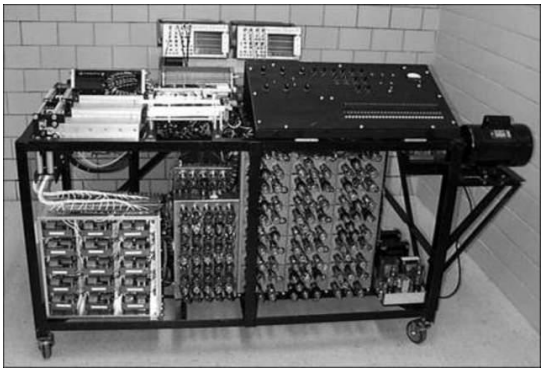
Islamic University of Najaf
College of Medical Technique
Department of Radiology Technique

Lecture One: Computer Fundamentals

INTRODUCTION



linkThe Atanasoff–Berry Computer (ABC) was the first electronic digital computing device. Conceived in 1937, the machine was not programmable, being designed only to solve systems of linear equations.

Computer as a revolution left no area of life untouched in the present world. It is of tremendous help in all field of life. Hence, the knowledge of computer is a necessity for existence of everybody in this global village. The invention of computer has transformed our simple manual works to sophisticated life of automated works to meet the global demand for the higher productivity and increased efficiency with high precision. Computer is increasingly becoming compulsory in nearly all fields of studies, not because of anything but its accuracy and versatility in processing data. Many tasks at home or office are being automated rapidly with computer. Thus it is becoming apparent that in whatever discipline or working sector, the computer is now a very vital tool for efficiency improvement and precision of job or task execution. A computer is an electronic device, operating under the control of instructions stored in its own memory. These instructions tell the machine what to do. The computer is capable of accepting data (input), processing data arithmetically and logically, producing output from the processing, and storing the results for future use. Most computers that sit on a desktop are called Personal Computers (PCs). The "computer" is an ensemble of different machines that you will be using to get your job done. A computer is primarily made of the Central Processing Unit (usually referred to as the computer), the monitor, the keyboard, and the mouse. Other pieces of hardware are commonly referred to as peripherals. In everyday life activities, we process data or encounter cases of data processing. A typical example of data processing is the generation of statement of student result from the marks score in an examination and continuous assessment. It is essential

By: Ali Al-bawi
Gmail: ali.albawi.ai@gmail.com

to know that information is as good as the data from which it is derived, and the transformation process which they are subjected to. Meaningless data or inappropriate processing produces wrong information. Thus computer gives you results corresponding to what data you supply and how you process it. Summarily, the intelligent performance of a computer depends on correctness of input data and the intelligence performance of the human being that drives it.

SOFTWARE AND HARDWARE

Hardware is the term given to the physical components of a computer: e.g. keyboard, monitor, system box or floppy disk drive. Software, on the other hand, is electronic information: files, operating system, graphics, computer programs are all example of software. The difference between hardware and software reflects the duality between the physical and mental worlds: for example, your brain is hardware, whereas your mind is software. Software is the stuff that makes your computer do things for you. The computer without software would be like a home entertainment system with no tapes, CD.s, or movies - you have the machine, but there.s nothing to play on it. Software is continually developed. Each time the software maker (Microsoft, Adobe, Corel, etc) develops a new version of their software they assign it a version number. Before Microsoft Word 7, there was Microsoft Word 6.0.1, and before that Word 6.0. The larger the developments made to the software, the larger the version number changes. Usually a large change will result in a whole number upgrade; a small change may result in a tenth of a decimal place. Hardware are those components or physical pieces (things you can touch) that make up the computer. The different pieces of the computer.s hardware are monitor, speakers, mouse, CDROM, floppy drive, hard drive, keyboard, CPU, RAM, Processor, etc. Each piece plays a role in the operation of a computer.

By: Ali Al-bawi
Gmail: ali.albawi.ai@gmail.com

OPERATING SYSTEM

What Is an Operating System (OS)?

You've probably been involved in a "PC versus Mac" argument at some point in your life. Everyone seems to have very strong opinions on the subject, but what it really comes down to is personal preference in operating systems. Most people know that they like one or another but may not be able to pinpoint what they really prefer about them. They may say they like a particular command prompt, or they enjoy some pre-installed software, the look and feel of the hardware, the applications or systems they can download, or even the pre-installed web browser. But the reality is that the features of an OS aren't immediately clear to most users. A resource to help users understand the different processing and interaction elements of their favorite OS helps it become easier to work with. Students (particularly online students), freelancers, contractors, and anyone who owns a phone, computer, or tablet should learn about different OSs so they can pick a computer and OS that meet their needs. If you're planning to study IT in school and pursue an IT career, you'll want a strong knowledge of OSs to make sure you're prepared for all the skills you'll need to be successful in your field.

What Is the Purpose of an Operating System?

