

Sistemes operatius

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Introducción

En esta asignatura, se presenta el sistema operativo (SO) desde el punto de vista de los diferentes usuarios de un sistema informático. Este tratamiento comprende aspectos que van desde la visión del sistema que tiene un usuario no especializado hasta la del técnico encargado de la administración del sistema, pasando por la de la persona que desarrolla aplicaciones. Esta visión se centra, desde la óptica del uso, en el conocimiento tanto de los principales servicios que ofrece el sistema operativo como de las herramientas que se le asocian.

Para alcanzar los objetivos de esta asignatura, los contenidos teóricos se combinan con los prácticos, basados en un sistema operativo de la familia Unix.

Objetivos

Esta asignatura contiene los materiales didácticos necesarios para que el estudiante alcance los objetivos siguientes:

1. Conocer los servicios que ofrece un sistema operativo.
2. Adquirir los conocimientos necesarios para acceder a los servicios del sistema operativo desde el intérprete de comandos.
3. Conocer el concepto de proceso y los aspectos relacionados con la manipulación de los procesos.
4. Aprender los principios básicos de la gestión de la memoria.
5. Conocer el concepto de dispositivo y los aspectos relacionados con la manipulación de los diferentes dispositivos.
6. Ver el sistema de ficheros y los aspectos relacionados con el uso de este sistema.
7. Conocer los principios de la comunicación y la sincronización entre procesos.

Contenidos

Módulo didáctico 1

Introducción a los sistemas operativos

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1. Clasificación del software. Definición de sistema operativo
2. Visión histórica de los sistemas operativos
3. Los servicios que ofrece el sistema operativo

Módulo didáctico 2

El sistema operativo: una máquina virtual

José Ramón Herrero Zaragoza, Josep Lluís Marzo i Lázaro y Enric Morancho Llena

1. Software de sistema y máquinas virtuales
2. Los mecanismos de entrada al sistema operativo
3. Apoyo del hardware para implementar el sistema operativo
4. Introducción a la planificación del procesador

Módulo didáctico 3

La gestión de la memoria

José Ramón Herrero Zaragoza, Enric Morancho Llena y Dolors Royo Vallés

1. Espacios de direcciones
2. Un primer mecanismo de traducción dinámica
3. Memoria virtual
4. Modificación dinámica del espacio lógico
5. Errores de programación relacionados con el acceso a la memoria

Módulo didáctico 4

Entrada/salida

José Ramón Herrero Zaragoza, Teodor Jové Lagunas y Enric Morancho Llena

1. El concepto de entrada/salida (E/S)
2. El concepto de dispositivo de entrada/salida
3. Las características de los dispositivos de entrada/salida
4. Los dispositivos físicos, los lógicos y los virtuales
5. La independencia de los dispositivos
6. Optimización de la entrada/salida
7. Ejemplos

Módulo didáctico 5

El sistema de ficheros

José Ramón Herrero Zaragoza, Teodor Jové Lagunas y Enric Morancho Llena

1. Definición del sistema de ficheros
2. El concepto de fichero
3. El espacio de nombres
4. La protección

5. Ejemplos de sistema de ficheros y protección

Módulo didáctico 6

La gestión de procesos

Teodor Jové Lagunas, Josep Lluís Marzo i Lázaro, Enric Morancho Llena y José Ramón Herrero Zaragoza

1. El proceso: un vistazo desde el interior del sistema
2. El ciclo de vida de un proceso
3. Flujos de ejecución
4. Ejemplos de gestión de procesos
5. *Pthreads*

Módulo didáctico 7

Comunicación y sincronización

José Ramón Herrero Zaragoza, Enric Morancho Llena y Dolors Royo Vallés

1. Comunicación y sincronización
2. Primer escenario: compartición de recursos
3. Segundo escenario: memoria no compartida
4. *Deadlocks* (abrazos mortales o interbloqueos)

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