

Understanding Pharo's global state to move programs through time and space

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Abstract

Code mobility is a mechanism that allows the migration of running programs between different environments. Such migration includes amongst others the migration of application data and resources. Application's data is usually composed by elements of different nature: from printers and files, to framework and domain objects. This application data will be transported along with the code of its program in space (when serialized and deployed in another environment) or time (when a new session is started in a different point of time). The main problem when moving around code resides, in our understanding, to *global* state. While unreferenced leaf objects are garbage collected, those referenced (transitively) by some global object will remain alive.

In order to support code mobility in time and space, we need to understand how global application data is used. With this purpose, we study and classify Pharo's global state. This classification uncovers some common patterns and provides a first insight on how global state should be managed, specially in code mobility scenarios. As a minor contribution, we also discuss solutions to each of the found categories.

1. Introduction

Code mobility is a mechanism that allows the migration of programs between different environments. It provides support for *e.g.*, load balancing, adjusting an application's resources dynamically and functionality customization. Fuggetta et al. define informally code mobility as the capability to re-bind a piece of code with the location it is running [?].

Such rebinding may consist, depending on the style of mobility, in the mobility of execution state, application data and resources, or both of them. Execution state mobility is the ability to suspend the actual execution of a program and transfer its internal execution information (*e.g.*, code, execution stacks, instruction pointers) to some other environment. Data mobility is the ability to transfer the application's data (*e.g.*, objects, database connections, files) between different environments.

Application data is usually composed by elements of different nature. Files are used for configuration and logging. Network connections such as sockets are used to communicate with remote systems. External libraries provide with code reuse. We can also find objects local to the application, of two different categories: domain objects modeling the application's specific concerns and application objects modeling those concerns that are cross-cutting between applications.

In our experience manipulating the language kernel of Pharo, we identified several cases where data mobility presents some issues. We can generalize those issues as mobility either *in time* (*i.e.*, creating or recreating a program), or *in space* (*i.e.*, moving a program between different environments):

Transporting code in space. When moving a program from one environment to another one, some of its state becomes invalid. For example, files existing in one machine will not exist in some other. Because of this, the migration mechanism should be aware of the state it migrates, to either reinitialize it, re-bind it in the new environment, or by keep it with its same value [?].

Transporting code in time. Image-based systems allow one to persist the state of a program to restart it at some other point of time from the last check-point, introducing the idea of *program sessions*: every time the system is restarted, a new *session* is started. These programming sessions introduce the concern of *session specific state* *i.e.*, state that is only valid during a programming ses-

sion. The mechanism in charge of stopping and restarting the image has to recognize the session specific state to re-initialize or rebind it every time a new session is started.

Creating for the first time. The initial creation of the system is a combination of transporting the program in space and time, since the issues of both appear in it. When creating or recreating the language kernel from scratch, for example during a bootstrap process [?], we must deal with its initialization. All the initial objects must be created, and their state is initialized by either binding it for the first time to some resource or assigning it some value. This state should be initialized in a proper order.

One of the main problems when moving code around resides in the existence of *global* state. While unreferenced leaf objects are garbage collected, those referenced (transitively) by some global object will remain alive. Because of this, we focus our attention on global state (cf. Section 2). Migrating global state in the cases described above in a generic way shows itself challenging (cf. Section 3). Global state is used for many different and unrelated purposes in the Pharo base libraries *e.g.*, from caches to constants values. Also, the intention of such usage is not explicit in the source code: its identification requires the developer to read the complete implementation.

In this paper we present an empirical study on the global state of Pharo base libraries. Our contribution is twofold:

- We present a classification of the usage of global state, identifying patterns built with global state constructs in Pharo (cf. Section 4).
- We discuss our findings and solutions to the issues we found. Our main goal with this is to make explicit those patterns. In such a way, client libraries and frameworks in charge of program migration can be simplified. (cf. Section 6 and Section 5).

2. Background

Global state is a simple and handy mechanism to share state between different objects. It is also a simple persistency mechanism: state hold by it will persist as long as the program is alive and running. Additionally, in image-based systems as Pharo it will remain alive through different program executions because the image persists its state taking as root the global objects. In this paper we put focus on global state because of this persistency property.

Global state is indeed not a bad mechanism per se, and is often used in applications to implement globally needed concerns. For example, Pharo implements through it a global process scheduler and the system dictionary holding all classes. However, its usage is discouraged in general terms because it introduces hidden dependencies in the software it is used.

2.1 Global State in Pharo

Global state in Pharo can be expressed in many forms with many constructs of the language. In this paper we will focus on the elements we present following. Note that equivalent language constructs can be found in other languages such as Java (for example, with static variables).

Global Variables. Global variables are variables that share their values to all objects in the system. A global variable can be accessed from any method, from any object. In Pharo, these kind of variables are stored in the global SystemDictionary object. Global variables may reference either (a) global instances such as Processor or Smalltalk, either (b) Classes and Traits.

Class Variables. Class variables are variables that belong to a class. These variables can be accessed by both classes and instances from the hierarchy below its owner class. Their value is shared between all the objects that can access them. In Pharo, these kind of variables are stored in a Dictionary object in its owner class.

Class Instance Variables. Class instance variables are instance variables of the classes. Their value is not directly accessible from subclasses and subinstances of the class. However, they are often made globally accessible with accessors.

Shared Pools. Shared pools are sets of class variables shared amongst many classes. Their values are accessible to all classes (and their instances) that import the shared pool. In Pharo, Shared Pools as implemented as classes treated specially by the compiler at binding time.

Method Literals. Each method contains a collection of those literal objects used in in *e.g.*, strings, literal arrays or numbers. As classes are globally accessible, their methods are too, and so their literals.

2.2 About the State in Image-Based Systems

Pharo, as a Smalltalk inspired language, is an image-based language such as Lisp. Image-based languages present the following two main properties: direct object manipulation and persistence. Direct object manipulation provides with instant feedback during development and a flexible way to understand the state of applications. Persistence allows one to store those changes made by direct object manipulation without the need of recreating the system every time it is started. Indeed, an image-based language can be persisted and restarted later on, possibly in another machine. We refer as a *session* to the time elapsed between the startup of an image and its shutdown.

These programming sessions have *session specific state*, *i.e.*, state that is valid only within a session. For example, we can name as such file and socket descriptors, handles to external libraries, operating system information, and time and date information. These kind of objects become invalid

when their session is finished. Using them in an invalid state may lead to unexpected behavior, exceptions and virtual machine crashes. The language runtime must ensure that this state is correctly handled on session startup and shutdown: *e.g.*, reinitialize it or discard it.

3. Motivation

In this section we show why understanding and making explicit the usage of global state is important. We introduce first an example based on two Pharo's cache implementations, and their problems. Then, we explore three different situations in which those problems are made more evident.

3.1 Problems on Global State Usage: an Example

To exemplify the problems on global state usage, we present here two different global cache implementations we find in Pharo 3.0. First, in Figure 1, we present a simplified version of the AST cache. Second, in Figure 2, we find an extract of the HelpIcon class, with the code related to an icon cache. By looking at these two ad-hoc implementations of caches, we identify the following issues:

Incompleteness. Both cache implementations were written to solve only particular issues. The AST cache presents weak references as it inherits from the WeakIdentityKeyDictionary class and also presents methods to be flushed. The icon cache does not present code for any of those features. None of them cover some concerns a cache may want to address such as specifying a maximum amount of elements or a recycling strategy (LRU, FIFO, etc.).

Non-Explicitness. In order to identify the examples as caches we need to read their code: the names of the classes and variables gives us an idea of its responsibility as caches. The default method in the AST cache hints us about having found also a singleton. This problem uncovers the existence of **hidden information** in the system. One cannot query the system to, for example, obtain a list of the existing caches in order to flush them, or make a report on their memory usage.

3.2 Creating Programs from Scratch: Bootstrapping

While bootstrapping Pharo [?], we must initialize the image's global state. We observed the need for an order in this initialization, showing off a hidden coupling between code pieces. For example, some global tables must be initialized before initializing the classes state, which in turn must be initialized before the rest of the language kernel (*i.e.*, the startup and shutdown lists, the main processes, etc.).

Since the global state language constructs are used for different concerns **implicitly**, it is difficult to discern whether they are responsibility of the language kernel, of basic libraries such as Collections, or other not-basic ones such as Networking. This makes the bootstrap process difficult to maintain. A lot of ad-hoc code should be written to handle

```

1 WeakIdentityKeyDictionary subclass: #ASTCache
2   classVariableNames: 'Default'.
3
4 ASTCache>>at: aCompiledMethod
5   ^ self
6     at: aCompiledMethod
7     ifAbsentPut: [ self newASTFor: aCompiledMethod ].
8
9 ASTCache>>newASTFor: aMethod
10  "creation of the AST..."
11
12 ASTCache>>reset
13   self removeAll.
14
15 ASTCache class>>default
16   ^ Default ifNil: [ Default := self new ].
17
18 ASTCache class>>shutDown
19   self default reset.
```

Figure 1. Simplified code of Pharo's AST cache.

```

1 Object subclass: #HelpIcons
2   classVariableNames: 'Icons'.
3
4 HelpIcons>>icons
5   ^ Icons ifNil: [Icons := Dictionary new]
6
7 HelpIcons>>iconNamed: aSymbol
8   ^ self icons at: aSymbol ifAbsentPut: [self perform: aSymbol]
9
10 HelpIcons>>refreshIcon
11   ^ "creates a new icon object"
```

Figure 2. Code of Pharo's Help Icon class with an icon cache.

the dependencies between the global state in Pharo's language kernel.

3.3 Transporting Programs in Time: Session Awareness

Image-based systems introduce the concern of *session specific state*. State holding references to for example, files, caches, or platform specific information, may become invalid when a new session is started in a different moment. Pharo presents a startup and a shutdown mechanism to support this. The language runtime raises events on its startup and shutdown. Classes subscribed to such events are notified and will execute some code according to the event. The handler of these events is responsibility of the class developer. This mechanism hides information in two different levels:

Dependencies between classes. The subscribed classes receive the startup and shutdown events in an explicitly defined order. This order is present in a list which is defined by the developers. This list express a dependency between classes *e.g.*, some classes must receive the startup event before others to satisfy its invariants. However, this

list does not actually express the reason of this dependency *i.e.*, which is the state or invariants that should be guaranteed before each class receives the proper event.

