FUNDAMENTALS OF INFORMATION SYSTEMS

ITE101 LESSON 5

INFORMATION SYSTEMS SOFTWARE

➔ consists of programs and procedures that collect, process, store, and distribute data to support organizational decision-making and operations.

Application Software

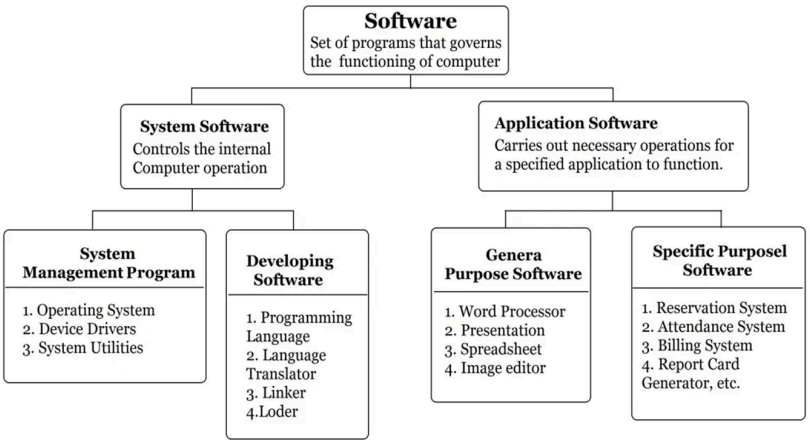
➔ Computer games
➔ Spreadsheets
➔ Word processors
➔ Databases
➔ Internet browsers

System Software

➔ Operating system
➔ Utilities

Hardware

➔ CPU
➔ Disks
➔ Mouse
➔ Printer, etc.



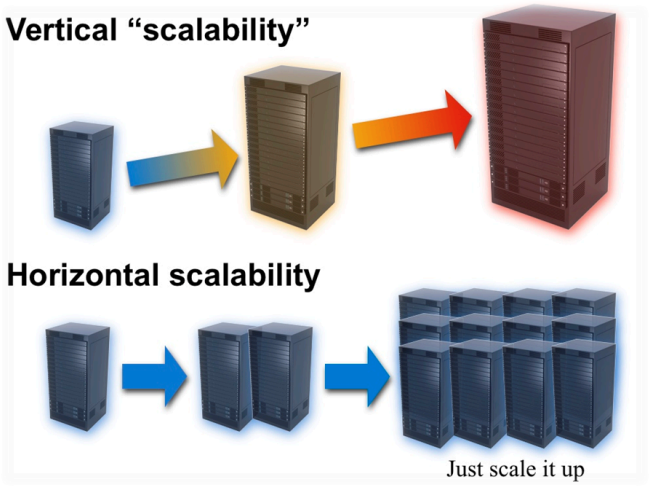
System software

➔ manages computer hardware and provides a platform for other software, operating in the background to ensure functionality

Application software

➔ It is intended for end-user use – not operating, administering or programming a computer. It includes programs such as word processors, web browsers, media players, and mobile applications used in daily tasks.

KINDS OF SYSTEM DESIGN



Horizontal Scaling and Vertical Scaling

➔ both of which can be used to improve the performance and capacity of the system.

Vertical Scaling (scaling up)

➔ the process of increasing the capacity or capabilities of an individual hardware or software component within a system.

Horizontal Scaling (scaling out)

➔ the process of increasing the capacity or performance of a system by adding more machines or servers to distribute the workload across a larger number of individual units.

