

1.What are Device Drivers?

- A device driver is a special kind of software program that controls a specific hardware device attached to a computer.
- Device drivers relay requests for device access and actions from the operating system and its active applications to their respective hardware devices. They also deliver outputs or status/messages from the hardware devices to the operating system and thus to applications.
- Device drivers are necessary to permit a computer to interface and interact with specific devices.
- They also handle device responses and messages for delivery to the computer.

2.Differences between GPOS and RTOS?

- **GPOS(General Purpose Operating System)**
- GPOS is designed to perform non-time critical general tasks.
- The general purpose operating system has no task deadlines.
- It requires large memory for memory management.
- GPOS is designed for a multi user environment
- The time response of the GPOS is not deterministic.
- GPOS is mainly used in PC,servers,tablets and mobile phones.
- **RTOS(Real Time Operating system)**
- The real time operating system has a task deadline.
- RTOS is designed for a single-user environment.
- The time response of the RTOS is deterministic.
- The RTOS is mainly used for a dedicated electronic application.
- It doesn't have large memory.
- The RTOS is mainly used in the embedded system.
- Examples: FreeRTOS, Contiki source code, etc.

3.Differences between Embedded system and General purpose systems?

- **EMBEDDED SYSTEM**
- : Embedded systems are specialized computing systems designed to perform specific tasks or functions within a larger system or device.
- Embedded systems are typically less complex than general-purpose systems.
- Embedded systems are often designed for minimal or no direct user interaction. They may have simple user interfaces, such as buttons or displays, but their primary focus is on the autonomous operation of the embedded device.
- Examples :GPS, sensor data processing,cameras, smart TVs etc.
- **General Purpose system**
- General-purpose systems are designed for a wide range of tasks and applications.
- They are flexible and capable of running various software programs.

- General-purpose systems are designed for user interaction.
- General-purpose systems are more powerful and versatile, with higher processing power, larger memory, and more storage capacity.
- Examples: desktop computers, laptops, tablets, smartphones, and servers etc.

4.How can hardware understand the code that we write in embedded system?

- Initially ,when the user writes the program in assembly language,the compilers (used for C programming) or interpreters (used for python) translates the assembly code into the machine code which is the language of 1's and 0's.
- The operating system loads the machine code into the memory and causes the CPU start executing its instructions and the device drivers which consists of specific software programs controls the hardware device and communicate with that.