Operating systems contain and manage all the programs and applications that a computer or mobile device is able to run, which means managing the device's software and hardware functions. The functions of an OS include: Booting: Booting is the process of turning on the computer and powering up the system. Memory management: This feature controls and coordinates the computer applications while allocating space for programs. Loading and execution: Your OS will load, or start up, a program and then execute the program so that it opens and runs. Data security: A good OS includes features that keep your data safe and computer programs secure. Security features are set up to keep unwanted cyberattackers at bay. Disk management: This manages all the drives installed in a computer, including hard drives, optical disk drives, and flash drives. Disk management can also be used to divide disks, format drives, and more. Process management: Your OS is designed to allocate resources to different computer processes, enable the processes to share information, protect them, and synchronize them. Device controlling: Your OS will

allow you to open or block access to devices like removable devices, CD/DVDs, data transfer devices, USBs, and more. Printing controlling: As an extension of device controlling, your OS takes control of the printers that are connected to the computer, and the materials that need to be printed. User interface: Also referred to as a UI, this is the part of the OS that allows a user to enter and receive information. This can be done with typed commands, code, and other formats.

By: Ali Al-bawi
Gmail: ali.albawi.ai@gmail.com

THE FIVE MOST POPULAR OPERATING SYSTEMS

There are five main types of operating systems. These five OS types are likely what run your phone, computer, or other mobile devices like a tablet. Whether you're just a normal computer and phone user or someone hoping to get involved in an IT career, knowledge of applications and systems types will help you maintain security and user access, perform routine operations, and much more.

MICROSOFT WINDOWS.

The Windows OS has been around since the 1980s and has had several versions and updates (including **Windows NT, Windows 95, Windows 98, Windows 2000, Windows Me, Windows XP, Windows Vista, Windows 7/8/10/11,** etc.) Microsoft Windows is one of the popular operating system types and is preloaded on most new PC hardware. With each new Windows update or release, Microsoft continues to work on improving their users' experience, hardware, and software, making Windows more accessible and easier to use. Microsoft Windows contains a control panel, a desktop and desktop assistant, disk cleanup, event viewer, and more. Many users prefer Microsoft Windows because they say it's compatible with many other kinds of software. Many kinds of computer programs run best on Microsoft Windows because they're developed by Microsoft.

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Gmail: ali.albawi.ai@gmail.com

APPLE MACOS.

Head-to-head in the competition with Microsoft Windows is Apple's **macOS**. **macOS** and Windows are both examples of proprietary operating systems, meaning that the company conceptualized, designed, developed, and now sells their own OS. They're designed and sold by the companies and aren't meant to be tampered with or tweaked by users. Apple and Macintosh computers run on the proprietary macOS and OS X system, the first of which launched 20 years ago. There are also previous versions or updates which include:

Kodiak (OS X 10 Beta)

Lion (OS X 10.7)

Mountain Lion (OS X 10.8)

Mavericks (OS X 10.9)

Yosemite (OS X 10.10)

El Capitan (OS X 10.11)

Sierra (macOS 10.12)

High Sierra (macOS 10.13)

Mojave (macOS 10.14)

Catalina (macOS 10.15)

Big Sur (macOS 11)

The macOS and Apple/Mac products are also known and beloved by their users for ease of use and continually improving user experience. Fast processing speeds, a simple desktop interface, and a wide variety of helpful resources make users excited about macOS. Many users relish the instant connection with their computers and mobile phone hardware, and enjoy the lack of bugs and hackers that Apple systems are known for.

By: Ali Al-bawi
Gmail: ali.albawi.ai@gmail.com

GOOGLE'S ANDROID OS.

The OS that companies including Google use to run its Android mobile smartphones and tablets is based on Linux distribution and other open source software. Android OS is the primary OS for Google mobile devices like smartphones and tablets. Android has gained increasing popularity since its release as an alternative to Apple's iOS for smartphone users and is continuing to increase in popularity with new updates and exciting features.

APPLE IOS.

Apple's iOS is another mobile operating system used exclusively for iPhones, some of the most popular mobile devices on the market. iOS integrations have regular updates, new expansions to software, and continually are offering new features for users even if they have older devices.

Many users appreciate the unique user interface with touch gestures, and the ease of use that iOS offers. This operating system also allows other Apple devices to connect, giving users easy connections to other devices or people.

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Gmail: ali.albawi.ai@gmail.com

LINUX OPERATING SYSTEM.

Linux is different from Windows and Apple in that it's not a proprietary software, but rather a family of open source systems. In other words, anyone can modify and distribute it. Linux may be the least known on this list, but it's free and available in many different open source versions. Linux is popular because of its ease of customization and offers a variety of options to those who understand how to use it. If you know how to customize and work with operating systems, Linux is an ideal choice. And if this kind of coding and back-end work is interesting to you, it may be a good idea to purchase a Linux system and get started on manipulating it.

Optional

WHAT IS ARTIFICIAL INTELLIGENCE?

Artificial intelligence (AI) is a wide-ranging branch of computer science concerned with building smart machines capable of performing tasks that typically require human intelligence.

Can we use AI in our study? Give an example.

By: Ali Al-bawi
Gmail: ali.albawi.ai@gmail.com