Semantics of class state. The startup and shutdown event handlers, which are in charge of the clean-up and reinitialization of some the global state, are written in an imperative fashion. This imperative fashion hides the semantics and invariants of this state.

This hidden information makes difficult to change the startup and shutdown mechanism. Some questions appear when doing so: Can we remove some class from these lists? Can we alter the order without changing the behavior? When we register a new class, in which position should we put it?

3.4 Transporting Programs in Space: Serialization

Migrating objects, and specially code (classes and methods), from one image to another requires in general customizations for the global state it carries and references. References to external classes and global variables may not be serialized but just re-binded in the new environment. Class variables containing constant value objects may be transported with the program. Session specific state should be re-initialized, as program migration implies session change also.

A migration mechanism needs information about the semantics of the state in migration, so it knows whether it should reinitialize it, re-bind it, or keep it as it is. As this information is **not usually explicitly available** in the program under migration, the developer must add it in the form of extensions or descriptions, external to the program. For example, the serialization library Fuel [?] presents special clusters to handle and customize the serialization of global variables and class variables. The user must customize these clusters externally.

4. Classification of Pharo's Global State

4.1 Classification Methodology

Our universe of study is the latest release of Pharo, Pharo 3.0. We selected as individuals to study all those usages of global state language constructs as we presented it in Section 2 *i.e.*, class variables and class instance variables, shared pools and global variables. For simplicity, we excluded from our analysis the classes referenced by global variables. We also excluded method literals because analyzing them would mean to read every single method in the language kernel.

The global state in Pharo is present mostly in ad-hoc implementations, making difficult the usage of automated methods for its classification. Since the goal of this paper is not to obtain an automatic classification, we built our classification using purely empirical observation: reading the code. We took each of the selected individuals, read all the code related to it and made a qualitative evaluation of it. We put special emphasis on the side-effects on such individuals, which showed useful to recognize the individual's semantics in the program.

As a result, we distinguished some patterns of usage, which lead us to the categories in Section 4.2. Note that the individuals under study can fall into more than of these categories *e.g.*, a cache made globally as a singleton. Also, to avoid noise we excluded from the classification those individuals whose role in the source code was very specific, thus they did not conform a representative category.

4.2 Categories

Constants. Constants are values that are initialized once and never updated. Pharo has no construct to express constant values. Thus, they are expressed using the other available constructs. This means that the semantics of constants must be ensured explicitly in the code or they are not ensured at all.

Settings and Configurable Default Values. Settings and configurable default values provide a single point to configure and share values amongst several instances. They are publicly accessible so they can be modified and customized by developers. Pharo uses settings to store for example maximum size of UI widgets, code completion configurations and network configurations.

Singletons. Singletons are well known objects globally accessible in the system [? ?]. They are used to provide a single access point to some shared state or behavior. Pharo presents several different singleton implementations: global leaf objects (not classes nor traits) such as *e.g.*, the Processor or the Transcript, leaf objects stored in class variables or class instance variables often accessible through the `uniqueInstance` message, and some classes which are indeed used as singletons.

Caches. A cache is a buffer that stores duplicated information to reduce the consumption of resources such as CPU or memory. Caches store usually up to a maximum amount of elements, discarding old ones following a given strategy *e.g.*, First In First Out (FIFO) and Least Recently Used (LRU). Pharo presents several caches which store for example images, fonts and package metadata.

Registries. A registry stores a list of possible service providers and resolves which one of them is the appropriate to handle a task. They are usually used as a factory, to decouple the users of a service from a particular implementation. For example, a compiler registry may store all the compiler implementations available and provide a default one. A registry allows users to subscribe and unsubscribe services into it. For example, when a notification has to be shown to the end user, the UIManager registry decides how to show it according to its registered providers: either by using the standard output or the graphical user interface. Pharo uses registries to manage different kind of concerns such as the compiler suite, the fonts or the UI interactions.

Session Specific State. Session specific state is the global state that is tied to a particular session *e.g.*, information gathered from the current platform, file handles and library handles. This state should be reinitialized or reset when a new session is started either in a new machine or a different one, to avoid misbehaviors and unexpected errors.

Process Controllers. Process controllers manage the life cycle of well known processes such as the idle process, the user interface (UI) process or the low space watcher process. They control how and when these well known processes are started, terminated, suspended and resumed.

Finalizables. Resources external to the language, such as files, sockets, or handles to external libraries, must be finalized accordingly when they are garbage collected or new session are started. For such a task, the classes of those objects implement a finalization mechanism to be aware of garbage collections and handle such situations.

Graphical Resources. Graphical resources are objects such as images, fonts, icons or bitmaps. These resources are embedded in the system using the global state constructs. As such, there is no general solution to discard them or reload them.

4.3 Results and Discussion of Impact

Table 1 lists the results of applying each of our categories to our set of individuals under study: how many of them apply to each category. The details of such a classification can be found in the Appendix A.

These results present some particularities we should take into account before doing a deep analysis. First, the number of detected graphical resources does not really represent the reality. A lot of graphical resources are represented as byte arrays in method literals (which we did not measure because of its complexity). With respect to the numbers in our results, we can argue that they give us an idea of the impact produced by each category *i.e.*, code-migration libraries have to potentially handle each appearance of these patterns in an ad-hoc fashion, since they are not explicit in the source code. For example, if we would decide that on serialization all caches should be flushed, we must add custom code to handle each of the 43 caches.

5. Discussion: a need for Reification

5.1 Concepts to Reify in Pharo.

Bouraqadi et al. [?] presented already the need for the reification of resources used in a mobile code. The reification of resources provide support for an open architecture and facilitates the task of object migration. They also make explicit the concepts that are part of the program, providing with information the system can benefit from. We identify in

Category	Amount satifying
Constants	1722
Settings and Configurable Default Values	236
Singletons	65
Graphical Resources*	47
Caches	43
Registries	31
Session Specific	27
Process Controllers	11
Finalizables	6

Table 1. Amount of individuals classified under each of the identified categories.

particular the need for reification of the following elements part of our categories:

Processes. Pharo processes, although they are already objects, are managed from other objects. Process specific state is controlled by objects other than the process itself, breaking encapsulation. As such, the life-cycle of processes are tied to those objects that create them or keep their state. A first class representation of processes, on the other hand, will encapsulate the process specific state, avoid conflicts on its access, and provide a common interface for their manipulation.

Finalizables. First class finalizable resources provide a framework supporting uniform finalization and resource deallocation.

Caches. First class caches provide a uniform and complete implementation of caches libraries can rely upon. Additionally they will enable the system with introspection and self-modification of such caches.

Variables. First class variables, namely slots, were sketched by Verwaest et al. [?] and a first version introduced into Pharo 3.0. Slots introduce the ability to refine instance variables, give them specific behavior and annotate them with meta-information. Specialized slots can be used to implement *e.g.*, session specific state, constant values or settings.

5.2 Using explicit metaclasses.

Finding all singletons installed in the system could be easily achieved through the usage of explicit metaclasses [?] or traits [?]. Explicit metaclasses and traits allow the sharing of behavior between classes, and thus, they eliminate the need for ad-hoc implementations of *e.g.*, singletons. Additionally, reifying the singleton abstraction in the language, provides with the ability to query and act upon the installed singletons. Implementing them with traits, however, presents as main limitation that the current trait implementation in Pharo is stateless. Thus, it does not allow to express class variables to hold the singleton instance.

6. Discussion: Moving responsibilities to the language runtime

Within our classification, we understand there are some concerns that should be moved under the umbrella of the language or its runtime system. The language may provide its own abstractions for recurrent problems such as caching or registering services. This will provide with the proper and needed meta-information to handle services. Additionally, providing end users with correct and complete implementations will avoid the ad-hoc implementations with repeated logic.

6.1 Resource manager

As we noted in the results, graphical resources such as images, icons and fonts are present as globally accessible resources in Pharo. We can add also that Pharo's memory is occupied in great percentage by instantiated bitmaps¹ [?]. There is not, however, a possibility to inspect all available resources, understand their origin (the package, class and method that defines them), or recreate them from files. This poses the need for a resource manager.

A sketch implementation of such a resource manager was implemented as a in-memory file system. In such a prototype, each Pharo package contains an associated file system that stores resources of that package. Images, icons, configuration files, and other files are stored in this file system. Package resources can be accessed from within and outside the package in an structured way, and serialized along with its package.

6.2 Session manager

How session specific state is handled nowadays denotes the need for a session manager. Currently, in the presence of session specific state, the class that stores it has to be subscribed to the startup and shutdown events of the runtime system. These two events are used to reset and initialize the class state when a new session is started.

We sketched a session manager to ease the management of session specific state. First class instance variables (Slots) describe declaratively their initialization when a new session is started. Then, during the startup of a new session, the session manager will reinitialize each of these slots using their description. This session manager encapsulates the need for the startup and shutdown lists, and removes such responsibility from the developer.

7. Related Work

Fuggetta et al. [?] present also a classification of the state of mobile systems, but using as criteria the strategy used for migration. As such, their classification is orthogonal and complementary to ours. They present two properties to characterize the data to migrate

Transferrable. A transferrable element is the one that can be physically migrated *e.g.*, a file. Oppositely, a non transferrable one is the one that cannot be migrated, *e.g.*, as a printer.

Desirability to transfer it. An application can mark some data as *fixed* or *free* according to its needs. Fixed data is associated permanently with its original environment, while free data migration is allowed.

and three ways to bind an application to a given resource

By identifier. Resources binded by identifier are tied with a particular instance of a resource *e.g.*, a socket. When a program is migrated, all its resources binder by identifier are kept in their original environment. A network communication is enforced between them.

By value. Resources binded by value are interested in the value of a resource and not in their identity, *e.g.*, the contents of a file. These kind of resources can be copied along with the program upon migration.

By type. Resources binded by type are intended to provide some kind of service despite their value or identity *e.g.*, a display. These kind of resources are rebinded to local resources of the same type after migration.

Ungar et al. implemented a transporter for the Self programming language [?]. This transporter had to deal with many of the difficulties we presented above, in particular the lack of explicit usage information. They provided a generic solution to the problem: let the developer annotate the objects' slots to guarantee the desired state of the program upon a migration. However, a question remained: How should developers annotate the slots? To answer this question, they provided with a series of properties that must help in such analysis.

Does identity matter? The developer has to identify those objects whose identity matters, and those whose it doesn't. When identity matters, the transporter must ensure that references to the same object are kept the same after migration. When it does not, the transporter can simply duplicate the object.

