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D10A 34
BATCH B

UNIX LAB

Experiment No: 1

Aim: Introduction to Unix,Case Study: Brief History of UNIX, Unix Architecture; Installation of Unix Operating System

Theory:

History-

Unix and Unix-like operating systems are a family of computer operating systems that are derived from the original Unix system from Bell Labs.Initial proprietary derivatives included the HP-UX and the SunOS systems. However, growing incompatibility between these systems led to the creation of interoperability standards like POSIX. Modern POSIX systems include Linux, its variants, and Mac OS.Unix is the most powerful and popular multi-user and multitasking Operating System. The basic concepts of Unix originated in the Multics project of 1969. The Multics system was intended as a time-sharing system that would allow multiple users to simultaneously access a mainframe computer.

Ken Thompson, Dennis Ritchie, and others developed the basic building blocks of Unix including a hierarchical file system, i.e, the concepts of processes and a command-line interpreter for the PDP-7. From there, multiple generations of Unix were developed for various machines.Growing incompatibility between these systems led to the creation of interoperability standards like POSIX and Single Unix Specification.Unix programs are designed around some core philosophies that include requirements like single purpose, interoperable, and working with a standardized text interface. Unix systems are built around a core kernel that manages the system and the other processes.Kernel subsystems may include process management, file management, memory management, network management, and others.

Unix Architecture-

The main concept that unites all the versions of Unix is the following four basics −

1. Kernel − The kernel is the heart of the operating system. It interacts with the hardware and most of the tasks like memory management, task scheduling and file management.

2. Shell − The shell is the utility that processes your requests. When you type in a command at your terminal, the shell interprets the command and calls the program that you want. The shell uses standard syntax for all commands. C Shell, Bourne Shell and Korn Shell are the most famous shells which are available with most of the Unix variants.

3. Commands and Utilities − There are various commands and utilities which you can make use of in your day to day activities. cp, mv, cat and grep, etc. are few examples of commands and utilities. There are over 250 standard commands

plus numerous others provided through 3rd party software. All the commands come along with various options.

4. Files and Directories − All the data of Unix is organized into files. All files are then organized into directories. These directories are further organized into a tree-like structure called the filesystem.

The architecture of Unix is based on the principles of modularity, layering, and abstraction. The operating system consists of several layers, each with its own specific functions, which work together to provide a complete computing environment. The following are the main components of Unix architecture:

1. Kernel: The kernel is the core of the Unix operating system, responsible for managing the hardware resources of the system, including memory, CPU, and I/O devices. It provides a layer of abstraction between hardware and software, and it is responsible for managing system calls, scheduling processes, and handling interrupts.

2. Shell: The shell is the command-line interface of Unix. It provides a user-friendly interface to interact with the system and run various commands. The shell is a user-level program that interacts with the kernel through system calls.

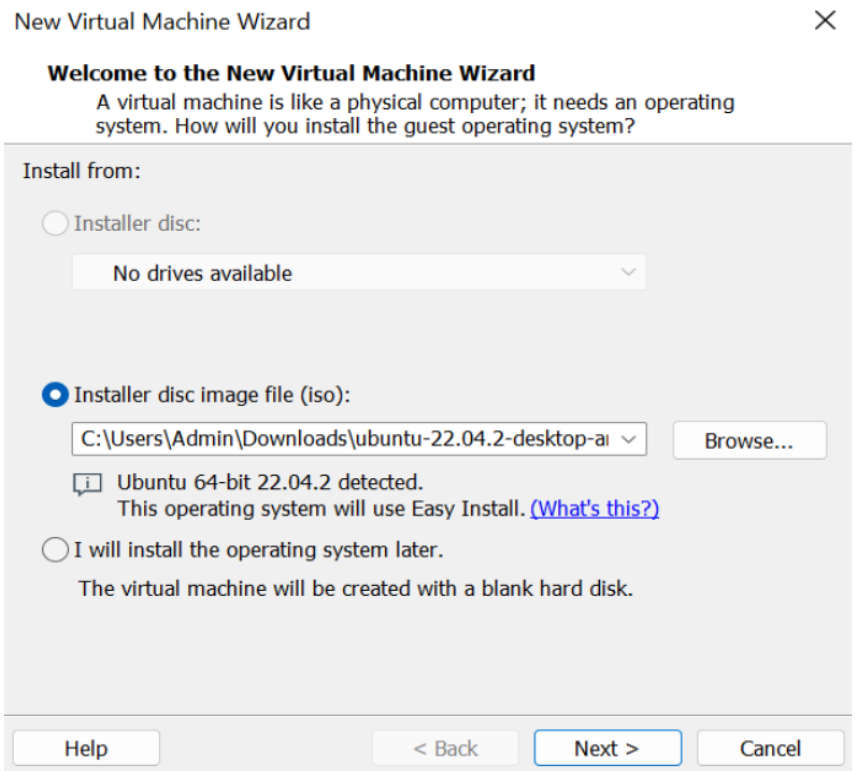
3. File System: Unix uses a hierarchical file system that organizes files and directories in a tree-like structure. Each file or directory has a unique path from the root directory to its location. The file system provides an interface for storing and retrieving files from the storage devices.

