Operating Systems (CS3000)

Lecture – 17

(Inter Process Communication - 4)

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Signals

- A signal is an asynchronous event which is delivered to a process.
  - The event can occur at any time (may be unrelated to the execution of the process)
  - An event which is generated to notify a process that some important situation has risen

- Signals are raised by some error conditions
  - Memory segment violations
  - Floating point processor errors
  - Illegal instructions – e.g. user types ctrl-C

Signals

- What Process will do on receipt of Signal?
  - Will stop what its doing and take some action

- Signals are defined in the header file <signal.h> as a macro constant
  - SIGINT
  - SIGFPE
  - SIGKILL
  - SIGUSR1
  - SIGUSR2
  - SIGSTOP
- Every signal has a name and an associated number.

Signals

- How to raise a signal?
  - Program
  - System generated
- What happens?
  - Default defined action
- Doesn’t want default?
  - User defined action/ handling of signal
- Ignore Signal?
  - Yes
- SIGSTOP/SIGKILL

Signal handling

- On Signal receipt, the process has a choice of action.
  - The process can ignore the signal – Signal is discarded
  - Can specify a handler function
  - Accept the default action for the specific kind of signal

- The program can register a handler function using function such as signal() or sigaction().

- If the signal has not been neither handled nor ignored, its default action takes place.

Signal handling

int signal (int signum, void (*func)(int))

```
#include<stdio.h>
#include<signal.h>

void sig_handler(int signum)
{
  printf(“I am in sig_handler ()\n");
}

int main()
{
  signal(SIGUSR1,sig_handler);
  printf(“I am in main()\n");
  raise(SIGUSR1);
  printf(“I am in main() again\n");
  return 0;
}
```

Signal handling

- int sigaction(int signum, const struct sigaction *act, struct sigaction *oldact)
- To change the signal action

Thank You

Any Questions?