Vertical Systems

FUNDAMENTALS OF INFORMATION SYSTEMS

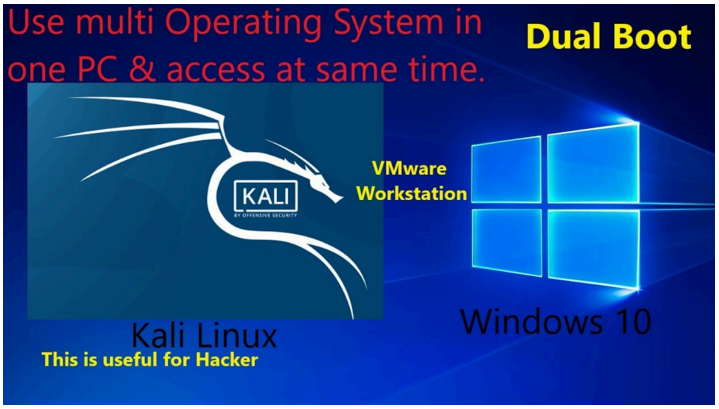
ITE101 LESSON 5

Horizontal Systems

Operating Systems

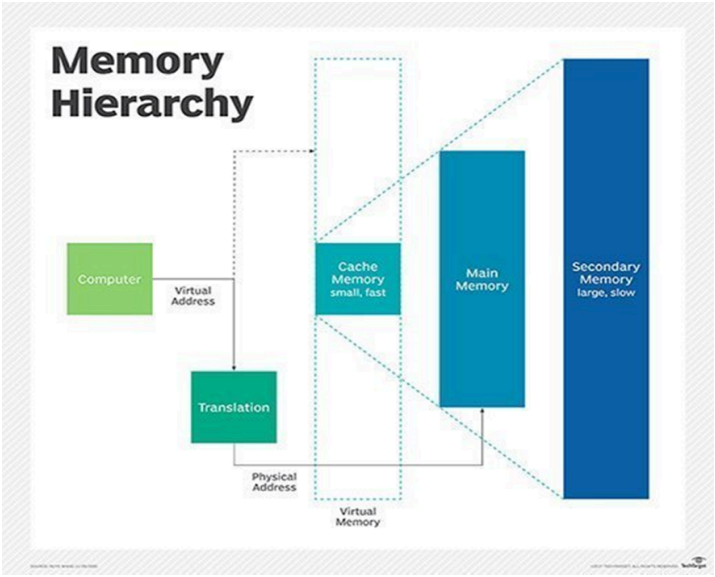
➔ essential system software that manages computer hardware, software resources, and provides common services for computer programs.

Multioperating



➔ a **multi-user operating system (OS)** allows multiple users on different computers to simultaneously access a single machine's resources, such as CPU and memory, via a network.

Virtual Memory



➔ an operating system technique that extends a computer's physical RAM by using storage space on the hard drive, allowing the system to run more applications simultaneously and handle larger tasks than physical memory allows.

MODES OF COMPUTER SYSTEM OPERATION

Bunch Operating

➔ a type of operating system that executes a series of jobs (programs and data) in batches without manual intervention, where similar jobs are grouped together to maximize efficiency and CPU utilization

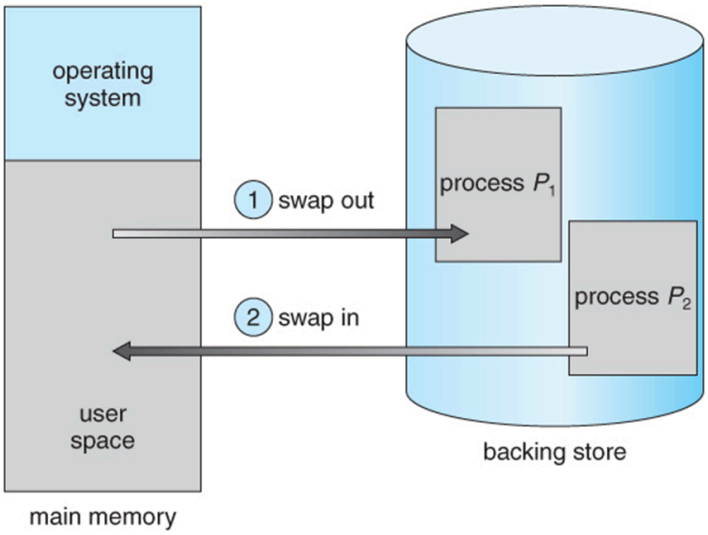
FUNDAMENTALS OF INFORMATION SYSTEMS

ITE101 LESSON 5

Schedule Divide

- ➔ refers to the process of breaking down a large, complex schedule, workload, or data set into smaller, more manageable components.
- ➔ this technique is used to improve efficiency, accuracy, and readability in various fields.

Actual Processing



- ➔ swapping is a memory management technique used by operating systems to temporarily move a process from main memory to secondary storage (backing store) and vice versa, allowing the system to manage limited RAM effectively and run multiple processes concurrently.

MOST POPULAR MICROCOMPUTER OPERATING SYSTEMS

- ➔ 95 Windows
- ➔ DOS
- ➔ Windows NT
- ➔ OS/2 Warp
- ➔ UNIX
- ➔ Macintosh System 7
- ➔ User Interface

THE KINDS OF INTEERFACE

Order Drive

- ➔ is the one whose command is used to attach, eliminate and fix connections to shared resources.

