



# SNS COLLEGE OF TECHNOLOGY

Coimbatore-35  
An Autonomous Institution



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## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

### 19ECT312 – EMBEDDED SYSTEM DESIGN

III YEAR/ VI SEMESTER  
1

#### UNIT 5 – SYSTEM DESIGN TECHNIQUES AND REAL TIME CONCEPTS

#### TOPIC 7 –Internals & Real Time Scheduling



# INTRODUCTION



## What is Internal Scheduling?

Internal scheduling refers to the process of creating and managing schedules within an organization.

It involves assigning tasks, setting deadlines, and allocating resources to ensure efficient and effective workflow.



## What is Real-Time Scheduling?

Real-time scheduling is a method of scheduling tasks and resources in real-time, taking into account the current state of the system.

It involves dynamically adjusting schedules based on changing conditions and priorities.



# BENEFITS OF INTERNAL SCHEDULING



## 1. Streamlined Operations:

- Internal scheduling helps to optimize resource allocation and minimize conflicts.
- It ensures that the right people are assigned to the right tasks at the right time.

## 2. Improved Efficiency:

- By automating scheduling processes, companies can reduce manual errors and save time.
- It allows for real-time updates and adjustments, ensuring that schedules are always up to date.

## 3. Enhanced Communication:

- Internal scheduling platforms enable seamless communication between team members.



# CHALLENGES IN INTERNAL SCHEDULING



## **Lack of Visibility**

- Difficulty in tracking and managing employee schedules in real-time.
- Lack of centralized system leads to confusion and scheduling conflicts.

## **Communication Breakdown**

- Inefficient communication channels result in delays and misunderstandings.
- Lack of real-time updates leads to missed shifts and last-minute changes.

## **Resource Allocation**

- Balancing workload and assigning tasks based on employee availability.
- Difficulty in optimizing resources and avoiding over or underutilization.

## **Compliance and Regulations**

- Ensuring compliance with labor laws and regulations regarding working hours and breaks.
- Difficulty in managing employee time off and ensuring fair scheduling practices.

