Internals - 03

(18CS44)

MES

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(29) Operational quality attributes:

(1) Response :- quickness is measured by response. it gives you an idea about how fast your system is tracking the input variables. Fast response time is required for most of the Embedded system.

(2) Throughput :- It is the number of events that take place within a given amount of time. The ability to provide appropriate response and processing times and throughput rates when performing its function.

(3) Reliability :- Mean time ~~B/w~~ to B/W failures and mean time to repair are terms used in defining System reliability. when function is critical during the mission time.

(4) Maintainability :- It is the parameter concerned with how the system in use can be restored after a failure, while also considering ~~Cost~~ concepts like preventing maintainence. and B.I.T. required maintainer skill level.

(5) Security :- Three pillars of security is Confidentiality, integrity and availability.

(6) Safety :- It deals with the damage that can happen to the ~~sup~~ operating person and ~~envi~~ environment due to breakdown.

of an Embedded System.

Non-operational attributes:-

① Testability and Debugability:-

After designing application, testing is performed for checking errors. Hardware test ensures that all devices work properly.

~~②~~ Debugability:- It is performed to find out the possible bugs.

② Evolvability:- Embedded product is modified according to new hardware technology and software.

③ Portability:- product is portability if it is capable of performing its operation as it is intended to do in various environments.

④ Time to prototype and market:-

It is a time laps b/w the construction of the product -t and time at which product is ready for selling.

(21)

C	Embedded C
* It is hardware independent language.	* It is hardware dependa -t language.
* C compilers are OS dependent	* Embedded C compilers ar -e OS independent.
* Standard compilers can be used to compile and execute.	* a specific compilers that are able to generate particular hardware/micro controller based output.

* C language has free format of program coding
* formatting depends on the type of microprocessor that is used.
* It is specifically used for desktop.
* it is used for limited resources like RAM and ROM.
* optimization is normal.
* High level of optimization.
* It is very easy to read and modify C language.
* It is not easy to read and modify Embedded C.

(40) Compiler vs Cross compilers

Compiler

* Compiler is a software tool that converts a code written in high level language.
* Here the OS, the compiler program and the application making use of the source code run on the same target processor.
* The development is platform Specific.
* A native compiler generates machine code for the same machine on which it is running.

Cross compilers

* It is a software that is used in software cross-platform development applications.
* The compiler running on a particular target processor/OS converts the source code to machine code.
* The development is not platform Specific.
* Cross compiler generates machine code for the same or different machine.

(4b).

An IDE is the software that assists programmers in developing Software. It normally consists of a source code editor, a compiler, a linker/locater and usually a debugger. IDE's support many languages, processors etc. Some commonly used IDE's for Embedded System are GNU Compiler, Eclipse, Delphi.

* Debugger:- It is used to test and debug other programs. it is a piece of software running on the PC, which has to be tightly integrated with the Emulator that you use to validate your code.

* Editor:- It is a text Editor program that is specifically for Editing Source code to control Embedded Systems. It may be a standalone application or built into an IDE.

* Compiler:- It translates source code into computer language. It also translates source code from a high level language to a lower level language. For embedded systems the compiler always runs on another platform, so a cross compiler is needed.

* Linker:- It is a program that takes one or more objects generated by compilers and assembles them into a single Executable program or a library that can later be linked to in itself.

* Simulators:- It tries to model the behaviour of the Complete microcontroller in software. simulators are the best suited to test algorithms that run completely within the microcontroller.