

# CENG 448 — Real Time Operating Systems

## Synchronization

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# Synchronization and Communication

Need to synchronize:

- resources
- activities

This usually requires inter-task communication.

There are some common design patterns.

# Resource Synchronization

Is access to a shared resource safe, and if not, when will it be safe?

*Mutual exclusion* is a mechanism that ensures that only one task at a time can access a shared resource.

A *critical section* is a section of code in which the shared resource is accessed.

## Activity Synchronization

Is the system in a state where this activity should be performed, and if not, when will it be?

*Barrier synchronization* is one way to synchronize tasks.

*Rendezvous synchronization* is one way to synchronize tasks.

# Resource Synchronization Methods

**Interrupt locks:** Disable interrupts

**Preemption locks:** Disable the scheduler