

iGC 2.0 SDK README

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Introduction

iGC 2.0 SDK contains libraries, headers, compiler patches and other files for creating garbage collected iOS applications. iGC is not a clone of Apple's garbage collector (formerly available for Mac OS but now is deprecated), or Microsoft .NET, or other GCs. It is based on a special HnxGC core to provide an uncompromised experience of object lifetime management.

For example, iGC-enabled code can mix with manual retain-release code, such as Apple's framework and 3rd party libraries. Or, you can just link against iGC library and have retain cycles collected ¹. And you can send a special message to terminate a "live" object immediately and safely.

For updated information, please visit iGC website: <http://harnixtechnologies.ca/iGC>

Basic features

- accurate (precise) collection for circular garbage (retain cycles)
- fully concurrent - never suspend the execution of app threads
- immediately reclaim objects if their RC drops to zero
- reclaim cycles in a controllable & deterministic order
- boost performance, e.g. linear-pool speeds up +6x faster in GC Bench testing

SDK 2.0+ New features

- collect some cycles of existing non-GC binaries
- collect cycles of Cocoa `NSArray`, `NSDictionary` and `NSSet` objects
- collect cycles of Objective-C/C++ Block
- manage lifetime of ObjC objects freely by: (i) directly destructing, like `C free` but safe, (ii) reference counting, e.g. MRR or ARC, and (iii) garbage collecting
- allow existing practice of postponed execution of `[dealloc]`
- introduce new convenient `Stacked Linear Pool`
- system improvements and new APIs

Installation

You can install iGC 2.0 SDK via a `.dmg` package for a particular Xcode version. Goto iGC download page and look for package for your particular Xcode version. Usually we provide a `.dmg` package for the popular Xcode version with a stable iGC Core library.

If you cannot find a right `.dmg` package for your Xcode version, you can download iGC Core and Xcode patches separately, then install them manually. Also, you can update iGC Core through this process as we may occasionally update iGC Core without providing a new `.dmg` package.

[un]Install via `.dmg` package

1. First, confirm your Xcode has been installed at **default** location `/Applications/Xcode.app`, and determine the Xcode version, such as 4.6.2, then
2. Go to the download page and select the appropriate `.dmg` package for the Xcode version, and download
3. Open the downloaded `.dmg` package, follow the instructions to install it.

After installation, iGC Core can be found at your home directory `~/Library/iGC`.

Everything is ready for creating your iGC-enabled app.

To uninstall, open the downloaded `.dmg` package, run the `Uninstall.app` to remove Xcode patches and iGC from your system.

[un]Install iGC Core

(You can skip this section and the following one if you are using a .dmg package)

Download the iGC Core tar ball, extract it to `~/Library/iGC` directory. You should see these directories:

```
~/Library/iGC/include
~/Library/iGC/lib
...
```

To uninstall, just remove the `iGC` directory.

[un]Install compiler patches

1. download compiler patches, all or only those you need, into a subdirectory named `devtools`.
2. download the `patch-devtools` script into the current directory or the `devtool` subdirectory.
3. run the `patch-devtools`, and follow the command line helps to install patches for Xcode compilers.

For example, run `sudo ./patch-devtools -i` to install a patch to the default Xcode location. The script will search appropriate patches for the target Xcode from the current directory or the `devtools` subdirectory.

To uninstall, run: `sudo ./patch-devtools -u`

If your Xcode was installed at other locations, append `-d <path to xcode>` command line option.

Samples and Documents

Under the `~/Library/iGC/samples` directory, you can find iGC sample code which are ready to be built and run on iPhone devices or simulators.

Online <http://harnixtechnologies.ca/iGC> and local directory `~/Library/iGC/docs` contain information for iGC app development.

¹ Cycles of ivars of non-GC objects are NOT collected, but cycles of properties of non-GC objects are collected.