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CS 202, Spring 2015
Handout 11 (Class 14)

Implementing threads

    Per-thread state in thread control block:

        typedef struct tcb {
            unsigned long esp;      /* Stack pointer of thread */
            char *t_stack;          /* Bottom of thread's stack */
            /* ... */
            };

    Machine-dependent thread-switch function:

        void swtch(tcb *current, tcb *next);

    Machine-dependent thread initialization function:

        void thread_init(tcb *t, void (*fn) (void *), void *arg);

    Implementation of swtch(current, next):

        pushl %ebp; movl %esp, %ebp             # Save frame pointer
        pushl %ebx; pushl %esi; pushl %edi      # Save callee-saved regs

        movl 8(%ebp),%edx                       # %edx = current
        movl 12(%ebp),%eax                      # %eax = next
        movl %esp,(%edx)                        # %edx->esp = %esp
        movl (%eax),%esp                        # %esp = %eax->esp

        popl %edi; popl %esi; popl %ebx # Restore callee saved regs
        popl %ebp                               # Restore frame pointer
        ret                                     # Resume execution


    [thanks to David Mazieres]
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