

Assignment 1

Name: Shashank Karkare
ASU ID: 1205168441

Answer 1: The memory address of the variable jiffies in my custom build kernel is 0xc06a0d20.

We can find the address of the variable of function by directly printing them using %p format because until our module is loaded the address is just local address.

The address is the virtual memory address.

When the kernel is build the compiler permanently gives these addresses and to see them we can view them in System.map file generated for the kernel we build.

jiffies is the lower 32 bit of the jiffies_64 variable.

Answer 2: When we configure the kernel ,we select the OMAP machine . So it sets the config variable for CONFIG_DM_TIMER to true thus stating the makefile to compile the dmtimer.c file. The compiler compiles the dmtimer.c and generate dmtimer.o file. Then in kernel build process since the CONFIG_ARCH_OMAP_PLUS was set to true. The compiler then links all the object file together to generate built-in.o in arch/arm/plat-omap folder. Then all such built-in.o files are linked together in vmlinux file.

Entry point of the omap_dm_timer_request function in the kernel is in the drivers/media/rc/ir-rx51.

Answer 3:

User Thread: If 1 of the user thread sleeps, whole process sleeps. It is very fast to create , manage and destroy. Does not use the hardware parallelism.

Kernel Thread: If thread sleeps , other continues to work. Very slow to create , manage and destroy. Uses hardware parallelism to the fullest extent.

User Process: It can spawn many user space thread under it.

Divide by zero operation :

- a)In user space process , the process is stopped with displaying the floating point exception as message.
- b)In kernel thread, the kernel panics and stops .
- c)Within a system call. Same thing happened , kernel panics and stops.
- d)Within a Interrupt service routine, the system should hang coz the divide by zero is illegal instruction for cpu and thus the interrupt service routine will not finish and cpu will not switch back to user mode and hence the system will stop working(i.e. hangs)