to uncover. *See* Audits
behavioral red flags indicating, 15-7–15-8
change management to avoid, 14-33
continuous fraud monitoring, 10-28
corruption schemes, 15-5
data analytics to detect, 15-13, 15-20, 15-25, 15-29, 15-31, 15-39, 17-12–17-13, 17-16
data visualization to detect, 18-23
defined, 15-2
encryption to prevent, 7-26
external, 15-4
financial statement. *See* Financial statement fraud
fraud triangle, 15-8–15-11
internal controls to avoid, 3-3, 3-5, 3-13, 12-27, 15-3, 15-8, 15-11, 15-15–15-17, 15-20–15-21
management override allowing for, 3-6, 15-30
non-behavioral red flags indicating, 15-13, 15-19–15-20
occupational or internal, 15-4–15-5
opportunity as motivation, 15-10
overview of, 15-1
in payments processes, 10-27–10-28. *See also* Fraudulent disbursements
payroll, 9-4, 9-25, 9-34, 15-12, 15-21
perceived pressure as motivation, 15-9–15-10
prevention techniques, 15-11–15-12
pricing process, 12-14
in purchasing processes, 10-5, 10-14, 10-21–10-22
rationalization as motivation, 15-10
real-world example, 12-25, 15-6
reputational risks with, 2-11
revenue recognition, 12-25–12-28
as risk, 12-27, 15-2–15-3
risk assessments, 15-3, 15-8
risk management, 15-8–15-13
robotic process automation to uncover, 7-21
sales, 12-40–12-41, 15-17. *See also* Channel stuffing
software development and, 4-7
user access leading to, 14-12, 14-18
whistleblowers on, 15-8, 15-13
- Fraudulent disbursements
as asset misappropriation, 15-18–15-21
billing schemes as, 15-21
defined, 15-18
expense reimbursement schemes, 15-2, 15-18–15-20, 15-39, 18-23
to fictitious vendors, 10-27, 15-21
in payments processes, 10-27–10-28
payroll schemes, 15-21
- Freemium business models, 1-8
- FTP (File Transfer Protocol), 4-6, 16-12
- Full backups, 14-22–14-23
- ## G
- GAAP (generally accepted accounting principles), 1-3, 11-15, 12-24–12-25, 13-13–13-14, 13-43
- Gamification, 7-10
- General journals, 13-9
- General ledgers
adjusted trial balance of, 13-12
database design for, 13-27
defined, 13-26
double-entry, vs. blockchain, 7-32–7-33
in ERP system, 13-25–13-26
journal entry testing for, 13-11, 13-27–13-29, 13-31
monitoring of, 13-30
post-closing trial balance of, 13-12
posting adjusted journal entries to, 13-12
posting closing journal entries to, 13-12
posting journal entries to, 13-10–13-11
trial balance roll-forward of, 13-27–13-29
unadjusted trial balance of, 13-11–13-12
- Generally accepted accounting principles (GAAP), 1-3, 11-15, 12-24–12-25, 13-13–13-14, 13-43
- Geospatial analytics, 17-6, 17-22–17-23
data visualization of, 17-22, 18-14, 18-23–18-24, 18-29–18-30
- Geospatial maps, 18-23–18-24, 18-29–18-30
- Geotags, 5-20
- Ghost employees, 9-34
- Giang, Holly, 10-37–10-38
- Gigabytes, data, 5-13
- Giles, Joshua, 17-24–17-25
- Go, 4-5
- Governance
COSO ERM Framework on, 3-27
cybersecurity, 16-6–16-7
IT, 14-2–14-5
- Grandfather-father-son redundant backups, 14-25
- Graphical user interfaces (GUIs), 6-6
- Gratuities, illegal, 15-5
- Gross profit margin, 1-20
- Growing businesses
information systems for, 4-15–4-21
systems configurations, 4-18–4-21
systems integration, 4-17–4-18
- Growth
acquisition-based, 4-15–4-16
organic, 4-15–4-16
- GUIs (graphical user interfaces), 6-6
- ## H
- Hackers, 16-2. *See also* Cyberattacks
- Hash strings, 7-31–7-32
- Heat maps
data visualization with, 18-18–18-19
defined, 2-17, 18-18
of inherent risk, 2-19

of residual risk, 2-20
 as risk matrix, 2-17-2-20
 Hiring. *See* Employee hiring
 Histograms, 18-19-18-20
 Horizontal financial statement analysis, 13-30, 15-13
 Horizontal flowchart shapes, 8-14
 Horizontal organizational charts, 8-7-8-8
 Horizontal scalability, 5-9
 Hot backup sites, 14-21-14-22
 HTML, 4-5
 Human resources
 as acquisition and payment process, 9-2, 9-25
 categorization of responsibilities, 9-5
 cost accounting for, 11-16-11-17
 data analytics, 9-28-9-35
 databases, 6-16-6-17, 9-29
 defined, 9-3
 employee operations, 9-3-9-4. *See also*
 Employee benefits; Employee hiring;
 Employee termination
 outsourced model of, 9-3
 overview of, 9-1
 payroll relationship to, 9-2-9-6, 9-20
 reporting and insights on, 9-30-9-34
 segregation of duties, 9-6
 virtual environment challenges for, 9-7
 Human Resources Management module
 (ERP system), 4-24
 Hybrid clouds, 4-8

I

IaaS (infrastructure as a service), 4-8
 ICFR (internal controls over financial reporting), 13-13-13-15
 Iconography, 18-12-18-13
 IIA (Institute of Internal Auditors), 3-16-3-18, 3-23
 IIoT (Industrial Internet of Things), 11-22, 11-24
 Illegal gratuities, 15-5
 IMA (Institute of Management Accountants), 3-23
 Immutability of blockchain, 7-28, 7-31-7-32
 Impact of risk, 2-14-2-20
 Implementation
 business functions for, 2-3-2-4
 data lake, 5-10
 data warehouse, 5-10
 direct cutover, 6-8
 ERP system, 4-25-4-28
 internal controls, 3-10-3-13
 management responsibility for, 1-18
 parallel, 6-8
 phased, 6-8
 pilot, 6-8
 systems development, 6-3, 6-7-6-8
 Income statements, 13-29-13-30, 13-43
 Incremental backups, 14-24
 Independence of auditors, 3-20
 Independent variables, 17-14-17-16
 Indirect factory labor, 11-16-11-17
 Indirect material costs, 11-17
 Industrial Internet of Things (IIoT), 11-22, 11-24
 Infographics, 18-27-18-28
 Information. *See also* Accounting information systems; Data
 comparability of, 1-21, 13-3

COSO ERM Framework on, 3-27
 COSO Internal Control Framework on, 3-25
 cost-benefit analysis of, 1-22, 13-4
 data flow diagrams of, 8-10, 8-19-8-23
 data transformed into, 1-3-1-4, 1-20, 5-2, 9-4
 decision context for, 1-22
 decision making with, 1-2-1-3, 1-18, 1-20-1-23, 13-3
 defined, 1-3
 enhancing characteristics of, 1-21, 13-3
 as faithful representation, 1-21, 13-3
 financial, tagging in XBRL, 13-16-13-18
 flow of, in supply chain, 10-7-10-8
 fundamental characteristics of, 1-20-1-21, 13-3
 importance of, 1-2-1-11
 larceny as theft of, 15-17
 management use of, 1-18-1-23
 overview of accounting and, 1-1
 quality of, 1-20-1-22, 3-1, 4-23, 13-3
 relevance of, 1-21, 1-23, 13-3
 supply and demand, 1-3
 timeliness of, 1-21, 13-3
 understandability of, 1-21, 13-3
 verifiability of, 1-21, 13-3
 Information events, 1-10, 1-13
 Information quality
 for decision making, 1-20-1-22, 13-3
 defined, 1-20
 in ERP systems, 4-23
 internal controls for. *See* Internal controls for risk management, 3-1
 Information systems. *See also* Accounting information systems; IT systems; *Systems entries*
 accounting professional use of, 6-1
 basic business model comparison, 1-9
 cloud computing, 4-7-4-10. *See also* Cloud computing
 decision support systems, 4-3
 defined, 1-3
 executive support systems, 4-3
 for growing businesses, 4-15-4-21
 management information systems, 4-3
 online analytical processing, 4-2
 online transaction processing, 4-2
 software, 4-5-4-7. *See also* Software transaction processing systems, 4-2-4-5, 6-3, 9-22
 users of, 4-3
 Information Systems Audit and Control Association (ISACA), 14-2, 16-28
 Information technology. *See* IT entries
 Infrastructure as a service (IaaS), 4-8
 Inherent risks, 2-19
 In-house development of software, 4-6-4-7
 Inline XBRL (iXBRL), 13-17
 Innovation, risk driving, 2-2. *See also* Technology innovations
 Input
 business process, 1-8, 1-10, 1-12-1-13, 9-2, 11-2
 data, 1-3-1-4
 defined, 1-3
 input/manual input shapes, 8-14
 Institute of Internal Auditors (IIA), 3-16-3-18, 3-23