An initial value must always be enforced? Some objects must be reinitialized every time they are migrated. This is for example the case of caches.

An object must be written in an abstract or concrete way? Some objects can be rebuilt as the result of an expression, while some others must be built by concretely enumerating its slots.

8. Conclusion and Future Work

In this paper we studied the usage of global state in Pharo. The study of global state is interesting since references kept from global state are persisted in image-based systems. Global state is also a concern in when working in

¹ 24.50% according to our measures in latest Pharo version

code mobility because resources globally available must be reinitialized or rebinded when code is migrated.

We present a classification of Pharo's global state based on its usage, and found many patterns that are recurrent in the kernel of the language, though not explicit in the code. We discuss how to make explicit these patterns so the language kernel can benefit from it, either by reifying them or moving some responsibilities to the language kernel.

This work is a first step to prepare Pharo to the mobile code world. To be able to transport Pharo programs either in time or space, the abstractions we found should be made explicit in the language, and so, libraries and frameworks

can take advantage of them. As future work we also consider that the discussed sketches have to be iterated and developed further.

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A. Appendix: Classification

A.1 Finalizables

FileHandle -> #Registry
FT2Handle -> #Registry
Socket -> #Registry
StandardFileStream -> #Registry
WeakRegistry -> #Default

A.2 Process Controllers

CPUWatcher -> #CurrentCPUWatcher
Delay -> #TimerEventLoop
MessageTally -> #Timer
MorphicUIManager -> #UIProcess
ProcessBrowser -> #SuspendedProcesses
ProcessBrowser -> #WellKnownProcesses
ProcessorScheduler -> #BackgroundProcess
SmalltalkImage -> #LowSpaceProcess
UpdateStreamer -> #UpdateDownloader
WeakArray -> #FinalizationProcess

A.3 Registries

Beeper -> #default
ChangeSet -> #AllChangeSets
ChangeSet -> #current
EncodedCharSet -> #EncodedCharSets
ExternalDropHandler -> #DefaultHandler
ExternalDropHandler -> #RegisteredHandlers
FileServices -> #FileReaderRegistry
FreeTypeFontProvider -> #current
FreeTypeGlyphRenderer -> #current
HelpBrowser -> #DefaultHelpBrowser
LanguageEnvironment -> #ClipboardInterpreterClass
LanguageEnvironment -> #Current
LanguageEnvironment -> #FileNameConverter
LanguageEnvironment -> #InputInterpreterClass
LanguageEnvironment -> #KnownEnvironments
LanguageEnvironment -> #SystemConverter
Locale -> #KnownLocales
MCPackageManager -> #registry
MCServerRegistry -> #registry
MetacelloProjectRegistration -> #registry
Nautilus -> #PluginClasses
PluggableTextMorph -> #StylingClass
RBProgramNode -> #FormatterClass
RGFactory -> #CurrentFactories
SmalltalkImage -> #CompilerClass
SmalltalkImage -> #Tools
SoundSystem -> #Current
TestResource -> #current
UIManager -> #Default
UITheme -> #Current
ZnServer -> #ManagedServers
ZnSingleThreadedServer -> #Default

A.4 Caches

ASTCache -> #default
AbstractMethodWidget -> #MethodsIconsCache

AbstractNautilusUI -> #ClassesIconsCache
AbstractNautilusUI -> #GroupsIconsCache
AbstractNautilusUI -> #PackagesIconsCache
BitBlt -> #CachedFontColorMaps
BitBlt -> #ColorConvertingMaps
CairoBackendCache -> #soleInstance
Color -> #CachedColormaps
Color -> #MaskingMap
FreeTypeCache -> #current
GLMUIThemeExtraIcons -> #icons
GradientFillStyle -> #PixelRampCache
HelpIcons -> #Icons
KomitClass -> #classes
KomitMethod -> #methods
KomitPackage -> #packages
KomitRemote -> #icon
Komitter -> #lastMessage
LoadingMorphState -> #image
LogicalFont -> #all
MCDefinition -> #Instances
MCGitHubRepository -> #DownloadCache
MCMethodDefinition -> #Definitions
MCSaveVersionDialog -> #PreviousMessages
NECSymbols -> #cachedSymbols
RPackageSet -> #cachePackages
ScrollBar -> #ArrowImagesCache
ScrollBar -> #BoxesImagesCache
SettingDeclaration -> #ValueListCache
SingleCodeCriticResultList -> #icons
SugsSuggestionFactory -> #collectorForAll
SugsSuggestionFactory -> #collectorForAssignment
SugsSuggestionFactory -> #collectorForClassVariable
SugsSuggestionFactory -> #collectorForClass
SugsSuggestionFactory -> #collectorForInstancesVariable
SugsSuggestionFactory -> #collectorForLiteral
SugsSuggestionFactory -> #collectorForMessage
SugsSuggestionFactory -> #collectorForMethod
SugsSuggestionFactory -> #collectorForSourceCode
SugsSuggestionFactory -> #collectorForTemporaryVariable
SugsSuggestionFactory -> #collectorForUndeclaredVariable

A.5 Graphical Resources

AbstractMethodWidget -> #MethodsIconsCache
AbstractNautilusUI -> #ClassesIconsCache
AbstractNautilusUI -> #GroupsIconsCache
AbstractNautilusUI -> #PackagesIconsCache
Cursor -> #BlankCursor
Cursor -> #BottomLeftCursor
Cursor -> #BottomRightCursor
Cursor -> #CornerCursor
Cursor -> #CrossHairCursor
Cursor -> #CurrentCursor
Cursor -> #DownCursor
Cursor -> #MarkerCursor
Cursor -> #MenuCursor
Cursor -> #MoveCursor
Cursor -> #NormalCursor

Cursor -> #OriginCursor
 Cursor -> #OverEditableText
 Cursor -> #ReadCursor
 Cursor -> #ResizeLeftCursor
 Cursor -> #ResizeTopCursor
 Cursor -> #ResizeTopLeftCursor
 Cursor -> #ResizeTopRightCursor
 Cursor -> #RightArrowCursor
 Cursor -> #SquareCursor
 Cursor -> #TargetCursor
 Cursor -> #TopLeftCursor
 Cursor -> #TopRightCursor
 Cursor -> #UpCursor
 Cursor -> #WaitCursor
 Cursor -> #WebLinkCursor
 Cursor -> #WriteCursor
 Cursor -> #XeqCursor
 FreeTypeCache -> #current
 FreeTypeSettings -> #current
 GLMUIThemeExtraIcons -> #icons
 HelpIcons -> #Icons
 IconicButton -> #DefaultGraphics
 ImageMorph -> #DefaultForm
 LogicalFontManager -> #current
 RemotesManager -> #addRemoteIcon
 RemotesManager -> #editRemoteIcon
 RemotesManager -> #removeRemoteIcon
 ScrollBar -> #ArrowImagesCache
 ScrollBar -> #BoxesImagesCache
 SingleCodeCriticResultList -> #icons
 Transcriber -> #Icon
 TransferMorph -> #CopyPlusIcon

A.6 Session Specific State

MCGitHubRepository -> #DownloadCache
 MCCacheRepository -> #default
 DiskStore -> #CurrentFS
 NOCCompletionTable -> #table
 NOCCompletionTable -> #classTable
 Locale -> #Current
 Locale -> #CurrentPlatform
 DateAndTime -> #LocalTimeZone
 FT2Handle -> #Session
 FileLocator -> #Resolver
 FileStream -> #Stdin
 FileStream -> #Stdout
 FileStream -> #TheStdioHandles
 FileStream -> #StdioFiles
 FileStream -> #Stderr
 LanguageEnvironment -> #SystemConverter
 LanguageEnvironment -> #FileNameConverter
 UUIDGenerator -> #Default
 VirtualMachine -> #WordSize
 WeakFinalizationList -> #HasNewFinalization
 AthensCairoSurface -> #uniqueSession
 AthensCairoSurface -> #dispatch
 AthensCairoSurface -> #dispatchStruct
 CairoLibraryLoader -> #session
 CairoLibraryLoader -> #libHandle

Session -> #current
 MultiByteFileStream -> #LineEndDefault

A.7 Singletons

ASTCache -> #default
 ActiveEvent -> #ActiveEvent
 ActiveHand -> #ActiveHand
 ActiveWorld -> #ActiveWorld
 Author -> #uniqueInstance
 BorderStyle -> #Default
 CPUWatcher -> #CurrentCPUWatcher
 CairoBackendCache -> #soleInstance
 ChangesLog -> #DefaultInstance
 Clipboard -> #Default
 CommandLineArguments -> #singleton
 CriticWorkingConfiguration -> #Current
 Display -> #Display
 EditorFindReplaceDialogWindow -> #Singleton
 EmptyLayout -> #instance
 FreeTypeCache -> #current
 FreeTypeSettings -> #current
 IdentityTransform -> #Default
 InputEventFetcher -> #Default
 KMBuffer -> #uniqueInstance
 KMPragmaKeymapBuilder -> #UniqueInstance
 KMRepository -> #Singleton
 KomitterManager -> #instance
 LayoutEmptyScope -> #instance
 LogicalFontManager -> #current
 MBConfigurationRoot -> #Current
 MCFileTreeFileUtils -> #Current
 MCRepositoryGroup -> #default
 MCServerRegistry -> #uniqueInstance
 MetacelloPlatform -> #Current
 NBExternalResourceManager -> #soleInstance
 NECController -> #uniqueInstance
 NNavNavigation -> #Instance
 NNavNavigation -> #Instance
 NativeBoost -> #Current
 NautilusMonticello -> #Default
 OSPlatform -> #Current
 PackageOrganizer -> #default
 PharoFilesOpener -> #Default
 PharoTutorial -> #Instance
 ProcessSpecificVariable -> #soleInstance
 Processor -> #Processor
 RBRefactoringManager -> #Instance
 RBRefactoryChangeManager -> #Instance
 RPackageOrganizer -> #default
 RecentMessageList -> #UniqueInstance
 Sensor -> #Sensor
 SharedValueHolder -> #instance
 Smalltalk -> #Smalltalk
 SoundTheme -> #Current
 SourceFiles -> #SourceFiles
 Spotlight -> #Current
 StartupPreferencesLoader -> #UniqueInstance
 SystemAnnouncer -> #announcer

