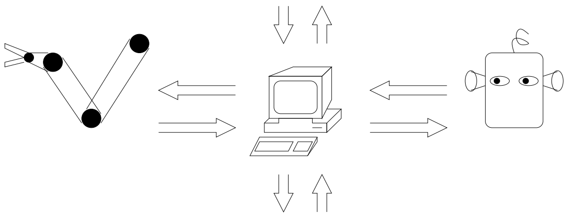
A simple definition of a real-time computer system:

A Computer System Which Interacts With
Its Environment In Real-Time.

- It responds to asynchronous stimuli from the environment.
  - the arrival time of such stimuli cannot be predicted in advance.

- The environment imposes time constraints on the system.
  - the functionality is compromised if the system response is too slow for the environment.

Embedded Systems:

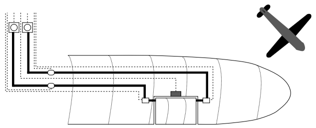
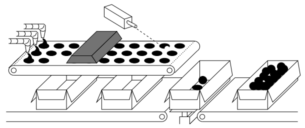
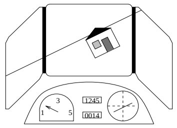


Embedded systems are typically dedicated computers[1] which monitor and/or control external entities via specialist I/O devices.

[1]as opposed to general purpose machines

Application of Real-Time and Embedded System Techniques

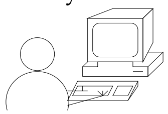
Typical applications include:

- Fly by Wire
- Plant Control
- Flight Simulation

Application of Real-Time and Embedded System Techniques

- General Purpose Computer Systems



Modern general purpose computers are equiped with a vast amount of I/O:

- Screen
- Keyboard
- Disks & Tapes
- Serial & Parallel Ports
- Ethernet Connection

Introduction

- Operating systems use embedded system techniques:

  Although we would not normally think of such a computer as an embedded system, the operating system must interact with the I/O in much the same way as an application program might interact with I/O in an embedded system.

- The operating system as a real-time program:

  Many of these interactions are to some extent real-time with the posibility of data loss in slow or badly designed systems.