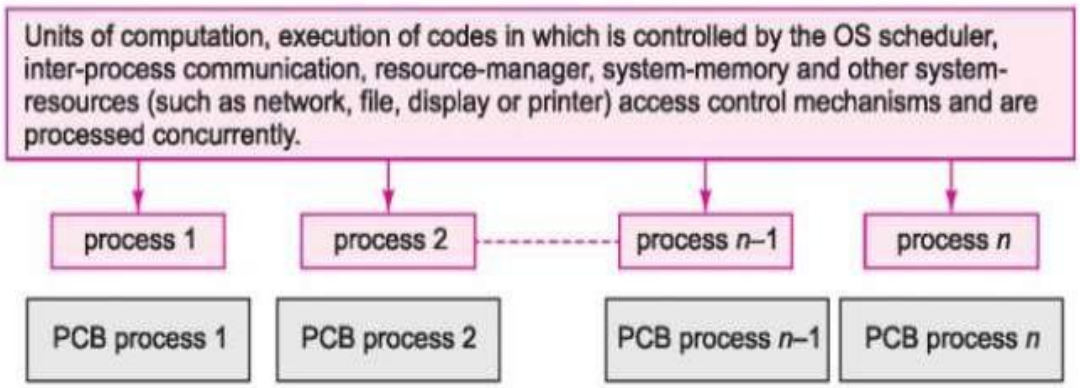
UNIT IV

RTOS BASED EMBEDDED SYSTEM DESIGN **9**

4.1

Process



Process Control Block

- A data structure having the information using which the OS controls the Process state.
- Stores in protected memory area of the kernel.
- Consists of the information about the process state

Information about the process state at Process Control Block…

- Process ID,
- Process priority,
- Parent process (if any),
- Child process (If any),and
- Address to the next process PCB which will run,
- Allocated program memory address blocks in physical memory and in secondary (virtual) memory for the process - codes,
- Allocated process - specific data address blocks
- allocated process-heap (data generated during the program run) addresses,
- allocated process-stack addresses for the functions called during running of the process,
- allocated addresses of CPU register- save area as a process context represents by CPU registers , which include the program counter and stack pointer
- allocated addresses of CPU register- save area as a process context [Register-contents (define process context) include the program counter and stack pointer contents]
- process- state signal mask [when mask is set to 0(active) the process is inhibited from running and when reset to 1, the process is allowed to run],

- Signals (messages) dispatch table[process IPC functions],
- OS allocated resources‘ descriptors (for example, file descriptors for open files, device descriptors for open (accessible) devices, device-buffer addresses and status, socket-descript or for open socket), and
- Security restrictions and permissions.

Context

- Context loads into the CPU registers from memory when process starts running, and the registers save at the addresses of register - save area on the context switch to another process
- The present CPU registers ,which include program counter and stack pointer are called context
- When context saves on the PCB pointed process-stack and register-save area addresses, then the running process stops.
- Other process context now loads and that process runs─ This means that the context has switched.