SystemOrganization -> #SystemOrganization
 SystemProgressMorph -> #UniqueInstance
 SystemVersion -> #Current
 Transcript -> #Transcript
 UUIDGenerator -> #Default
 Undeclared -> #Undeclared
 UserManager -> #default
 VTermOutputDriver -> #stderrTerminalInstance
 VTermOutputDriver -> #stdoutTerminalInstance
 World -> #World
 ZnNetworkingUtils -> #Default

A.8 Settings and Configurable Default Values

AbstractNautilusUI -> #NextFocusKey
 AbstractNautilusUI -> #PreviousFocusKey
 AlphaImageMorph -> #DefaultImage
 BalloonMorph -> #BalloonFont
 CCompilationContext -> #WarningAllowed
 CPUWatcher -> #CpuWatcherEnabled
 ChangeSet -> #DefaultChangeSetDirectoryName
 ChangeSet -> #MustCheckForSlips
 CodeHolder -> #AnnotationRequests
 CodeHolder -> #BrowseWithPrettyPrint
 CodeHolder -> #DecorateBrowserButtons
 CodeHolder -> #DiffsInChangeList
 CodeHolder -> #DiffsWithPrettyPrint
 CodeHolder -> #OptionalButtons
 CodeHolder -> #ShowAnnotationPane
 CodeHolder -> #SmartUpdating
 CommandLineUIManager -> #SnapshotErrorImage
 DangerousClassNotifier -> #enabled
 Deprecation -> #RaiseWarning
 Deprecation -> #ShowWarning
 DialogItemsChooserUI -> #alreadySearchedSelectedItemList-
 MaxSize
 DialogItemsChooserUI -> #alreadySearchedUnselectedItemsList-
 MaxSize
 DisplayScreen -> #DeferringUpdates
 DisplayScreen -> #DisplayChangeSignature
 DisplayScreen -> #LastScreenModeSelected
 DisplayScreen -> #ScreenSave
 Editor -> #BlinkingCursor
 Editor -> #CmdKeysInText
 Editor -> #DumbbellCursor
 Editor -> #SkipOverMultipleSpaces
 EyeInspector -> #useAutoRefresh
 FLCompiledMethodCluster -> #transformationForSerializing
 FinderUI -> #Icon
 FinderUI -> #searchedTextListMaxSize
 Form -> #FloodFillTolerance
 FreeTypeSettings -> #UpdateFontsAtImageStartup
 FreeTypeSystemSettings -> #LoadFT2Library
 GrowlMorph -> #DefaultBackgroundColor
 GrowlMorph -> #Position
 HaloMorph -> #CurrentHaloSpecifications
 HaloMorph -> #HaloEnclosesFullBounds
 HaloMorph -> #HaloWithDebugHandle
 HaloMorph -> #ShowBoundsInHalo
 HandMorph -> #DoubleClickTime

HandMorph -> #NormalCursor
 HandMorph -> #ShowEvents
 HandMorph -> #UpperHandLimit
 Heap -> #sortBlock
 LongTestCase -> #RunLongTestCases
 MBInfo -> #ValidateAll
 MCDirectoryRepository -> #DefaultDirectoryName
 MCFileRepositoryInspector -> #Order
 MCFileTreeRepository -> #defaultPackageExtension
 MCFileTreeRepository -> #defaultPropertyFileExtension
 MCGitHubRepository -> #CacheDirectory
 MCMMethodDefinition -> #InitializerEnabled
 MCWorkingCopyBrowser -> #Order
 MCWorkingCopyBrowser -> #ShowOnlyRepositoriesFromWork-
 ingCopy
 MCWorkingCopyBrowser -> #repositorySearchMaxSize
 MCWorkingCopyBrowser -> #workingCopySearchMaxSize
 MessageDialogWindow -> #AutoAccept
 MessageTally -> #DefaultPollPeriod
 MetacelloCommonMCSpecLoader -> #RetryPackageResolution
 MetacelloScriptEngine -> #DefaultRepositoryDescription
 MetacelloScriptEngine -> #DefaultVersionString
 MonticelloRepositoryBrowser -> #Order
 Morph -> #CmdGesturesEnabled
 Morph -> #CycleHalosBothDirections
 Morph -> #DefaultYellowButtonMenuEnabled
 Morph -> #HalosEnabled
 MorphicModel -> #KeyboardFocusOnMouseDown
 MorphicModel -> #MouseOverForKeyboardFocus
 NECPreferences -> #backgroundColor
 NECPreferences -> #captureNavigationKeys
 NECPreferences -> #caseSensitive
 NECPreferences -> #enabled
 NECPreferences -> #expandPrefixes
 NECPreferences -> #popupAutomaticDelay
 NECPreferences -> #popupShowAutomatic
 NECPreferences -> #popupShowWithShortcut
 NECPreferences -> #smartCharactersMapping
 NECPreferences -> #smartCharactersWithDoubleSpace
 NECPreferences -> #smartCharactersWithSingleSpace
 NECPreferences -> #smartCharacters
 NECPreferences -> #spaceAfterCompletion
 NECPreferences -> #useEnterToAccept
 NNavNavigation -> #UseArrowShortcuts
 Nautilus -> #CommentPosition
 Nautilus -> #HistoryMaxSize
 Nautilus -> #OpenOnGroups
 Nautilus -> #ShowAnnotationPane
 Nautilus -> #ShowHierarchy
 Nautilus -> #SwitchClassesAndPackages
 Nautilus -> #WarningLimit
 Nautilus -> #emptyCommentWarning
 Nautilus -> #maxSize
 Nautilus -> #populateMethodList
 Nautilus -> #useOldStyleKeys
 NautilusRefactoring -> #PromptOnRefactoring
 NetNameResolver -> #DefaultHostName
 NetworkSystemSettings -> #BlabEmail
 NetworkSystemSettings -> #HTTPProxyExceptions

NetworkSystemSettings -> #HTTPProxyPort
 NetworkSystemSettings -> #HTTPProxyServer
 NetworkSystemSettings -> #ProxyPassword
 NetworkSystemSettings -> #ProxyUser
 NetworkSystemSettings -> #UseHTTPProxy
 NetworkSystemSettings -> #UseNetworkAuthentication
 ObjectExplorer -> #ShowIcons
 PSMCPatchMorph -> #UsedByDefault
 PackageTreeNautilus -> #ShowGroupsOnTop
 Paragraph -> #InsertionPointColor
 Path -> #absoluteWindowsPathRegex
 PluggableButtonMorph -> #UseGradientLook
 PluggableTextMorph -> #ShowTextEditingState
 PluggableTextMorph -> #StylingClass
 PluggableTextMorphWithLimits -> #DefaultWarningLimit
 PolygonMorph -> #CurvierByDefault
 PolymorphSystemSettings -> #DesktopColor
 PolymorphSystemSettings -> #DesktopColor
 PolymorphSystemSettings -> #DesktopGradientDirection
 PolymorphSystemSettings -> #DesktopGradientDirection
 PolymorphSystemSettings -> #DesktopGradientFillColor
 PolymorphSystemSettings -> #DesktopGradientFillColor
 PolymorphSystemSettings -> #DesktopGradientOrigin
 PolymorphSystemSettings -> #DesktopGradientOrigin
 PolymorphSystemSettings -> #DesktopImageFileName
 PolymorphSystemSettings -> #DesktopImageFileName
 PolymorphSystemSettings -> #DesktopLogoFileName
 PolymorphSystemSettings -> #DesktopLogoFileName
 PolymorphSystemSettings -> #DesktopLogo
 PolymorphSystemSettings -> #DesktopLogo
 PolymorphSystemSettings -> #ShowDesktopLogo
 PolymorphSystemSettings -> #ShowDesktopLogo
 PolymorphSystemSettings -> #ShowDesktopLogo
 PolymorphSystemSettings -> #UseDesktopGradientFill
 PolymorphSystemSettings -> #UseDesktopGradientFill
 PolymorphSystemSettings -> #usePolymorphDiffMorph
 PolymorphSystemSettings -> #usePolymorphDiffMorph
 PolymorphSystemSettings -> #usePolymorphDiffMorph
 ProgressBarMorph -> #DefaultHeight
 ProgressBarMorph -> #DefaultWidth
 ProportionalSplitterMorph -> #ShowHandles
 RBConfigurableFormatter -> #CascadedMessageInsideParentheses
 RBConfigurableFormatter -> #FormatCommentWithStatements
 RBConfigurableFormatter -> #IndentString
 RBConfigurableFormatter -> #IndentsForKeywords
 RBConfigurableFormatter -> #KeepBlockInMessage
 RBConfigurableFormatter -> #LineUpBlockBrackets
 RBConfigurableFormatter -> #MaxLineLength
 RBConfigurableFormatter -> #MethodSignatureOnMultipleLines
 RBConfigurableFormatter -> #MinimumNewLinesBetweenStatements
 RBConfigurableFormatter -> #MultiLineMessages
 RBConfigurableFormatter -> #NewLineAfterCascade
 RBConfigurableFormatter -> #NewLineBeforeFirstCascade
 RBConfigurableFormatter -> #NewLineBeforeFirstKeyword
 RBConfigurableFormatter -> #NewLinesAfterMethodComment
 RBConfigurableFormatter -> #NewLinesAfterMethodPattern
 RBConfigurableFormatter -> #NewLinesAfterTemporaries
 RBConfigurableFormatter -> #NumberOfArgumentsForMultiLine
 RBConfigurableFormatter -> #OneLineMessages
 RBConfigurableFormatter -> #PeriodsAtEndOfBlock
 RBConfigurableFormatter -> #PeriodsAtEndOfMethod
 RBConfigurableFormatter -> #RetainBlankLinesBetweenStatements
 RBConfigurableFormatter -> #StringFollowingReturn
 RBConfigurableFormatter -> #StringInsideBlocks
 RBConfigurableFormatter -> #StringInsideParentheses
 RBConfigurableFormatter -> #TraditionalBinaryPrecedence
 RBConfigurableFormatter -> #UseTraditionalBinaryPrecedenceForParentheses
 RBRefactoring -> #RefactoringOptions
 RBRefactoryChangeManager -> #UndoSize
 RealEstateAgent -> #StaggerOffset
 RealEstateAgent -> #StandardSize
 RealEstateAgent -> #UsedStrategy
 RecentMessageList -> #settingDropList
 SHPreferences -> #CustomStyleTable
 SHPreferences -> #Groups
 SHPreferences -> #enabled
 SHTextStyleerST80 -> #styleTable
 SHTextStyleerST80 -> #textAttributesByPixelHeight
 ScriptLoader -> #CheckImageSyncWithUpdate
 SettingBrowser -> #regexpSearch
 SettingBrowser -> #searchedTextList
 SimpleEditor -> #CmdActions
 SimpleEditor -> #ShiftCmdActions
 SmalltalkImage -> #ShouldDownloadSourcesFile
 SoundSystem -> #SoundEnabled
 SoundSystem -> #SoundQuickStart
 SoundTheme -> #UseThemeSounds
 SpecDebugger -> #AlwaysOpenFullDebugger
 SpecDebugger -> #ErrorRecursion
 SpecDebugger -> #FilterCommonMessageSends
 SpecDebugger -> #LogDebuggerStackToFile
 SpecDebugger -> #LogFileName
 SpecDebuggerStack -> #DoItFilterEnabled
 SpecDebuggerStack -> #FilterDictionary
 SpecDebuggerStack -> #KCFilterEnabled
 SpecDebuggerStack -> #NilSelectorsFilterEnabled
 StandardFonts -> #ButtonFont
 StandardFonts -> #CodeFont
 StandardFonts -> #HaloFont
 StandardFonts -> #ListFont
 StandardFonts -> #MenuFont
 StandardFonts -> #WindowTitleFont
 StartupPreferencesLoader -> #AllowStartupScript
 StringMorph -> #EditableStringMorph
 SystemProgressMorph -> #horizontalPosition
 SystemProgressMorph -> #verticalPosition
 SystemWindow -> #CloseBoxImage
 SystemWindow -> #CollapseBoxImage
 SystemWindow -> #FullscreenMargin
 TaskListMorph -> #KeepOpen
 TaskbarMorph -> #ShowTaskbar
 TaskbarMorph -> #ShowWindowPreview
 TextDiffBuilder -> #IgnoreLineEndings
 TextDiffBuilder -> #InsertTextAttributes
 TextDiffBuilder -> #NormalTextAttributes
 TextDiffBuilder -> #RemoveTextAttributes
 TextEditor -> #CaseSensitiveFinds