Institute of Management Accountants (IMA), 3-23
 Interactive dashboards, 18-28-18-30
 Internal audits
 auditors performing, 3-20
 blockchain applications, 7-31-7-32
 data analytics for, 5-17-5-18
 data visualization for, 18-31-18-34
 documentation for, 8-6-8-7
 of emerging and disruptive technology risks, 7-4-7-5
 for fraud, 15-8, 15-13
 of internal controls, 3-16-3-17, 3-20-3-21
 of payroll, 9-35
 of purchasing and payments processes, 10-37-10-38
 risk assessments, 2-31-2-32
 robotic process automation for, 7-18-7-21
 skills required, 1-6-1-7
 of user access, 7-18-7-20
 Internal controls
 assessment of, 3-16-3-21, 3-25
 automated, 3-11-3-13, 12-26, 14-12, 14-27
 for business continuity, 14-26
 for business-to-business sales, 12-13-12-15, 12-17, 12-19-12-20
 for business-to-consumer sales, 12-4, 12-6-12-8
 for change management, 14-33
 classification of, 3-8-3-15
 for collections, 12-6, 12-29-12-35
 collusion to circumvent, 3-6
 continuous monitoring, 3-13-3-14, 10-28
 controls/control activities, 3-2, 3-25
 corrective, 3-5-3-7, 3-10
 COSO Internal Control-Integrated Framework, 3-23-3-26, 14-3
 for cost accounting, 11-21
 for cybersecurity, 16-7, 16-13-16-16, 16-20, 16-23, 16-28
 data analytics, 3-14
 data security and, 3-23
 defined, 3-2
 for denial-of-service attacks, 16-23
 detective. *See* Detective controls
 documentation of, 8-2, 8-17
 for employee onboarding, 9-10-9-11
 for employee termination, 9-17-9-19
 environment for, 3-25
 external audits of, 3-17, 3-22
 over financial reporting, 13-13-13-15
 frameworks for, 3-21-3-28
 for fraud detection and prevention, 3-3, 3-5, 3-13, 12-27, 15-3, 15-8, 15-11, 15-15-15-17, 15-20-15-21
 functions of, 3-2-3-7
 implementing, 3-10-3-13
 internal audits of, 3-16-3-17, 3-20-3-21
 for inventory, 3-5, 3-11-3-12, 11-13-11-14
 IT application, 3-8-3-10
 IT general, 3-8-3-9, 14-2-14-34
 lines of defense for, 3-16-3-21
 logical access, 4-14, 14-6-14-12, 16-20
 for logical reconnaissance attacks, 16-14-16-15
 for malware attacks, 16-28
 management override of, 3-5-3-6, 15-30

I-14 SUBJECT INDEX

- Internal controls (*continued*)
management responsibilities, 3-16–3-20, 3-22, 15-22
manual, 3-10–3-11, 3-13, 14-12, 14-27
for manufacturing operations, 11-9
maturity models and, 3-18–3-20, 9-12–9-13, 9-18–9-19, 10-15, 10-22–10-23, 12-34–12-35
monitoring of, 3-25
number of, 3-3
for order placement, 10-13–10-14
overview of, 3-15
for payments processes, 10-27–10-28
for payroll, 9-24–9-27
penalties for violation of, 3-22
physical, 3-8, 3-10
physical access, 4-14, 14-6, 14-13–14-18, 16-16
for physical reconnaissance attacks, 16-13
policies and procedures as, 3-15, 3-25, 13-13
preventive. *See* Preventive controls
for product development, 11-6
for production planning and scheduling, 11-8
over purchasing processes, 10-11–10-16, 10-21–10-23
for quality management, 11-10
for receiving purchases, 10-15–10-16
regulatory requirements, 3-2, 3-22–3-23, 3-25, 13-13, 14-27, 15-3, 15-22
reports on, 3-22, 3-24
for revenue recognition, 12-26–12-28
risk assessments for, 3-25
for risk management, 3-1–3-37, 4-13–4-14, 9-10–9-11, 9-17–9-19, 9-24–9-27, 10-11–10-16, 10-22, 10-27, 11-6, 11-8–11-10, 11-13–11-14, 11-21, 12-4, 12-6–12-8, 12-13–12-15, 12-17, 12-19–12-20, 12-26–12-35, 13-13–13-15, 14-12, 14-17–14-18, 14-26, 14-33
segregation of duties, 3-3–3-4, 3-12, 4-14
for startups and small businesses, 4-13–4-14
for supply chain management, 11-13–11-14
time-based model of, 3-6–3-7
user access, 4-14, 14-6–14-18, 16-16, 16-20
for vendor selection and management, 10-12–10-13
weaknesses of, 3-5–3-6
- Internal controls over financial reporting (ICFR), 13-13–13-15
- Internal fraud, 15-4–15-5
- Internal Revenue Service (IRS), 1-2
- Internal risks
defined, 2-7
financial, 2-8–2-9
operational, 2-8–2-9
reputational, 2-8–2-11
- Internet of Things (IoT), 4-12–4-13, 7-7–7-9, 7-12, 11-22, 11-24
- Inventory
asset misappropriation, 15-16–15-17
control of, 10-4
conversion processes and supply chain management relationship to, 11-2–11-14
data visualization of, 18-19–18-20
defined, 10-3
document flowcharts for, 10-9–10-11
documentation of processes, 8-8
financial statement fraud and, 15-23–15-25
finished goods as, 10-3
internal controls, 3-5, 3-11–3-12, 11-13–11-14
internal controls for purchasing, 10-11–10-16
management of, 10-3, 10-6–10-9, 11-3, 11-12–11-14, 12-10, 12-19
physical count of, 3-5, 3-11, 8-8
physical flow of, 10-7–10-8
product costs and, 11-18
purchasing and payments processes for, 10-1–10-16, 10-32–10-34
raw materials as, 10-3–10-6, 10-32–10-34, 11-7, 11-17
work in process as, 10-3
- Inventory control, 10-4
- Inventory management
business-to-business sales, 12-19
business-to-consumer sales, 12-10
conversion processes and, 11-3, 11-12–11-14
defined, 10-6, 11-12, 12-10
overview of, 10-6–10-7
purchasing and payments processes and, 10-3, 10-6–10-9
working capital and, 10-8–10-9
- Investing events, 1-10, 10-24, 12-29
- IoT (Internet of Things), 4-12–4-13, 7-7–7-9, 7-12, 11-22, 11-24
- IP addresses, 16-14
- IP spoofing, 16-19–16-20, 16-22
- IRS (Internal Revenue Service), 1-2
- ISACA (Information Systems Audit and Control Association), 14-2, 16-28
- IT application controls, 3-8–3-10
- IT general controls (ITGCs)
backups as, 14-21–14-25
for business continuity, 14-19–14-21, 14-26
for change management, 14-27–14-33
COBIT framework, 14-2–14-5
defined, 3-9
examples, 3-8
for IT system risk mitigation, 14-2–14-34
logical access controls, 14-6–14-12
overview of, 3-9
physical access controls, 14-6, 14-13–14-18
user access, 14-6–14-18
- IT governance, 14-2–14-5
frameworks, 14-2. *See also* COBIT framework
- IT systems. *See also* Information systems
backups of, 14-21–14-25
business continuity planning, 14-19–14-21, 14-26
change management, 14-27–14-33
COBIT framework for, 14-1–14-5
data categorization and prioritization, 14-20–14-21
governance of, 14-2–14-5
information technology, defined, 14-2
operational continuity, 14-18–14-26
overview of, 14-1
physical protection of, 14-6, 14-13–14-18
process mining, 17-20
user access controls, 14-6–14-18. *See also* User access
- iXBRL (inline XBRL), 13-17
- J**
- Java, 4-5, 6-19
- JavaScript, 4-5
- Job postings
accounting intern, 1-0
cost and managerial accountant, 11-0
cybersecurity audit lead, 16-0
cybersecurity careers, 16-5–16-6
data governance specialist, 5-0
enterprise risk associate—operational risk, 3-0
financial data analyst—accounting, 18-0
financial systems analyst, 4-0
fixed asset accountant, 10-0
internal audit data analytics manager, 17-0
internal controls manager, 8-0
IT risk assurance associate—IT audit, 14-0
manager—payroll tax and accounting, 9-0
revenue marketing accountant, 12-0
risk management intern, 2-0
senior accountant—financial reporting, technical accounting, 13-2
senior financial analyst—financial reporting, 6-0
senior internal auditor—fraud specialist, 15-0
- Job time tickets, 11-8
- Job-order costing, 11-15
- Jobs, Steve, 2-2
- JOIN operators
database queries, 6-34–6-38
full outer join, 6-34–6-36
inner join, 6-34
left outer join, 6-34–6-35, 6-37
right outer join, 6-34
- Journals/journal entries
cash disbursements, 10-25
defined, 13-9
general, 13-9
natural language processing analysis of, 17-24
payroll, 4-4, 9-21–9-22, 9-33
posting adjusted entries to ledgers, 13-12
posting closing entries to ledgers, 13-12
posting entries to ledgers, 13-10–13-11
process mining entries, 17-20
special, 13-9
testing of entries, 13-11, 13-27–13-29, 13-31, 17-13, 17-16, 17-20
- K**
- Key performance indicators (KPIs)
for balanced scorecard, 13-22–13-24
dashboards of, 18-28. *See also* Dashboards
data analytics of, 1-25, 5-20, 5-22, 13-30
defined, 1-19
information quality from, 1-20
maturity model, 3-18
monitoring and evaluation of, 1-19, 3-13–3-14
- Keys, database, 6-24–6-25
- Kilobytes, data, 5-13
- L**
- Labeled data, 17-6, 17-11–17-13
- Labor. *See* Employees; Human resources
- Labor-leisure trade-off, 9-20
- Landing page, 18-28–18-29
- Larceny, 15-17
- Laws and legislation. *See* Regulation and legislation; *specific laws*
- Leadership. *See* Board of directors; Management
- Ledgers
blockchain, 7-25–7-28
centralized, 7-26
decentralized, 7-26–7-28
distributed, 7-26
general. *See* General ledgers
subsidiary, 10-19, 13-10