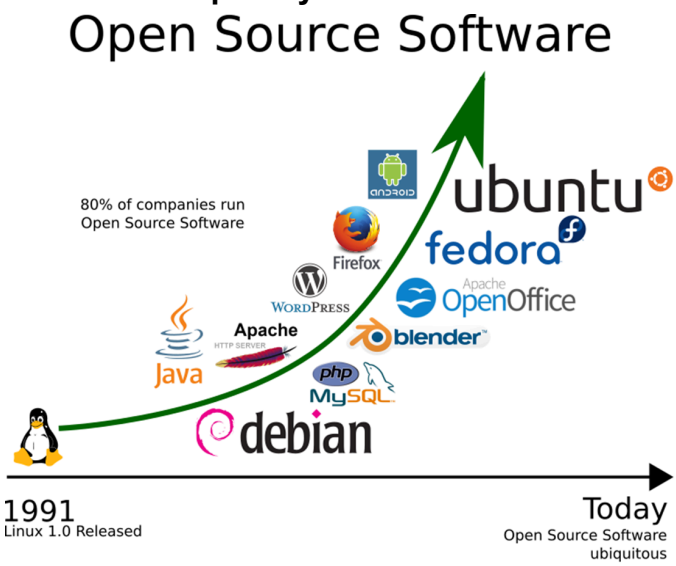
Menu Drive

- ➔ is the same as GUI but not advanced yet.
- ➔ this is where you can choose whether what you want to access or enter.

Interface User Graphic

- ➔ is a kind of user interface that authorizes users to communicate with electronic tools through illustrative icons and visual measure.

The Goal of Open System



Application Portables

- ➔ are software programs designed to run on a computer without requiring a formal installation process or making changes to the system registry.

Application Scalables

- ➔ app's ability to handle increased load—such as more users, data, or transactions—without performance degradation or service interruptions.

FUNDAMENTALS OF INFORMATION SYSTEMS

ITE101 LESSON 5

Interoperability

Web Browser

➔ a software application for accessing, retrieving, and displaying information on the World Wide Web, including websites, images, and videos. It functions as a client that requests data from a server, rendering HTML files into visible content.

Personal Productivity Software

➔ streamlines individual workflows, task management, and information organization to enhance efficiency.

FUNCTIONS OF PERSONAL PRODUCTIVITY SOFTWARE

➔ Spreadsheets
➔ Database Management

THE DATABASE MANAGEMENT TARGETS AND MANAGING 3 IMPORTANT MATTERS

1. The Data that being stored
2. Database Engine
3. Database schema

Microsoft Access 2019
Word Processing
Desktop Publishing

➔ the creation of professional quality, page-layout documents such as brochures, magazines, books, and marketing materials—using specialized software on a personal computer

Presentation Software

➔ it creates, edits, and displays slideshows to effectively communicate information using text, graphics, and multimedia.

Multimedia Authoring Software

➔ enables the creation of interactive digital content by integrating text, graphics, audio, video, and animation

Graphics Software

➔ enables the creation, editing, and manipulation of digital images, categorized into raster (pixel-based), vector (mathematical paths), 3D modeling, and desktop publishing.

Hypermedia

➔ a computer-based, non-linear information system that uses hyperlinks to connect various media types, including text, audio, video, graphics, and images.

Personal Information Management

➔ refers to the activities, practices, and tools individuals use to acquire, organize, maintain, and retrieve information—such as emails, documents, and photos—to meet daily, professional, and personal goals.

FUNDAMENTALS OF INFORMATION SYSTEMS

ITE101 LESSON 5

Communication Software and Web Browser

➔ are essential, often integrated, tools for information exchange and accessing the World Wide Web.

FUNCTIONS OF THE SOFTWARE

1. **Transmission and initiation of information**
2. **Transfer of desired documents to other user**
3. **Terminal emulator** – a piece of software to log into mainframes and access email
4. **Voice over Internet Protocol (VoIP)** - allows users to make calls through internet

COMMUNICATIONS SOFTWARE

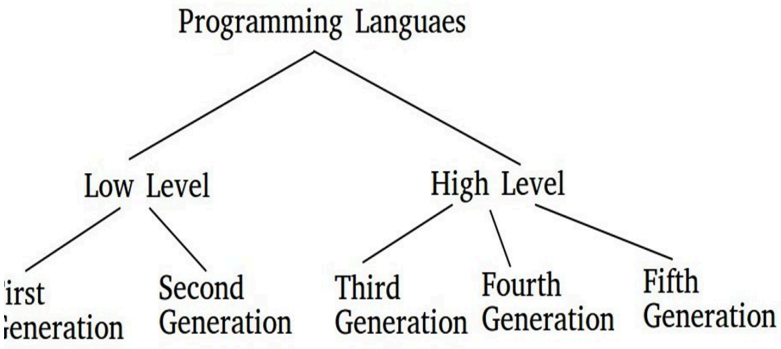
➔ consists of digital tools designed to exchange information, files, and messages in real-time (synchronous) or with delays (asynchronous) across computers and mobile devices.

