



Real-Time Operating Systems

Computer Science and Engineering

Instructor Name: Prof. RAJIB MALL

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Department: Computer Science and Engineering

About Instructor: Rajib Mall is Professor, Department of Computer Science and Engineering, Indian Institute of Technology Kharagpur, West Bengal. He has more than a two decades of teaching experience in the areas of program analysis and testing. He has written five text books and over 150 refereed research papers.

Pre Requisites: : C Programming, Operating Systems

Core/Elective: : Elective

UG/PG: : PG

Industry Support : NIL

Course Intro: : In several software applications, especially in embedded application, the operating system is required to support the application to meet the timing constraints. The operating system achieves this by deploying suitable scheduling algorithms. A major problem arises, when the real-time tasks share resources. Priority inversions can take place in this case, unless suitable techniques are deployed. Starting with a brief introduction to real-time operating systems, we first discuss the important real-time task/thread scheduling algorithms and resource sharing protocols. An effort towards standardization of real-time operating systems has come to be known as POSIX-RT. We review POSIX-RT requirements. Besides, we review several commercial and open source real-time operating systems.

COURSE PLAN

SL.NO	Week	Module Name
1	1	Introduction
2	2	Rate Monotonic and earliest deadline first Schedulers
3	3	Rate Monotonic Schedulability Analysis
4	4	Resource Sharing among Real-Time tasks