Apollo design guidelines

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Date:

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* Collection.Remove, should this return a Boolean indicating if remove was successful?
* Allow predicates for selecting /searching in a collection
* Make API powerful 🡪 Work in layers 🡪 Low level upwards. But make sure that we have a high level abstract API that is easy to use
* Throw exception if a member cannot live up to the design contract (i.e. can’t do it’s job)
* Collections always have to be IEnumerable

As a good citizen, I...

* Keep a consistent state at all times - init() or populate() is a code smell.
* Have no static fields or methods
* Never expect or return null.
* FailFast - even when constructing.
* Am Easy to test- all dependent object I use can be passed to me, often in my constructor (typically as [Mock Objects](http://docs.codehaus.org/display/PICO/Mock+Objects)).
* Accept dependent object that can easily be substituted with Mock Objects (I don't use [Concrete Class Dependency](http://docs.codehaus.org/display/PICO/Concrete+Class+Dependency)).
* Chain multiple constructors to a common place (using this(...)).
* Always define hashCode() alongside equals()
* Prefer immutable value objects that I can easily throw away.
* Have a special value for 'nothing' - e.g. Collections.EMPTY\_SET.
* Raise checked exceptions when the caller asked for something unreasonable - e.g. open a non-existant file.
* Raise unchecked exceptions when I can't do something reasonable that the caller asked of me - e.g. disk error when reading from an opened file.
* Only catch exceptions that can be handled fully.
* Only log information that someone needs to see.
* Classes that are designed for [Constructor Injection](http://docs.codehaus.org/display/PICO/Constructor+Injection) are better citizens than those that are not.

Security

* Read some security books first!
* Check:
  + Check file permissions
    - File read / write
    - Execute rights
    - Connection permissions
  + Limit permissions as much as possible. This could be problematic because we don’t control the first AppDomain that is started (can’t control the AppDomain creator)
  + Check AppDomains when they are created by us
  + Check permissions required for system
    - Execute
    - Read program files / framework dir
    - Read/Write all user app dir & users documents dir
    - UI permission
  + Check permissions for plugins
    - Execute
  + Denials for plugins
    - Read / Write
    - UI permission
    - SecurityPermission
    - Unmanaged (dnA??)
* Always validate inputs
* Check link demands
* Failure mode should be to fail if the check is not positive. E.g. don’t check for all disallowed, check for all allowed and fail if not in that list.
* Allow users to disable all call-home actions

ID numbers:

* Define an Id.Invalidate method which invalidates the ID number
* Defines a default ‘Null’ ID which is used to track illegal / unknown ID numbers. Upon deletion or invalidation an ID number becomes the ‘Null’ ID.