Browser

➔ is a computer program with a graphical user interface for displaying and navigating between web pages.

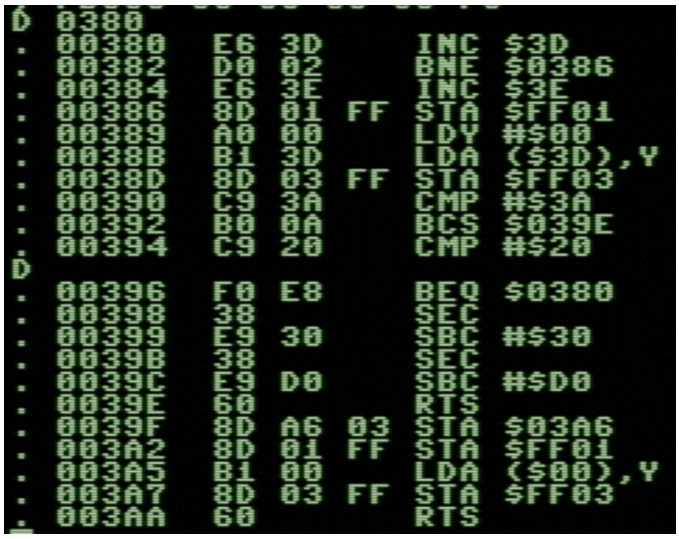
PROGRAMMING LANGUAGES AND THEIR TRANSLATORS

These languages have evolved over 5 generations.



1. **Machine Languages (1GL)**
2. **Assembler Languages (2GL)**
3. **High-level Languages (3GL)**
4. **Fourth Generation Languages (4GL)**
5. **Fifth Generation Languages (5GL)**

Machine Languages



➔ is the lowest-level programming language, consisting entirely of binary digits (s and s) that the computer's CPU executes directly.

FUNDAMENTALS OF INFORMATION SYSTEMS

ITE101 LESSON 5

ADVANTAGES OF MACHINE LANGUAGES

1. The main advantage is that program of machine language runs quick because it does not need translation program is required for the CPU
2. Efficient use of primary memory

DISADVANTAGES OF MACHINE LANGUAGES

1. Programmers have to know details of hardware to write a program.
2. Programmers have to remember a lot of codes
3. To use machine language, programmers must write it using binary codes.
4. It is difficult to debug.

HIGH-LEVEL LANGUAGES

➔ are programming languages designed to be easy for humans to read, write, and maintain by using abstract, natural language-like commands.

Java

➔ a multiplatform, object-oriented programming language that runs on billions of devices worldwide.

ADVANTAGES:

1. High level languages are programmer friendly. They are easy to write, debug and maintain.
2. It provides higher level of abstraction from machine languages
3. It is machine independent language.
4. Easy to learn
5. Easier to locate the errors, can be debugged immediately
6. High-level knowledge in programming product in better productivity

DISADVANTAGES:

1. It takes extra interpretation times to make an interpretation of the source to machine code
2. High level programs are nearly slower than low level projects
3. Contrasted with low level projects, they are for the most part less memory proficient
4. Cannot communicate directly with the hardware

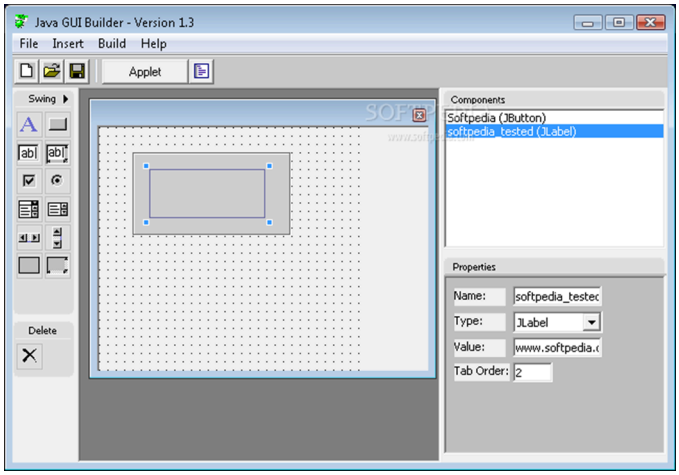
Beyond High-Level Programming Languages

➔ refers to moving past typical application development languages to explore lower-level, specialized, or alternative programming paradigms and tools.

