

Quora



Search Quora



Add Question

Because you may have been active from a region where some people speak Dutch

**Ahmed, do you speak Dutch?**

Join the Dutch community on Quora! Don't worry, English will remain your primary language, and you can easily switch between them.

Yes

No

Real-Time Systems Real Time Mobile Application Development Mobile Applications

Computer Programming

What are real time application?

[Answer](#) [Follow · 15](#) [Request](#)


Ad by Whole Tomato Software

**Fill the gaps in Visual Studio.**

Download Visual Assist for free!

[Free Trial](#)

10 Answers

**Michał Fita**, Started programming before even had a computer...

Answered September 12, 2017

Originally Answered: What is the real time application?

Original wording of the question: *What is the real time application of C?*

I think the author heard the term in context of C programming language, however the term *real-time application* or *real-time system* has much wider context than application to C language only.

I believe I'm fully qualified to answer this question after years of experience in real-time programming.

Software qualifies as real-time when one of its major run time constraints is time. Specifically periods within certain goals **have to** be achieved. In fact games are somehow good example of real-time software, as rendering engines have to finish calculation of the frame before it can be displayed on the screen. However they're *very soft*.

And now we reach very important point in the matter of real-time software. Classification of real-time software is based on consequence of missing a deadline:

- *Hard* – missing a deadline is a total system failure; may mean deaths of people on board the airplane.
- *Firm* – infrequent deadline misses are tolerable, but may degrade the system's quality of service. The usefulness of a result is zero after its deadline.
- *Soft* – the usefulness of a result degrades after its deadline, thereby degrading the system's quality of service.

Above explanations are hard to understand, so illustrations below are more explanatory:

You upvoted this

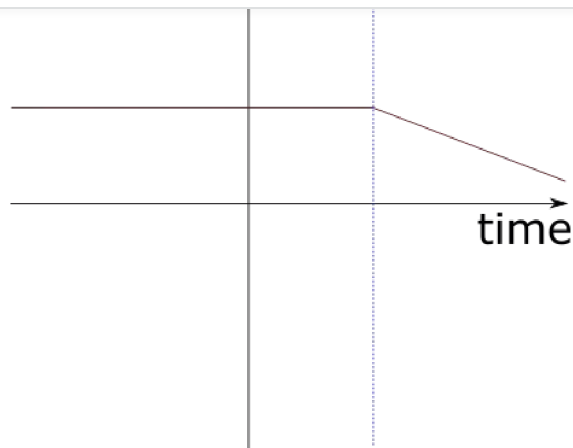


8

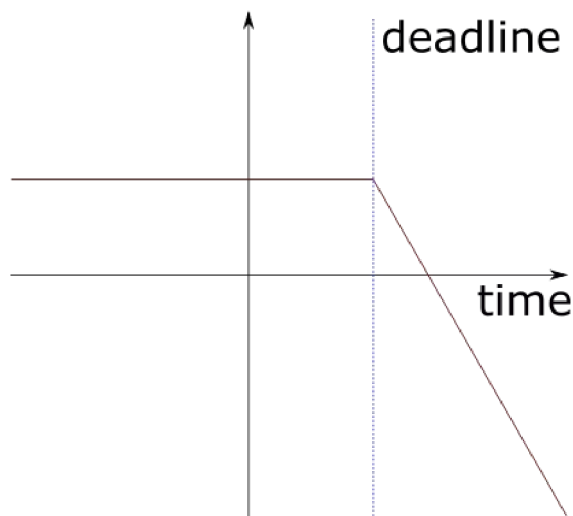


Related Questions

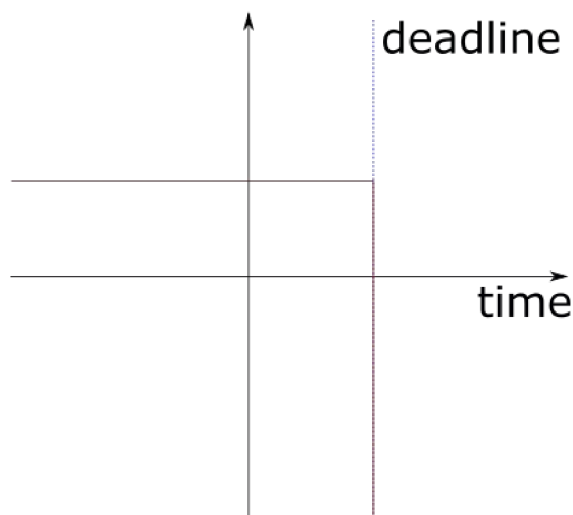
[What are some of the examples of real time and non-real time systems?](#)
[Some ideas of Realtime applications?](#)
[What are the example of real time software?](#)
[What are the applications for a non-real-time OS?](#)
[What is a real time web app?](#)
[What are the applications of real time operating systems? Where is it used?](#)
[Ask Question](#)

This chart shows degradation of value or quality over time after missing a deadline for soft real-time system.



This is much more steep degradation of the firm real-time system, some draws this chart differently, where the line is vertical to zero at deadline and then continue at zero.



And the hard real-time system, where missing deadline is absolutely total lost of value of quality.