TextEditor -> #UseFindReplaceSelection
 TextEditor -> #UseSecondarySelection
 TextEditor -> #UseSelectionBar
 TextEditor -> #cmdActions
 TextEditor -> #shiftCmdActions
 TextEntryDialogWindow -> #MinimumWidth
 UITheme -> #defaultSettings
 UserInterruptHandler -> #CmdDotEnabled
 Week -> #StartDay
 WorldState -> #CanSurrenderToOS
 WorldState -> #DebugShowDamage
 WorldState -> #DesktopMenuPragmaKeyword
 WorldState -> #DesktopMenuTitle
 WorldState -> #EasySelectingWorld
 WorldState -> #MinCycleLapse
 WorldState -> #ServerMode
 WorldState -> #ShowUpdateOptionInWorldMenu
 ZnConstants -> #DefaultMaximumEntitySize
 ZnServer -> #AlwaysRestart

A.9 Constants

AJConstants -> #CcA
 AJConstants -> #CcABOVE
 AJConstants -> #CcABOVEEQUAL
 AJConstants -> #CcAE
 AJConstants -> #CcB
 AJConstants -> #CcBE
 AJConstants -> #CcBELOW
 AJConstants -> #CcBELOWEQUAL
 AJConstants -> #CcC
 AJConstants -> #CcE
 AJConstants -> #CcEQUAL
 AJConstants -> #CcFPNOTUNORDERED
 AJConstants -> #CcFPUNORDERED
 AJConstants -> #CcG
 AJConstants -> #CcGE
 AJConstants -> #CcGREATER
 AJConstants -> #CcGREATEREQUAL
 AJConstants -> #CcL
 AJConstants -> #CcLE
 AJConstants -> #CcLESS
 AJConstants -> #CcLESSEQUAL
 AJConstants -> #CcNA
 AJConstants -> #CcNAE
 AJConstants -> #CcNB
 AJConstants -> #CcNBE
 AJConstants -> #CcNC
 AJConstants -> #CcNE
 AJConstants -> #CcNEGATIVE
 AJConstants -> #CcNG
 AJConstants -> #CcNGE
 AJConstants -> #CcNL
 AJConstants -> #CcNLE
 AJConstants -> #CcNO
 AJConstants -> #CcNOCONDITION
 AJConstants -> #CcNOOVERFLOW
 AJConstants -> #CcNOTEQUAL
 AJConstants -> #CcNOTSIGN
 AJConstants -> #CcNOTZERO

AJConstants -> #CcNP
 AJConstants -> #CcNS
 AJConstants -> #CcNZ
 AJConstants -> #CcO
 AJConstants -> #CcOVERFLOW
 AJConstants -> #CcP
 AJConstants -> #CcPARITYEVEN
 AJConstants -> #CcPARITYODD
 AJConstants -> #CcPE
 AJConstants -> #CcPO
 AJConstants -> #CcPOSITIVE
 AJConstants -> #CcS
 AJConstants -> #CcSIGN
 AJConstants -> #CcZ
 AJConstants -> #CcZERO
 AJConstants -> #InstCMOVA
 AJConstants -> #InstJA
 AJConstants -> #O64Only
 AJConstants -> #OFM1
 AJConstants -> #OFM10
 AJConstants -> #OFM2
 AJConstants -> #OFM24
 AJConstants -> #OFM248
 AJConstants -> #OFM4
 AJConstants -> #OFM48
 AJConstants -> #OFM4810
 AJConstants -> #OFM8
 AJConstants -> #OG16
 AJConstants -> #OG163264
 AJConstants -> #OG32
 AJConstants -> #OG3264
 AJConstants -> #OG64
 AJConstants -> #OG8
 AJConstants -> #OG8163264
 AJConstants -> #OIMM
 AJConstants -> #OMEM
 AJConstants -> #OMM
 AJConstants -> #OMMMEM
 AJConstants -> #OMMXMM
 AJConstants -> #OMMXMMMEM
 AJConstants -> #ONOREX
 AJConstants -> #OXMM
 AJConstants -> #OXMMMEM
 AJConstants -> #OpImm
 AJConstants -> #OpLabel
 AJConstants -> #OpMem
 AJConstants -> #OpNONE
 AJConstants -> #OpREG
 AJConstants -> #PrefetchNTA
 AJConstants -> #PrefetchT0
 AJConstants -> #PrefetchT1
 AJConstants -> #PrefetchT2
 AJConstants -> #RIDEAX
 AJConstants -> #RIDEBP
 AJConstants -> #RIDE BX
 AJConstants -> #RIDE CX
 AJConstants -> #RIDE DI
 AJConstants -> #RIDE DX
 AJConstants -> #RIDE SI

AJConstants -> #RIDESP	AJx86Registers -> #MM6
AJConstants -> #RegCodeMask	AJx86Registers -> #MM7
AJConstants -> #RegGPB	AJx86Registers -> #R10
AJConstants -> #RegGPD	AJx86Registers -> #R10B
AJConstants -> #RegGPQ	AJx86Registers -> #R10D
AJConstants -> #RegGPW	AJx86Registers -> #R10W
AJConstants -> #RegHighByteMask	AJx86Registers -> #R11
AJConstants -> #RegMM	AJx86Registers -> #R11B
AJConstants -> #RegProhibitsRexMask	AJx86Registers -> #R11D
AJConstants -> #RegRequiresRexMask	AJx86Registers -> #R11W
AJConstants -> #RegTypeMask	AJx86Registers -> #R12
AJConstants -> #RegX87	AJx86Registers -> #R12B
AJConstants -> #RegXMM	AJx86Registers -> #R12D
AJConstants -> #SegmentCS	AJx86Registers -> #R12W
AJConstants -> #SegmentDS	AJx86Registers -> #R13
AJConstants -> #SegmentES	AJx86Registers -> #R13B
AJConstants -> #SegmentFS	AJx86Registers -> #R13D
AJConstants -> #SegmentGS	AJx86Registers -> #R13W
AJConstants -> #SegmentNONE	AJx86Registers -> #R14
AJConstants -> #SegmentSS	AJx86Registers -> #R14B
AJConstants -> #SizeByte	AJx86Registers -> #R14D
AJConstants -> #SizeDQWord	AJx86Registers -> #R14W
AJConstants -> #SizeDWord	AJx86Registers -> #R15
AJConstants -> #SizeQWord	AJx86Registers -> #R15B
AJConstants -> #SizeTWord	AJx86Registers -> #R15D
AJConstants -> #SizeWord	AJx86Registers -> #R15W
AJx86InstructionDescription -> #instructions	AJx86Registers -> #R8
AJx86Registers -> #AH	AJx86Registers -> #R8B
AJx86Registers -> #AL	AJx86Registers -> #R8D
AJx86Registers -> #AX	AJx86Registers -> #R8W
AJx86Registers -> #BH	AJx86Registers -> #R9
AJx86Registers -> #BL	AJx86Registers -> #R9B
AJx86Registers -> #BP	AJx86Registers -> #R9D
AJx86Registers -> #BPL	AJx86Registers -> #R9W
AJx86Registers -> #BX	AJx86Registers -> #RAX
AJx86Registers -> #CH	AJx86Registers -> #RBP
AJx86Registers -> #CL	AJx86Registers -> #RBX
AJx86Registers -> #CX	AJx86Registers -> #RCX
AJx86Registers -> #Codes	AJx86Registers -> #RDI
AJx86Registers -> #DH	AJx86Registers -> #RDX
AJx86Registers -> #DI	AJx86Registers -> #RIP
AJx86Registers -> #DIL	AJx86Registers -> #RSI
AJx86Registers -> #DL	AJx86Registers -> #RSP
AJx86Registers -> #DX	AJx86Registers -> #SI
AJx86Registers -> #EAX	AJx86Registers -> #SIL
AJx86Registers -> #EBP	AJx86Registers -> #SP
AJx86Registers -> #EBX	AJx86Registers -> #SPL
AJx86Registers -> #ECX	AJx86Registers -> #ST0
AJx86Registers -> #EDI	AJx86Registers -> #ST1
AJx86Registers -> #EDX	AJx86Registers -> #ST2
AJx86Registers -> #EIP	AJx86Registers -> #ST3
AJx86Registers -> #ESI	AJx86Registers -> #ST4
AJx86Registers -> #ESP	AJx86Registers -> #ST5
AJx86Registers -> #IP	AJx86Registers -> #ST6
AJx86Registers -> #MM0	AJx86Registers -> #ST7
AJx86Registers -> #MM1	AJx86Registers -> #XMM0
AJx86Registers -> #MM2	AJx86Registers -> #XMM1
AJx86Registers -> #MM3	AJx86Registers -> #XMM10
AJx86Registers -> #MM4	AJx86Registers -> #XMM11
AJx86Registers -> #MM5	

