Marshall Lindsay
ECE 4220
Lab6 Prelab

1) Investigate and include a brief description for the following instructions:

i)request_irq(unsigned int irq, irq_handler_t handler, unsigned long irqflags, const char * devname, void * dev_id) - This function is used to allocate an interrupt line. There are 5 Arguments -
- a)irq - Interrupt line to allocate
- b)handler - Function to be called when the IRQ occurs
- c)irqflags - Interrupt type flags
- d)devname - An ascii name for the claiming device
- e)dev_id - A cookie passed back to the handler function.

ii)free_irq(unsiged int irq, void* dev_id) - This function is used to free an interrupt. There are 2 arguments:
- a)irq - Interrupt line to free.
- b)dev_id - Device identity to free.

iii)hrtimer_init(struct hrtimer* timer, clockid_t clock_id, enum hrtimer_mode mode) - This function is used to initialize a high resolution to the given clock. There are 3 arguments:
- a)timer - The timer to be initialized.
- b)clock_id - The clock to be used.
- c)mode - Timer mode abs/rel.

iv)kthread_create(int(*threadfn(void* data), void* data, const char namefmt[], ...) - This function is used to create a kthread. There are at least three arguments:
- a)threadfn - This function to run until the signal_pending(current).
- b)data - Data ptr for the threadfn.
- c)namefmt[] - printf-style name for the thread.
- d)And various variable arguments.

v)kthread_stop(struct task_struct* k) - This function is used to stop a kthread that was created by kthread_creat(). There is a single argument:
- a)k - The thread created by kthread_create().

Lab6 pseudo code:

Week1 -

a)
Create a kthread with info about the IO
Send a square wave to the speaker with a delay

b)
Same as a) but instead of delay we will use a timer to change the frequency.

Week2 -
Take the function created in week1 and implement it such that we send it a frequency value.

Use interrupts to change that value.

Could use the interrupt to kill a thread and then make a new one with the new frequency variable. I will need to check the ability of kthreads and the interrupts.