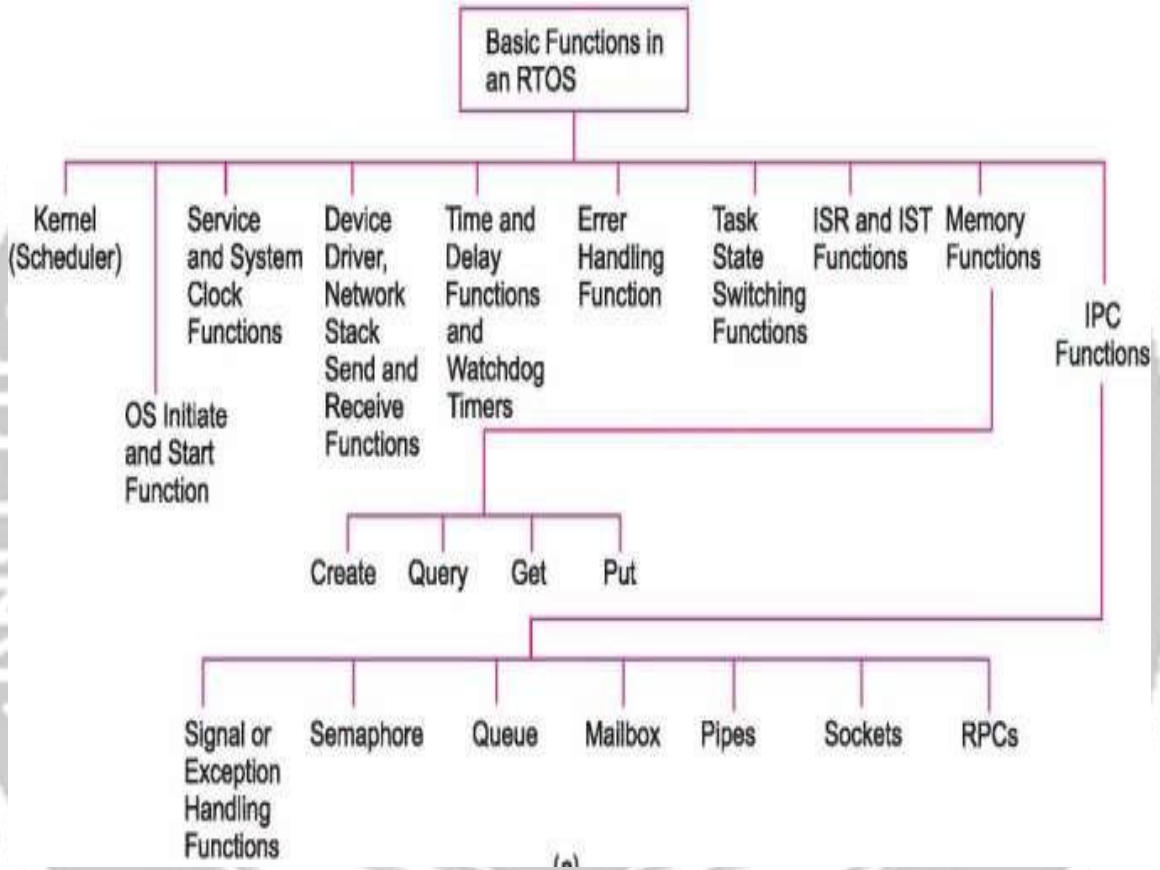


UNIT V

EMBEDDED SYSTEM APPLICATION DEVELOPMENT

5.1 Basic functions expected from kernel fan RTOS



## RTOS features in general

- Basic kernel functions and scheduling : Preemptive or Preemptive plus times
- Support to Limited Number of tasks and threads
- Task priorities and Inter Service Threads priorities definitions
- Priority Inheritance feature or option of priority ceiling feature
- Task synchronization and IPC functions
- Support to task and threads running in kernel space
- IDE consisting of editor, platform builder , GUI and graphics software, compiler, de bugging and host target support tools
- Device Imaging tool and device drivers
- Clock ,time and timer functions,
- Support to POSIX,
- A synchronous IOs,
- Fixed memory blocks allocation and de allocation system,
- Support to different file systems and flash memory systems
- TCP/IP protocols , network and b uses protocols,
- Development environment with Java
- Componentization (reusable modules for different functions), which leads to small foot print(small of size of RTOS codes placed in ROM image)
- Support to number of process or architectures, such as INTEL, ARM, Philips

## Development Approaches

Host and Target Based Development Approach:

- A host machine (Computer) for example, a PC uses a general purpose OS, for example Windows or Unix for system development. The target connects by a network protocol for example TCP /IP during the development phase. The developed codes and the target RTOS functions first connect a target. The target with downloaded codes finally disconnects and contains a small size footprint of RTOS. For example, the target does not download host machine resident compiler cross compiler edit for programs, simulation and debugging programs and MMU support.

Self-host Based Development Approach:

- Same system with full RTOS is used for development on which the application will be running. This also does not require cross compilation. When application codes are ready, the required RTOS functions codes and application codes are downloaded into the ROM of the target board

## Types of RTOS

1. In-House Developed RTOS
2. Broad based Commercial RTOS
3. General Purposes OS with RTOS
4. Special Focus RTOS