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**Experiment 1**

**Question:**

1. **Students have to explore different types of operating systems and differentiate them on the basis of pros and cons.**

Ans**: Different types of OS are**:

* Embedded Operating System:

An Embedded Operating System is designed to perform a specific task for a particular device which is not a computer. For example, the software used in elevators is dedicated to the working of elevators only and nothing else. So, this can be an example of Embedded Operating System. The Embedded Operating System allows the access of device hardware to the software that is running on the top of the Operating System.

|  |  |
| --- | --- |
| Pros | Cons |
| Since it is dedicated to a particular job, so it is fast. | Only one job can be performed. |
| Low cost. | It is difficult to upgrade or is nearly scalable. |
| These consume less memory and other resources. |  |

* Multiprogramming Operating System

Multiprogramming is an extension to batch processing where the CPU is always kept busy. Each process needs two types of system time: CPU time and IO time.In a multiprogramming environment, when a process does its I/O, The CPU can start the execution of other processes. Therefore, multiprogramming improves the efficiency of the system.

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| Pros | Cons |
| Throughout the system, it increased as the CPU always had one program to execute | Multiprogramming system provide an environment which various systems resources are used efficiently, but they do not provide any user interaction with the computer system. |
| Response time can also be reduced |  |

* Multiprocessing Operating System

In Multiprocessing, Parallel computing is achieved. There are more than one processor present in the system which can execute more than one process at the same time. This will increase the throughput of the system. In Multiprocessing, Parallel computing is achieved. More than one processor present in the system can execute more than one process simultaneously, which will increase the throughput of the system.

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| Pros | Cons |
| Due to the multiprocessing system, processing tasks can be distributed among several processors. This increases reliability as if one processor fails, the task can be given to another processor for completion. | Multiprocessing operating system is more complex and sophisticated as it takes care of multiple CPUs simultaneously. |
| As several processors increase, more work can be done in less. |  |

* Multitasking Operating System

The multitasking operating system is a logical extension of a multiprogramming system that enables **multiple** programs simultaneously. It allows a user to perform more than one computer task at the same time.

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| Pros | Cons |
| This operating system is more suited to supporting multiple users simultaneously. | The multiple processors are busier at the same time to complete any task in a multitasking environment, so the CPU generates more heat. |
| The multitasking operating systems have well-defined memory management. |  |

**A comparative Study of Different OS : Windows v/s Linux v/s IOS**

|  |  |  |
| --- | --- | --- |
| Windows | Linux | IOS |
| It was developed and is owned by **Microsoft Incorporation**. | It was developed by **Linus Torvalds**. | It was developed by **Apple Incorporation**. |
| Kernel type is Hybrid with modules. | Its kernel type is Monolithic. | Its kernel type is Hybrid. |
| The native APIs are Win32 and NT API. | Its native APIs are LINUX/POSIX. | Its native APIs are Cocoa and BSD-POSIX. |
| Update management is Windows Update. | Its update management depends on the distribution | Its update management is Software Update. |
| File systems supported are NTFS, FAT, ISO 9660, UDF, HFS+, FATX and HFS. | File systems supported by Linux are ext2, ext3, ext4, btrfs, ReiserFS, FAT, ISO 9660, UDF and NFS. | File systems supported by iOS are HFS+ and APFS. |
| It is for workstation, personal computers, media center, tablets and embedded systems. | Its target system types are embedded systems, mobile devices, personal computers, servers, mainframe computers and supercomputers. | Its target system types are smartphone, music player and tablet computer. |
| It charges for original version. | The non-native APIs supported through its subsystems are Mono, Java, Win16 and Win32. | The non-native APIs are not supported through its subsystems. |

1. **Take any 5 domains like gaming, finance, banking etc and suggest which OS will be best suitable for these domains.**

**Ans: OS which are best suitable for 5 domains are:**

* Hacking: KALI LINUX.
* Gaming: Win10
* Coding: GNU LINUX
* Business: Windows
* Banking: Windows/MAC

