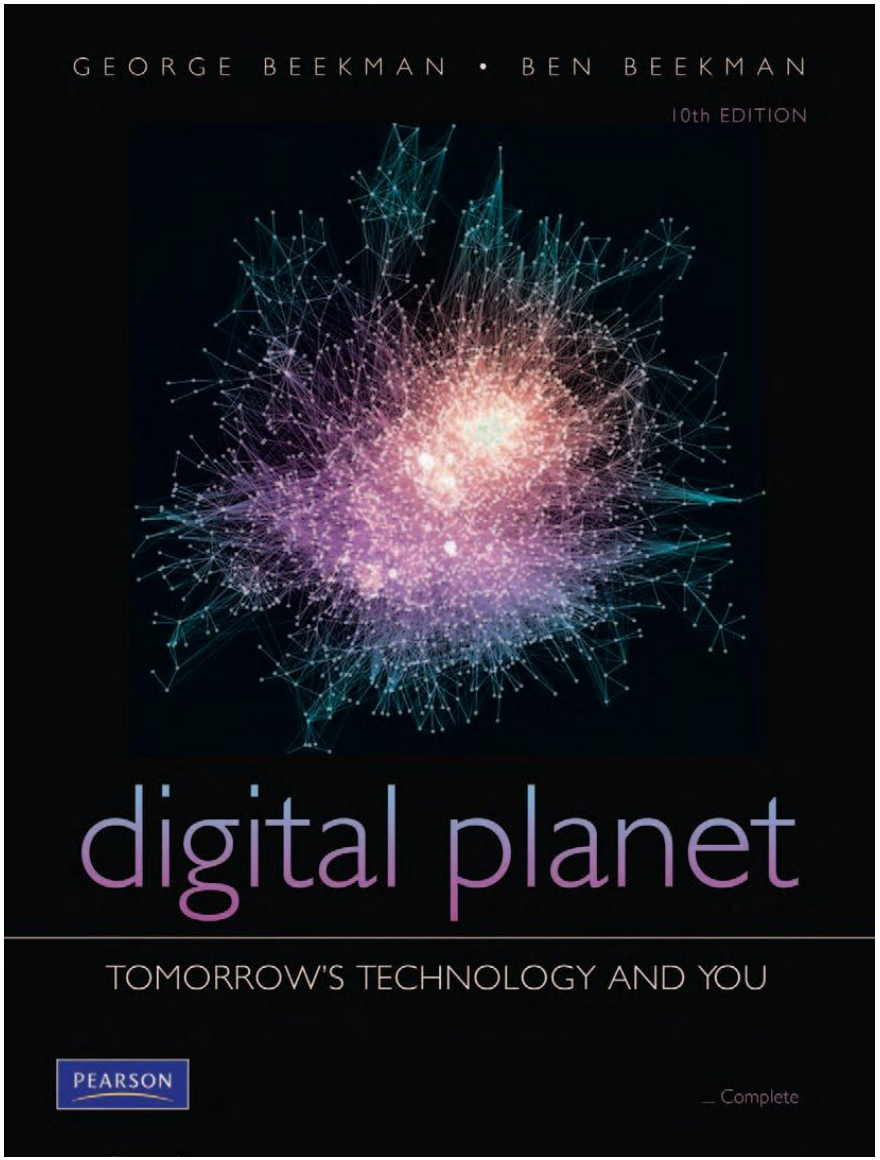


Digital Planet:

Tomorrow's Technology and You

George Beekman • Ben Beekman

Tenth Edition

Digital Planet:
Tomorrow's Technology and You

Chapter 1

Exploring Our Digital Planet

Chapter 1 Objectives

- ✓ Describe digital technology's critical role in our lives
- ✓ Discuss several key trends in the evolution of computers and digital technology
- ✓ Describe the major types of computers and their principal uses(استخدامات رئيسية)
- ✓ Explain how the growth and evolution of the Internet is changing our lives

Objectives (cont.)

- ✓ Explain how our information age differs from any time that came before
- ✓ Discuss the social and ethical impact of information technology on our society

Living in a Nondigital World

- Computers are everywhere.
- Our lives are directly affected when they do not operate.
- Computers have infiltrated(تسللت) our lives so we do not know how to function without them.

Computers in your daily life

How many of <u>you</u> <u>do not</u> have:
Email account? Facebook account? Viber? Whatsapp? Smart phone? PC? Laptop? Internet? 3G?