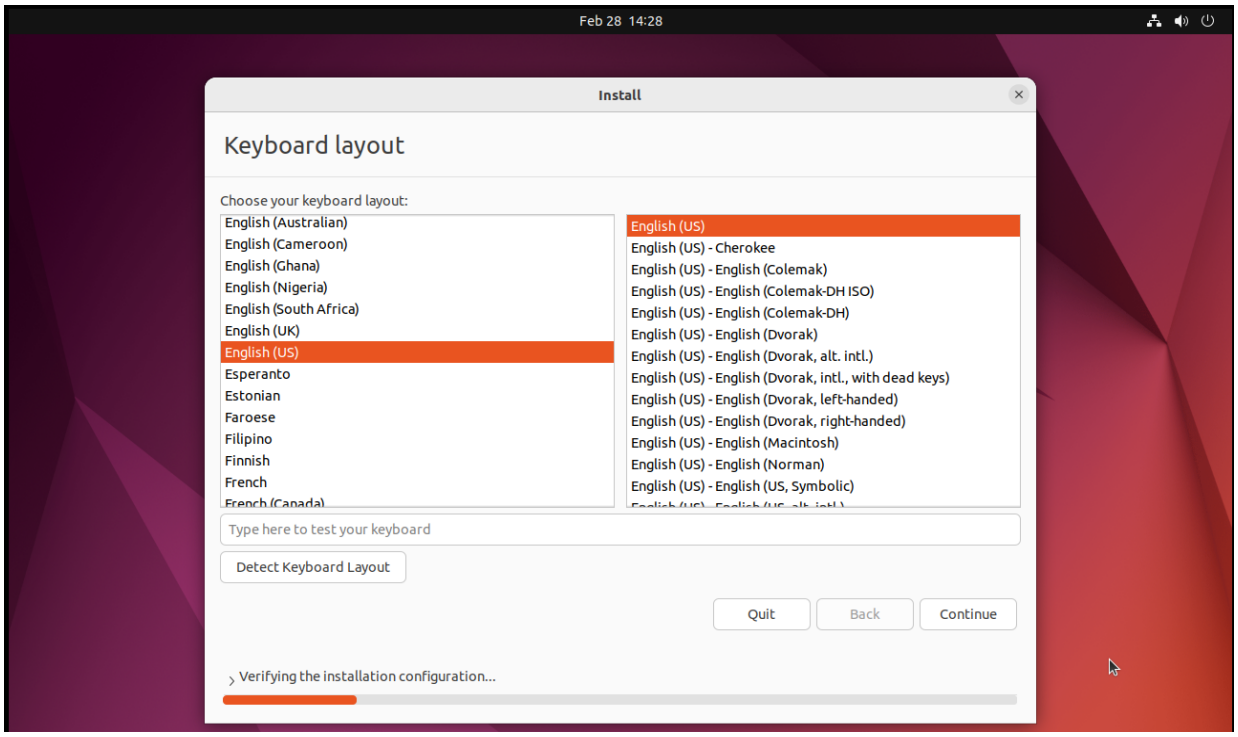
4. Utilities: Unix provides a set of utilities that perform various functions, such as file manipulation, text processing, networking, and system administration. The utilities are modular and can be combined to create complex commands.

