Roll No : 21BCP150 21BCP169 21BCP180 21BCP158 21BCP152

Jay Lapani Mahil Kuvadiya Darshan Devani Ohm Patel Hemal Chudasama

Real Time Operating System

A **real-time operating system** (**RTOS**) is an operating system (OS) for real-time applications that processes data and events that have critically defined time constraints.

All processing must occur within the defined constraints.

Examples of the real-time operating systems: Airline traffic control systems, Command Control Systems, Airlines reservation system, Heart Pacemaker, Network Multimedia Systems, Robot etc.

The real-time operating systems can be of 3 types –

Hard Real-Time **operating system:**
These operating systems guarantee that critical tasks be completed within a range of time.

Soft real-time **operating system:**
This operating system provides some relaxation in the time limit

Firm Real-time **Operating System**:
RTOS of this type have to follow deadlines as well. In spite of its small impact, missing a deadline can have unintended consequences

Advantages:

Maximum utilization of devices and systems. Thus more output from all the resources.

Time assigned for shifting tasks in these systems is very less.

Focus on running applications and less importance to applications that are in the queue.

These types of systems are error-free.

Disadvantages:

Very few tasks run simultaneously, and their concentration is very less on few applications to avoid errors.

The algorithms are very complex and difficult for the designer to write on.

It needs specific device drivers and interrupts signals to respond earliest to interrupts

RTOS performs minimal task switching