Examples of exercises
Use case: Photocopier driver

ARCOS

Operating Systems Design

Degree in Computer Engineering

University Carlos III of Madrid

Exercise
Statement (1/2)

▸ We start from a computer with one CPU. The aim is to develop a driver of a printer-scanner (with interruptions but without DMA) for a UNIX-like operating system with a monolithic non-preemptive kernel. The functionality is as follows:

  ▸ The computer asks the printer-scanner for scanning a document, receiving the data in PDF format.

  ▸ The computer asks the printer-scanner for printing a document, sending the data in PDF format.

  ▸ The computer asks the printer-scanner for making photocopies (i.e. scanning a document and printing it without computer interaction).

  ▸ The printer-scanner has only one interruption, indicating the end of one of these three operations.

  ▸ Finally, the driver can be loaded and unloaded dynamically.

Exercise
Statement (2/2)

a) Design the interface of the driver, including system calls.

b) Define all data structures or modify the existing ones to provide the required functionality

c) Implement using pseudo-code the required functionality. Which events are involved?

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