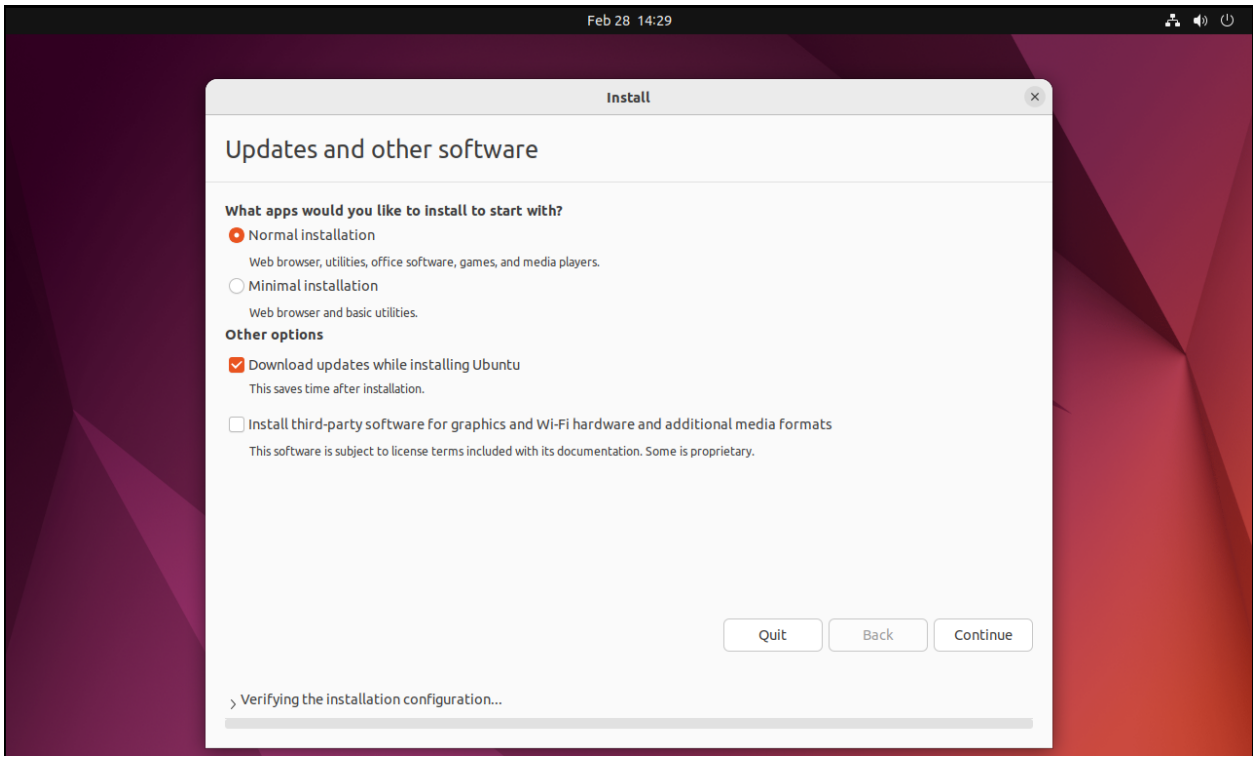
5. Libraries: Unix provides a set of libraries that contain common functions and procedures that can be used by other programs. The libraries provide an interface between the application programs and the kernel, making it easier for developers to create new software.