AJx86Registers -> #XMM12
 AJx86Registers -> #XMM13
 AJx86Registers -> #XMM14
 AJx86Registers -> #XMM15
 AJx86Registers -> #XMM2
 AJx86Registers -> #XMM3
 AJx86Registers -> #XMM4
 AJx86Registers -> #XMM5
 AJx86Registers -> #XMM6
 AJx86Registers -> #XMM7
 AJx86Registers -> #XMM8
 AJx86Registers -> #XMM9
 AsyncFile -> #Busy
 AsyncFile -> #ErrorCode
 AthensBezierConverter -> #CollinearityEps
 AthensBezierConverter -> #CurveAngleTolerance
 AthensBezierConverter -> #DistanceEps
 AthensCairoDefs -> #CAIRO_ANTIALIAS_BEST
 AthensCairoDefs -> #CAIRO_ANTIALIAS_DEFAULT
 AthensCairoDefs -> #CAIRO_ANTIALIAS_FAST
 AthensCairoDefs -> #CAIRO_ANTIALIAS_GOOD
 AthensCairoDefs -> #CAIRO_ANTIALIAS_GRAY
 AthensCairoDefs -> #CAIRO_ANTIALIAS_NONE
 AthensCairoDefs -> #CAIRO_ANTIALIAS_SUBPIXEL
 AthensCairoDefs -> #CAIRO_EXTEND_NONE
 AthensCairoDefs -> #CAIRO_EXTEND_PAD
 AthensCairoDefs -> #CAIRO_EXTEND_REFLECT
 AthensCairoDefs -> #CAIRO_EXTEND_REPEAT
 AthensCairoDefs -> #CAIRO_FONT_SLANT_ITALIC
 AthensCairoDefs -> #CAIRO_FONT_SLANT_NORMAL
 AthensCairoDefs -> #CAIRO_FONT_SLANT_OBLIQUE
 AthensCairoDefs -> #CAIRO_FONT_TYPE_FT
 AthensCairoDefs -> #CAIRO_FONT_TYPE_QUARTZ
 AthensCairoDefs -> #CAIRO_FONT_TYPE_TOY
 AthensCairoDefs -> #CAIRO_FONT_TYPE_USER
 AthensCairoDefs -> #CAIRO_FONT_TYPE_WIN32
 AthensCairoDefs -> #CAIRO_FONT_WEIGHT_BOLD
 AthensCairoDefs -> #CAIRO_FONT_WEIGHT_NORMAL
 AthensCairoDefs -> #CAIRO_FORMAT_A1
 AthensCairoDefs -> #CAIRO_FORMAT_A8
 AthensCairoDefs -> #CAIRO_FORMAT_ARGB32
 AthensCairoDefs -> #CAIRO_FORMAT_INVALID
 AthensCairoDefs -> #CAIRO_FORMAT_RGB16_565
 AthensCairoDefs -> #CAIRO_FORMAT_RGB24
 AthensCairoDefs -> #CAIRO_HINT_METRICS_DEFAULT
 AthensCairoDefs -> #CAIRO_HINT_METRICS_OFF
 AthensCairoDefs -> #CAIRO_HINT_METRICS_ON
 AthensCairoDefs -> #CAIRO_HINT_STYLE_DEFAULT
 AthensCairoDefs -> #CAIRO_HINT_STYLE_FULL
 AthensCairoDefs -> #CAIRO_HINT_STYLE_MEDIUM
 AthensCairoDefs -> #CAIRO_HINT_STYLE_NONE
 AthensCairoDefs -> #CAIRO_HINT_STYLE_SLIGHT
 AthensCairoDefs -> #CAIRO_LINE_CAP_BUTT
 AthensCairoDefs -> #CAIRO_LINE_CAP_ROUND
 AthensCairoDefs -> #CAIRO_LINE_CAP_SQUARE
 AthensCairoDefs -> #CAIRO_LINE_JOIN_BEVEL
 AthensCairoDefs -> #CAIRO_LINE_JOIN_MITER
 AthensCairoDefs -> #CAIRO_LINE_JOIN_ROUND
 AthensCairoDefs -> #CAIRO_OPERATOR_ADD
 AthensCairoDefs -> #CAIRO_OPERATOR_ATOP
 AthensCairoDefs -> #CAIRO_OPERATOR_CLEAR
 AthensCairoDefs -> #CAIRO_OPERATOR_COLOR_BURN
 AthensCairoDefs -> #CAIRO_OPERATOR_COLOR_DODGE
 AthensCairoDefs -> #CAIRO_OPERATOR_DARKEN
 AthensCairoDefs -> #CAIRO_OPERATOR_DEST
 AthensCairoDefs -> #CAIRO_OPERATOR_DEST_ATOP
 AthensCairoDefs -> #CAIRO_OPERATOR_DEST_IN
 AthensCairoDefs -> #CAIRO_OPERATOR_DEST_OUT
 AthensCairoDefs -> #CAIRO_OPERATOR_DEST_OVER
 AthensCairoDefs -> #CAIRO_OPERATOR_DIFFERENCE
 AthensCairoDefs -> #CAIRO_OPERATOR_EXCLUSION
 AthensCairoDefs -> #CAIRO_OPERATOR_HARD_LIGHT
 AthensCairoDefs -> #CAIRO_OPERATOR_HSL_COLOR
 AthensCairoDefs -> #CAIRO_OPERATOR_HSL_HUE
 AthensCairoDefs -> #CAIRO_OPERATOR_HSL_LUMINOSITY
 AthensCairoDefs -> #CAIRO_OPERATOR_HSL_SATURATION
 AthensCairoDefs -> #CAIRO_OPERATOR_IN
 AthensCairoDefs -> #CAIRO_OPERATOR_LIGHTEN
 AthensCairoDefs -> #CAIRO_OPERATOR_MULTIPLY
 AthensCairoDefs -> #CAIRO_OPERATOR_OUT
 AthensCairoDefs -> #CAIRO_OPERATOR_OVER
 AthensCairoDefs -> #CAIRO_OPERATOR_OVERLAY
 AthensCairoDefs -> #CAIRO_OPERATOR_SATURATE
 AthensCairoDefs -> #CAIRO_OPERATOR_SCREEN
 AthensCairoDefs -> #CAIRO_OPERATOR_SOFT_LIGHT
 AthensCairoDefs -> #CAIRO_OPERATOR_SOURCE
 AthensCairoDefs -> #CAIRO_OPERATOR_XOR
 AthensCairoDefs -> #CAIRO_STATUS_CLIP_NOT_REPRESENTABLE
 AthensCairoDefs -> #CAIRO_STATUS_DEVICE_ERROR
 AthensCairoDefs -> #CAIRO_STATUS_DEVICE_TYPE_MISMATCH
 AthensCairoDefs -> #CAIRO_STATUS_FILE_NOT_FOUND
 AthensCairoDefs -> #CAIRO_STATUS_FONT_TYPE_MISMATCH
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_CLUSTERS
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_CONTENT
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_DASH
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_DSC_COMMENT
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_FORMAT
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_INDEX
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_MATRIX
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_PATH_DATA
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_POP_GROUP
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_RESTORE
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_SIZE
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_SLANT
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_STATUS
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_STRIDE
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_STRING
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_VISUAL
 AthensCairoDefs -> #CAIRO_STATUS_INVALID_WEIGHT
 AthensCairoDefs -> #CAIRO_STATUS_LAST_STATUS
 AthensCairoDefs -> #CAIRO_STATUS_NEGATIVE_COUNT
 AthensCairoDefs -> #CAIRO_STATUS_NO_CURRENT_POINT
 AthensCairoDefs -> #CAIRO_STATUS_NO_MEMORY
 AthensCairoDefs -> #CAIRO_STATUS_NULL_POINTER
 AthensCairoDefs -> #CAIRO_STATUS_PATTERN_TYPE_MISMATCH
 AthensCairoDefs -> #CAIRO_STATUS_READ_ERROR
 AthensCairoDefs -> #CAIRO_STATUS_SUCCESS
 AthensCairoDefs -> #CAIRO_STATUS_SURFACE_FINISHED
 AthensCairoDefs -> #CAIRO_STATUS_SURFACE_TYPE_MISMATCH

