SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

19ITT204 – MICROCONTROLLER & EMBEDDED SYSTEMS

III YEAR - V SEM

UNIT 4 – Processes and Operating Systems

Topic- Task Scheduling

Task Scheduling

- The process of deciding which task will utilize the cpu time is called task scheduling.
- The scheduling of the task may be on the basis of their priorities.
- The priority assignment mechanism for the tasks can be either static or dynamic.
- In the case of static priority assignment the priority of task is assigned as soon as the task is created, thereafter the priorities cannot be changed. In dynamic assigning the priorities of the task can be changed during the runtime.

Task Scheduling

- Meeting specific time deadlines for tasks to occur in
- Difficulty- it must be able to guarantee that the worst case response time for the operating system to give control to a process that needs attention is short enough that the process has time to handle events.
- One aid to ensuring sufficient response time is to prioritize processes so that more important processes always receive processor attention if they need it.
- Thus the idea of scheduling based on priorities .

Task Scheduling

- **Task Scheduler-** The part of the operating system that responds to the requests by programs and interrupts for processor attention and gives control of the processor to those processes
- Scheduling algorithm- The algorithm followed to decide who gets next turn to the CPU
- The program that does this is called the scheduler.

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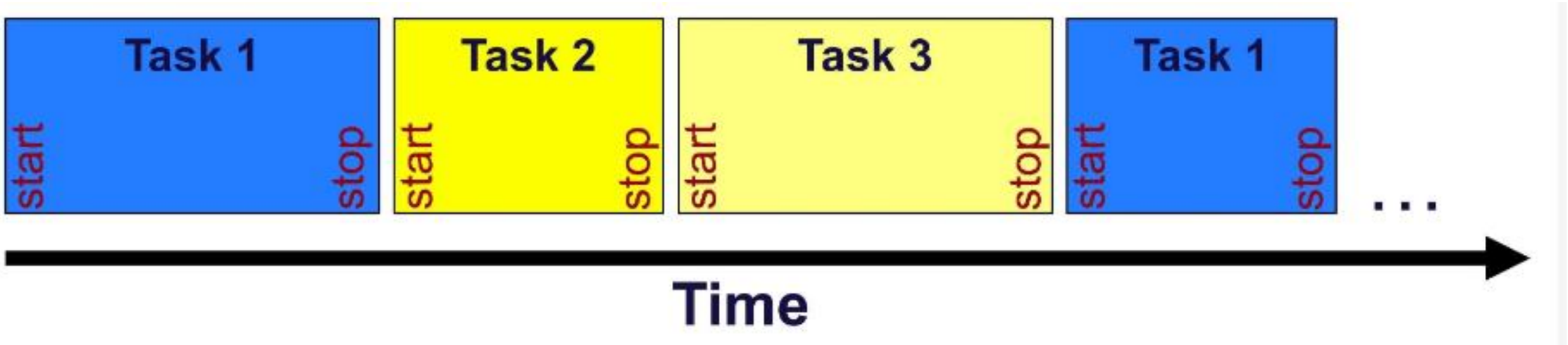
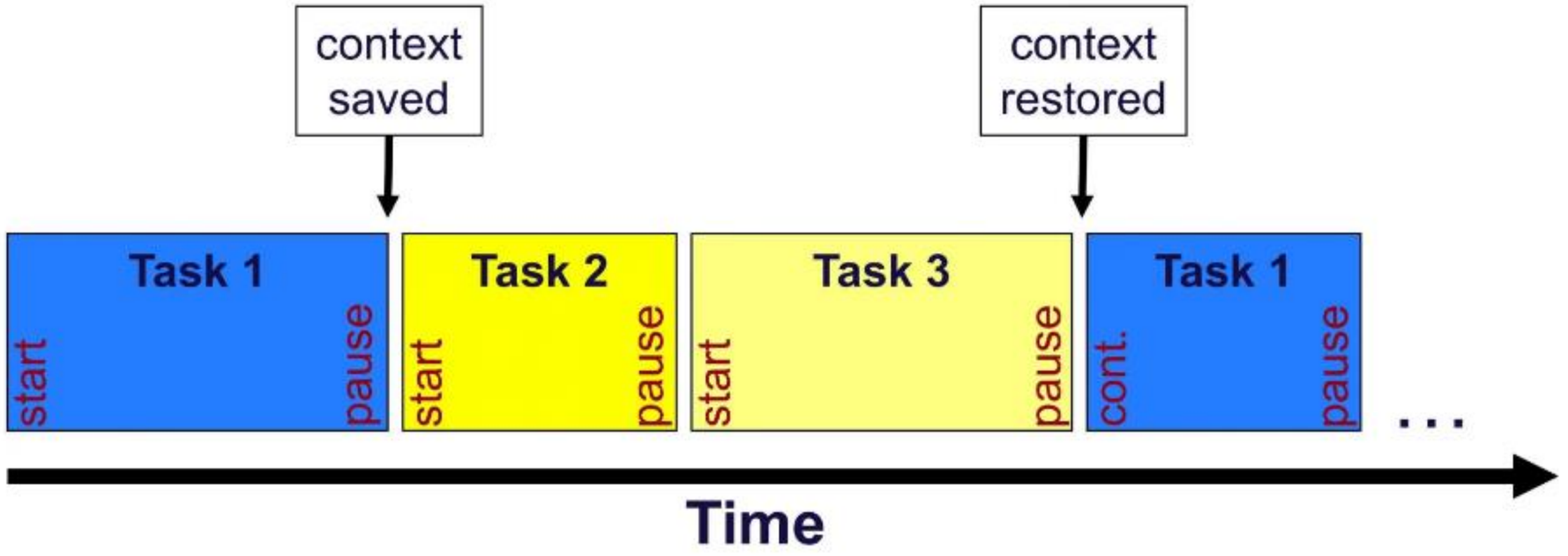
Run to Completion Scheduler(RTC)

