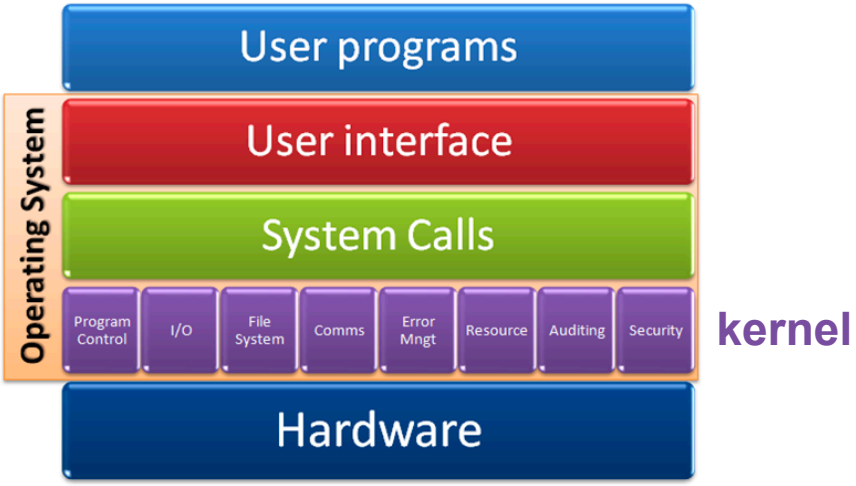
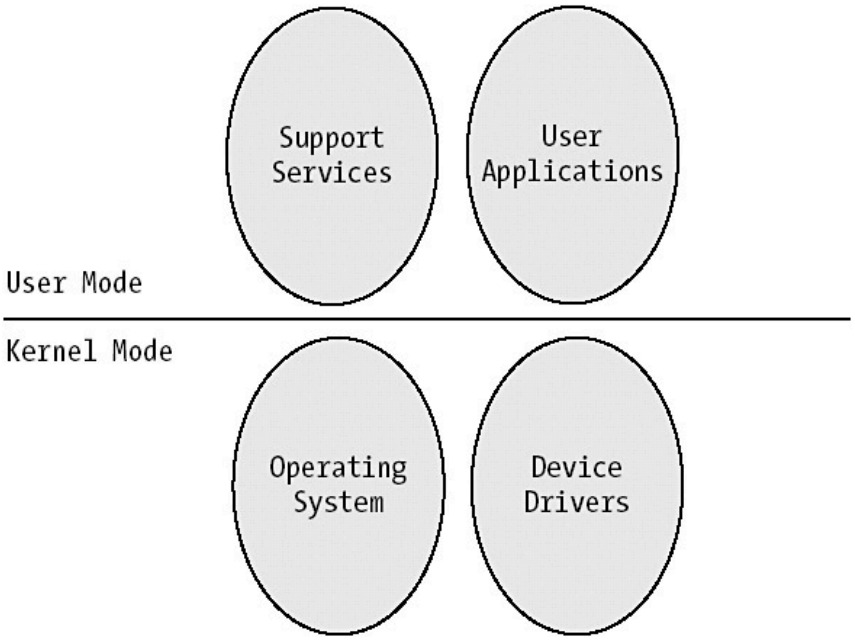
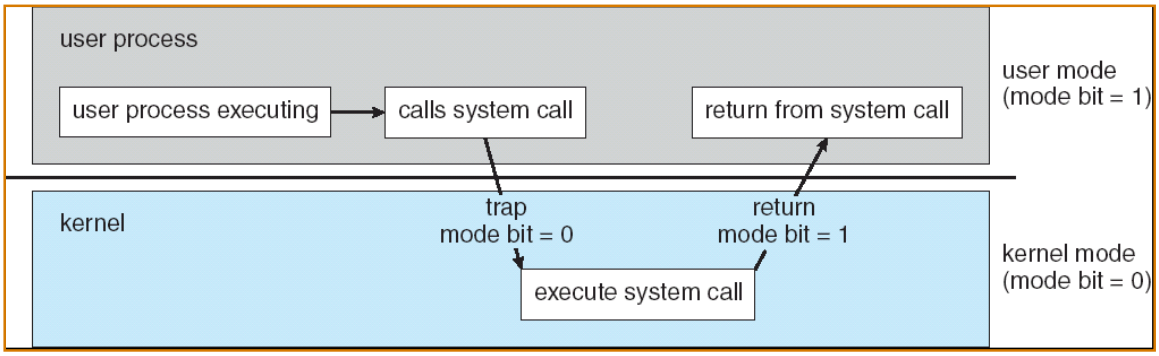
OS Organization