Why do you use them:
Learning? Communication & Socialization? Dating? Media & News? Shopping? E-intifada? Work? …..

What type of problems do you face:
Legal? Official? Social?

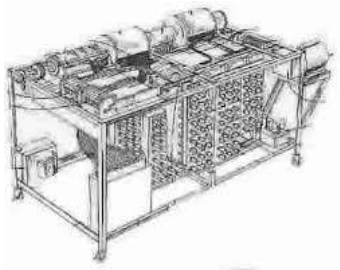
What is the difference between you and your dad/mam?

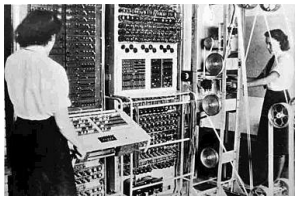
Computers in Perspective(انطباع،المنظور)

- ✓ Computers have been with us for a short time but are built on centuries of insight(تبصر) and effort.
- ✓ Early humans counted with fingers or rocks.
- ✓ The abacus was used by Babylonians and Chinese for thousands of years.

- ✓ By early 19th century, the need for more accurate calculating tools became evident(أصبح واضحاً).
- ✓ Charles Babbage and Ada Lovelace imagined the construction of the Analytical Engine.

Computers in Perspective (cont.)





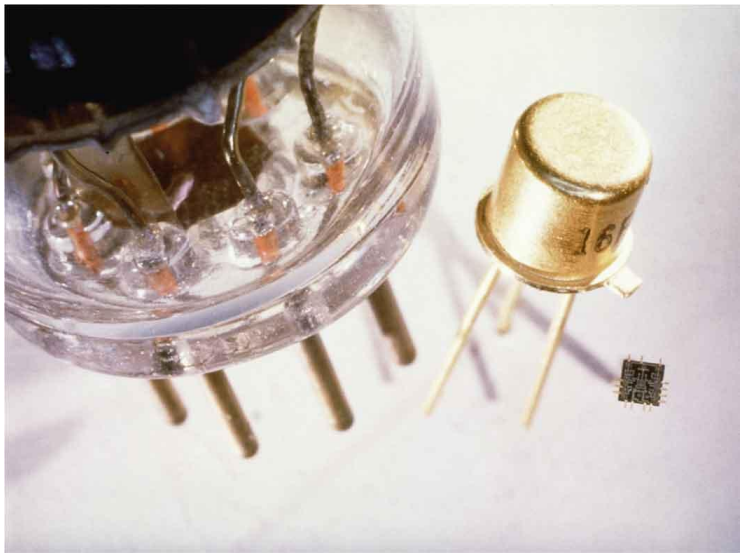
✓ Brief history of computers

- 1939—Atanasoff-Berry Computer created
- 1943—Alan Turing developed Colossus
- 1944—Mark I completed to compute ballistics tables
- 1945—ENIAC completed
- 1951—UNIVAC I (the first general-purpose commercial computer) was delivered to the U.S. Census Bureau

Computers in Perspective (cont.)

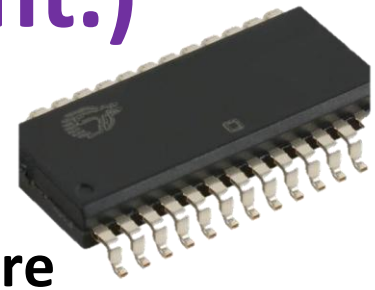
✓Computer hardware

- Early computers used ***vacuum tubes*****.**
- Tubes were replaced by ***transistors*****.**
- By mid-1960s, more powerful machines were based on integrated circuits—small ***silicon chips*** containing hundreds of transistors.



A vacuum tube, a transistor, and an integrated circuit.

Computers in Perspective (cont.)



- ✓ **Benefits of integrated circuits (ICs)**
  - ***Reliability (موثوقية):*** **Less prone(أقل عرضة) to failure**
  - ***Size (حجم):*** **Single chips could replace entire boards**
  - ***Speed (سرعة):*** **Electricity had shorter distances to travel**
  - ***Efficiency (كفاءة):*** **Small chips used less electrical power and created less heat**
  - ***Cost (تكلفة):*** **Mass production techniques made it easy to manufacture inexpensive chips**

Embedded Systems
أنظمة مضمَّنة

- ✓ ***Embedded system:*** A microprocessor used as a component of a larger system
- ✓ More than 90% of microprocessors are hidden inside common household and electronic devices:
  - Thermostats, traffic lights, cars
  - Wristwatches, toys, game machines
  - TVs, camcorders, ovens
- ✓ Anything powered by electricity—battery or house current—is candidate(مرشح) for microprocessor implant(زرع)

