C

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1) What is hard and soft embedded system ?
    - Hard Real Time System :
        - Hard real time system is purely time constraint system for example users expected the output for the given input in 10sec then system should process the input data and give the output exactly by 10th second. Here in the above example 10 sec. is the deadline to complete process for given data. Hard real systems should complete the process and give the output by 10th second. It should not give the output by 11th second or by 9th second, exactly by 10th second it should give the output. In the hard real time system meeting the deadline is very important if deadline is not met the system performance will fail
        - Hard real time is a system whose operation is incorrect whose result is not produce according to time constraint.
          For example,
          1. Air Traffic Control
          2. Medical System
    - Soft Real Time System :
        - In soft real time system, the meeting of deadline is not compulsory for every time for every task but process should get processed and give the result. Even the soft real time systems cannot miss the deadline for every task or process according to the priority it should meet the deadline or can miss the deadline. If system is missing the deadline for every time the performance of the system will be worse and cannot be used by the users. Best example for soft real time system is personal computer, audio and video systems, etc.
        - Soft real time system is a system whose operation is degrade if results are not produce according to the specified timing requirement.
          For example
          1. Multimedia Transmission and Reception
          2. Computer Games

2) What is bug ?
    - A software bug is an error, fault in a computer program or system that causes it to produce an incorrect or unexpected result, or to behave in unintended ways.

3) Difference between C and Embedded C

Parameters	C	Embedded C
GENERAL	• C is a general purpose programming language, which can be used to design any type of desktop based applications. • It is a type of high level language.	• Embedded C is simply an extension C language and it is used to develop micro-controller based applications. • It is nothing but an extension of C.
DEPENDENCY	• C language is hardware independent language. • C compilers are OS dependent.	• Embedded C is fully hardware dependent language. • Embedded C are OS independent.
COMPILER	• For C language, the standard compilers can be used to compile and execute the program. • Popular Compiler to execute a C language program are: • GCC (GNU Compiler collection) • Borland turbo C, • Intel C++	• For Embedded C, a specific compilers that are able to generate particular hardware/micro-controller based output is used. • Popular Compiler to execute a Embedded C language program are: • Keil compiler • Green Hill software • VxWorks

USABILITY AND APPLICATION	• C language has a free-format of program coding. • It is specifically used for desktop application. • Optimization is normal. • It is very easy to read and modify the C language. • Bug fixing are very easy in a C language program. • It supports other various programming languages during application. • Input can be given to the program while it is running. • Applications of C Program: • Logical programs • System software programs	• Formatting depends upon the type of microprocessor that is used. • It is used for limited resources like RAM and ROM. • High level of optimization. • It is not easy to read and modify the Embedded C language. • Bug fixing is complicated in a Embedded C language program. • It supports only required processor of the application, and not the programming languages. • Only the pre-defined input can be given to the running program. • Applications of Embedded C Program: • Ecu

4) Microcontroller vs. Microprocessor

- Microprocessor consists of only a Central Processing Unit, whereas Micro Controller contains a CPU, Memory, I/O all integrated into one chip.
- Microprocessor is used in Personal Computers whereas Micro Controller is used in an embedded system.
- Microprocessor uses an external bus to interface to RAM, ROM, and other peripherals, on the other hand, Microcontroller uses an internal controlling bus.
- Microprocessor is complicated and expensive, with a large number of instructions to process but Microcontroller is inexpensive and straightforward with fewer instructions to process.