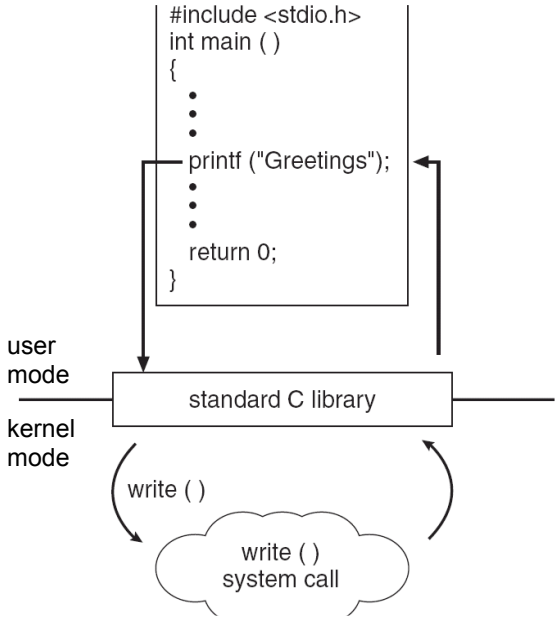
User and Kernel Mode



System Calls



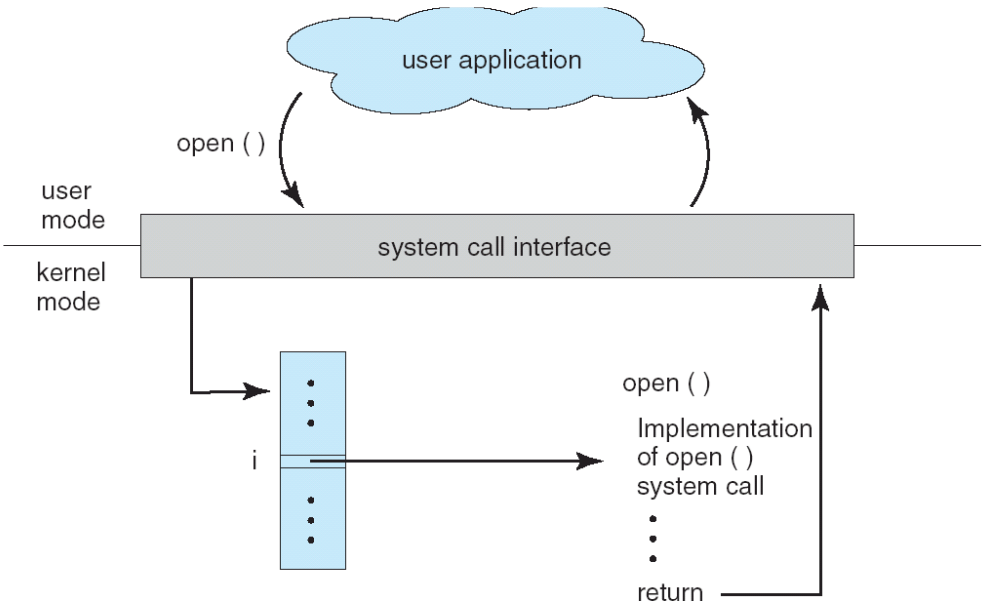
Making a System Call



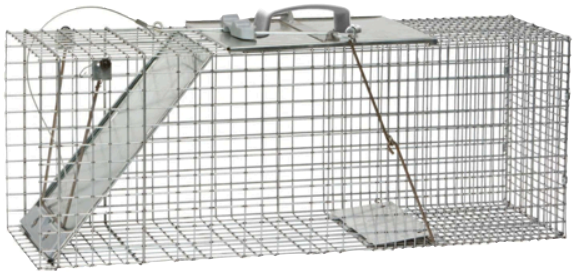
Example System Calls

	Windows	Unix
Process Control	CreateProcess() ExitProcess() WaitForSingleObject()	fork() exit() wait()
File Manipulation	CreateFile() ReadFile() WriteFile() CloseHandle()	open() read() write() close()
Device Manipulation	SetConsoleMode() ReadConsole() WriteConsole()	ioctl() read() write()
Information Maintenance	GetCurrentProcessID() SetTimer() Sleep()	getpid() alarm() sleep()
Communication	CreatePipe() CreateFileMapping() MapViewOfFile()	pipe() shmget() mmap()
Protection	SetFileSecurity() InitializeSecurityDescriptor() SetSecurityDescriptorGroup()	chmod() umask() chown()

System Call Implementation



Traps



Trap Vector

Memory Addresses	
0: 0x00080000	Illegal address
1: 0x00100000	Memory violation
2: 0x00100480	Division by zero
3: 0x00123010	System call
⋮	