Level 0 diagrams, 8-20–8-21
 Level 1 diagrams, 8-21–8-23
 Level 2 diagrams, 8-22
 Liabilities, understatement of, 15-26–15-28.
See also Expenses
 Lift and shift, 4-17
 Likelihood of risk, 2-13–2-20
 Line charts, 18-21–18-22
 Linear regression, 17-6, 17-14–17-16, 18-21
 Lockboxes, 12-30–12-31
 Logic bombs, 16-25–16-26
 Logical access attacks
 brute-force, 16-17–16-18, 16-20
 cybersecurity for, 16-17–16-20
 defined, 16-17
 internal controls for, 16-20
 IP spoofing, 16-19–16-20
 on-path, 16-18–16-20
 Logical access controls, 4-14, 14-6–14-12, 16-20
 Logical entity relationship diagrams,
 6-21–6-23, 8-11
 Logical reconnaissance attacks
 cybersecurity for, 16-9, 16-13–16-15
 defined, 16-9, 16-13
 internal controls for, 16-14–16-15
 ping sweeps for, 16-14
 port scans for, 16-14
 Logos, 18-7
 Losses. *See* Financial losses
 Low-cost strategies, 13-20–13-21
 Lucidchart, 8-12

M

Ma, Jack, 2-2
 Machine learning, 14-12, 17-5–17-6, 17-9–17-13,
 17-23
 macOS (Apple), 4-6
 Main vendor tables, 10-12–10-13
 Maintenance stage, of SDLC, 6-3, 6-8
 Malicious code, 16-24
 Malware attacks
 cybersecurity for, 16-23–16-28
 defined, 16-24
 internal controls for, 16-28
 logic bombs, 16-25–16-26
 ransomware, 16-3, 16-24, 16-26
 Trojan horses, 16-26
 viruses, 16-24–16-25
 worms, 16-25
 Management
 business process responsibilities, 1-18–1-19
 codes of conduct for, 15-12
 cybersecurity responsibilities, 16-4
 data-driven decision making, 1-20–1-23
 financial reporting responsibilities, 13-2
 fraud by, 15-4–15-5, 15-22, 15-30. *See also*
 Financial statement fraud
 information system and business process
 iterative relationship with, 1-19–1-20
 as information systems users, 4-3
 information use by, 1-18–1-23
 internal control environment shaped by,
 3-25
 internal control override by, 3-5–3-6, 15-30
 internal control responsibilities, 3-16–3-20,
 3-22, 15-22
 IT system objectives, 14-4–14-5
 in organizational charts, 8-6–8-8
 risk response responsibilities, 2-18

tone at the top, 3-25, 15-12. *See also*
 Organizational culture
 Management accounting, 13-20. *See also*
 Managerial accounting
 Management information systems (MIS),
 4-3
 Management override, 3-5–3-6, 15-30
 Managerial accounting
 break-even analysis in, 17-17
 cost accounting as. *See* Cost accounting
 data analytics for, 5-19–5-21, 17-17
 defined, 11-14–11-15
 financial reporting for, 13-20–13-24, 13-26
 forecasting in, 17-17
 Manual controls
 automated combined with, 3-13
 automated vs., 3-11
 change to automated, 14-27
 defined, 3-10
 examples, 3-11
 overview of, 3-10–3-11
 physical vs., 3-10
 user access review as, 14-12
 Manual input shapes, 8-14
 Manual operation shapes, 8-14
 Manufacturing bill of materials, 11-4
 Manufacturing efficiency, 11-3
 Manufacturing operations, 11-3, 11-8–11-9
 digital, 11-22–11-25
 indirect factory labor for, 11-16–11-17
 Manufacturing overhead, 11-17
 Manufacturing yield, 11-30
 Marketing, sales, and collections processes.
See also Sales
 in accounting information systems, 1-12,
 1-16–1-17
 anomaly detection in, 17-7
 in basic business model, 1-9, 1-12, 2-3, 12-2
 business-to-business, 12-2, 12-12–12-23,
 12-29–12-30, 12-32–12-33
 business-to-consumer, 12-2–12-11, 12-29
 cash collections and accounts receivable,
 12-3, 12-6, 12-12–12-13, 12-19,
 12-21–12-22, 12-29–12-35, 12-43–12-44,
 13-10, 15-16–15-17
 data analytics, 12-39–12-40, 12-42–12-44,
 17-16
 databases, 12-37–12-38
 in ERP systems, 12-36–12-44
 overview of, 12-1–12-3
 reporting and insights, 12-38–12-44
 revenue recognition, 12-19, 12-24–12-28,
 12-41–12-42
 risks and controls, 2-4, 12-4, 12-6, 12-8,
 12-13–12-15, 12-17, 12-19–12-20,
 12-29–12-35
 Master production schedule (MPS), 11-7
 Materiality, defined, 15-22
 Materials requisition requests, 11-7
 Maturity models
 for accounts receivable, 12-34–12-35
 for business processes, 3-18–3-20
 defined, 3-18
 for employee onboarding, 9-12–9-13
 for employee termination, 9-18–9-19
 phases of maturity, 3-18–3-19
 for purchasing processes, 10-15, 10-22–10-23
 Megabytes, data, 5-13
 Melancon, Barry, 7-30

Merge shapes, 8-13
 Mergers, 4-16
 Messaging, 4-6
 Meta tags, 5-4
 Michel, Yanek, 11-31
 Miners, blockchain, 7-24–7-25, 7-28
 MIS (management information systems), 4-3
 Misclassification of revenue, 15-28–15-29
 Mixed reality (MR), 7-9
 Mobile technologies
 big data and, 5-15
 geospatial analytics from, 17-22
 payment processing via, 4-11
 phishing, 16-9
 real-time processing, 4-5
 Model environment, change management in,
 14-28–14-31
 Monitoring and evaluation
 continuous monitoring controls, 3-13–3-14,
 10-28
 general ledger, 13-30
 human resources roles, 9-3
 information quality for, 1-20
 internal controls, 3-25
 key performance indicators, 1-19, 3-13–3-14
 management responsibility for, 1-18–1-19
 Monte Carlo simulation, 17-6, 17-17–17-18
 Move tickets, 11-7
 MPS (master production schedule), 11-7
 MR (mixed reality), 7-9
 Multifactor authentication, 14-9
 Multiple regression, 17-15
 Musk, Elon, 2-2