These charts self explains why game engines are soft real-time applications, as loosing frames is just annoyance to the player and doesn't cost anybody's life; they explain what missing deadline means for an airplane; and puts automated investment systems somewhere between hard and firm as missed bid doesn't have to mean total loss of investment.

7.9K views · View 8 upvotes

Quora



Search Quora



Add Question



Add a comment...

Add Comment

Sponsored by ShipEngine

**Have you discovered the new standard in multi-carrier shipping?**

ShipEngine is a powerful shipping API, built for developers to power fast-growing ecommerce businesses.

[Learn More](#)

You upvoted this



1



A real time application is one for which timing is critical. While there is no exact definition of the minimum time a "real time" application must exhibit, in general "real time" means that a human will not recognize the computational period of the program. In other words, the response appears to be instantaneous.

Another term "hard real time" is associated with automated control systems that must respond faster than a human can respond. Most humans cannot respond to an event in less than 100 milliseconds. Many control applications require responses far faster than 100 milliseconds.

Examples of ... [\(more\)](#)



Add a comment...

Add Comment



30



2



computers in 1981

Hard real time was probably best explained to me, in a book somewhere, I forget which, that essentially the time in which the a calculation is made is as important as the calculation itself.

It's not necessarily about being *fast*, which is a pretty relative term, it's about being predictable.

A self driving car is a good example. If a car is speeding along at 100kmh, and an obstacle suddenly appears, then the car needs to work out if it's best to move left, right, or just brake. It may even need to accelerate to get out of the way of a moving obstacle.

The time in which it makes this calculation is absolutely critical. It may even be more critical than the result itself. Say if the car decides that moving left is a great option, does it have time to also evaluate moving right? It may not, and might just return the "good" option, without having time to find the "best" option. In that circumstance, the time in which the result is returned is more important than the accuracy of the result.

That's where predictability comes into it. If we can predict how long a result will take to come back, then the car can use that information to decide if it has time to check more options. Without hard real time, it can't know if it's got time to check for further results.

7.2K views · View 30 upvotes

2 comments from Kshitiz Bakshi and more

Sponsored by Jelvix

**Hire top mobile application developers!**

Global tech partner for digital transformation and software innovation. Share your project with us!

[Learn More](#)

What are some of the examples of real time and non-real time systems?

Some ideas of Realtime applications?

What are the example of real time software?

3

In simple terms, real-time applications are software that are time-sensitive, cannot be susceptible to failure, and require immediate, always-on action.

A good example of a real-time application is **flight management software** for airport control - you always need them online, and every request has to be dealt with as soon as possible, and you cannot have them be unstable especially in busy cities like New York and Los Angeles.

2.7K views · View 3 upvotes · Answer requested by Rachna Gaire

3

Real-time depends a lot on the context. In enterprise applications it usually means request-responses that happen immediately such as web services, JMS, etc. That doesn't mean they are instantaneous. Your web service might do a query against a database making a number of joins and return long lists of data and then transform it. But the user or system making the request can expect a response back.

This is in contrast with batch processes where I create a file of data for processing, send it to someone such as a bank perhaps over FTP and don't expect an immediate response but one that comes back ... [\(more\)](#)

- The Real-Time system is a comprehensive-time system, which ensures that the reaction is received within a given time period or that the system follows the specified time period.
- The real-time system has been of two forms, Hard and Soft. In different cases, these are used
- Hard real-time systems have been used in which only a lag of any nano or micro seconds is not required.
- Soft real-time systems have some relief in the representation of time.

253 views

Speaking casually, most people implicitly have an informal mental model that considers information or an event as being "real-time"

- if, or to the extent that, it is manifest to them with a delay (latency) that can be related to its perceived currency

A slightly more formal criterion is that a real-time system (application or not) must have timeliness of actions' (e.g., tasks, robot motion) completion, and predictability of that timeliness, BE PART OF THE SYSTEM'S LOGIC.

Obviously, conventional so-called ... [\(more\)](#)

[Add Comment](#)

In short an application or a system which behaves like some living thing, for example if you are using facebook and some of your friends comes online you would notice a green dot beside their picture instantly, in this case facebook is a realtime application.

863 views

[Add Comment](#)

Originally Answered: What is real time application?

Autonomous vehicle control is real time application.

US Navy CWIS is real time application.

Red light cameras at traffic signal is real time application.

Airliner autopilot is real time application.

When computer controls objects in real time is real time application.

11 views

[Add Comment](#)

1



Originally Answered: What are some examples of real time applications?

Mobile phone, central heating controller, fly-by-wire aircraft systems, automotive engine management, Internet aware toaster... don't put that last one in your assignment submission.

9.7K views · View 1 upvote

[Add Comment](#)

5 Answers Collapsed (Why?)

Related Questions

[What are some of the examples of real time and non-real time systems?](#)

[Some ideas of Realtime applications?](#)

[What are the example of real time software?](#)

[What are the applications for a non-real-time OS?](#)

[What is a real time web app?](#)

Quora

Add Question

Amelia is not a real-time communication system. What does this mean?

Is Python good for real time applications?

What is a real time system?

What is a non-real time system?

What are sample and hold circuit real time application?

What does real-time programming mean?

What is real time technology?

Technology to build real time web app?

What are examples of non real time applications?