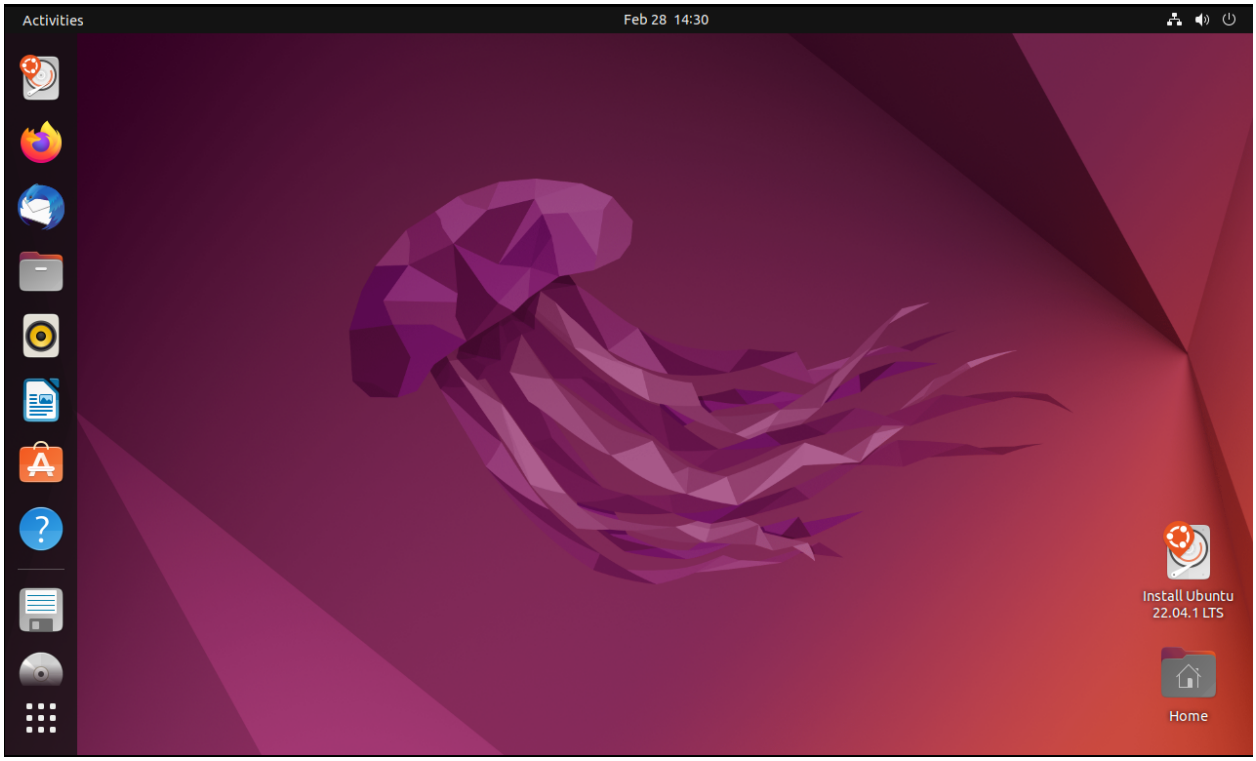
6. Network Services: Unix provides a set of network services that allow processes running on different systems to communicate with each other. The network services include protocols such as TCP/IP, FTP, SSH, and Telnet.

Installation-


New Virtual Machine Wizard
Welcome to the New Virtual Machine Wizard
A virtual machine is like a physical computer; it needs an operating system. How will you install the guest operating system?
Install from:
Installer disc:
No drives available
Installer disc image file (iso):
C:\Users\Admin\Downloads\ubuntu-22.04.2-desktop-ai
Browse...
Ubuntu 64-bit 22.04.2 detected.
This operating system will use Easy Install. (What's this?)
I will install the operating system later.
The virtual machine will be created with a blank hard disk.
Help
< Back
Next >
Cancel


Feb 28 14:28
Install
Keyboard layout
Choose your keyboard layout:
English (Australian)
English (Cameroon)
English (Ghana)
English (Nigeria)
English (South Africa)
English (UK)
English (US)
Esperanto
Estonian
Faroese
Filipino
Finnish
French
French (Canada)
English (US)
English (US) - Cherokee
English (US) - English (Colemak)
English (US) - English (Colemak-DH ISO)
English (US) - English (Colemak-DH)
English (US) - English (Dvorak)
English (US) - English (Dvorak, alt. intl.)
English (US) - English (Dvorak, intl., with dead keys)
English (US) - English (Dvorak, left-handed)
English (US) - English (Dvorak, right-handed)
English (US) - English (Macintosh)
English (US) - English (Norman)
English (US) - English (US, Symbolic)
Type here to test your keyboard
Detect Keyboard Layout
Quit
Back
Continue
Verifying the installation configuration...


Feb 28 14:29
Install
Updates and other software
What apps would you like to install to start with?
Normal installation
Web browser, utilities, office software, games, and media players.
Minimal installation
Web browser and basic utilities.
Other options
Download updates while installing Ubuntu
This saves time after installation.
Install third-party software for graphics and Wi-Fi hardware and additional media formats
This software is subject to license terms included with its documentation. Some is proprietary.
Quit
Back
Continue
Verifying the installation configuration...


Activities
Feb 28 14:30
Install Ubuntu 22.04.1 LTS
Home