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CS340

Homework 1

**Windows**

Windows is an operating system developed and first published by Microsoft on 1985. It is currently leading in market share for personal computers with nearly 90% market shares. The most important versions of Microsoft Windows are Windows 95, Windows 98, Windows 2000, Window XP and Window 7.

**Versions**

Windows 95 – The first version that has the Start Menu button which is later used in every Windows Operating system until Windows 8. It is also the first version to use Graphic User Interface.

Windows 98 – a lot more stable, performance enhancement and compatibility for handling old applications or hardware. It also supports internet connection sharing and Wake-On-LAN.

Windows 2000 – Uses NTFS for file systems which allow users to share folder and set permissions on the computer.

Windows XP SP 2 – added WPA encryption compatibility for WIFI connections, Pop-up ad blocker for IE and Windows Firewall.

Windows 7 – The most secured Windows Operating system. Improved Performances, Reduced boot time and application launch, Virtual hard disk support, and great compatibility are the top benefits of having Windows 7.

**Advantage of Windows Operating System**

* Ease to use
* A lot of software
* Backward compatibility
* Plug and play for hardware
* Support for new hardware
* Good for gaming

**Disadvantage for Windows Operating System**

* Expensive
* High resource requirement
* Closed source
* Virus susceptibility

**MAC OS**

MAC OS is an UNIX based operating system that was first developed and published by Apple in the 1984. It is currently the second most used operating system in the world with approximately 7% market shares.

**Versions**

Kodiak – first MAC OS to use aqua interface

Jaguar – Improved performance, Quartz Extreme for compositing graphics directly, and added IChat

Panther – Incorporating a brushed-metal Interface

Leopard – added time machine, spaces and Boot Camp pre-installed. Also supports both PowerPC and Intelx86 based Mac.

Snow Leopard – increased performance, efficiency and stability. Only supports machine with Intel CPU that has at least 1GB of rams.

Lion – easier to navigate between applications using multi-touch gestures on the Launchpad

Mountain Lion – Incorporates several features that are in IOS5 like the game center, and IMessage

**Advantage of MAC OS**

* High reliability
* Ease of use
* Good security – low marketshare compare to windows therefore hackers intent to attack windows over MAC OS.
* Less viruses
* Takes less system resources
* More stable since it is UNIX based

**Disadvantage of MAC OS**

* MAC machines are expensive
* Less support, only apple can fix any hardware problems for the machine
* Cannot upgrade MAC OS, must buy the new OS each time
* Bad for gaming

**Real-Time operating systems**

A real time operating system is an operating system that is designed to run applications and finish tasks with a very precise time and high reliability. There are two types of Real time operating system called hard real time and soft real time. Hard real time means that the system must perform the task within a specific time. For examples, the air bag system for a car is a hard real time operating system because you have to guarantee that the tasks will be done within a certain time. If the airbag system delays even for 1 second during a car accident, it could cause injuries. A soft real time system means that the system must complete its task within a time with a little flexibility base on what the system is use for. For example, live video streaming is a soft real time system because the task needs to be done within a certain time however, it is ok if there is like a second delay.

**Charateristics**

* Single purpose
* Small size
* Inexpensively mass-produced
* Specific timing requirements
* Extreme reliability and safety
* Guaranteed response times

**Embedded System**

An embedded system is a computer system that is designed to handle a specific task. The word embedded means that the system is an integral part of a larger system. Moreover, multiple embedded systems can exist in a single machine. Examples of embedded system would be Printer, home phone, portable game console, television, GPS and DVD players, these machines does not require the embedded system to complete their task within a time constraint.

**Characteristics**

* Low cost
* Easy to maintain
* Speed and performance
* Reliability

**Are embedded systems the same as real-time systems?**

Embedded systems can also be in real time computing constraints. For example, in the navigation system, it is require for the system to calculate your position, and give you route directions within a short time period

**What are TSR processes?**

TSR stands for Terminate and stay resident is a function in the computer system which release and give control back to the system just like when an application is close. The program will be loaded and stays in the computer memory so the user can access the program faster when they need to use the program again. TSR is also a good way to implement multitasking for an operating system. Examples of TSR programs are calendars, calculators, spell checkers and notepads.

**Interrupts and Interrupt Request**

Interrupt is a signal sends to the processor by the hardware or software to tell the processor that there is a new event that needs to be process first. The processor then stops the event that is it currently working on and save its current state and execute a program called interrupt handler to handle the new event. Once the new event is finished, the processor will resume its previous event. There are two types of interrupt called the hardware interrupted and software interrupted. Hardware interrupt is an electronic signal sent to the processor from an external device like a mouse or keyboard. Software interrupt is caused either by an exceptional condition or a special instruction and is built in the processor.

Interrupt request is a signal sent to the processor by hardware to tell the processor to temporarily stop what it is currently working on and let the interrupt handler program to be executed first.

**Linux Trap Instruction**

When I use the “man trap” command in Queens College’s venus/linux system, it displays 2 category of list commands that you can use. First, it displayed the “Name” with commands like bash, etc. The other category is called the BASH BUILTIN COMMAND which consists of cd, break, etc.

**Sources**

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