Video Lecture # 8
Exit Handlers
Process Resource Limits

Course: SYSTEM PROGRAMMING

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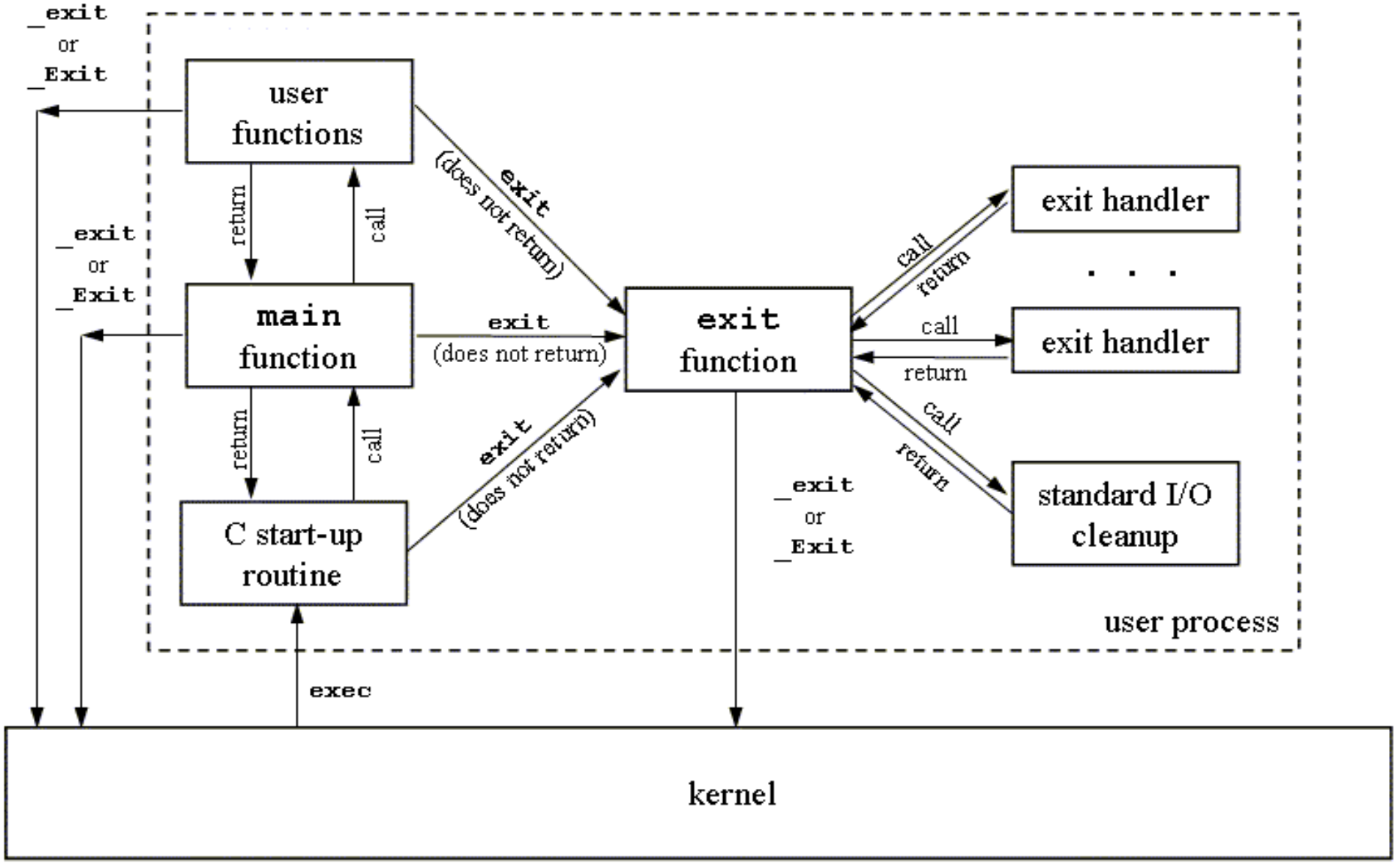
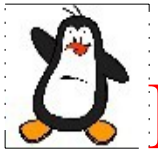
Agenda

- How a C program start & terminates
- Normal & abnormal termination
- What are exit handlers
- Registering exit handler using `atexit()`
- Registering exit handlers using `on_exit()`
- Process Resource Limits

How a C Porgram Starts & Terminates





How a C Porgram Terminates

- Normal termination
  - The main function's **`return`** statement
  - Any function calling **`exit()`** library call
  - Any function calling **`_exit()`** system call
- Abnormal termination
  - Calling **`abort()`** function
  - Terminated by a signal

Limitations of `atexit()`

Limitations of exit handler registered via `atexit()`

- An exit handler doesn't know what exit status was passed to **`exit()`**; which may be useful. e.g., we may like to perform different actions depending on whether the process is exiting successfully or unsuccessfully
- We can't specify an argument to exit handler when called; which may be useful to define an exit handler that perform different actions depending on its argument

Library Call `on_exit()`

```
int on_exit(void(*func)(int,void*),void*arg);
```

- The **`on_exit()`** is also used to register exit handlers like `atexit()`, but is a more powerful than **`atexit()`**
- It accepts two arguments, a function pointer and a void pointer
- The `func` is a function pointer that is passed two arguments (an integer and a void*)
- The first argument to `func` is the integer value passed to `exit()`, and the second argument is the second argument to `on_exit()`

Process Resource Limits

Process Resource Limits

- Every process has as set of resource limits that can be used to restrict the amounts of various systems resources that the process may consume
- We can set the resource limits of the shell (terminal) using the **`ulimit`** built-in command. These limits are inherited by the processes that the shell creates to execute user commands
- Since kernel 2.6.24, the Linux-specific **`/proc/PID/limits`** file can be used to view all of the resource limits of any process

Things To Do

If you have problems visit me in counseling hours. . . .