

Embedded Programming

Mathias Balling & Mads Thede

Last updated: February 26, 2024

Contents

1	Notes	2
1.1	Interrupts	2
1.2	Task model	2

1 Notes

Static variables

Global variables

Volatile

extern

Build process

1.1 Interrupts

An interrupt is the automatic transfer of software execution in response to a hardware event that is asynchronous with the current software execution.

The hardware event is called a trigger. When this happens, an ISR is called. This pauses the execution of the regular code, until the ISR returns or a higher priority interrupt is triggered.

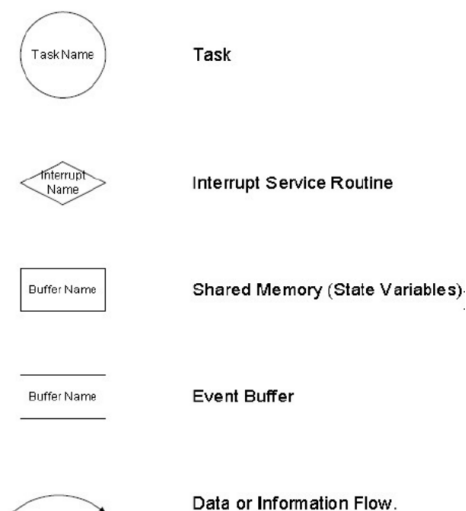
1.2 Task model

A task is an independent thread of execution that can compete with other concurrent tasks for processor execution time. It is the same as a process in a multitasking operating system.

Division of applications into tasks

Criteria for task creation:

- Parallelism: Simultaneous and independent functionality
- Timing: Different timing constraints
- Priority: Divide tasks with different priority
- Structure: Each task handles one well defined problem
- Coupling: Divide problem into loosely coupled tasks.
- Periodicity: A task that must execute with a fixed period is a task by itself.



A shared memory element keeps its value after it has been read. An event from the event buffer gets destroyed after reading and processing.