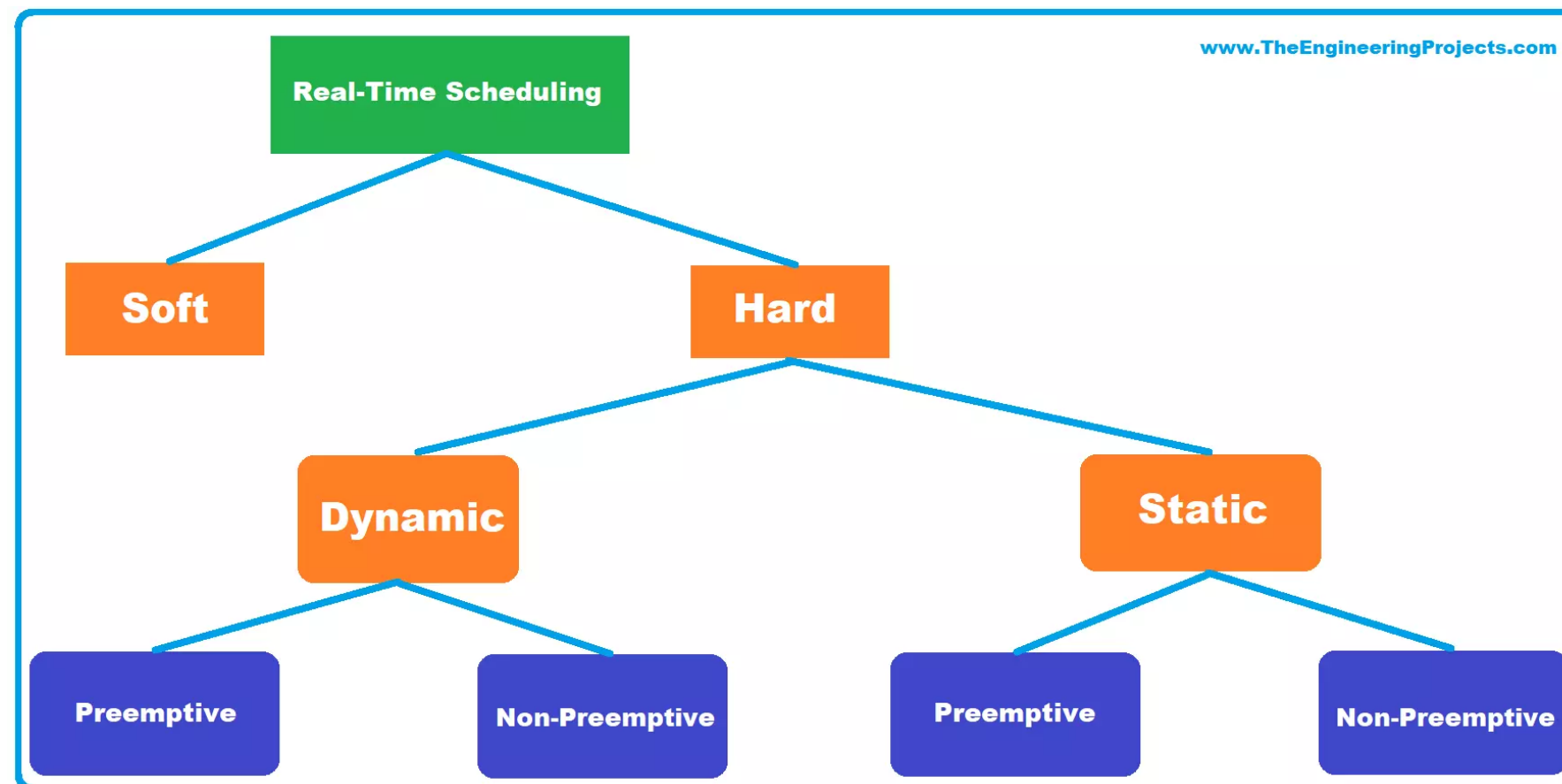


# REAL TIME SCHEDULING



Real-time scheduling is a critical component of many systems and applications that require precise timing and responsiveness.

It involves allocating resources and managing tasks in a way that ensures timely execution and meets specific timing requirements.





# KEY FEATURES OF REAL TIME SCHEDULING



## **Real-time Updates**

Real-time scheduling provides instant updates and notifications, allowing for immediate adjustments to the schedule as needed.

## **Dynamic Resource Allocation**

Real-time scheduling automatically allocates resources based on real-time data, optimizing efficiency and minimizing downtime.

## **Integration with External Systems**

Real-time scheduling seamlessly integrates with external systems such as CRM and ERP, ensuring accurate and up-to-date information across the organization.

## **Real-time Analytics**

Real-time scheduling provides real-time analytics and insights, enabling data-driven decision-making and continuous improvement.



# BENEFITS OF REAL TIME SCHEDULING



## Increased Efficiency

- Real-time scheduling allows for optimal resource allocation and reduces downtime.
- It enables better coordination and communication among team members.

## Improved Customer Satisfaction

- Real-time scheduling ensures timely delivery of products or services.
- It enables companies to respond quickly to customer demands and changes.

## Cost Savings

- Real-time scheduling helps minimize overtime costs and reduces inefficiencies.
- It allows companies to optimize their resources and minimize idle time.

