Nyeinchan Kyaw

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Homework Assignment 1

**Part - A**

**Give a brief outline describing MS WINDOWS and UNIX. Emphasize the features and**

**advances of more important versions.**

MS WINDOWS

MS WINDOWS (also known as Microsoft Windows) is currently the most popular operating

system in the world. It is produced by Microsoft company and has many different versions of

operating systems. The very first version of MS WINDOWS came out in 1985 which was simply

called WINDOWS. The last version is called Windows 7. Here are the more important versions

of MS WINDOWS: (1) Windows 1.0 (2) Windows 95 (3) Windows XP

## 1. Windows 1.0

Windows 1.0 was the very first version of MS Windows. Also, this version was known as

interface Manager'. It finally came out in 1985. It revolutionized the way computers were used

before; not requiring to type MS-DOS commands anymore. It could be used by moving a mouse

to point and clicking through monitors. Besides, drop-down menus, scroll bars, dialog boxes,

icons were created to help users use PCs more conveniently. Windows 1.0 included a variety of

programs, including MS‑DOS file management, Windows Writer, Paint,  Notepad,

Calculator, calendar, card file, clock and a game called Reversi. This unique design made

Microsoft become the most popular OS system around that time.

2. Windows 95

Windows 95 came out in 1995 and it was sold a record-setting 7 million copies in the first five

weeks. It was recognized as the most publicized launch among MS windows versions around

that time. Windows 95 included built-in Internet support, dial-up networking, new Plug and

Play capabilities for installing hardware and software. Windows 95 is the upgrade to previous

operating systems. Upgrade versions were sold for both floppy disk and CD-ROM formats.

Windows 95 features the first appearance of the Start menu, taskbar, minimize, maximize, and

close buttons on each window. And it's available in 12 languages. The very first version of

Internet explorer was released in summer, 1995, making Windows 95 become more popular.

3. Windows XP

Windows XP came out in 2001, available in 25 languages. It's amazingly fast and

steady. It's compiled from 45 million lines of code. It has two great versions such as

(1)Windows XP Home Edition which features the Network Setup

Wizard, Windows Media Player, Windows Movie Maker, and enhanced digital photo

capabilities, and (2) Windows XP professional which includes advanced features such

as remote desktop support, an encrypting file system, and system restore and

advanced networking features with more enhancing reliability, security, and

performance.

UNIX

UNIX OS was primarily developed in the 1960s. UNIX is different from other operating

systems because it's based on the suite of programs which make the computer work. UNIX is

actually more stable, reliable and it is also a multi-user, multi-tasking system for servers,

desktops and laptops. The UNIX operating system consists of three parts; the kernel, the shell

and the programs. Here are more important versions of UNIX: (1) Sun Solaris, (2) GNU/Linux,

and (3) MacOS X.

(1) Sun Solaris

Solaris is a [Unix](http://en.wikipedia.org/wiki/Unix) [operating system](http://en.wikipedia.org/wiki/Operating_system) originally developed by [Sun Microsystems](http://en.wikipedia.org/wiki/Sun_Microsystems), released in 1993.

Solaris is well-matched to [symmetric multiprocessing](http://en.wikipedia.org/wiki/Symmetric_multiprocessing), supporting a large number of [CPUs](http://en.wikipedia.org/wiki/Central_processing_unit).

Solaris currently features [DTrace](http://en.wikipedia.org/wiki/DTrace" \o "DTrace), [Doors](http://en.wikipedia.org/wiki/Doors_(computing)), [Service Management Facility](http://en.wikipedia.org/wiki/Service_Management_Facility), Solaris Containers, [Solaris Multiplexed I/O](http://en.wikipedia.org/wiki/Solaris_Multiplexed_I/O), [Solaris Volume Manager](http://en.wikipedia.org/wiki/Solaris_Volume_Manager), [ZFS](http://en.wikipedia.org/wiki/ZFS), and Solaris Trusted Extensions.

(2) GNU/Linux

[GNU](http://www.gnu.org/gnu/gnu.html) project, a Unix operating system, was introduced in 1984. GNU is used with a kernel

called Linux. GNU/Linux distributions feature completely free software packages.  The

combination of [GNU and Linux](http://www.gnu.org/gnu/linux-and-gnu.html) is the **GNU/Linux operating system which is currently**  used by

millions.

(3) MAC OS X

Mac OS X , a UNIX based OS, was  created by [Apple Inc in 2002.](http://en.wikipedia.org/wiki/Apple_Inc.) Staring from 2002, Mac OS

X has been incorporated with all new Mac computer systems.

**Part - B**

**Give examples of Real-Time Operating Systems.**

Examples of Real-Time operating system are Lynx OS, T-Kernel, Free RTOs, RT Linux or

RTcore, OSE( operating system Embedded) and QNX.

**In about half page describe what an "Embedded System" is. Give examples of embedded**

**systems.**

Embedded System is a microprocessor-based system built to manipulate a function or range of

functions. It is designed not to be modified and programmed by the end user, different from how

PC is designed. The major difference between PC and embedded system is that embedded

system is self-contained computing device mainly intended to perform restricted computing

functions and most of them can be lost cost.

There are variety of embedded systems being used in different areas. Examples of embedded

systems are; traffic lights, fare collection retail register, children's toys, network processors,

ATMs, nuclear power-plant controllers, communication devices, GPS systems, DVD players,

electronic stethoscopes, mp3 players, printers, scanners, digital cameras, security systems, video

game consoles, and electric motors.

**Are Embedded systems the same as Real-time systems? Discuss.**

Yes, they are generally the same. There are no explicit difference between both systems.

Especially real-time system is contained inside the embedded system. Thus, real-time operating

system is recognized as embedded operating system.

**Give examples of TSR processes of our days.**

Examples of TSR processes of our days are device drivers (software drivers) which are used to

deal with hardware devices for multitasking for games and Operating systems, and mainly used

by software vendors.

**Part- C**

**Do an internet search and give an overview for Interrupts and Interrupt request.**

Interrupts

Interrupts are used to demand attention from the CPU as our computers were built as an interrupt driven system. The interrupt controller can be used as an transitional between the hardware devices and the processor.  Communications between the CPU, hardware and software take places by means of interrupts. Each PC is limited to 256 software interrupts and 15 hardware interrupts. Three types of interrupts are known as processor, hardware and software driven interrupts. The Programmable Interrupt Controller (also called as PIC) manages which type of interrupt gets the attention of the CPU and when it begins. Each type of software interrupt is connected with an interrupt handler  to handle when the interrupt occurs. Interrupt vector table keeps the complete list of interrupts and associated interrupt handlers.

Interrupt Request

Interrupt request is also known as IRQ. Interrupt requests are used by computers to manage and control various hardware operations. The devices such as modems, scanners, sound cards, keyboards, printers are capable to send interrupt requests to the processor. After each device performs their respective job, they send an interrupt signal to PC. For a short time, the signal interrupts the PC in order to decide what is going to be next processing.

Use the man command to find trap instruction.

This command arg is read and executed by the time the shell receives signals sigspec.

Basically, if arg is missing, each specified signal is reset to its original disposition. On the other

hand, if arg is the null string the signal specified by each sigspec is disregarded by the shell and

by the commands it calls upon. Even though arg is not present and but -p has been supplied,

then the trap commands coupled with each sigspec are being displayed. If no

arguments are supplied or if only -p is given, trap instruction prints the list of commands

connected with each signal. Trapped signals which are not disregarded are reset to their original

values in a child process by the time it is produced. If any sigspec is invalid, then trap will return

false. But if a sigspec is valid, trap will return true.

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