VP Vidyalankar Polytechnic	DEPARTMENT OF COMPUTER ENGINEERING

Subject: Operating System	Subject Code:22516
Semester:5th Semester	Course: Computer Engineering
Laboratory No: L001C	Name of Subject Teacher: Vijay Patil
Name of Student: Siddharth P. Shah	Roll Id: 22203A0041

Experiment No:	01
Title of Experiment	Install and configure Linux(or alike) operating system.

X. Program Code

1. Install and configure Linux (or similar) operating system on your computer. Write down the steps for same.

Ans:

Step 1: Download the ISO File.

Step 2: Boot Your system with Bootable DVD/USB drive.
To start the installation click on “Install Ubuntu”.

Step 3: Check Install Prerequisite.

Step 4: Select the Installation Type.

Step 5: Select Your respective Time Zone.

Step 6: Select Your respective Keyboard Layout.

Step 7: Set the Hostname of your system and User credentials that will be used after installation.
Installation has started .Once the installation is completed , it will ask to restart the machine. Click on “Restart Now”

Step 8: Login Screen after reboot.
Use the same user and its credentials that we have set during the installation.
We will get below screen after entering the credentials.
Ubuntu Installation is Completed Now.
Similarly any open source installation shall be considered

2. Compare Unix and Windows OS

Ans:

Aspect	**Unix**	**Windows OS**
Architecture	Monolithic Kernel	Hybrid Kernel
File System	UFS, ext4, ZFS	NTFS
Process Management	Efficient multitasking; fork/exec	Complex process and inter-process management
Networking	Robust support; many tools	Extensive support; enterprise-focused tools
Command-Line Interface	Powerful CLI (Bash, Zsh)	Command Prompt, PowerShell
Graphical Interface	Various GUIs (GNOME, KDE, Xfce)	User-friendly, consistent GUI
Security	Strong security model; permissions	Advanced security features; regular updates

XII. Practical Related Questions

1. What are different versions of Linux operating system?

Ans:

a) Ubuntu
b) Fedora
c) Debian
d) CentOS
e) RHEL (Red Hat Enterprise Linux)
f) Arch Linux
g) openSUSE
h) Linux Mint
i) Kali Linux

2. Enlist the steps for booting the operating system.

Ans:

a) **Power On**: Press the power button to start the computer.
b) **POST (Power-On Self-Test)**: Perform hardware checks and initialize components.
c) **Load Bootloader**: Read the bootloader from the boot device (e.g., GRUB, LILO).
d) **Select OS**: Choose the operating system (if multiple are available).
e) **Load Kernel**: Load the operating system kernel into memory.
f) **Initialize Kernel**: Set up system resources, drivers, and hardware interfaces.
g) **Start Init/Systemd**: Begin the initialization process (start essential system services).
h) **Run Startup Scripts**: Execute scripts to configure user environments and services.
i) **User Login**: Present login screen or command prompt for user access.
j) **Load Desktop/GUI**: Start graphical user interface (if applicable) and user session.

3. State names of latest multiuser operating system and its advantages.

Ans:

a) **Ubuntu Server 24.04 LTS:** Long-term support and ease of use.
b) **Red Hat Enterprise Linux (RHEL) 9:** Enterprise-grade stability and advanced security.
c) **CentOS Stream 9:** Continuous updates and community-driven insights.
d) **Debian 12 (Bookworm):** Stability and flexibility.
e) **Fedora Server 39:** Cutting-edge features and modularity.

X111 Exercise:

1. Differentiate between command line OS and GUI OS by giving example.

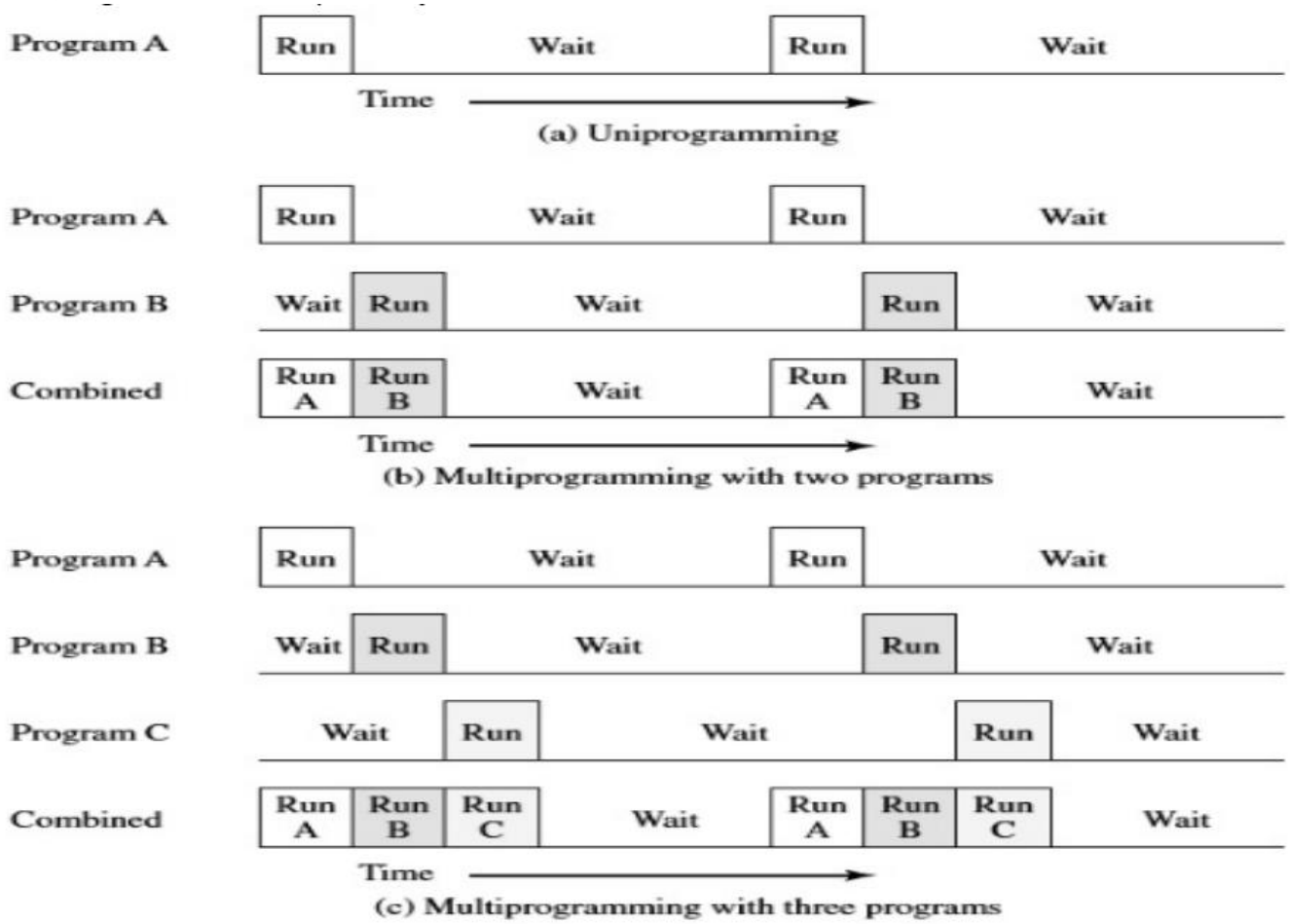
Ans:

Feature	**Command Line OS (CLI)**	**GUI OS (Graphical User Interface)**
User Interaction	Command-based, text input	Graphical, uses icons, windows, and menus
Ease of Use	Requires knowledge of commands	More intuitive, user-friendly
Learning Curve	Steeper, requires memorization	Shallower, easier for beginners
Resource Consumption	Low, uses fewer system resources	Higher, requires more memory and CPU
Example	MS-DOS, Linux Terminal	Windows, macOS, Ubuntu with GNOME
Flexibility	High for advanced users	Limited to what the GUI provides
Efficiency	Fast for tasks that require repetition	Can be slower due to graphical elements

2. Draw the diagram of multiprogramming system and state concept of it.

Ans:

i) Diagram:



ii) Multiprogramming increases CPU utilization by organizing jobs such that the CPU always has one to execute. In multiprogrammed systems the operation system keeps several jobs in memory at a time. This set of jobs is a subset of the jobs kept in the job pool.

iii) The operating system picks and begins to execute one of the jobs in the memory. Eventually the job may have to wait for some task, such as a tape is mounted, or an input/output operation to complete.

iv) In a non-multiprogramming system, the CPU would sit idle. In a multiprogramming system, the operating system simply switches to and executes another job. When that job needs to wait, the CPU is switched to another job and so on. Eventually the first job finishes waiting and gets the CPU back. As long as there is always some job to execute, the CPU will never be idle.

3. Which are the extra facilities provided by Unix other than Windows OS?

Ans:

Unix offers several facilities beyond what is typically found in Windows OS:

a) Multi-user Environment: Unix is designed to handle multiple users efficiently, allowing simultaneous logins and operations without conflicts.
b) Advanced Shell Scripting: Unix provides powerful shell scripting capabilities with shells like Bash and KornShell, enabling complex task automation and scripting.
c) Unified File System Hierarchy: Unix treats everything as a file, including devices and processes, within a single hierarchical file system.
d) Robust Security Model: Unix has a strong security model with detailed permission settings and user controls.

4. Enlist four features of the following operating system:

a. Windows 98 **b. Windows 2000** **c. Windows XP**

Ans:

a. Windows 98

Start Menu and Taskbar
Plug and Play Support
Internet Explorer 4.0 Integration
USB Device Support

b. Windows 2000

Enhanced Security Features
NTFS File System Support
Active Directory Integration
Improved Hardware Support

c. Windows XP

Improved User Interface (Luna Theme)
Fast User Switching
Remote Desktop Access
System Restore Feature