



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

19ITT204 – MICROCONTROLLER & EMBEDDED SYSTEMS

III YEAR - V SEM

UNIT 4 – Processes and Operating Systems

Topic- Types of Operating System



Operating System



- An embedded operating system is a specialized operating system (OS).
- Designed to perform a specific task for a device that is not a computer.
- The main job of an embedded OS is to run the code that allows the device to do its job.
- These operating systems are designed to be **small, resource-efficient, dependable**, and reduce many features that aren't required by specialized applications.



Operating Systems



Features	Embedded Operating Systems	General-use Operating Systems
Primary Goal	Run a single application	Run many applications
App Distribution	Generally, the application and the system are distributed as a single image	The applications and the operating system are distributed separately
Architecture	Designed for a specific purpose	Designed for general use to solve all kinds of tasks
Processing	MCUs and CPUs	CPUs



Types of Embedded OS



- Batch Operating System
- Multiprogramming Operating System
- Multitasking Operating System
- Multiprocessing Operating System
- Real time Operating System



Types of Embedded OS



Real Time Operating System:

➤ A **real-time operating system (RTOS)** is a deterministic operating system with limited functionalities that allows multi-threaded applications by giving processed outputs within set time limitations.

➤ Multi-tasking Operating System

The [multitasking operating system](#) may execute multiple tasks at the same time. In a multitasking operating system, multiple tasks and processes run at the same time. If the system contains more than one processor, it may perform a wide range of functions.



Types of Embedded OS



Preemptive Operating System:

- A multitasking operating system that interprets task preemption is known as a preemptive operating system.
- A task with a higher priority is always defined and executed before a task with a lower priority.

Rate Monotonic Operating System

- Some embedded systems are designed to use a specific task scheduling method known as '**Rate Monotonic Scheduling**'.
- In a system may operate for a specific amount of time and duration of time. It is a priority-based scheduling algorithm.



Popular Embed OS



- **eCos**
- **Mbed OS**
- **VxWorks**
- **Free RTOS**
- **QNX**



References

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Thank You