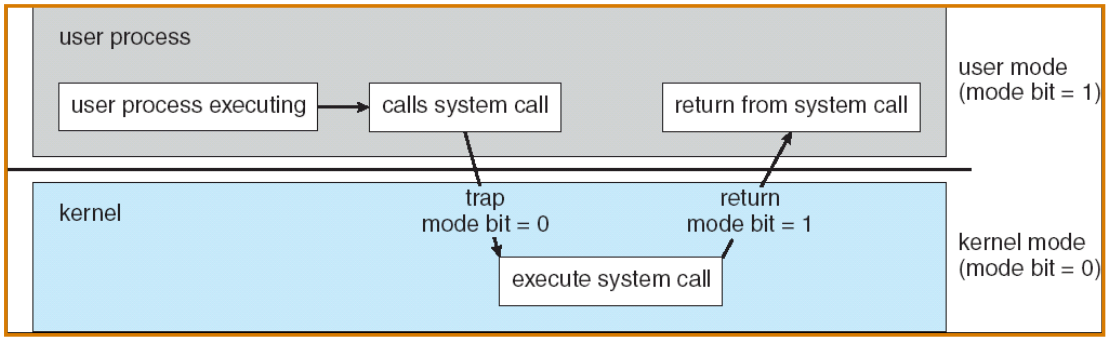
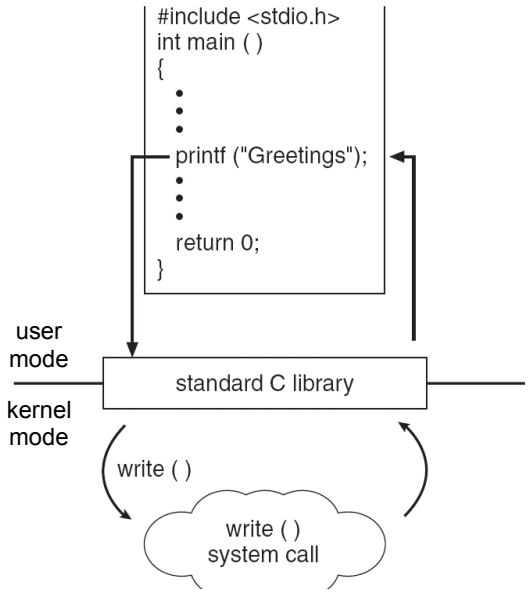
Recap: Architecture Support for OS

OS Service	Hardware Support
Protection	Kernel/user mode, privileged instructions, base/limit registers
Interrupts	Interrupt vectors
System calls	Trap instructions and trap vectors
I/O	Interrupts
Scheduling, error recovery, accounting	Timer
Synchronization	Atomic instructions
Virtual memory	Translation look-aside buffers