N

Narratives, 8-8–8-9. *See also* Storytelling
 National Institute of Standards and
 Technology (NIST)
 control activities, 16-13–16-16, 16-20, 16-23,
 16-28
 control families, 16-7
 Cybersecurity Framework, 16-6–16-8
*Security and Privacy Controls for Federal
 Information Systems and Organizations*
 (NIST 800-53), 16-7
 Natural language processing (NLP), 17-6,
 17-23–17-24
 Network analysis, 17-6, 17-20–17-21
 Network operations centers (NOCs), 14-13
 Network ports, 16-14
 New employee hiring. *See* Employee hiring
 New hire packages, 9-10
 New technologies. *See* Emerging technologies;
 Technology innovations
 Nodes
 blockchain, 7-24–7-25, 7-28
 in network analysis, 17-21
 Noise, 17-14
 Normal packets, 16-19
 NoSQL databases, 6-19–6-20
 Null, keys not, 6-24

O

Object Management Group, 8-10
 Object-oriented databases, 6-18–6-19
 Objects, in databases, 6-18–6-19
 Occupational fraud, 15-4–15-5
 OEE (overall equipment effectiveness), 11-3,
 11-30

- Offer letters, 9-10
 - Onboarding
 - customer, 12-17
 - employee, 9-6-9-13, 9-30-9-31
 - vendors, 7-20
 - Online analytical processing (OLAP) systems, 4-2
 - Online transaction processing (OLTP) systems, 4-2
 - On-path attacks, 16-18-16-20
 - Operating events, 1-10, 10-24, 12-29
 - Operating system (OS), 4-6
 - Operational feasibility, 6-5
 - Operational risks, 2-8-2-9
 - Operations list, 11-4-11-6
 - Operations objectives, for internal controls, 3-24
 - Operator documentation, 8-3-8-4
 - Opinion mining, 17-23-17-24
 - Opportunity, as fraud motivation, 15-10
 - Optionality constraints, 6-26-6-27
 - Order placement
 - internal controls for, 10-13-10-14
 - purchase orders, 10-5, 12-17
 - split, 10-14
 - relational databases of, 6-17, 6-20-6-38
 - sales orders, 12-4-12-5, 12-17
 - Organic growth, 4-15-4-16
 - Organizational charts, 8-6-8-8
 - Organizational culture
 - anti-fraud, 15-3, 15-12
 - audit of, visualization tools for, 18-33-18-34
 - COSO ERM Framework on, 3-27
 - new employee exposure to, 9-7
 - risk appetite in, 2-19
 - risk-aware, 2-3, 3-25
 - tone at the top, 3-25, 15-12
 - OS (operating system), 4-6
 - Outlier analysis, 17-7-17-8, 17-14
 - Outlook (Microsoft), 4-6
 - Out-of-the-box ERP systems, 4-26
 - Output
 - business process, 1-8, 1-10, 1-12, 1-16, 9-2, 11-2
 - data, 1-3-1-4
 - defined, 1-3
 - output shapes, 8-14
 - Outsourced human resources model, 9-3
 - Outsourcing of payroll, 9-7, 9-20, 9-25
 - Overall equipment effectiveness (OEE), 11-3, 11-30
 - Overtime, 9-23
- P**
- PaaS (platform as a service), 4-8-4-9
 - Packets, 16-14
 - normal, 16-19
 - spoofed, 16-19
 - Packing slips, 10-5, 12-18
 - Paid time off, 9-22-9-23
 - Parallel implementation, 6-8
 - Passwords, 14-6, 14-9, 16-18
 - Patches, 16-15, 16-20
 - Pathways Vision Model, 1-3, 7-21-7-22
 - Patterns of data, 17-7
 - Pay and return fraud scheme, 15-21
 - Pay stubs, 9-33
 - Payment processing software, 4-11
 - Payment vouchers, 10-6
 - Payments, receiving, 12-29-12-30
 - Payments processes
 - acquisitions and. *See* Acquisitions and payments processes
 - cash flow effects, 10-24
 - credit, 10-25-10-26. *See also* Accounts payable
 - data from, 10-28-10-37
 - database design for, 10-29-10-31
 - defined, 10-2, 10-24
 - document flowcharts for, 10-26
 - in ERP system, 10-28-10-37
 - fixed asset, 10-1-10-2, 10-17-10-23, 10-34-10-35
 - fraud in, 10-27-10-28. *See also* Fraudulent disbursements
 - internal controls for, 10-27-10-28
 - inventory, 10-1-10-6, 10-32-10-34
 - overview of, 10-1
 - reporting and analytics, 10-31-10-37
 - three-way matches in, 10-6, 10-13, 10-25, 10-30-10-31
 - Payroll
 - accrued, 9-33
 - as acquisition and payment process, 9-2, 9-25
 - batch processing, 4-4, 9-22
 - categorization of responsibilities, 9-5
 - cost accounting for, 11-16-11-17
 - data visualization of, 18-21
 - defined, 9-4
 - employee compensation via, 9-4-9-5, 9-19-9-27
 - employee onboarding role, 9-7, 9-9
 - employee termination role, 9-14, 9-16
 - fraud, 9-4, 9-25, 9-34, 15-12, 15-21
 - human resources relationship to, 9-2-9-6, 9-20
 - internal audits of, 9-35
 - journal/journal entries, 4-4, 9-21-9-22, 9-33
 - outsourcing of, 9-7, 9-20, 9-25
 - overtime, 9-23
 - overview of, 9-1
 - pay stubs, 9-33
 - payroll batch, 9-23
 - process flowchart of, 9-22-9-24
 - processing of, 9-5
 - real-world example of risks, 9-25
 - reporting and analytics, 9-33-9-35
 - risks and control activities, 9-24-9-27
 - segregation of duties, 9-6
 - severance pay, 9-14
 - timekeeping system, 9-23
 - vacation and paid time off, 9-22-9-23
 - Payroll journal, 9-33
 - Payroll service administrators, 9-7
 - PCAOB (Public Company Accounting Oversight Board), 15-3
 - Peer-to-peer business models, 1-8
 - Peer-to-peer networks, 7-23-7-24
 - Penetration tests, 16-14-16-15
 - Perceived pressure, as fraud motivation, 15-9-15-10
 - Performance evaluation, 3-27, 9-3
 - Period costs, 11-16-11-17
 - Permission, user access, 14-7
 - Petabytes, data, 5-13
 - Phased implementation, 6-8
 - Phishing, 16-9-16-13
 - Photographs, icons vs., 18-12
 - Physical access attacks, 16-15-16-17
 - Physical access controls, 4-14, 14-6, 14-13-14-18, 16-16
 - Physical controls, 3-8, 3-10
 - Physical entity relationship diagrams, 6-21, 6-23-6-28, 8-11, 11-27
 - Physical flow of inventory, 10-7-10-8
 - Physical reconnaissance attacks
 - cybersecurity for, 16-9-16-13
 - defined, 16-9
 - Dumpster diving as, 16-12-16-13
 - eavesdropping as, 16-12-16-13, 16-18
 - internal controls for, 16-13
 - phishing as, 16-9-16-13
 - Physical risks, 2-8, 2-12
 - Pickens, John Aubrey, 15-31
 - Picking requests, 12-18
 - Pie charts, 18-15-18-16
 - Piggybacking, 14-16, 16-16
 - Pilot implementation, 6-8
 - Ping sweeps, 16-14
 - Pivot tables, 17-9
 - Planning
 - business continuity, 3-10, 11-9, 14-19-14-21, 14-26
 - cyberattacks, 16-8-16-15
 - cybersecurity, 16-4
 - management responsibility for, 1-18
 - production, 11-3, 11-6-11-8
 - strategic, 1-18-1-19, 2-3, 3-27, 13-22, 14-4
 - as systems development life cycle stage, 6-3-6-5
 - Platform as a service (PaaS), 4-8-4-9
 - Plurality constraints, 6-26-6-27
 - Policies and procedures
 - cybersecurity, 16-6-16-7, 16-27
 - as internal controls, 3-15, 3-25, 13-13
 - Polite tailgating, 16-16
 - Ponzi schemes, 15-2
 - Port scans, 16-14
 - Portfolio view of risk, 2-4
 - Post-closing trial balance, 13-12
 - Power BI (Microsoft), 17-9, 18-3-18-4, 18-28
 - PowerPoint (Microsoft), 4-6, 5-1, 8-12, 8-14, 18-28
 - PP&E (property, plant, and equipment), 10-2, 10-17. *See also* Fixed assets
 - Predictive analytics
 - for audits and compliance, 5-18
 - defined, 5-16, 17-4-17-5
 - for financial accounting, 5-19
 - for forecasting, 17-6, 17-16-17-17
 - linear regression as, 17-15
 - for managerial accounting, 5-20
 - for tax accounting, 5-22
 - Prescriptive analytics
 - for audits and compliance, 5-18
 - defined, 5-16, 17-4-17-5
 - for financial accounting, 5-19
 - for managerial accounting, 5-20
 - for tax accounting, 5-22
 - Preventive controls
 - for asset misappropriation, 15-15-15-17, 15-20-15-21
 - defined, 3-3
 - examples, 3-6-3-7
 - for financial statement fraud, 15-24-15-25, 15-27-15-30
 - overview of, 3-3-3-4