Personal Computers

- ✓ ***Personal computer:*** Designed to be used by one person at a time
  - Tool for enhancing productivity, creativity, communication
- ✓ ***Desktop computer*** has several components:
  - Tower (containing microprocessor and other components)
  - Monitor, keyboard, mouse, speakers
- ✓ Some house all components in monitor casing

Workstations

- ***Workstation:*** A high-end desktop computer with massive computing power.
  - Used for computationally intensive(الحوسبة المكثفة) interactive applications
  - Large-scale scientific data analysis
- Line separating workstations and desktop computers becoming less distinct.

Portable Computers

- ***Laptop computers***—sometimes called ***notebook computers***—designed for portability
- ***Netbooks*** are extra-small, extra-light, no-frills computers

Handheld Devices

- ***Personal digital assistants (PDAs)***
- ***Smart phones*** combine the functions of a phone, camera, PDA, game machine, and music/video player.

- ***Tablet computers*** bridge the gap between smart phone and notebook/netbook PC.

Servers

- ***Server:*** A computer that provides other computers connected to a ***network*** with access to data, programs, and other resources
- Any desktop computer can be used as a server but some are specifically designed for this purpose.
- Servers have faster processors, more memory, or faster network connections.
- Often clustered together in groups to increase processing power

Computer Connections: The Internet Revolution

- ***Internet:*** Work began on experimental network in the in late 1960s as it evolved it became known as the Internet.
- In 1990s, software became more usable.
- The Internet was transformed from text-only to include pictures, animation, sounds, and video.
- The ***World Wide Web*** (WWW) became accessible to millions who connect through a Web ***browser***.

Computer Connections: The Internet Revolution (cont.)

