

# Computer Applications

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Zeeshan Abbas

# Evolution of Computing

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But first, why should we spend time on  
recounting the events of the past

Why not just talk about what is happening in  
computing now and what is going to happen in  
the future?

Why?

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- If you do not learn from the history, your condemned to repeat it
  - Recounting the events of the past provides an excellent opportunity to:
    - learn lessons
    - discover patterns of evolution, and
    - use them in the future
  - If we learn from history well, we will:
    - neither repeat the mistakes of the past
    - nor would we waste time re-inventing what already has been invented



# Babbage's *Analytical Engine* - 1833

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- Mechanical, general-purpose
- Was crank-driven
- Could store instructions
- Could perform mathematical calculations
- Could store information permanently in punched cards

# Punch card





# Punched Cards - 1801

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- Initially had no relationship with computers
- Invented by a Frenchman named Joseph-Marie Jacquard for storing patterns.
- Their value for storing computer-related information was later realized by the early computer builders
- Punched cards were replaced by magnetic storage only in the early 1950s

# Vacuum Tube - 1904

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- John Fleming, an English Physicist, developed the very first one
- These electronic devices consist of 2 or more electrodes encased in a glass or metal tube
- They along with electric relays were used in the construction of earlier computers
- These tubes have now been almost completely replaced by more reliable and less costly transistors



# Vacuum Tube - 1904



# ABC - 1939

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- Attanasoff-Berry Computer
- John Attanasoff & Clifford Berry at Iowa State College
- World's first electronic computer
- The first computer that used binary numbers instead of decimal
- Helped grad students in solving simultaneous linear equations



# Harvard Mark 1 - 1943

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- Howard Aiken of Harvard University
- The first program controlled machine
- Included all the ideas proposed by Babbage for the Analytical Engine
- The last famous electromechanical computer

# ENIAC – 1946

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- Electronic Numerical Integrator And Computer
- World's first large-scale, general-purpose electronic computer
- Built by John Mauchly & John Eckert at the University of Pennsylvania
- Developed for military applications
- 5,000 operations/sec, 19000 tubes, 30 ton
- 150 kilowatts: Used to dim the lights in the City when it ran



# Transistor - 1947

- Invented by Shockly, Bardeen, and Brattain at the Bell Labs in the US
- Compared to vacuum tubes, it offered:
  - much smaller size
  - better reliability
  - much lower power consumption
  - much lower cost
- All modern computers are made of miniaturized transistors

# Floppy Disk - 1950

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- Invented at the Imperial University in Tokyo by Yoshiro Nakamats
- Provided faster access to programs and data as compared with magnetic tape



# UNIVAC 1 - 1951

- UNIVersal Automatic Computer
- Echert & Mauchly Computer Company
- First computer designed for commercial apps
- First computer that could not only manipulate numbers but text data as well
- Max speed: 1905 operations/sec
- Cost: US\$1,000,000
- 5000 tubes. 943 cu ft. 8 tons. 100 kilowatts
- Between 1951-57, 48 were sold

# Compiler - 1952

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- Grace Hopper of US Navy develops the very first high-level language compiler
- Before the invention of this compiler, developing a computer program was tedious and prone to errors
- A compiler translates a high-level language (that is easy to understand for humans) into a language that the computer can understand



# ARPANET (Advanced Research Projects Agency) - 1969

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- A network of networks
- The grand-daddy of the today's global Internet
- A network of around 60,000 computers developed by the US Dept of Defense to facilitate communications between research organizations and universities

# Intel 4004 - 1971

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- The first microprocessor
- Intel's “Ted Hoff”
- Microprocessor: A complete computer on a chip
- Its speed is same as ENIAC
- 2500 transistors



# Altair 8800 - 1975

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- The commercially available 1<sup>st</sup> PC
- Based on the Intel 8080
- Cost \$397
- Had 256 bytes of memory;

# Altair 8800 - 1975

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# Cray 1 - 1976

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- The first commercial supercomputer
- Supercomputers are state-of-the-art machines designed to perform calculations as fast as the current technology allows
- Used to solve extremely complex tasks: weather prediction, simulation of atomic explosions; aircraft design; movie animation
- Cray 1 could do 167 million calculations a second