- segregation of duties as, 3-3-3-4
in time-based model, 3-7
- Pricing processes, 12-14
- Primary keys, 6-24-6-25
- Privacy issues, 4-9, 7-9, 11-24, 16-8
- Private blockchain, 7-29
- Private clouds, 4-8
- Process costing, 11-15
- Process flowcharts
for business-to-business sales, 12-22-12-23
for business-to-consumer sales, 12-8-12-9
for collections, 12-33-12-34
defined, 8-9
for documentation, 8-9, 8-12-8-18
for employee onboarding, 9-7-9-10
for employee termination, 9-14-9-16
for financial reporting, 13-7-13-8
for payroll process, 9-22-9-24
for production, 11-8-11-10
- Process fragmentation, 11-24
- Process mining, 17-6, 17-19-17-20
- Process shapes, 8-13, 8-19
- Process-based information systems, 1-12-1-17, 4-4
- Procurement processes. *See* Purchasing processes
- Product backlog, 6-12
- Product costs, 11-16-11-18, 11-21
- Product development, 11-3-11-6
- Product differentiation, 13-20-13-21
- Product increment, 6-13
- Product safety, 11-10
- Production analytics, 11-30
- Production databases, 5-9
- Production environment, change management in, 14-28-14-29, 14-31
- Production module (ERP system), 4-23-4-24, 11-26
- Production planning, 11-3, 11-6-11-8
- Production process flowchart, 11-10-11-12
- Production reports, 11-8, 11-29-11-30
- Production scheduling, 11-3, 11-6-11-8
- Professionals. *See* Accounting professionals
- Profile view of risk, 2-4
- Profits
gross profit margin, 1-20
overstatement of, 15-23-15-26
as purpose of business, 1-7
- Program documentation, 8-3-8-4
- Program flowcharts, 8-9
- Programming languages, 4-5. *See also specific languages*
- Project plans, 6-4
- Proof of work, blockchain, 7-27-7-28
- Property, plant, and equipment (PP&E), 10-2, 10-17. *See also* Fixed assets
- Public blockchain, 7-29
- Public clouds, 4-8
- Public Company Accounting Oversight Board (PCAOB), 15-3
- Purchase orders, 10-5, 12-17
split, 10-14
- Purchase requisitions, 10-4
- Purchasing accounting transactions, 12-3
- Purchasing processes. *See also* Acquisitions
business activities in, 10-3
cost accounting for, 11-17
data from, 10-28-10-37
database design for, 10-29-10-31
defined, 10-2-10-3
- document flowcharts for, 10-9-10-11, 10-19-10-21
- e-procurement systems in, 10-13, 11-13
- in ERP system, 10-28-10-37
- fixed asset, 10-1-10-2, 10-17-10-23, 10-34-10-35, 11-17
- fraud in, 10-5, 10-14, 10-21-10-22
- internal controls over, 10-11-10-16, 10-21-10-23
- inventory, 10-1-10-16, 10-32-10-34
- maturity models for, 10-15, 10-22-10-23
- order placement in, 10-13-10-14. *See also* Order placement
- overview of, 10-1, 10-9-10-11
- process mining, 17-19-17-20
- purchasing department role in, 10-5
- receiving in, 10-5-10-6, 10-15-10-16, 10-18
- reporting and analytics, 10-31-10-37
- three-way matches in, 10-6, 10-13, 10-25, 10-30-10-31
- vendor selection and management in, 10-12-10-13
- Python, 4-5, 5-16, 6-19, 6-38, 17-4, 17-9, 17-24-17-25
- Q**
- Quality management, 11-3, 11-9-11-10
- Quantitative values of data, 17-7-17-8, 18-15-18-19
- Queries, 5-8, 6-29-6-38
- Querying languages, 5-8. *See also* Structured Query Language (SQL)
- Questionnaires, 8-8
- QuickBooks, 4-13-4-15
- R**
- R (software), 17-17
- Ransomware, 16-3, 16-24, 16-26
- Rationalization, for fraud, 15-10
- Raw materials
conversion of. *See* Conversion processes
defined, 10-3
direct vs. indirect material costs, 11-17
materials requisition requests, 11-7
purchasing and payments processes for, 10-3-10-6, 10-32-10-34, 11-17
reporting and analytics, 10-32-10-34
- RBAC (role-based access controls), 14-7-14-8
- Real-time processing, 4-5
- Receiving
of fixed assets, 10-18
internal controls for, 10-15-10-16
payments, 12-29-12-30
in purchasing processes, 10-5-10-6, 10-15-10-16, 10-18
- Receiving reports, 10-6
- Reconciliation
fixed assets, 10-19
human resources and payroll functions, 9-5
- Reconnaissance attacks
cybersecurity for, 16-8-16-15
defined, 16-8
logical, 16-9, 16-13-16-15
physical, 16-9-16-13
- Recording. *See also* Documentation
cash receipts, 12-32-12-33
data records, 5-2-5-3, 6-16-6-17
fixed assets, 10-18-10-19
segregation of duties, 3-4
- Recovery point objective (RPO), 14-22, 14-25
- Recovery time objective (RTO), 14-22
- Red flags
behavioral, for fraud, 15-7-15-8
for cyberattacks, 16-10-16-11
non-behavioral, for fraud, 15-13, 15-19-15-20
- Referential integrity, 6-24
- Regression, 17-6, 17-14-17-16, 18-21
- Regulation and legislation. *See also specific laws*
compliance risks, 2-8, 2-10, 3-1
compliance with. *See* Compliance on data security, 3-23
on delivery and handling, 12-7-12-8
on external audits, 3-22
on financial statements, 3-22, 15-22
on internal controls, 3-2, 3-22-3-23, 3-25, 13-13, 14-27, 15-3, 15-22
technology risks and, 7-4
- Reinforcement learning, 17-6
- Relational databases
business rules for, 6-26
cardinality in, 6-25-6-27
conversion processes, 11-27-11-28
crow's foot notation for, 6-26-6-27
data integrity in, 6-24
defined, 5-8
design of, 6-20-6-28
entity relationship diagrams of, 6-20-6-28, 8-10-8-11, 11-27, 12-37, 13-27
general ledger, 13-27
marketing, sales, and collections processes, 12-37-12-38
primary and foreign keys in, 6-24-6-25
queries, 6-29-6-38
selection of, 6-15-6-18
table relationships in, 11-28
terminology, 6-16
- Relationships between data points, 18-14, 18-21-18-23
- Relevance
of blockchain to accounting professionals, 7-30-7-34
of information, 1-21, 1-23, 13-3
- Remittance advice, 10-6, 12-21, 12-30-12-31
- Reporting
bank remittance reports, 12-30-12-31
collections and accounts receivable, 12-43-12-44
conversion processes, 11-29-11-30
COSO ERM Framework on, 3-27
data analytics vs., 1-24-1-25
defined, 1-24
of employee expenses. *See* Expense reports
financial statement. *See* Financial reporting;
Financial statements
human resources and payroll, 9-30-9-34
internal control, 3-22, 3-24
marketing, sales, and collections processes, 12-38-12-44
production reports, 11-8, 11-29-11-30
purchasing and payments processes, 10-31-10-37
receiving reports, 10-6
revenue recognition reports, 12-41-12-42
sales reports, 12-38-12-39
- Reputational risks, 2-8-2-11
- Requirements definition, 6-5
- Residual risk, 2-20, 3-2