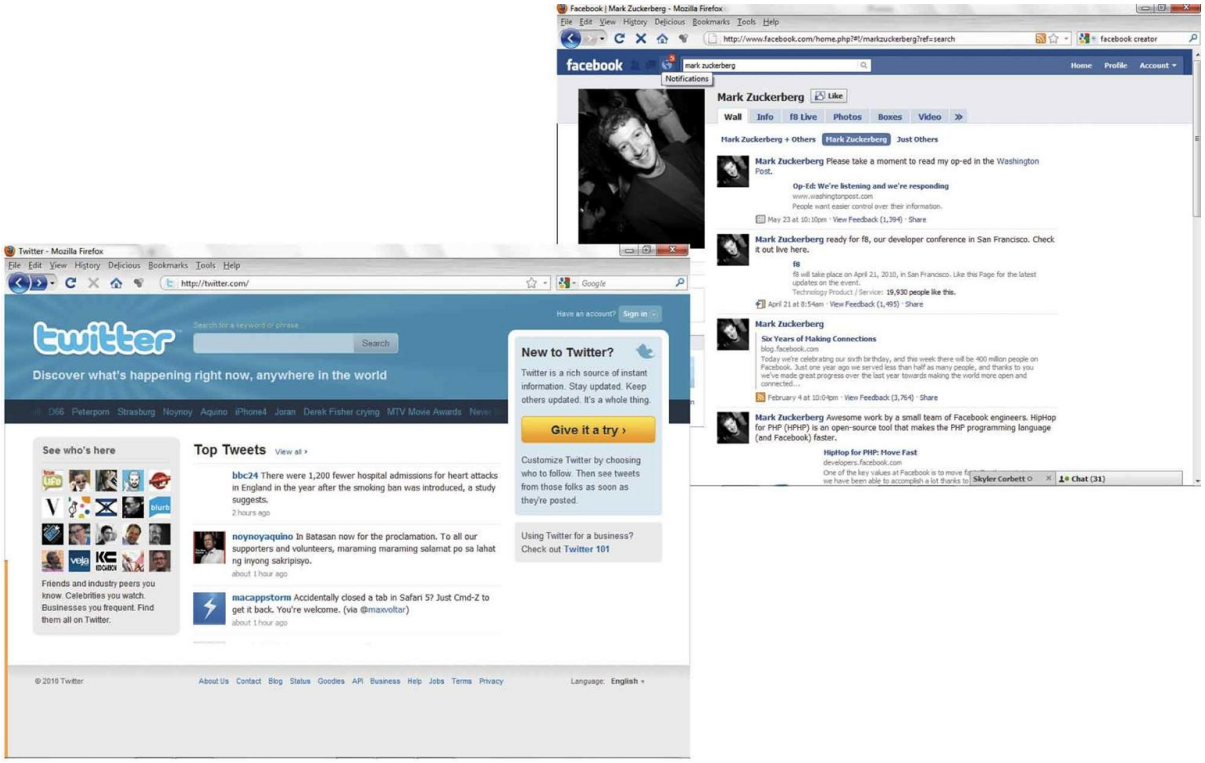
✓ Growth of the Internet

- Widespread ***email*** and Web use
- Few million users in 1990s—about two billion users today
- Internet's population reflects population at large
- More than half are now female
- Areas with no Internet access are harder to find

Computer Connections: The Internet Revolution (cont.)

✓ Web 2.0 sites are built around contributions from Web users

- My Space
- Facebook
- Twitter
- YouTube
- Google Maps



Into the Information Age

- ✓ 10,000 years ago, people learned to domesticate animals and grow their own food.
- ✓ **Agricultural age:** Lasted until about 200 years ago
- ✓ **Industrial age:** Advances in machine technology ushered(بشرت ، أعلنت) in this age
- ✓ **Information age:** A convergence(جمع ، لقاء) of computer and network technology—where most people earn their living working with words, numbers, and ideas

عصر المعلومات، حيث اصبح الناس في دخلهم ووظائفهم يعتمدون على الحاسوب، وتعددت وتنوعت الوظائف والمهارات المتعلقة بالحاسوب

Living with Digital Technology

- ✓ In 1943, Thomas Watson, Sr., declared that the world would not need more than five computers.
- ✓ Since then, computers have evolved from massive, expensive, unreliable calculators into (mostly) dependable(جدير بالثقة), versatile(متعددة الجوانب والإستعمالات) machines.
- ✓ Who could have imagined netbooks, iPhones, PlayStations, Google, Facebook, YouTube, Twitter, eBay, robot moon rovers, or laserguided “smart bombs”?

Phases of the Information Age

- ✓ **Institutional computing phase (حوسبة احتياجات المؤسسات), starting about 1950: large, expensive mainframes.**
- ✓ **Personal computing phase (حوسبة احتياجات فردية), starting about 1975: millions of PCs joined mainframes.**
- ✓ **Interpersonal computing phase (حوسبة احتياجات مجموعات من الافراد), starting about 1995: networks connected the PCs and mainframes.**
- ✓ **Collaborative computing phase (حوسبة اجهزة متصلة بسحابة), starting about 2005: smart phones, tablets, and other digital devices join PCs on the Internet; migration to Internet "cloud".**

Explanations: Clarifying Technology

- ✓ Computer hardware and software details change every few years.
- ✓ Internet is evolving even faster.
- ✓ Most of the underlying concepts(المفاهيم الأساسية) remain constant.
- ✓ It is important to understand the basics to keep up with the changes.

تطور تكنولوجيا المعلومات يسير بسرعة هائلة جدا

يجب فهم اساسيات هذه التكنولوجيا للتمكن من فهم التكنولوجيا القادمة

Applications: Digital Technology in Action

✓ Everyone can benefit from knowing the following:

هذه تقنيات هامة يجب على الجميع فهم اساسياتها

- Network applications
- Word processing and desktop publishing
- Spreadsheets and databases
- Graphics and image processing
- Audio, video, and multimedia
- Programming and customized problem solving
- Artificial intelligence(الذكاء الإصطناعي)

Implications: Social and Ethical Issues

Potential risks of digital technology امور مرتبطة بتكنولوجيا المعلومات يجب فهمها

- Threat to personal privacy (الخصوصية)
- Hazards of high-tech crime (جرائم الكترونية)
- Difficulty of defining and protecting intellectual property (حقوق الملكية)
- Threat of automation and the dehumanization of work (استبدال البشر بالتكنولوجيا)
- Abuse of information for political and economic power (الابتزاز الالكتروني)
- Dangers of dependence on complex technology (الاعتمادية على التكنولوجيا)
- Emergence of biodigital technology (التكنولوجيا الحيوية)

Computer Ethics

الأخلاقيات والحاسوب

- ✓ Know the rules and the law.
- ✓ Don’t assume that it’s okay if it’s legal.
- ✓ Think scenarios.
- ✓ When in doubt, talk it out.
- ✓ Make yourself proud.
- ✓ Remember the golden rule.
- ✓ Take the long view.
- ✓ Do your part.