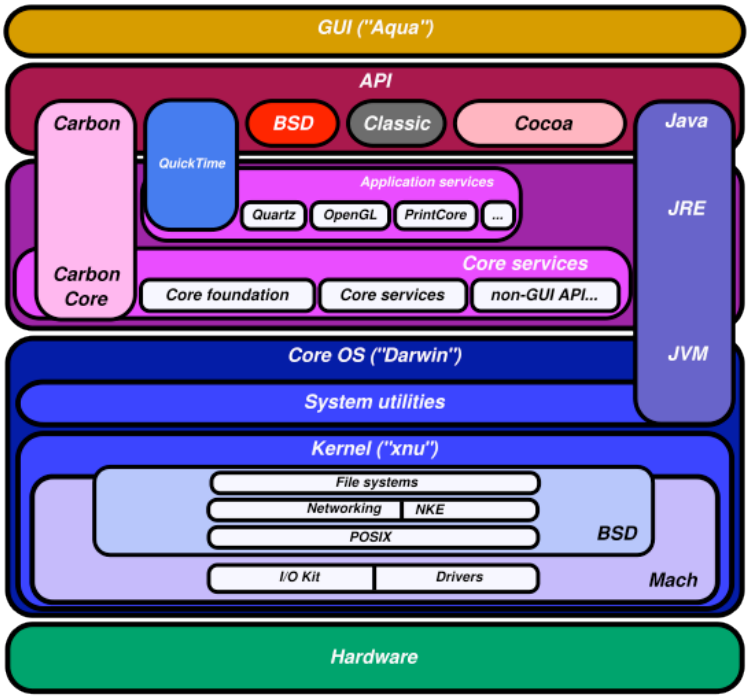
Interrupts & I/O Control

Interrupt Vector

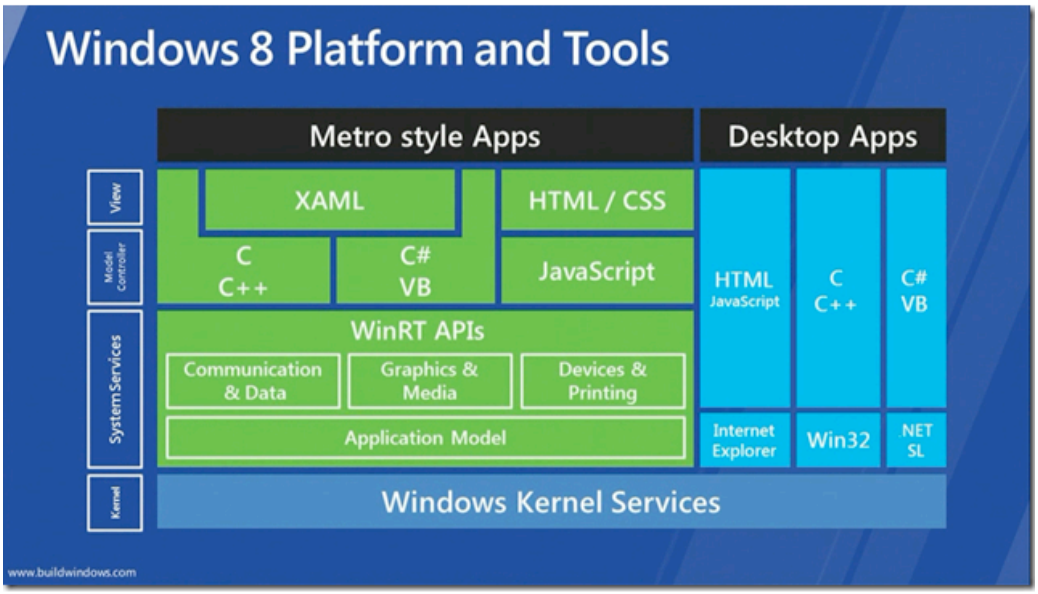
0: 0x2ff080000	keyboard
1: 0x2ff100000	mouse
2: 0x2ff100480	timer
3: 0x2ff123010	disk 1

