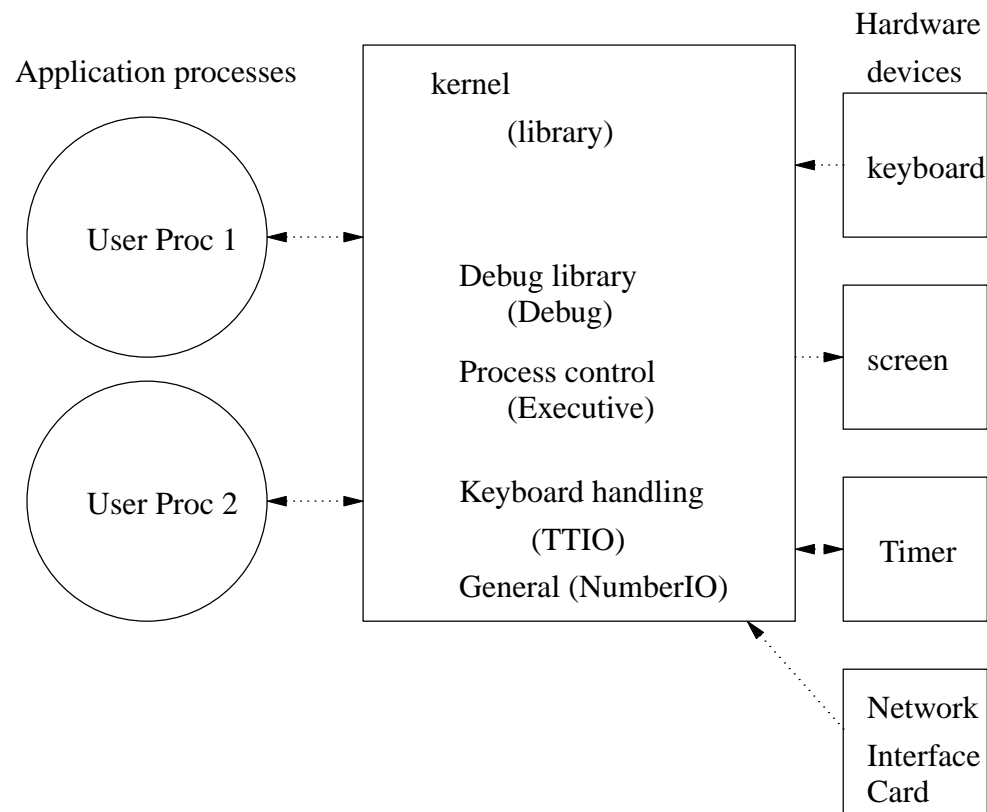


# The Microkernel Executive



## The Microkernel Executive

- coordinates concurrent process activity within the
  - creation of processes
  - coordination of interrupts
  - scheduling of processes
  - provides mutual exclusion primitives
    - Wait, Signal - Semaphores in this Executive

## Functions provided by the Executive

- ```
Descriptor *
  Executive_InitProcess (void (*p)(void),
                        int StackSize,
                        char *Name,
                        int NameLength);
```
- initializes a process which is held in the suspended state
- when the process is resumed it will start executing procedure, p.
- the process has a maximum stack size of, StackSize, bytes and its textual name is, Name. The StackSize should be at least 5000 bytes.

## Functions provided by the Executive

- ```
void *Executive_Resume (Descriptor *d);
```
- resumes a suspended process
- if all is successful then the process, p, is returned
- if it fails then NIL is returned

## Functions provided by the Executive

- `void Executive_Suspend (void);`
- suspend the calling process
- the process can only continue running if another process Resumes it.

## Functions provided by the Executive

- ```
Semaphore *  
Executive_InitSemaphore (int v,  
                        char *Name,  
                        int NameLength);
```
- creates a semaphore whose initial value is, v, and whose name is, Name

## Functions provided by the Executive

- ```
void Executive_Wait (Semaphore *s);
```
- performs dijkstra's P operation on a semaphore
- a process which calls this procedure will wait until the value of the semaphore is  $> 0$  and then it will decrement this value

## Functions provided by the Executive

- ```
void Executive_Signal (Semaphore *s);
```
- performs dijkstra's V operation on a semaphore
- a process which calls the procedure will increment the semaphores value



## Functions provided by the Executive

- ```
EXTERN void Executive_WaitForIO (int VectorNo);
```
- waits for an interrupt to occur on vector, VectorNo

## Functions provided by the Executive

- `void Executive_Ps (void);`
- displays a process list together with process status

## Functions provided by the Executive

- `Descriptor *Executive_GetCurrentProcess (void);`
- returns the descriptor of the current running process

## Functions provided by the Executive

- `void Executive_RotateRunQueue (void);`

- rotates the process run queue
  - it does not call the scheduler

## Functions provided by the Executive

- `void Executive_ProcessName (Descriptor *d);`
- displays the name of process, d, through DebugString

## Functions provided by the Executive

- `void Executive_DebugProcess (Descriptor *d);`
- gdb debug handle to enable users to debug deadlocked semaphore processes