**VASAVI COLLEGE OF ENGINEERING**

**Ibrahimbagh, Hyderabad-500 031**

Department of Information Technology

**HAND OUT FOR B.E 1II/IV Students: 2017-18**

Sub: **Operating Systems**

**Name of the faculty: J.Suneetha Section: IT**

**---------------------------------------------------------------------------------------------------------------------**

**UNIT-I**

**Introduction**: Operating System Functionalities, Types of Operating Systems, User Operating System Interface, System calls, System Boot. **Process Concept:** Overview, Threads. **Process Scheduling** - Uniprocessor scheduling algorithms, Multiprocessor and Real-time scheduling algorithms.

**Operating System Functionalities:**

* Process Management
* Memory Management
* File Management
* Storage Management
* Mass-Storage Management

**Types of Operating Systems:**

* Batch Operating System
* Multitasking
* Time-sharing Operating Systems
* Distributed Operating System
* Network Operating System
* Real-Time Operating System

**User Operating System Interface:**

* CLI
* GUI

**System calls:**

A system call, sometimes referred to as a kernel call, is a request in a Unix-like operating system made via a software interrupt by an active process for a service performed by the kernel.

**Process:**

A process is basically a program in execution.

Process States:

New

Ready

Running

Waiting

Terminated

**Threads:**

A thread is a flow of execution through the process code, thread is also called a lightweight process. Threads provide a way to improve application performance through parallelism.

Types of Thread

Threads are implemented in following two ways:

User Level Threads -- User managed threads

Kernel Level Threads -- Operating System managed threads acting on kernel, an operating system core.

**Process Scheduling:**

The process scheduling is the activity of the process manager that handles the removal of the running process from the CPU and the selection of another process on the basis of a particular strategy.

The Operating System maintains the following important process scheduling queues:

Job queue - This queue keeps all the processes in the system.

Ready queue - This queue keeps a set of all processes residing in main memory, ready and waiting to execute. A new process is always put in this queue.

Device queues - The processes which are blocked due to unavailability of an I/O device constitute this queue.

**Scheduling Algorithms:**

* First-Come, First-Served (FCFS) Scheduling
* Shortest-Job-Next (SJN) Scheduling
* Priority Scheduling
* Shortest Remaining Time
* Round Robin(RR) Scheduling
* Multiple-Level Queues Scheduling