國立屏東大學 資訊工程學系 即時系統導論

1. 即時系統簡介

1.1 What is a real-time system?

A real-time system is a type of hardware and/or software that operates with a time constraint.

- Any system in which the time at which the output is produced is significant. This is usually because the input corresponds to some movement in the physical world, and the output has to relate to that same movement. The lag from input to output time must be sufficiently small for acceptable timeliness. (The Oxford Dictionary of Computing)
- A real-time system reads inputs from the plant and sends control signals to the plant at times determined by plant operational considerations - not at times limited by the capabilities of the computer system. [control]
- In computer science, real-time computing (RTC), or reactive computing, is the study of hardware and software systems that are subject to a “real-time constraint”, for example operational deadlines from event to system response. Real-time programs must guarantee response within strict time constraints, often referred to as “deadlines”.[1] Real-time responses are often understood to be in the order of milliseconds, and sometimes microseconds. Conversely, a system without real-time facilities, cannot guarantee a response within any timeframe (regardless of actual or expected response times).

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