## Enhanced Flexibility

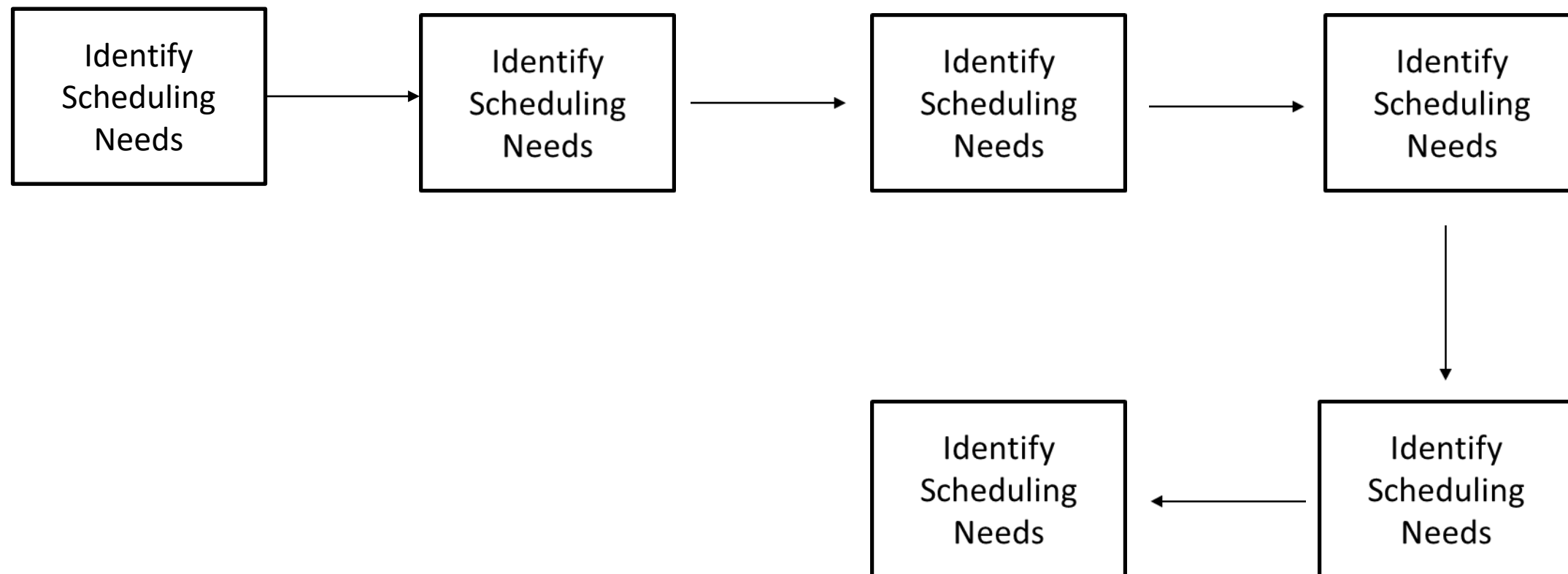
- Real-time scheduling provides the ability to make adjustments on the fly.
- It allows companies to adapt to unexpected events and changes in real-time.



# IMPLEMENTING INTERNAL SCHEDULING



Internal scheduling is a crucial aspect of managing operations within a company. It involves the coordination and organization of tasks, resources, and personnel to ensure efficient and effective operations. Implementing internal scheduling requires careful planning and consideration of various steps.







# BEST PRACTICES FOR REAL TIME SCHEDULING



## **Clear Communication**

- Implement clear communication channels to ensure all team members are aware of real-time schedule updates and changes.

## **Efficient Task Allocation**

- Allocate tasks efficiently, considering the availability and skills of team members, to maximize productivity and minimize delays.

## **Real-time Monitoring**

- Continuously monitor the progress of tasks and adjust schedules in real-time to optimize productivity and meet deadlines.