BalloonEngineConstants -> #GStateWaitingForFill
 BalloonEngineConstants -> #GEXValue
 BalloonEngineConstants -> #GEYValue
 BalloonEngineConstants -> #GEZValue
 BalloonEngineConstants -> #GErrorAETEntry
 BalloonEngineConstants -> #GErrorBadState
 BalloonEngineConstants -> #GErrorFillEntry
 BalloonEngineConstants -> #GErrorGETEntry
 BalloonEngineConstants -> #GErrorNeedFlush
 BalloonEngineConstants -> #GErrorNoMoreSpace
 BalloonEngineConstants -> #GFDirectionX
 BalloonEngineConstants -> #GFDirectionY
 BalloonEngineConstants -> #GFNormalX
 BalloonEngineConstants -> #GFNormalY
 BalloonEngineConstants -> #GFOriginX
 BalloonEngineConstants -> #GFOriginY
 BalloonEngineConstants -> #GFRampLength
 BalloonEngineConstants -> #GFRampOffset
 BalloonEngineConstants -> #GGBaseSize
 BalloonEngineConstants -> #GLBaseSize
 BalloonEngineConstants -> #GLEndX
 BalloonEngineConstants -> #GLEndY
 BalloonEngineConstants -> #GLError
 BalloonEngineConstants -> #GLErrorAdjDown
 BalloonEngineConstants -> #GLErrorAdjUp
 BalloonEngineConstants -> #GLWideEntry
 BalloonEngineConstants -> #GLWideExit
 BalloonEngineConstants -> #GLWideExtent
 BalloonEngineConstants -> #GLWideFill
 BalloonEngineConstants -> #GLWideSize
 BalloonEngineConstants -> #GLWideWidth
 BalloonEngineConstants -> #GLXDirection
 BalloonEngineConstants -> #GLXIncrement
 BalloonEngineConstants -> #GLYDirection
 BalloonEngineConstants -> #GWAAColorMask
 BalloonEngineConstants -> #GWAAColorShift
 BalloonEngineConstants -> #GWAALHalfPixel
 BalloonEngineConstants -> #GWAALLevel
 BalloonEngineConstants -> #GWAAScanMask
 BalloonEngineConstants -> #GWAAShift
 BalloonEngineConstants -> #GWAETStart
 BalloonEngineConstants -> #GWAETUsed
 BalloonEngineConstants -> #GWBezierHeightSubdivisions
 BalloonEngineConstants -> #GWBezierLineConversions
 BalloonEngineConstants -> #GWBezierMonotonSubdivisions
 BalloonEngineConstants -> #GWBezierOverflowSubdivisions
 BalloonEngineConstants -> #GWBufferTop
 BalloonEngineConstants -> #GWClearSpanBuffer
 BalloonEngineConstants -> #GWClipMaxX
 BalloonEngineConstants -> #GWClipMaxY
 BalloonEngineConstants -> #GWClipMinX
 BalloonEngineConstants -> #GWClipMinY
 BalloonEngineConstants -> #GWColorTransform
 BalloonEngineConstants -> #GWCountAddAETEntry
 BalloonEngineConstants -> #GWCountChangeAETEntry
 BalloonEngineConstants -> #GWCountDisplaySpan
 BalloonEngineConstants -> #GWCountFinishTest
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 JPEGReadWriter -> #FIXn0n541196100
 JPEGReadWriter -> #FIXn0n71414
 JPEGReadWriter -> #FIXn0n765366865
 JPEGReadWriter -> #FIXn0n899976223
 JPEGReadWriter -> #FIXn1n175875602
 JPEGReadWriter -> #FIXn1n40200
 JPEGReadWriter -> #FIXn1n501321110
 JPEGReadWriter -> #FIXn1n77200
 JPEGReadWriter -> #FIXn1n847759065
 JPEGReadWriter -> #FIXn1n961570560
 JPEGReadWriter -> #FIXn2n053119869
 JPEGReadWriter -> #FIXn2n562915447
 JPEGReadWriter -> #FIXn3n072711026
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 NBMacConstants -> #MAP_PRIVATE
 NBMacConstants -> #MAP_RENAME
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 NBMacConstants -> #PROT_WRITE
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 NBWinConstants -> #CREATE_NEW_CONSOLE
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 NBWinConstants -> #WS_BORDER
 NBWinConstants -> #WS_CAPTION
 NBWinConstants -> #WS_CHILD
 NBWinConstants -> #WS_CHILDWINDOW
 NBWinConstants -> #WS_CLIPCHILDREN
 NBWinConstants -> #WS_CLIPSIBLINGS
 NBWinConstants -> #WS_DISABLED
 NBWinConstants -> #WS_DLGFRAME
 NBWinConstants -> #WS_EX_ACCEPTFILES
 NBWinConstants -> #WS_EX_APPWINDOW
 NBWinConstants -> #WS_EX_CLIENTEDGE
 NBWinConstants -> #WS_EX_COMPOSITED
 NBWinConstants -> #WS_EX_CONTEXTHELP
 NBWinConstants -> #WS_EX_CONTROLPARENT
 NBWinConstants -> #WS_EX_DLGMODALFRAME
 NBWinConstants -> #WS_EX_LAYERED
 NBWinConstants -> #WS_EX_LAYOUTRTL
 NBWinConstants -> #WS_EX_LEFT
 NBWinConstants -> #WS_EX_LEFTSCROLLBAR
 NBWinConstants -> #WS_EX_LTRREADING
 NBWinConstants -> #WS_EX_MDICHILD
 NBWinConstants -> #WS_EX_NOACTIVATE
 NBWinConstants -> #WS_EX_NOINHERITLAYOUT
 NBWinConstants -> #WS_EX_NOPARENTNOTIFY
 NBWinConstants -> #WS_EX_OVERLAPPEDWINDOW
 NBWinConstants -> #WS_EX_PALETTEWINDOW
 NBWinConstants -> #WS_EX_RIGHT
 NBWinConstants -> #WS_EX_RIGHTSCROLLBAR
 NBWinConstants -> #WS_EX_RTLREADING
 NBWinConstants -> #WS_EX_STATICEDGE
 NBWinConstants -> #WS_EX_TOOLWINDOW
 NBWinConstants -> #WS_EX_TOPMOST
 NBWinConstants -> #WS_EX_TRANSPARENT
 NBWinConstants -> #WS_EX_WINDOWEDGE
 NBWinConstants -> #WS_GROUP
 NBWinConstants -> #WS_HSCROLL
 NBWinConstants -> #WS_ICONIC
 NBWinConstants -> #WS_MAXIMIZE
 NBWinConstants -> #WS_MAXIMIZEBOX
 NBWinConstants -> #WS_MINIMIZE
 NBWinConstants -> #WS_MINIMIZEBOX
 NBWinConstants -> #WS_OVERLAPPED
 NBWinConstants -> #WS_OVERLAPPEDWINDOW
 NBWinConstants -> #WS_POPUP
 NBWinConstants -> #WS_POPUPWINDOW
 NBWinConstants -> #WS_SIZEBOX
 NBWinConstants -> #WS_SYSMENU
 NBWinConstants -> #WS_TABSTOP
 NBWinConstants -> #WS_THICKFRAME
 NBWinConstants -> #WS_TILED
 NBWinConstants -> #WS_TILEDWINDOW
 NBWinConstants -> #WS_VISIBLE
 NBWinConstants -> #WS_VSCROLL
 NBWinTypes -> #ATOM
 NBWinTypes -> #BOOL
 NBWinTypes -> #BOOLEAN
 NBWinTypes -> #BYTE
 NBWinTypes -> #CALLBACK
 NBWinTypes -> #CHAR
 NBWinTypes -> #COLORREF
 NBWinTypes -> #DWORD
 NBWinTypes -> #DWORD32
 NBWinTypes -> #DWORD64
 NBWinTypes -> #DWORDLONG
 NBWinTypes -> #DWORD_PTR
 NBWinTypes -> #FLOAT
 NBWinTypes -> #HACCEL
 NBWinTypes -> #HALF_PTR
 NBWinTypes -> #HANDLE
 NBWinTypes -> #HBRUSH
 NBWinTypes -> #HCOLORSPACE
 NBWinTypes -> #HCONV
 NBWinTypes -> #HCONVLIST
 NBWinTypes -> #HCURSOR
 NBWinTypes -> #HDC
 NBWinTypes -> #HDDDEDATA
 NBWinTypes -> #HDESK
 NBWinTypes -> #HDROP
 NBWinTypes -> #HDWP
 NBWinTypes -> #HENHMETAFILE
 NBWinTypes -> #HFILE
 NBWinTypes -> #HFONT
 NBWinTypes -> #HGDIOBJ
 NBWinTypes -> #HGLOBAL
 NBWinTypes -> #HHOOK
 NBWinTypes -> #HICON
 NBWinTypes -> #HINSTANCE
 NBWinTypes -> #HKEY
 NBWinTypes -> #HKL
 NBWinTypes -> #HLOCAL
 NBWinTypes -> #HMENU
 NBWinTypes -> #HMETAFILE
 NBWinTypes -> #HMODULE
 NBWinTypes -> #HMONITOR
 NBWinTypes -> #HPALETTE
 NBWinTypes -> #HPEN
 NBWinTypes -> #HRESULT
 NBWinTypes -> #HRGN
 NBWinTypes -> #HRSRC
 NBWinTypes -> #HSZ
 NBWinTypes -> #HWINSTA

NBWinTypes -> #HWND	NBWinTypes -> #POINT
NBWinTypes -> #INT	NBWinTypes -> #POINTER_32
NBWinTypes -> #INT32	NBWinTypes -> #POINTER_64
NBWinTypes -> #INT64	NBWinTypes -> #PSHORT
NBWinTypes -> #INT_PTR	NBWinTypes -> #PSIZE_T
NBWinTypes -> #LANGID	NBWinTypes -> #PSSIZE_T
NBWinTypes -> #LCID	NBWinTypes -> #PSTR
NBWinTypes -> #LCTYPE	NBWinTypes -> #PTBYTE
NBWinTypes -> #LGRPID	NBWinTypes -> #PTCHAR
NBWinTypes -> #LONG	NBWinTypes -> #PTSTR
NBWinTypes -> #LONG32	NBWinTypes -> #PUCHAR
NBWinTypes -> #LONG64	NBWinTypes -> #PUHALF_PTR
NBWinTypes -> #LONGLONG	NBWinTypes -> #PUINT
NBWinTypes -> #LONG_PTR	NBWinTypes -> #PUINT32
NBWinTypes -> #LPARAM	NBWinTypes -> #PUINT64
NBWinTypes -> #LPBOOL	NBWinTypes -> #PUINT_PTR
NBWinTypes -> #LPBYTE	NBWinTypes -> #PULONG
NBWinTypes -> #LPCOLORREF	NBWinTypes -> #PULONG32
NBWinTypes -> #LPCSTR	NBWinTypes -> #PULONG64
NBWinTypes -> #LPCTSTR	NBWinTypes -> #PULONGLONG
NBWinTypes -> #LPCVOID	NBWinTypes -> #PULONG_PTR
NBWinTypes -> #LPCWSTR	NBWinTypes -> #PUSHORT
NBWinTypes -> #LPDWORD	NBWinTypes -> #PVOID
NBWinTypes -> #LPHANDLE	NBWinTypes -> #PWCHAR
NBWinTypes -> #LPINT	NBWinTypes -> #PWORD
NBWinTypes -> #LPLONG	NBWinTypes -> #PWSTR
NBWinTypes -> #LPSTR	NBWinTypes -> #RECT
NBWinTypes -> #LPTCH	NBWinTypes -> #SC_HANDLE
NBWinTypes -> #LPTSTR	NBWinTypes -> #SC_LOCK
NBWinTypes -> #LPVOID	NBWinTypes -> #SERVICE_STATUS_HANDLE
NBWinTypes -> #LPWCH	NBWinTypes -> #SHORT
NBWinTypes -> #LPWORD	NBWinTypes -> #SIZE_T
NBWinTypes -> #LPWSTR	NBWinTypes -> #SSIZE_T
NBWinTypes -> #LRESULT	NBWinTypes -> #TBYTE
NBWinTypes -> #PBOOL	NBWinTypes -> #TCHAR
NBWinTypes -> #PBOOLEAN	NBWinTypes -> #UCHAR
NBWinTypes -> #PBYTE	NBWinTypes -> #UHALF_PTR
NBWinTypes -> #PCHAR	NBWinTypes -> #UINT
NBWinTypes -> #PCSTR	NBWinTypes -> #UINT32
NBWinTypes -> #PCTSTR	NBWinTypes -> #UINT64
NBWinTypes -> #PCWSTR	NBWinTypes -> #UINT_PTR
NBWinTypes -> #PDWORD	NBWinTypes -> #ULONG
NBWinTypes -> #PDWORD32	NBWinTypes -> #ULONG32
NBWinTypes -> #PDWORD64	NBWinTypes -> #ULONG64
NBWinTypes -> #PDWORDLONG	NBWinTypes -> #ULONGLONG
NBWinTypes -> #PDWORD_PTR	NBWinTypes -> #ULONG_PTR
NBWinTypes -> #PFLOAT	NBWinTypes -> #USHORT
NBWinTypes -> #PHALF_PTR	NBWinTypes -> #USN
NBWinTypes -> #PHANDLE	NBWinTypes -> #VOID
NBWinTypes -> #PHKEY	NBWinTypes -> #WCHAR
NBWinTypes -> #PINT	NBWinTypes -> #WNDCLASSEX
NBWinTypes -> #PINT32	NBWinTypes -> #WNDPROC
NBWinTypes -> #PINT64	NBWinTypes -> #WORD
NBWinTypes -> #PINT_PTR	NBWinTypes -> #WPARAM
NBWinTypes -> #PLCID	NativeBoostConstants -> #ErrInvalidPlatformId
NBWinTypes -> #PLONG	NativeBoostConstants -> #ErrInvalidPrimitive VoltageUse
NBWinTypes -> #PLONG32	NativeBoostConstants -> #ErrNoNBPrimitive
NBWinTypes -> #PLONG64	NativeBoostConstants -> #ErrNoNativeCodeInMethod
NBWinTypes -> #PLONGLONG	NativeBoostConstants -> #ErrNotEnabled
NBWinTypes -> #PLONG_PTR	