Hardware Timer

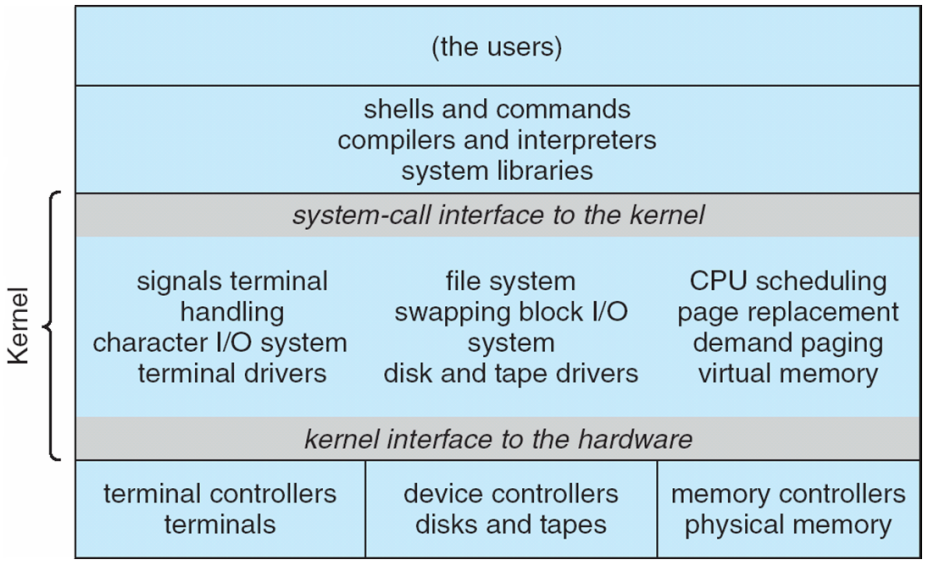
OS Architecture: Mac OS X



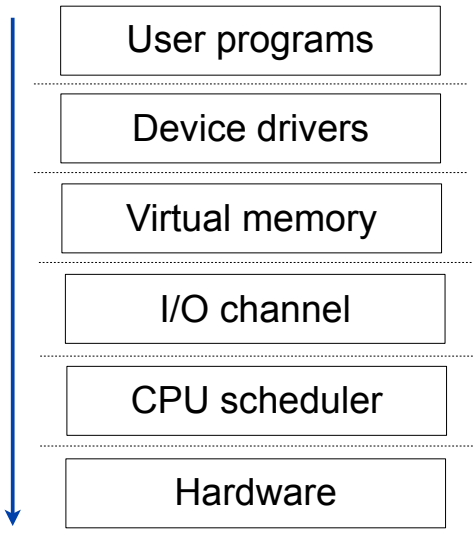
OS Architecture: Windows 8



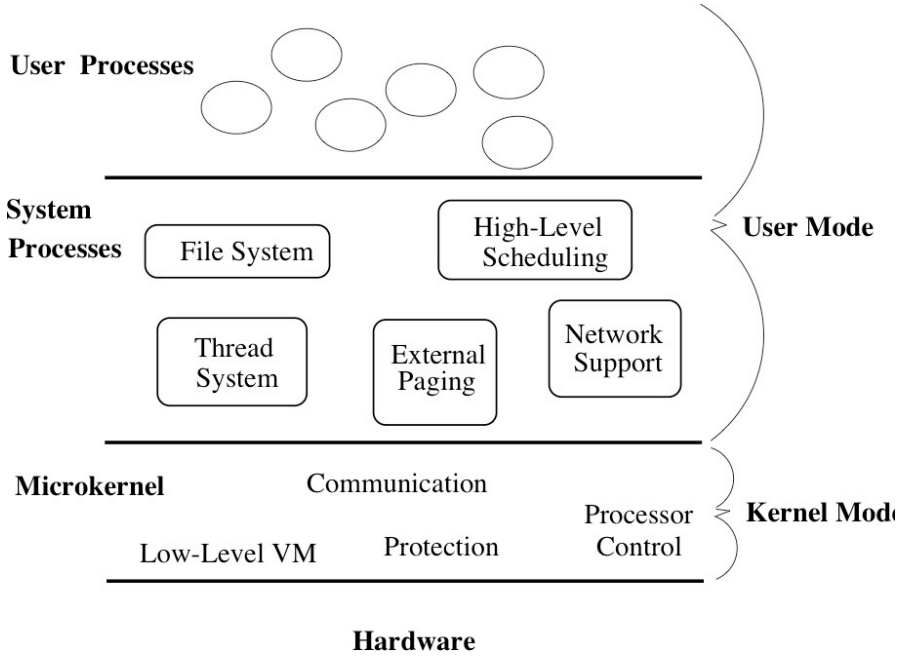