- Responsibility accounting, 13-21–13-22
 - Retail customers, 12-13
 - Retailer business models, 1-8
 - Retained earnings, 1-7, 13-43, 15-23
 - Returns, product, 12-22
 - Revenue recognition
 - business-to-business sales, 12-19
 - defined, 12-24
 - fraud and mistakes in, 12-25–12-28
 - model for, 12-24–12-25
 - at point in time, 12-25
 - real-world example, 12-25
 - reporting and analytics, 12-41–12-42
 - risks and controls, 12-26–12-28
 - over time, 12-25
 - Revenues
 - data visualization of, 18-24
 - misclassification of, 15-28–15-29
 - overstatement of, 12-26–12-27, 15-23–15-26
 - recognition of, 12-19, 12-24–12-28, 12-41–12-42
 - sales forecasts based on, 12-11
 - understatement of, 12-26–12-27, 15-28–15-29
 - unrecorded, 15-29
 - Risk
 - acceptance of, 2-18, 2-20, 2-22
 - appetite for, 2-19, 3-2
 - applying to a business, 2-3–2-4
 - assessment of. *See* Risk assessments
 - avoidance of, 2-18, 2-21–2-22
 - categorization of, 2-5, 2-7–2-13
 - cloud, 4-9–4-10
 - compliance, 2-8, 2-10, 3-1
 - cyber, 2-9, 11-24
 - defined, 2-2
 - digital manufacturing, 11-24
 - employee onboarding, 9-10–9-11
 - employee termination, 9-17–9-19
 - employee turnover, 9-7
 - external, 2-8, 2-10–2-12, 3-1
 - financial, 2-8–2-9
 - formulas for prioritizing, 2-15–2-17
 - fraud as, 12-27, 15-2–15-3
 - identification of, 2-3, 2-5–2-7, 9-28–9-35
 - impact of, 2-14–2-20
 - importance of, 2-2–2-3
 - inherent, 2-19
 - internal, 2-7–2-11
 - inventory of, 2-12
 - likelihood of, 2-13–2-20
 - management of. *See* Risk management
 - matrix illustrating, 2-17–2-20
 - mitigation of. *See* Risk mitigation
 - nature of, 2-2–2-7
 - operational, 2-8–2-9
 - optimal level of, 2-2–2-3
 - payroll, 9-24–9-27
 - physical, 2-8, 2-12
 - portfolio view of, 2-4
 - prioritization of, 2-5, 2-13–2-18
 - profile view of, 2-4
 - reputational, 2-8–2-11
 - residual, 2-20, 3-2
 - response to, 2-5, 2-18–2-22
 - risk-aware culture, 2-3, 3-25
 - severity, evaluating, 2-13–2-15
 - statements of. *See* Risk statements
 - strategic, 2-8, 2-11–2-12
 - systems development, 6-2, 6-10, 6-13
 - technology. *See* Technology risks
 - transfer of, 2-18, 2-21–2-22
 - Risk acceptance, 2-18, 2-20, 2-22
 - Risk appetite, 2-19, 3-2
 - Risk assessments
 - defined, 2-3
 - for enterprise risk management, 2-5–2-6–2-18
 - fraud, 15-3, 15-8
 - internal audits, 2-31–2-32
 - for internal controls, 3-25
 - regulatory requirements for, 3-1
 - risk categorization in, 2-5, 2-7–2-13
 - risk identification in, 2-5–2-7
 - risk prioritization in, 2-5, 2-13–2-18
 - risk response based on, 2-19–2-20
 - Risk avoidance, 2-18, 2-21–2-22
 - Risk formulas, 2-15–2-17
 - Risk inventory, 2-12
 - Risk management
 - accounting professional roles in, 2-1–2-2, 2-18, 2-22–2-23, 3-1, 3-28
 - careers in, 2-18
 - cybersecurity in. *See* Cybersecurity
 - enterprise. *See* Enterprise risk management
 - fraud, 15-8–15-13
 - internal controls for, 3-1–3-37, 4-13–4-14, 9-10–9-11, 9-17–9-19, 9-24–9-27, 10-11–10-16, 10-22, 10-27, 11-6, 11-8–11-10, 11-13–11-14, 11-21, 12-4, 12-6–12-8, 12-13–12-15, 12-17, 12-19–12-20, 12-26–12-35, 13-13–13-15, 14-12, 14-17–14-18, 14-26, 14-33
 - Monte Carlo simulations in, 17-18
 - startup and small business, 4-13–4-14
 - Risk matrix, 2-17–2-20
 - Risk mitigation
 - change management for, 14-27–14-33
 - defined, 2-21
 - for emerging and disruptive technologies, 7-4–7-6
 - employee onboarding for, 9-7
 - internal controls for, 3-1–3-37
 - for IT systems, 14-2–14-34
 - as risk response, 2-18, 2-21–2-22
 - Risk response
 - acceptance as, 2-18, 2-20, 2-22
 - avoidance as, 2-18, 2-21–2-22
 - for enterprise risk management, 2-5, 2-18–2-22
 - example, 2-22
 - mitigation as, 2-18, 2-21–2-22. *See also* Risk mitigation
 - mitigation
 - risk assessment informing, 2-19–2-20
 - transfer as, 2-18, 2-21–2-22
 - Risk severity, 2-13–2-15
 - Risk statements
 - on business continuity, 14-26
 - on business-to-business sales, 12-13–12-15, 12-17, 12-19–12-20
 - on business-to-consumer sales, 12-4, 12-6, 12-8
 - on change management, 14-33
 - on collections, 12-6, 12-30–12-31, 12-33
 - on cost accounting, 11-21
 - defined, 2-6
 - on employee onboarding, 9-10–9-11
 - on employee termination, 9-17–9-18
 - examples, 2-6
 - on fixed asset acquisitions, 10-22
 - internal controls targeting, 3-9, 9-10–9-11, 9-17–9-18, 9-25–9-26, 10-12–10-13, 10-16, 10-22, 10-27, 11-6, 11-8–11-10, 11-14, 11-21, 12-4, 12-6, 12-8, 12-13–12-15, 12-17, 12-19–12-20, 12-26–12-27, 12-30–12-31, 12-33, 13-13–13-15, 14-12, 14-18, 14-26, 14-33
 - on inventory, 11-14
 - on logical security, 14-12
 - on manufacturing operations, 11-9
 - on order placement, 10-13
 - on payments, 10-27
 - on payroll processing, 9-25–9-26
 - on physical security, 14-18
 - on product development, 11-6
 - on production planning and scheduling, 11-8
 - on quality management, 11-10
 - on receiving, 10-16
 - on revenue recognition, 12-26–12-27
 - risk formulas based on, 2-16
 - risk severity in, 2-14–2-15
 - source of risk identified in, 2-8
 - on supply chain management, 11-14
 - on vendor management, 10-12
 - Risk transfer, 2-18, 2-21–2-22
 - RobbinHood ransomware attack, 16-26
 - Robotic process automation (RPA)
 - accounting professional benefits, 7-12–7-22
 - accounting use cases, 7-17–7-21
 - for accounts payable functions, 7-17–7-18, 7-20
 - artificial intelligence vs., 7-13
 - change to, management of, 14-27
 - conditional statements in, 7-14–7-21
 - defined, 7-13
 - efficiencies and opportunities with, 7-21–7-22
 - for financial reporting, 7-21
 - for fraud alerts, 7-21
 - for internal audit functions, 7-18–7-21
 - logic behind, 7-14–7-16
 - real-world example, 7-22
 - for user access review, 14-12
 - Robotics. *See also* Artificial intelligence
 - automated controls, 3-12
 - as Autonomous Things, 7-11
 - in digital manufacturing, 11-23, 11-25
 - robotic process automation, 7-12–7-22, 14-12, 14-27
 - Rogers Adoption Curve, 7-2–7-3
 - Role-based access controls (RBAC), 14-7–14-8
 - RPA. *See* Robotic process automation (RPA)
 - RPO (recovery point objective), 14-22, 14-25
 - RTO (recovery time objective), 14-22
- S**
- SaaS (software as a service), 4-8–4-13
 - Sales
 - analytics on, 12-39–12-40, 17-16
 - automated sales process, 12-26
 - business-to-business, 12-2, 12-12–12-23, 12-29–12-30, 12-32–12-33
 - business-to-consumer, 12-2, 12-3–12-11, 12-29
 - contracts, 12-15
 - fictitious sales larceny, 15-17
 - fraudulent, 12-40–12-41, 15-17. *See also* Channel stuffing
 - marketing, sales, and collections processes, 1-9, 1-12, 1-16–1-17, 2-3–2-4, 12-1–12-45, 13-10, 15-16–15-17, 17-7, 17-16