Central domains and families about 4GLs are:

1. Database questions
2. Report generators
3. Information control
4. Screen painters and generators
5. GUI makers
6. Numerical advancement
7. Web development and broadly useful languages

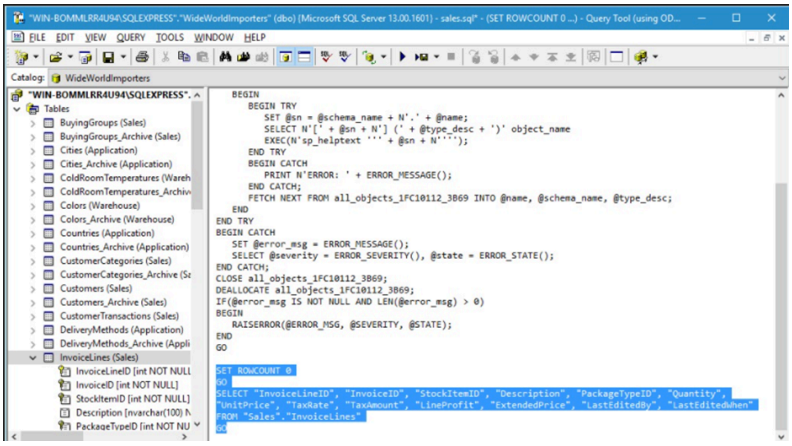
Examples:



FUNDAMENTALS OF INFORMATION SYSTEMS

ITE101 LESSON 5

SQL



ADVANTAGES:

1. Programming productivity is increased
2. System development is faster
3. Program support is simpler.
4. The completed framework will probably be what the user imagined
5. End user can regularly build up their own applications
6. Projects created in 4GLs are more convenient than those created in other age of languages.
7. Documentation is enhanced on the grounds that a large number are self-documenting.

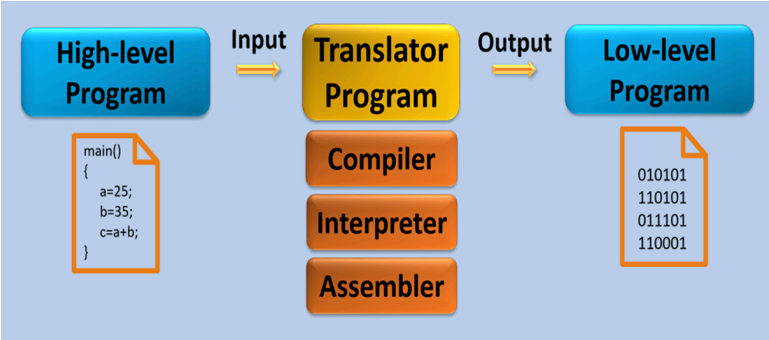
ADVANTAGES:

1. Decision making machines can be developed.
2. System automation, which can the efforts of programmer

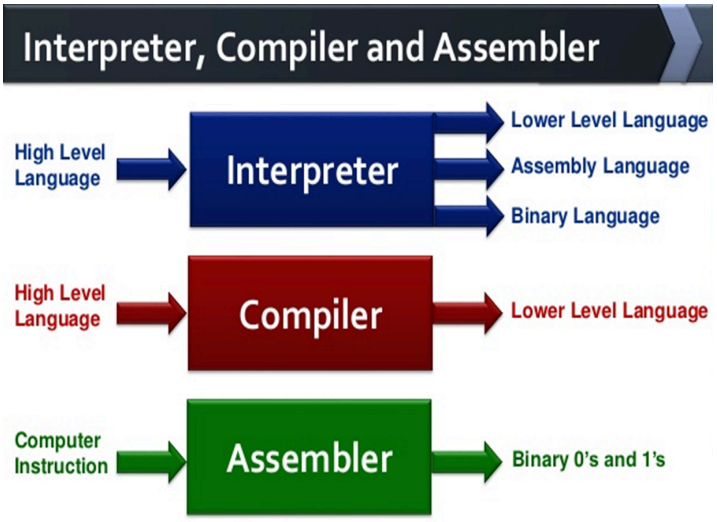
DISADVANTAGES:

1. Programs keep on getting more complicated and slowly loose relation with the original algorithm

Translators: Assemblers, Compilers, and Interpreters



Assemblers, Compilers and Interpreters



FIFTH GENERATION LANGUAGES

Fifth-generation programming language

Examples :

Artificial intelligence :

- The branch of computer science concerned with making computers behave like humans.
- There are several programming languages that are known as AI languages because they are used almost exclusively for AI applications. The two most common are *LISP* and *Prolog.*