➢RTC scheduling is very simplistic and uses minimal resources. It is, therefore, an ideal choice, if the application's needs are fulfilled. Here is the timeline for a system using RTC scheduling:



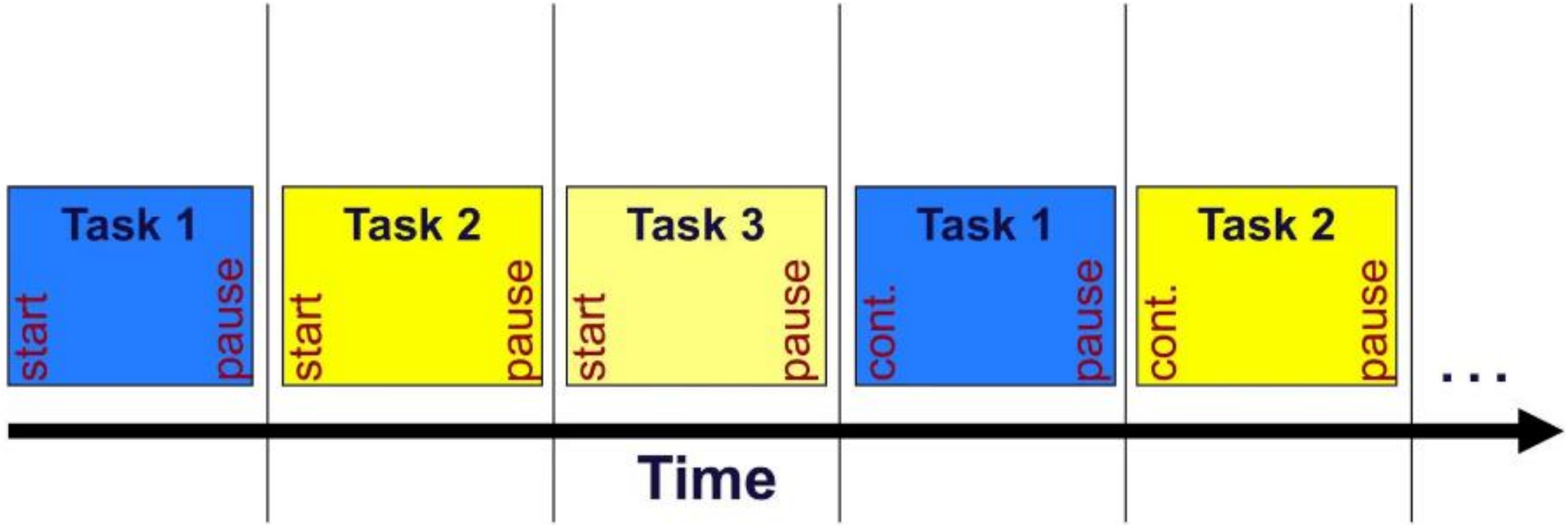
Round Robin Scheduler

➢An RR scheduler is similar to RTC, but more flexible and, hence, more complex. In the same way, each task is run in turn (allowing for task suspension), thus:



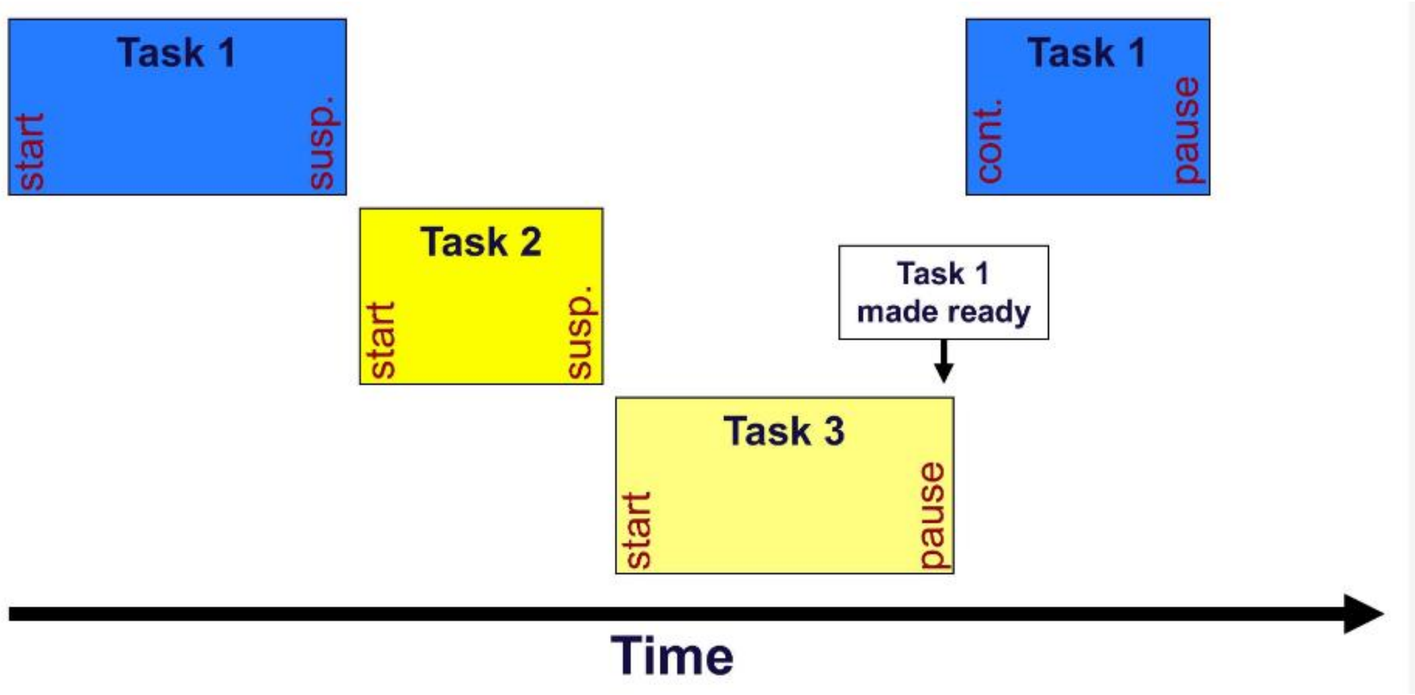
Time Slice Scheduler

A TS scheduler is the next step in complexity from RR. Time is divided into “slots”, with each task being allowed to execute for the duration of its slot, thus:



Priority Scheduler

Most RTOSes support Priority scheduling. The idea is simple: each task is allocated a priority and, at any particular time, whichever task has the highest priority and is “ready” is allocated the CPU, thus:



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