# IBM PC & MS DOS - 1981

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- IBM PC: The tremendously popular PC; 95% of the PC's in use today
- MS DOS: The tremendously popular operating system that came bundled with the IBM PC



# Apple Macintosh - 1984

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- The first popular, user-friendly, WIMP-based PC
- Based on the WIMP (Windows, Icons, Menus, Pointing Device)

# World Wide Web -1989

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- Tim Berners Lee – British physicist
- 1989 – At the European Center for Nuclear Energy Research (CNER) in Geneva



# What is the World Wide Web?

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- A huge resource of information
- Logically unified, but physically distributed
- Logically unified: Any one from any where can access the information using a very simple scheme consisting of links & URLs
- Physically distributed: The information is stored on Internet-connected computers that are spread all over the globe

# Who is allowed to access the Web?

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- Any one and every one with a computer and a connection to the Internet
- No nationalistic, ideological, racial, or religious restrictions
- In Pakistan, Web is accessible from any city or town that has a phone available



# How do I visit a Web page?

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- Turn your computer **on**
- **Connect** to the internet through a modem or Local Area Network
- Launch the **browser** (which in most cases, will be the Internet Explorer)
- Type in the **URL** of the Web page that you want to visit

# Browser

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- Browser is the tool that we use to access the content of the Web
- Browser and the content of the Web have the same relationship as the TV has with cable programs
- 1993 - The 1<sup>st</sup> major browser “Mosaic” was developed at the National Center for Supercomputing Applications (NCSA) at the University of Illinois, Urbana-Champaign
- Initially handled text only, later graphics-viewing capability was added



# What is a URL?

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- Uniform Resource Locator
- The unique address assigned to each unique page on the Web

# Examples

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<http://dawn.com>

<http://www.uobs.edu.pk>

<http://www.smeda.org.pk>



# Are there any access charges?

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- Most of the info on the Web is available for free
- There is some for-payment content on the Web, which is generally paid with the help of a credit card

# Links

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- The underlined pieces of text are called links
- Each link is a gateway to another Web page
- All you have to do is click on the link to go to the page corresponding to that link



# The most popular Web sites?

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- Microsoft – Most popular software developer's Web site
- Yahoo – Most popular multi-service Web site
- Amazon – most popular shop on the Web
- CNN – most popular news Web site
- Google – most useful search engine

# What is a Web site?

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- A collection of related documents available on the Web
- The first portion of the URLs in the Web pages of a Web site is the same e.g.
  - <http://www.uobs.edu.pk/>
  - [http:// www.uobs.edu.pk/about-us](http://www.uobs.edu.pk/about-us)
  - <http:// www.uobs.edu.pk/contact>

Are the URLs of three distinct Web pages on a single Web site



# What is a Web Search Engine?

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- Search engines continuously scan the Web and compile a list of all the Web pages that they find
- The search engine with the largest such list (or index) is **Google** – with a list of over 2 billion Web pages and over 330 million images
- We use the search engine by typing a “search key word” or “query” on its Web page. It looks for those keyword in its index, and displays a list of Web pages that contain that keyword

# I know I can read off the Web. Am I allowed to put my stuff on the Web?

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- Yes. You just need to have a computer that is hooked up to the Internet.
- You do not require anyone's permission to put your Web page(s) on the Web
- Your Web page will be available to all the millions of users that have access to the Internet the moment you place it on the Web



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**Internet ---- Web**

# What info is available on the Web?

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- Information about almost every thing known to mankind and then some!
- The info is in the form of:
  - Text
  - Graphics
  - Animation
  - Video
  - Sound



# Impact of the Web on:

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- Society
- Commerce

# Impact of the Web on Society

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- User friendly **communication** has become much more affordable – the global village is shrinking
- Business persons can stay in touch with their businesses even without being there – for some, that has resulted in the destruction of their family life



# Impact of the Web on Commerce

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- Huge impact
- The moment I take my business to the Web, it becomes possible for my customers to find out about me without me being physically present in their city
- Suddenly, I'm running a global business

ANY QUESTION...??

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# Assignment...

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- Explain the types of Computer on the basis of their sizes, power and speed.
- Explain the generation of computer.