Monolithic Kernel Design



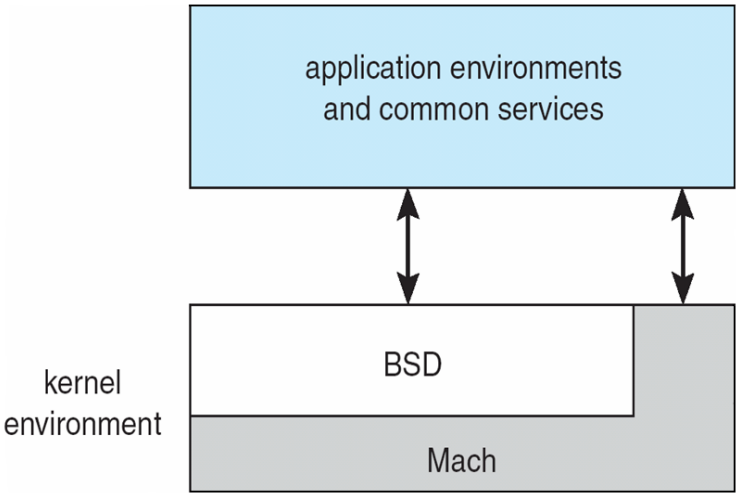
Layered OS Design



Microkernel Design



Hybrid Design in Mac OS X



Modular Kernel Design