**Chapter 1**

02/04/16 -

We use bus and not a switch because the bus only allows one output at a time. Only one transfer at a time. Switch allows multiple devices to talk to each other.

DMA- Direct Memory Access , (pulling data from controller)

instruct controller

shift to memory

cpu interrupts

Almost all controllers are DMA enabled

Also allows devices to write between each other

Interrupt - When interrupt occurs must save the current context. If another interrupt occurs interrupt priorities come into play. Only a limited amount of interrupts may occur. Processor can a start queue to keep track of interrupts. Queue must be limited also. When a queue becomes full you lose an interrupt. An interrupt should be handled very very fast. Interrupt handlers need to be very very small.

Software Interrupt - an instruction that causes an interrupt when it is executed, used to enter operating system, handling errors. Trap is a software interrupt.

Call vs Interrupt- Call is cheaper because you don't have to save all of the registers before executing an interrupt. Call needs some kind of protection because it can directly touch the hardware.

Processor- before the cpu services an interrupt, the cpu saves the context . Program Counter and registers allows you to start where you left off when you experience an interrupt. To service an interrupt by interrupt handling routine. You need to have an interrupt for each device.

Vector- Must have a vector in memory that has a pointer to each interrupt handler. Must initialize vector when you start, by the kernel

vector has pointers to functions which are used as the interrupt handlers which are called when an interrupt occurs.

Kernel occurs after the bios, only the drives in the operating system understand how to handle the devices. Kernel will handle interrupts

In User Mode - You can only use a subset of hardware instructions. if you try to use a privileged instruction while in user mode, you will receive an error.

In privilege mode- access to hardware and kernel

Traps- Turns the processor into privilege mode

Controller- When the controller finished reading and writing back to the memory, it generates an interrupt.

Dram- dynamic ram, transistors used as capacitors.. continuously keep refreshing to allow the dram to keep memory, transistors leak

Sram- Costs more money, runs faster, does not need to be continuously refreshed

Flash- Can’t read and write as much to a regular disk, expensive, If you always read no problem, however writing to flash memory wears out

Cache- When you read and the item is already cached it is called a Cache hit.

Process inside of Kernel is kept track by data structures. Data structures in the kernel are called process control block. Kernel needs PCBs to keep track of processes.

Benefit of virtual memory, increase in memory, allows execution of processes not completely in memory

If you create a processes you must destroy/delete it to conserve memory.

2/11/2015

**Operating System Structure:**

-It contains multiprogramming and timesharing.

-In multiprogramming there is no time sharing.

The kernal gets the interrupt.

Process is program in execution (Slide #34)

**Memory management**

-Kernal has to know which process is on. Make sure we don't snap on other person territory such as memory.

-Storage devices is divided into the blocks for the kernel to perform it tasks.

Protection and Security

**Chapter 2:**

System Calls : programming interface into kernel, by using software interrupts

CLI= command interpreter

System call is used for programming interface to the services provided by the IOS.

API= application Programming Interface

To copy one file to other file we need to read the file ( Source File —-> Destination File )

We pass the parameters through registers. Because of a lot of parameters we start using on the stack

Parameters are pushed onto the stack by the program and popped off the stack by the operating system.

Kernal could locate the memory and look for the parameters while passing.

Types of system call: end, abort, create process, terminate process, load, execute, get process attributes, set process attributes and more.

Types of system calls : File management .

Information maintenance is about get time or date, set time or date.

We also have communications where we create delete communication connection.

Daemons are background services, they run in the user space, daemon cuts communication with console with file scriptures

process, used to grab a program and execute the program in memory, resulting in the program becoming a process

PCB is in the kernel memory

Chapter 3