System Calls



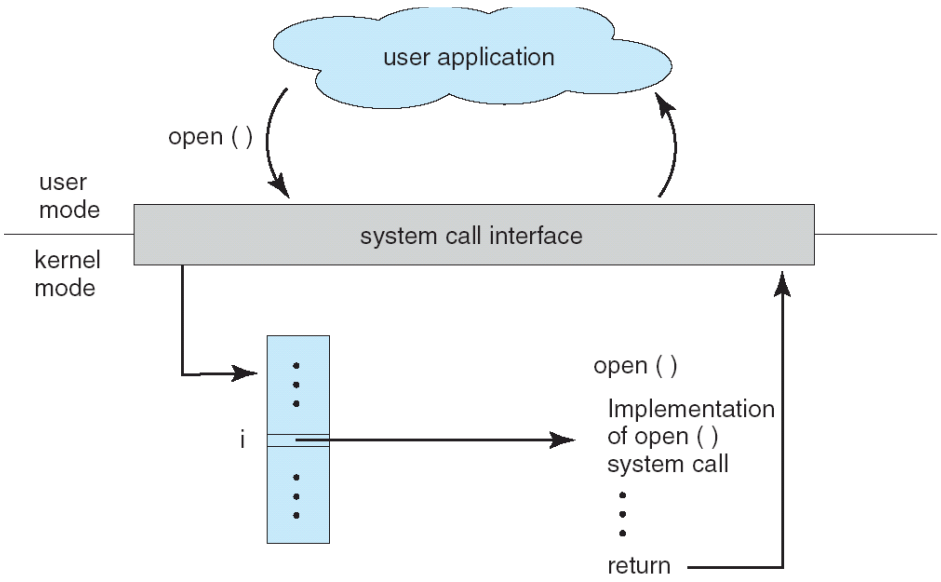
Making a System Call



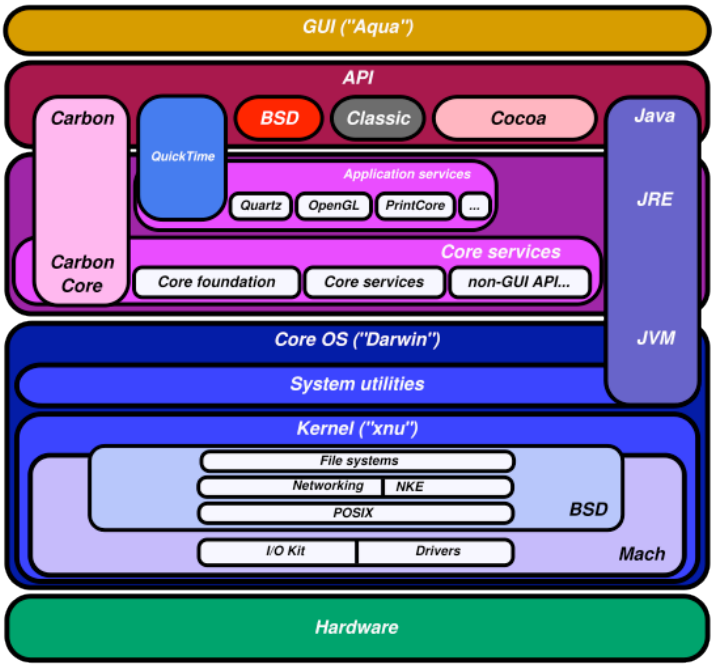
Example System Calls

	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() InitlializeSecurityDescriptor() SetSecurityDescriptorGroup()	chmod() umask() chown()