**Commands**

>>>Basic Commands

**sargun@Sargun:~$ pwd**

/home/sargun

**sargun@Sargun:~$ ls**

**sargun@Sargun:~$ ls -a**

. .. .bash\_history .bash\_logout .bashrc .landscape .motd\_shown .profile .sudo\_as\_admin\_successful

**sargun@Sargun:~$ history**

1 sudo apt get update

2 sudo apt-get update

3 sudo apt-get upgrade

4 whoami

5 passwd

6 which python

7 bash readme.sh

8 bash readme.sh 4

9 bash readme.sh 4 abc hkh Easy

10 cat /etc/shells

11 which bash

12 ls

13 touch helloScript.sh

14 ls

15 ls -al

16 clear

17 chmod +x helloScript.sh

18 ls

19 ls -al

20 ./helloScript.sh

21 ./helloScript.sh

22 ls

23 cd

24 ls

25 ls

26 ls

27 pwd

28 ls

29 pwd

30 ls

31 ls -a

32 history

>>>Making file structure

**sargun@Sargun:~$ mkdir A**

**sargun@Sargun:~$ ls**

A

**sargun@Sargun:~$ cd A**

**sargun@Sargun:~/A$ mkdir B**

**sargun@Sargun:~/A$ mkdir C**

**sargun@Sargun:~/A$ cd B**

**sargun@Sargun:~/A/B$ touch b\_file.txt**

**sargun@Sargun:~/A/B$ gedit b\_file.txt**

**sargun@Sargun:~/A/B$ sudo gedit b\_file.txt**

sudo: gedit: command not found

**sargun@Sargun:~/A/B$ sudo nano b\_file.txt**

**sargun@Sargun:~/A/B$ cat b\_file.txt**

Hello there, this file is under B directory

**sargun@Sargun:~/A/B$ cd ..**

**sargun@Sargun:~/A$ mkdir C**

mkdir: cannot create directory ‘C’: File exists

**sargun@Sargun:~/A$ ls**

B C

**sargun@Sargun:~/A$ cd C**

**sargun@Sargun:~/A/C$ ls**

**sargun@Sargun:~/A/C$ touch c\_file.txt**

**sargun@Sargun:~/A/C$ cat c\_file.txt**

**sargun@Sargun:~/A/C$ nano c\_file.txt**

**sargun@Sargun:~/A/C$ cat c\_file.txt**

this file is under C directory

**sargun@Sargun:~/A/C$ ls -l c\_file.txt**

-rw-r--r-- 1 sargun sargun 31 Sep 12 01:57 c\_file.txt

**>>**Permissions

**sargun@Sargun:~/A/C$ chmod 644 c\_file.txt**

**sargun@Sargun:~/A/C$ ls -l c\_file.txt**

-rw-r--r-- 1 sargun sargun 31 Sep 12 01:57 c\_file.txt

**sargun@Sargun:~/A/C$ chmod 764 c\_file.txt**

**sargun@Sargun:~/A/C$ ls -l c\_file.txt**

-rwxrw-r-- 1 sargun sargun 31 Sep 12 01:57 c\_file.txt

**sargun@Sargun:~/A/C$ ls**

c\_file.txt

**sargun@Sargun:~/A/C$ rm c\_file.txt**

**sargun@Sargun:~/A/C$ ls**

**sargun@Sargun:~/A/C$ cd ..**

**sargun@Sargun:~/A$ ls**

B C

**sargun@Sargun:~/A$ rmdir C**

**sargun@Sargun:~/A$ ls**

B

**sargun@Sargun:~/A$ cd B**

**sargun@Sargun:~/A/B$ rm b\_file.txt**

**sargun@Sargun:~/A/B$ cd ..**

**sargun@Sargun:~/A$ rmdir B**

**sargun@Sargun:~/A$ cd ..**

**sargun@Sargun:~$ rmdir A**

**sargun@Sargun:~$ cd**

**sargun@Sargun:~$ ls**