## **Automation and Integration**

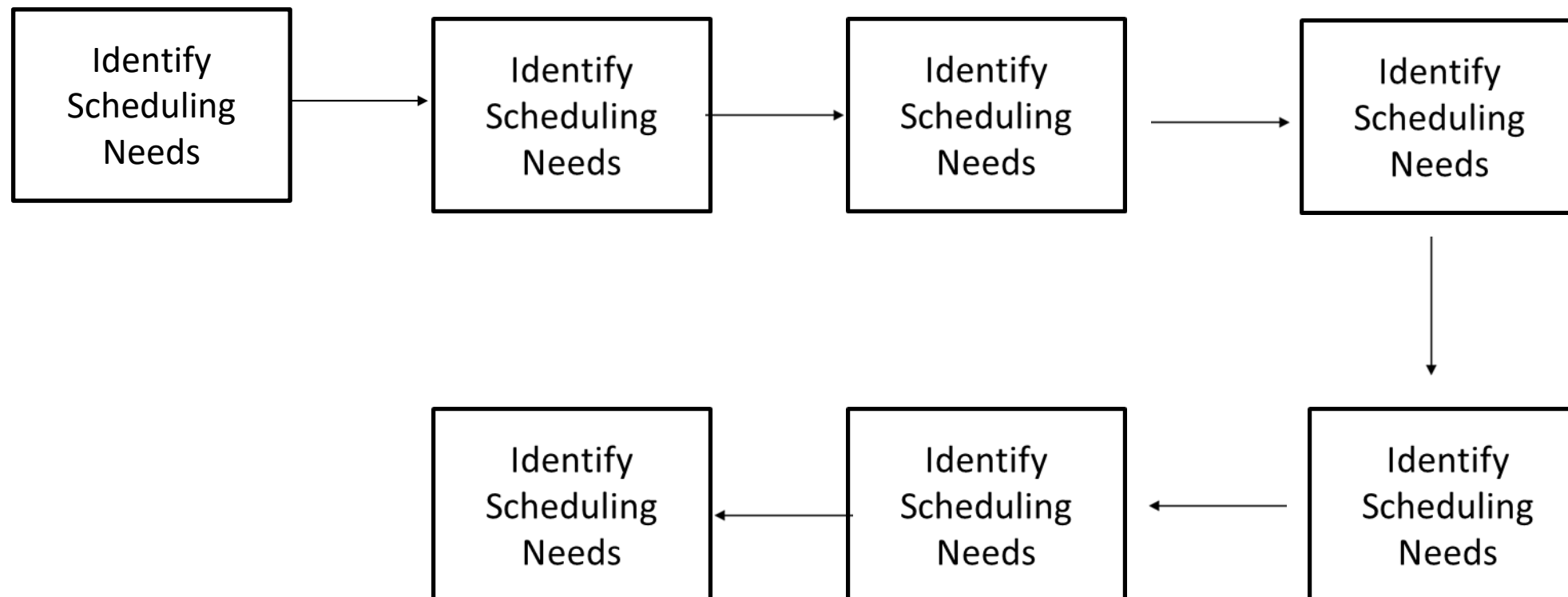
- Utilize automation tools and integrate scheduling software with other systems to streamline the real-time scheduling process.



# IMPLEMENTING REAL TIME SCHEDULING



Real-time scheduling is a crucial aspect of efficient operations in a company. It involves managing and optimizing tasks and resources in real-time to ensure timely completion and maximum productivity. Implementing real-time scheduling requires several key steps:





# BEST PRACTICES FOR REAL TIME SCHEDULING



## **Clear Communication**

- Implement clear communication channels to ensure all team members are aware of real-time schedule updates and changes.

## **Efficient Task Allocation**

- Allocate tasks efficiently, considering the availability and skills of team members, to maximize productivity and minimize delays.

## **Real-time Monitoring**

- Continuously monitor the progress of tasks and adjust schedules in real-time to optimize productivity and meet deadlines.

## **Automation and Integration**

- Utilize automation tools and integrate scheduling software with other systems to streamline the real-time scheduling process.



# COMPARISON: INTERNAL SCHEDULING VS. REAL TIME SCHEDULING



## Internal Scheduling:

- Pre-determined schedules created in advance.
- Provides structure and predictability.
- Allows for planning and allocation of resources.
- May not be flexible enough to accommodate unexpected changes.

## Real Time Scheduling

- Dynamic schedules that adjust in real-time.
- Responds to changing conditions and priorities.
- Enables efficient resource allocation.
- Provides flexibility to adapt to unexpected changes.



# CHOOSING THE RIGHT SCHEDULING APPROACH



## **Nature of Work**

The nature of the work being performed, such as shift-based or project-based, can influence the choice of scheduling approach. Some companies may require more flexible scheduling options, while others may need more structured schedules.

## **Employee Preferences**

Considering the preferences and needs of employees is important. Some employees may prefer fixed schedules, while others may prefer more flexible options. Taking employee preferences into account can improve job satisfaction and work-life balance.

## **Real-Time Updates**

Real-time scheduling allows for immediate updates and adjustments to schedules based on changing circumstances or unexpected events. This approach can be beneficial for companies that require dynamic scheduling and quick response times.



# CONCLUSION



## Key Findings

- Internal and real-time scheduling systems have the potential to greatly improve efficiency and productivity within organizations.
- Real-time scheduling allows for immediate adjustments and updates, reducing scheduling conflicts and improving overall coordination.

## Recommendations

- Implement an internal scheduling system that includes real-time updates and notifications.
- Train employees on how to effectively use the scheduling system and encourage regular usage.
- Continuously monitor and analyze scheduling data to identify areas for improvement and optimization.



## SUMMARY & THANK YOU