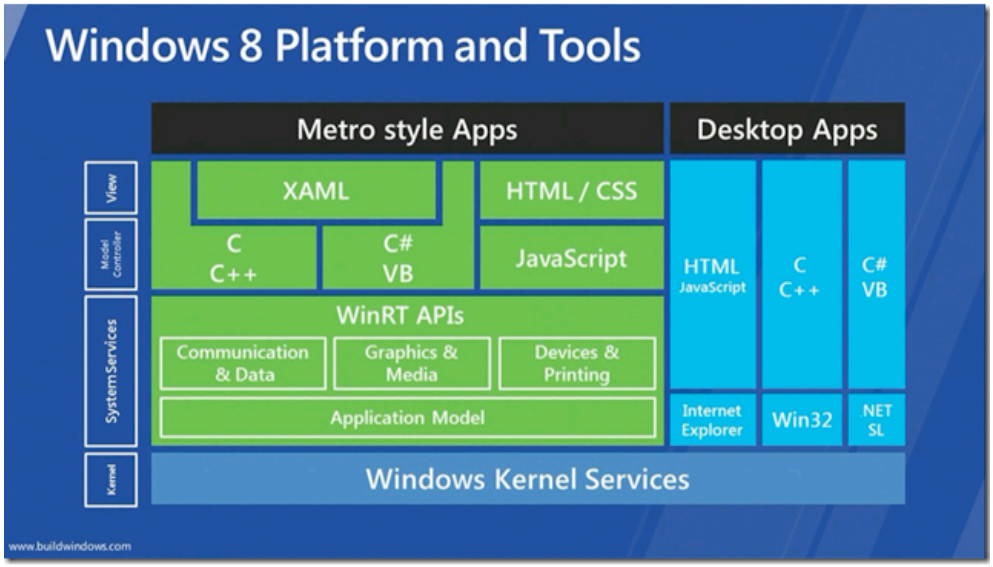
System Call Implementation



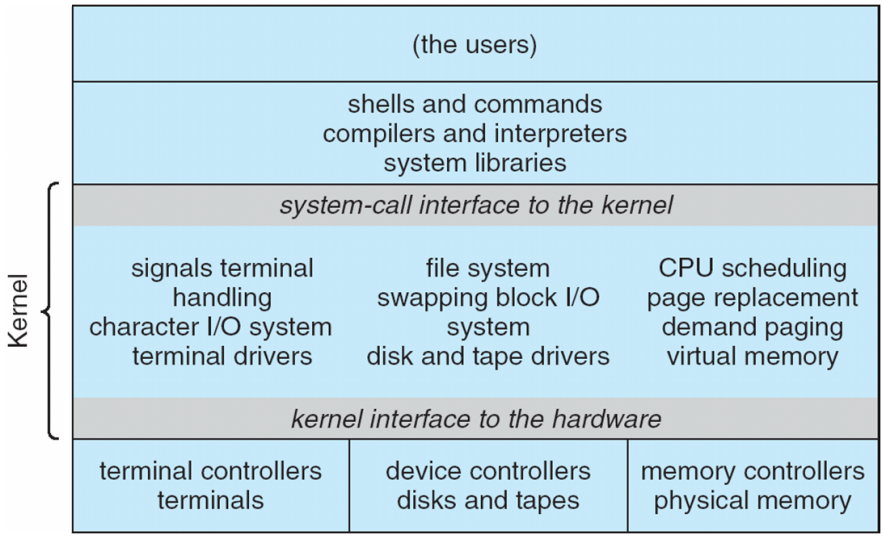
OS Architecture: Mac OS X



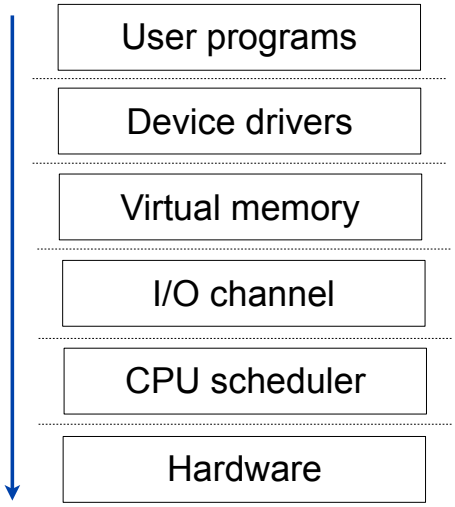
OS Architecture: Windows 8



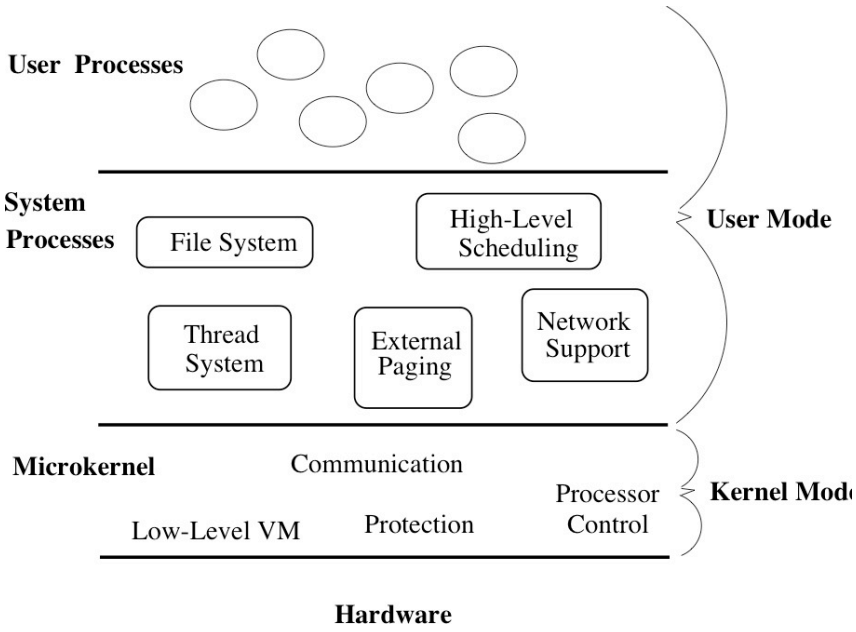
Monolithic Kernel Design



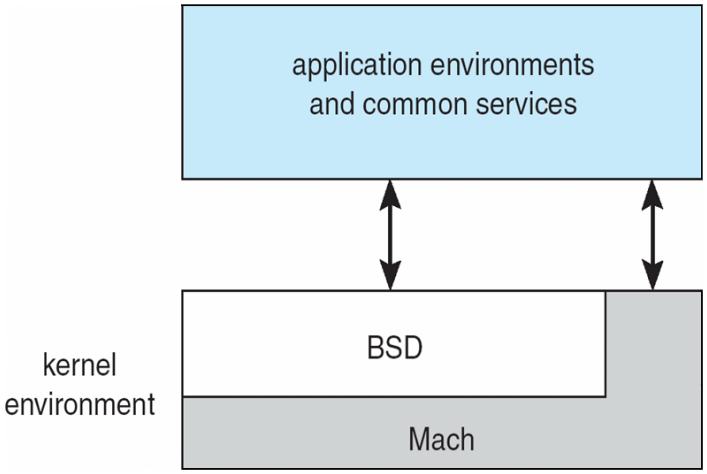
Layered OS Design



Microkernel Design



Hybrid Design in Mac OS X



Modular Design