



COMPUTER SCIENCE & ENGINEERING

INFORMATION TECHNOLOGY

Operating System

Hand Notes For GATE, PSUs & Competitive Exam

Hand Notes

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Operating Systems

Topics :

(1) Background

(a) Process management

- * Process concepts
- * CPU scheduling
- * IPC & synchronisation
- * concurrency
- * Deadlocks
- * Threads

(b) Memory management

- * concepts
- * RAM chips
- * Techniques
- * Virtual memory

(4) File system & I/O management

- * Interface
- * Device characteristics
- * Implementation issues.

(5) Protection mechanisms

(q). What is an operating system ?

Ans: Interface between user and Hardware

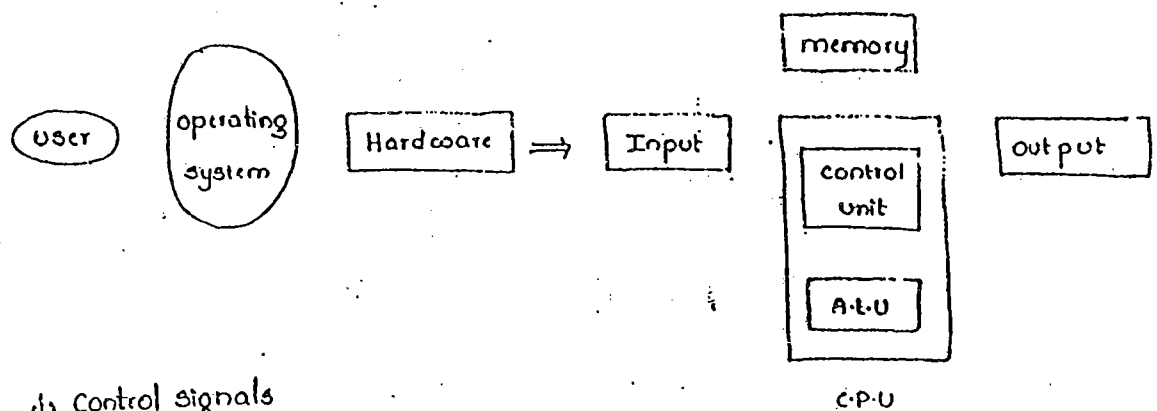
* Resource manager

* control program(s)

* A set of utilities to simplify application development.

* Acts like a government.

Von-Neumann Architecture :



(i) Control signals

(ii) Mathematical operations (Data, Register)

clock cycles.

$$c = a + b$$

load R_1 m[a]

load R_2 m[b]

Memory :

* Primary (main memory, physical \Rightarrow RAM, ROM, cache, Registers)

* Secondary (Auxiliary \Rightarrow HD / DVD / Pen drives)

* Processor cannot fetch data directly from secondary memory. Instead Instruction Register (IR) is used, from where instructions are fetched and executed sequentially.

* If IR requires any operands, then it fetches the operands and executes as :-

* Fetch cycle
 * Decode cycle
 * Execute cycle
 * Interrupt cycle

} → Instruction cycle

* The communication among user and CPU can be represented by Von-Neumann architecture.

Main Objective of operating system :

* It takes the complete control of hardware, and create a platform, which is easy to user to write different applications.

Command Interpreter :

* A program that interprets the commands of the user.

* It acts as Interface between the user and Kernel.

* These are of two types :

* Text based O.S (shell) : DOS, UNIX, NETWARE

* GUI based O.S (Desktop) : WINDOWS, LINUX.

* Operating system is a set of control program(s).