

Ruby master - Feature #12690

Improve GC with external library that may use large memory

08/19/2016 04:03 PM - kou (Kouhei Sutou)

Status:	Closed
Priority:	Normal
Assignee:	ko1 (Koichi Sasada)
Target version:	
Description	
<p>GC cares memory allocated by only Ruby. GC doesn't care memory allocated by external library. GC isn't run frequently when external library allocates large memory but Ruby allocates only small memory. In the case, process uses large memory. e.g.: Programs that handle large images may use large memory even when most images are garbage.</p> <p>How about improving GC to care memory allocated by external library? It means that GC is run when external library allocates large memory.</p> <p>I created a gem to show the concept: https://github.com/kou/gc-trigger</p> <p>The gem provides an API that accepts diff of memory usage of external library. Bindings of external library notify diff of memory usage of external library. GC is run when total memory usage of external library overs threshold. Then memory of external library associated with garbage Ruby objects is freed.</p> <p>I tried the concept with rcairo that is bindings of cairo 2D graphics library.</p> <p>Yellow line is memory usage without the concept and blue line is memory usage with the concept:</p> <p>cairo-memory.png Memory usage is increased without the concept but stable with the concept.</p> <p>See also: https://github.com/kou/gc-trigger#effect</p> <p>V8 has an API that is similar to the concept:</p> <p>https://github.com/v8/v8/blob/5.4.469/include/v8.h#L5937-L5951</p> <pre>/** * Adjusts the amount of registered external memory. Used to give V8 an * indication of the amount of externally allocated memory that is kept alive * by JavaScript objects. V8 uses this to decide when to perform global * garbage collections. Registering externally allocated memory will trigger * global garbage collections more often than it would otherwise in an attempt * to garbage collect the JavaScript objects that keep the externally * allocated memory alive. * * \param change_in_bytes the change in externally allocated memory that is * kept alive by JavaScript objects. * \returns the adjusted value. */ V8_INLINE int64_t AdjustAmountOfExternalAllocatedMemory(int64_t change_in_bytes);</pre>	

Associated revisions

Revision 68aa1d81 - 09/20/2016 07:52 AM - nobu (Nobuyoshi Nakada)

gc.c: rb_gc_adjust_memory_usage

- gc.c (rb_gc_adjust_memory_usage): notify memory usage to the GC engine by extension libraries, to trigger GC. [Feature #12690]

git-svn-id: svn+ssh://ci.ruby-lang.org/ruby/trunk@56189 b2dd03c8-39d4-4d8f-98ff-823fe69b080e

Revision 56189 - 09/20/2016 07:52 AM - nobu (Nobuyoshi Nakada)

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History

#1 - 08/19/2016 04:47 PM - matz (Yukihiro Matsumoto)

- Assignee set to ko1 (Koichi Sasada)

LGTM. Iff Koichi agrees, it should be merged.

Matz.

#2 - 08/24/2016 10:51 PM - kou (Kouhei Sutou)

Koichi agreed:

https://twitter.com/_ko1/status/768278836882526208

I don't see this ticket details yet but implementing the concept is OK to me.

(Translated to English from Japanese by me.)

#3 - 08/24/2016 10:52 PM - kou (Kouhei Sutou)

Nobu's implementation: https://github.com/ruby/ruby/compare/trunk...nobu:gc_trigger

#4 - 09/20/2016 07:52 AM - nobu (Nobuyoshi Nakada)

- Status changed from Open to Closed

Applied in changeset r56189.

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