- reporting, 12-38–12-39
- sales cutoff schemes, 15-25–15-26, 15-29
- sham, 15-23–15-24
- Sales invoices, 12-21
- Sales Management module (ERP system), 4-24, 12-36
- Sales orders, 12-4–12-5, 12-17. *See also* Order placement
- Sales reports, 12-38–12-39
- SamSam ransomware attack, 16-26
- Sandbox. *See* Test environment
- Sarbanes-Oxley Act of 2002 (SOX)
 - documentation requirements, 8-2
 - financial statement requirements, 3-22, 15-22
 - internal controls requirements, 3-22–3-23, 3-25, 13-13, 14-27, 15-3, 15-22
 - overview of, 3-22–3-23
 - risk assessment requirements, 3-1
 - user access testing requirements, 7-18–7-19
 - whistleblower protections, 15-8
- Scala, 4-5
- Scalability
 - database, 5-9, 6-15, 6-19–6-20
 - horizontal, 5-9
 - vertical, 5-9
- Scatter plots, 18-22–18-23
- Schema, database, 5-9, 8-10–8-11
- Scope creep, 6-12
- Scraped data, 5-4
- Scrum, 6-11–6-13
- SDLC. *See* Systems development life cycle (SDLC)
- Seasonality, 17-14
- Securities and Exchange Commission, U.S. (SEC)
 - Accounting and Auditing Enforcement Releases, 15-30
 - civil enforcements, 12-28
 - fraud investigations, 15-30
 - internal controls requirements, 3-23, 13-14–13-15
 - role of, 3-23
 - XBRL requirements, 13-16–13-18
- Security. *See also* Cybersecurity; Data security
 - cloud-supported cameras, 4-13
 - internal controls for. *See* Internal controls technology risks, 7-4
- Segregation of duties, 3-3–3-4, 3-12, 4-14, 9-6, 15-11, 15-16
- SELECT command
 - database queries, 6-29–6-32, 6-36–6-38
 - Select all, 6-31
 - Select multiple columns, 6-32
 - Select one column, 6-31
- Sentiment analysis, 17-23–17-24
- Severance pay, 9-14
- Sham sales, 15-23–15-24
- Sheu, Eliza, 5-23
- Shimamoto, Donny, 2-22–2-23
- Shipping, 12-13, 12-18–12-20, 15-24. *See also* Delivery
- Shipping notices, 12-19
- Simple regression, 17-15
- Simulations
 - defined, 17-17
 - Monte Carlo, 17-6, 17-17–17-18
- Skills. *See also* Career skills
 - critical thinking, 1-3, 7-21
 - data analytics, 1-26–1-27, 5-16–5-17
 - internal audit, 1-6–1-7
- Skimming, 15-15–15-17
- Small businesses. *See also* Startups
 - blockchain applications, 7-33
 - risk management, 4-13–4-14
- Smart contracts, 7-24, 7-33
- Smart glasses, 11-25
- Smart lightbulbs, 4-13
- Smart locks, 4-13
- Social engineering, 16-9–16-12, 16-16
- Social media, 2-10, 17-21, 17-24
- Social network analysis, 17-21
- Social responsibility, 1-7–1-8, 1-16, 1-35–1-36
- Software
 - accounting, 4-13–4-15
 - application software, 4-6
 - consolidation, 13-5–13-6
 - customer relationship management, 12-3–12-4
 - for data analytics, 4-11–4-12
 - data communication software, 4-6
 - for data storage, 4-12
 - defined, 4-5
 - in-house development of, 4-6–4-7
 - malware, 16-3, 16-23–16-28
 - overview of, 4-5–4-7
 - patches, 16-15, 16-20
 - for payment processing, 4-11
 - programming languages, 4-5. *See also specific languages*
 - sourcing of, 4-6–4-7
 - for startups, 4-10–4-15, 4-28
 - systems software, 4-6
 - utility programs, 4-6
- Software as a service (SaaS), 4-8–4-13
- Source documents, 10-3–10-4, 13-9
- SOX. *See* Sarbanes-Oxley Act of 2002 (SOX)
- Special journals, 13-9
- Split purchase orders, 10-14
- Spoofed packets, 16-19
- Sprint backlog, 6-12
- Sprints, 6-12
- SQL. *See* Structured Query Language (SQL)
- Square, 4-11
- Stacked bar charts, 18-17–18-18, 18-22
- Standard costing, 11-15–11-16
- Standardization
 - documentation for, 8-6
 - of financial reporting, 13-17–13-18
- Startups
 - risk management, 4-13–4-14
 - software and technology for, 4-10–4-15, 4-28
- Statement of cash flows, 10-24, 12-29, 13-29, 13-43
- Statement of stockholders' equity, 13-29, 13-43
- Static dashboards, 18-28
- Static data, 5-6
- Statisticians, 17-2
- Stockholders' equity statements, 13-29, 13-43
- Story arcs, 18-30–18-31
- Storyboards, 18-30–18-34
- Storytelling, 18-2–18-4, 18-25–18-34. *See also* Narratives
- Strategic planning, 1-18–1-19, 2-3, 3-27, 13-22, 14-4
- Strategic risks, 2-8, 2-11–2-12
- Structured data, 5-4–5-5
- Structured Query Language (SQL)
 - commands, 6-29–6-38
 - data analytics, 5-16, 17-4, 17-9, 17-24
 - data control language, 6-29
 - data definition language, 6-29
 - data manipulation language, 6-29
 - Data Query Language, 6-29–6-38
 - database queries, 5-8, 6-29–6-38
 - JOIN operators, 6-34–6-38
 - languages, 6-29
 - as programming language, 4-5
 - SELECT command, 6-29–6-32, 6-36–6-38
 - SQL statements, 6-30
 - Transaction Control Language, 6-29
 - Where clause, 6-32–6-34, 6-36–6-38
- Subscription business models, 1-8
- Subsidiaries, consolidated financial statements
 - for, 13-5–13-6
- Subsidiary ledgers, 10-19, 13-10
- Sukhani, Bharti, 12-44–12-45
- Supervised learning, 17-6, 17-11–17-13, 17-23
- Suppliers, 10-4. *See also* Vendors
- Supply chain management (SCM)
 - for business-to-consumer sales, 12-10–12-11
 - conversion processes and, 11-3, 11-13–11-14
 - defined, 10-7, 11-13, 12-10
 - information flow in, 10-7–10-8
 - overview of, 10-7–10-8
 - physical flow in, 10-7–10-8
 - purchasing and payments processes and, 10-3, 10-7–10-8
 - revenue data selection, 12-11
 - risks and controls, 11-13–11-14
- Supply Chain Management module (ERP system), 4-23–4-24, 10-29–10-30, 11-26
- Sustainability, 1-16
- Swim lanes, flowchart, 8-17–8-18, 13-7–13-8
- Sylvester, Dominic, 6-38–6-39
- System go-live, 6-7–6-8
- Systems configurations
 - centralized systems, 4-18–4-19
 - decentralized systems, 4-19
 - distributed systems, 4-20
 - for growing businesses, 4-18–4-21
- Systems development
 - buy-build decisions, 6-2
 - life cycle, stages of, 6-2–6-9
 - methodologies for, 6-9–6-14
 - Agile, 6-10–6-14
 - selection of, 6-13–6-14
 - Waterfall, 6-10, 6-13–6-14
 - overview of, 6-1
 - real-world example, 6-13
 - risks in, 6-2, 6-10, 6-13
- Systems development life cycle (SDLC)
 - Agile methodology for executing, 6-10–6-14
 - analysis stage, 6-3, 6-5
 - defined, 6-2
 - design stage, 6-3, 6-6
 - development stage, 6-3, 6-7
 - implementation stage, 6-3, 6-7–6-8
 - maintenance stage, 6-3, 6-8
 - planning stage, 6-3, 6-4–6-5
 - roles and responsibilities during, 6-4
 - stages of, 6-2–6-9
 - testing stage, 6-3, 6-7
 - Waterfall methodology for executing, 6-10, 6-13–6-14

