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Float of double for timing

By Ninja_Mouse, November 19, 2009 in General and Gameplay Programming

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Ninja_Mouse
Member
122

Posted November 19, 2009

As I'm using XNA, I assume the GameTime object, which has TimeSpan objects for total and frame elapsed time, is accurate. When you say I'll run into trouble, do you mean trying to keep count of the total running time of the game because of adding each frame time together? As XNA handles that, I assume that won't be an issue. I hope!

For some of my objects, that need to keep track of how long they have been running, I've been using floats. Each frame they add the current frame time to keep track of their total elapsed time. I've been using the TotalSeconds (which is a double) property for this.

From the last couple of replies about storing the time as integers, I assume that is really to keep track of the entire running time, not for the current frame time. Is that the case?

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Z
Zakwayda
Member
2356

Posted November 19, 2009

> Quote:
> From the last couple of replies about storing the time as integers, I assume that is really to keep track of the entire running time, not for the current frame time. Is that the case?

That's right.

A typical floating-point representation does not have uniform precision over its entire range; as the magnitude of the value increases, the precision decreases. This means that if you track elapsed time using a floating-point value, the accuracy of the value will decrease over time.

Integer types, on the other hand, have uniform precision, so this problem does no occur. A typical way to handle timing is to keep track of elapsed time using an integer type, and then for each update, compute the difference between the current and previous elapsed times and convert the result to a floating-point type if needed. Since the result will almost always be a small number (< 1), the precision will always be high.

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I have no idea how XNA handles timing internally, but I assume it's sound. I'm a little surprised they make the total time available as a double though - is it also available as an integer? (If so, I'd use the integer value instead, but that's just me - under normal circumstances you're probably unlikely to see any measurable inaccuracy in the double value, but with an integer type, you'll more or less be guaranteed accurate results.)

Ninja_Mouse
Member
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Posted November 19, 2009

Wonderful. Thanks to everyone for your replies. I feel much more confident with what is going on and what I want to do in my engine in regards to timing.

Z

zedz
Member
291

Posted November 19, 2009

why not and int?
thus each frame go gametick++;

for me a game_tick = 1/60 sec

in 24 hours this equals 5,184,000 ticks
enuf for at least a year

(oops I see others have mentioned this)

swiftcoder
Senior Moderator
18930

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Posted November 19, 2009

> Quote:
> *Original post by zedz*
> why not and int?
> thus each frame go gametick++;
>
> for me a game_tick = 1/60 sec

While fixed frame-rate is a nice feature, it isn't directly related to the representation of time. You still have a dependency on external time (i.e. a game tick = 1/60 sec), so you still need to represent external time in some way.

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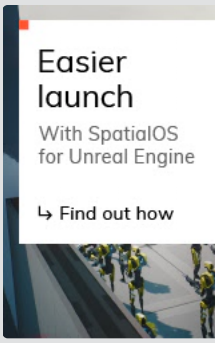

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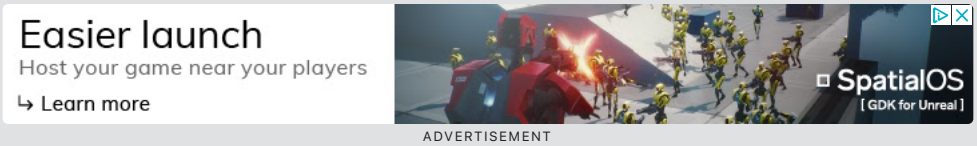

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