- Systems documentation
 business process model and notation for, 8-9–8-10
 data flow diagrams for, 8-10, 8-19–8-23
 defined, 8-3
 entity relationship diagrams for, 8-10–8-11
 flowcharts for, 8-9, 8-12–8-18
 in hierarchy, 8-3
 narratives for, 8-8–8-9
 overview of, 8-3
- Systems flowcharts, 8-9, 8-12–8-18
- Systems integration
 defined, 4-17
 ERP systems for, 4-22–4-25
 for growing businesses, 4-17–4-18
 immediate, 4-18
 lift and shift, 4-17
- Systems models, 6-6
- Systems software, 4-6
- T**
- Tableau
 case studies. *See* Tableau case studies
 data summarization in, 17-9
 data visualization with, 18-3–18-4, 18-6, 18-10, 18-14, 18-21, 18-23–18-24, 18-28, 18-34
- Tableau case studies
 Accounts Payable Red Flags, 10-45–10-46
 Accounts Receivable Analysis, 12-54–12-55
 Call Center Performance, 17-33
 Change Management, 14-42–14-43
 Control Mapping, 3-36–3-37
 Cookies Cares Charitable Foundation, 1-35–1-36
 Employee Reimbursement Expenses, 15-38–15-39
 General Ledger Journal Entries, 13-41–13-42
 IT Help Desk, 5-29–5-30
 IT Help Desk Employee Insights, 6-48
 Network Logins, 16-35–16-36
 People Analytics, 9-44–9-45
 Raw Ingredient Costs, 11-40–11-41
 Risk Profile, 2-31–2-32
 Sales Dashboard, 18-48
 Smart Freezers, 7-41
 System Conversion, 4-35
 System Migration, 8-31–8-32
- Tagging
 of financial information in XBRL, 13-16–13-18
 of fixed assets, 10-18
- Tailgating, 14-16, 16-16
- Target residual risk, 2-20, 3-2
- Tax accounting, 5-22, 7-33, 14-28, 14-30
- Tax data hubs, 5-22
- Taxonomy, XBRL, 13-16, 13-18
- TCL (Transaction Control Language), 6-29
- Technical architecture specifications, 6-6
- Technical feasibility, 6-5
- Technology for startups, 4-10–4-13
- Technology innovations
 artificial intelligence as. *See* Artificial intelligence (AI)
 disruptive. *See* Disruptive technologies
 emerging. *See* Emerging technologies
 mobile. *See* Mobile technologies
 opportunities with, 7-7–7-12
 overview of, 7-1–7-2
 risk assessment and mitigation, 7-4–7-6.
See also Technology risks
 robotics as. *See* Robotics
 Rogers Adoption Curve, 7-2–7-3
- Technology risks
 business disruptions as, 7-4
 center of excellence evaluating, 7-4, 7-6
 cyber risk as, 2-9, 11-24
 defined, 2-9
 with emerging and disruptive technologies, 7-4–7-6
 enterprise risk management of, 7-4–7-6
 financial losses as, 7-4
 internal audits for, 7-4–7-5
 internal controls to manage, 3-1
 IT application controls for, 3-8–3-10
 IT general controls for, 3-8–3-9. *See also* IT general controls
 regulatory risks as, 7-4
 security-related, 7-4
- Terabytes, data, 5-13
- Termination. *See* Employee termination
- Terminator shapes, 8-13
- Test environment
 change management in, 14-28–14-31
 systems development in, 6-3, 6-7
- Textual analysis, 17-23
- Thomas, Mark, 14-34
- Throughput, 11-30
- Time management, 9-5
- Time series data, 17-13–17-15, 17-19, 18-21–18-22
- Time trends, 17-14
- Time-based model of controls, 3-6–3-7
- Timeboxing, 6-12
- Timekeeping system
 job time tickets, 11-8
 payroll process and, 9-23
 unauthorized hours recorded, 15-21
- Timeliness of information, 1-21, 13-3
- Tinley, David, 16-25
- Tone, data visualization setting, 18-6–18-7
- Tone at the top, 3-25, 15-12. *See also* Organizational culture
- Tooltips, 18-24
- TPS (transaction processing systems), 4-2–4-5, 6-3, 9-22
- Traditional cost accounting
 of conversion processes, 11-15–11-19
 job-order costing, 11-15
 labor costs, 11-16–11-17
 process costing, 11-15
 purchasing process costs, 11-17
 sample system, 11-18–11-19
 standard costing, 11-15–11-16
- Transaction Control Language (TCL), 6-29
- Transaction processing systems (TPS), 4-2–4-5, 6-3, 9-22
- Transaction-based accounting information systems, 1-12–1-17, 4-4
- Transparency
 blockchain, 7-28
 data, 4-23, 7-33
- Transportation Security Administration (TSA), 16-3
- Tree maps, 18-16
- Trends, data, 17-7, 17-14, 18-22
- Trial balance
 adjusted, 13-12
 post-closing, 13-12
 roll-forward, 13-27–13-29
 unadjusted, 13-11–13-12
- Trojan horses, 16-26
- Turnover rates, 9-32
- Typography, 18-11–18-12
- U**
- Unadjusted trial balance, 13-11–13-12
- Unauthorized hours, 15-21
- Unauthorized shipments, 15-24
- Understandability of information, 1-21, 13-3
- Unrecorded revenue, 15-29
- Unstructured data, 5-4–5-7, 6-18–6-20
- Unsupervised learning, 17-6, 17-10–17-11, 17-23
- Updates, software, 4-7
- User acceptance testing (UAT), 6-7, 14-30
- User access
 adding and removing users, 14-9–14-12
 administrator role, 14-7–14-8
 assigning access, 14-6–14-8
 de-provisioning, 14-10
 dormant, 14-11
 internal audits of, 7-18–7-20
 IT system controls, 14-6–14-18
 logical access controls, 4-14, 14-6–14-12, 16-20
 multifactor authentication, 14-9
 permission, 14-7
 physical access controls, 4-14, 14-6, 14-13–14-18, 16-16
 provisioning, 14-9–14-10
 reviews of, 14-11–14-12
 risks and controls, 14-12, 14-17–14-18
 role-based access controls, 14-7–14-8
 user authentication and, 14-9
- User documentation, 8-3–8-5
- Usernames, 14-6
- Utility programs, 4-6
- V**
- Vacation and paid time off, 9-22–9-23
- Valdez, Rob, 16-28–16-29
- Value of big data, 5-12, 5-15, 7-8
- Variables
 in databases, 6-18–6-19
 dependent and independent, 17-14–17-16
- Variety
 of big data, 5-12–5-13, 7-8
 of data in databases, 6-15
 defined, 5-13
- Velocity of big data, 5-12–5-13, 7-8
- Vendor invoices, 10-6, 15-21
- Vendors. *See also* Suppliers
 bid-rigging schemes, 10-21–10-22, 15-4
 codes of conduct for, 15-12
 defined, 10-4
 of ERP systems, 4-26
 fraud by, 15-4
 fraudulent disbursements to, 10-27, 15-21
 invoices from, 10-6, 15-21
 main vendor table of approved, 10-12–10-13
 payments owed. *See* Accounts payable;
 Payments processes

robotic process automation for onboarding, 7-20
 selection and management of, 10-12–10-13
 software, 4-6–4-7
 Veracity of big data, 5-12, 5-14, 7-8
 Verifiability of information, 1-21, 13-3
 Vertical financial statement analysis, 13-30, 15-13
 Vertical flowchart shapes, 8-14
 Vertical organizational charts, 8-7
 Vertical scalability, 5-9
 Virtual reality (VR), 7-9–7-10, 7-12
 Viruses, 4-6, 16-24–16-25
 Visio (Microsoft), 8-12
 Visualization audience, 18-5
 Visualizations. *See also* Data visualization
 business process model and notation as, 8-9–8-10
 on dashboards, 5-16. *See also* Dashboards
 defined, 5-16
 diagrams as. *See* Data flow diagrams; Entity
 relationship diagrams
 flowcharts as. *See* Flowcharts

Voice assistants, 4-12
 Voice phishing, 16-9–16-10
 Volume
 of big data, 5-12–5-13, 7-8
 of data in databases, 6-15
 defined, 5-12
 VR (virtual reality), 7-9–7-10, 7-12
 Vulnerability scans, 16-14–16-15

W

W-2 form, 9-33
 W-3 form, 9-33
 Wall Street Blockchain Alliance, 7-30
 Wallet applications, 7-24–7-25
 Wang, Kevin, 7-35
 WannaCry ransomware attack, 16-26
 Warm backup sites, 14-21–14-22
 Warm colors, 18-7
 Waterfall methodology, 6-10, 6-13–6-14
 Web 2.0, 5-5–5-6
 Where clause, 6-32–6-34, 6-36–6-38
 Whistleblowers, 15-8, 15-13
 White space, 18-10–18-11

Williams, Laniesha, 4-28
 Willis, Mark, 13-16
 Windows (Microsoft), 4-6
 Word (Microsoft), 4-6, 5-1, 8-12
 Work in process, 10-3
 Working capital, 10-8–10-9
 Worms, 16-25
 Wyatt, Cindy, 3-28

X

XBRL (eXtensible Business Reporting
 Language), 5-19, 13-16–13-19
 XBRL instance document, 13-17
 XBRL tags, 13-16
 XML (eXtensible Markup Language), 13-16
 XR (extended reality), 7-9–7-10, 7-12

Y

Yottabytes, data, 5-13

Z

Zettabytes, data, 5-13
 Zuckerberg, Mark, 2-2