NativeBoostConstants -> #ErrRunningViaInterpreter
 NativeBoostConstants -> #Linux32PlatformId
 NativeBoostConstants -> #Mac32PlatformId
 NativeBoostConstants -> #NBErrorBase
 NativeBoostConstants -> #NBErrorDescriptions
 NativeBoostConstants -> #NBPrimErrBadArgument
 NativeBoostConstants -> #NBPrimErrBadIndex
 NativeBoostConstants -> #NBPrimErrBadMethod
 NativeBoostConstants -> #NBPrimErrBadNumArgs
 NativeBoostConstants -> #NBPrimErrBadReceiver
 NativeBoostConstants -> #NBPrimErrGenericFailure
 NativeBoostConstants -> #NBPrimErrInappropriate
 NativeBoostConstants -> #NBPrimErrLimitExceeded
 NativeBoostConstants -> #NBPrimErrNamedInternal
 NativeBoostConstants -> #NBPrimErrNoCMemory
 NativeBoostConstants -> #NBPrimErrNoMemory
 NativeBoostConstants -> #NBPrimErrNoModification
 NativeBoostConstants -> #NBPrimErrNotFound
 NativeBoostConstants -> #NBPrimErrObjectMayMove
 NativeBoostConstants -> #NBPrimErrUnsupported
 NativeBoostConstants -> #NBPrimNoErr
 NativeBoostConstants -> #Win32PlatformId
 NetNameResolver -> #ResolverBusy
 NetNameResolver -> #ResolverError
 NetNameResolver -> #ResolverMutex
 NetNameResolver -> #ResolverReady
 NetNameResolver -> #ResolverUninitialized
 OCASTTranslator -> #OptimizedMessages
 PNGReadWriter -> #BPP
 PNGReadWriter -> #BlockHeight
 PNGReadWriter -> #BlockWidth
 PNGReadWriter -> #StandardColors
 PNGReadWriter -> #StandardSwizzleMaps
 ParseNode -> #Bfp
 ParseNode -> #BtpLong
 ParseNode -> #CodeBases
 ParseNode -> #CodeLimits
 ParseNode -> #DblExtDoAll
 ParseNode -> #Dup
 ParseNode -> #EndMethod
 ParseNode -> #EndRemote
 ParseNode -> #Jmp
 ParseNode -> #JmpLimit
 ParseNode -> #JmpLong
 ParseNode -> #LdFalse
 ParseNode -> #LdInstLong
 ParseNode -> #LdInstType
 ParseNode -> #LdLitIndType
 ParseNode -> #LdLitType
 ParseNode -> #LdMinus1
 ParseNode -> #LdNil
 ParseNode -> #LdSelf
 ParseNode -> #LdSuper
 ParseNode -> #LdTempType
 ParseNode -> #LdThisContext
 ParseNode -> #LdTrue
 ParseNode -> #LoadLong
 ParseNode -> #LongLongDoAll
 ParseNode -> #NodeFalse
 ParseNode -> #NodeNil
 ParseNode -> #NodeSelf
 ParseNode -> #NodeSuper
 ParseNode -> #NodeThisContext
 ParseNode -> #NodeTrue
 ParseNode -> #Pop
 ParseNode -> #Send
 ParseNode -> #SendLimit
 ParseNode -> #SendLong
 ParseNode -> #SendLong2
 ParseNode -> #SendPlus
 ParseNode -> #SendType
 ParseNode -> #ShortStoP
 ParseNode -> #StdLiterals
 ParseNode -> #StdSelectors
 ParseNode -> #StdVariables
 ParseNode -> #Store
 ParseNode -> #StorePop
 ProcessorScheduler -> #HighIOPriority
 ProcessorScheduler -> #LowIOPriority
 ProcessorScheduler -> #SystemBackgroundPriority
 ProcessorScheduler -> #SystemRockBottomPriority
 ProcessorScheduler -> #TimingPriority
 ProcessorScheduler -> #UserBackgroundPriority
 ProcessorScheduler -> #UserInterruptPriority
 ProcessorScheduler -> #UserSchedulingPriority
 RBAbstractClass -> #LookupSuperclass
 RBClass -> #LookupComment
 RBScanner -> #PatternVariableCharacter
 RBScanner -> #PatternVariableCharacter
 RBScanner -> #classificationTable
 RBTransformationRule -> #RecursiveSelfRule
 RealEstateAgent -> #StaggerOffset
 RemotesManager -> #addRemoteIcon
 RemotesManager -> #editRemoteIcon
 RemotesManager -> #removeRemoteIcon
 RxMatcher -> #Cr
 RxMatcher -> #Lf
 RxParser -> #BackslashConstants
 RxParser -> #BackslashSpecials
 RxsPredicate -> #EscapedLetterSelectors
 RxsPredicate -> #NamedClassSelectors
 SHA1 -> #K1
 SHA1 -> #K2
 SHA1 -> #K3
 SHA1 -> #K4
 Scanner -> #DoItCharacter
 SetElement -> #NilElement
 Socket -> #Connected
 Socket -> #DeadServer
 Socket -> #InvalidSocket
 Socket -> #OtherEndClosed
 Socket -> #TCPSocketType
 Socket -> #ThisEndClosed
 Socket -> #UDPSocketType
 Socket -> #Unconnected
 Socket -> #WaitingForConnection
 String -> #AsciiOrder
 String -> #CSLineEnders
 String -> #CSNonSeparators

String -> #CSSeparators
String -> #CaseInsensitiveOrder
String -> #CaseSensitiveOrder
String -> #CrLfExchangeTable
String -> #LowercasingTable
String -> #Tokenish
String -> #TypeTable
String -> #UppercasingTable
TextConstants -> #BS
TextConstants -> #BS2
TextConstants -> #Basal
TextConstants -> #Bold
TextConstants -> #CR
TextConstants -> #Centered
TextConstants -> #Clear
TextConstants -> #CrossedX
TextConstants -> #CtrlA
TextConstants -> #CtrlB
TextConstants -> #CtrlC
TextConstants -> #CtrlD
TextConstants -> #CtrlDigits
TextConstants -> #CtrlE
TextConstants -> #CtrlF
TextConstants -> #CtrlG
TextConstants -> #CtrlH
TextConstants -> #CtrlI
TextConstants -> #CtrlJ
TextConstants -> #CtrlK
TextConstants -> #CtrlL
TextConstants -> #CtrlM
TextConstants -> #CtrlN
TextConstants -> #CtrlO
TextConstants -> #CtrlOpenBrackets
TextConstants -> #CtrlP
TextConstants -> #CtrlQ
TextConstants -> #CtrlR
TextConstants -> #CtrlS
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TextConstants -> #CtrlV
TextConstants -> #CtrlW
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TextConstants -> #Ctrlu
TextConstants -> #Ctrlv
TextConstants -> #Ctrlw
TextConstants -> #Ctrlx
TextConstants -> #CtrlY
TextConstants -> #Ctrlz
TextConstants -> #DefaultBaseline
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TextConstants -> #DefaultLineGrid
TextConstants -> #DefaultMarginTabsArray
TextConstants -> #DefaultMask
TextConstants -> #DefaultRule
TextConstants -> #DefaultSpace
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TextConstants -> #DefaultTabsArray
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TextConstants -> #EndOfRun
TextConstants -> #Enter
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TextConstants -> #Justified
TextConstants -> #LeftFlush
TextConstants -> #LeftMarginTab
TextConstants -> #RightFlush
TextConstants -> #RightMarginTab
TextConstants -> #Space
TextConstants -> #Tab
TextConstants -> #TextSharedInformation
TextContainer -> #OuterMargin
TextConverter -> #latin1Encodings
TextConverter -> #latin1Map
ThumbnailMorph -> #EccentricityThreshold
ThumbnailMorph -> #RecursionMax
Transcriber -> #Icon
TransferMorph -> #CopyPlusIcon
UCSTable -> #GB2312Table
UCSTable -> #JISX0208Table
UCSTable -> #KSX1001Table
UCSTable -> #Latin1Table
Unicode -> #Cc
Unicode -> #Cf
Unicode -> #Cn
Unicode -> #Co
Unicode -> #Cs
Unicode -> #DecimalProperty
Unicode -> #GeneralCategory
Unicode -> #Ll
Unicode -> #Lm
Unicode -> #Lo
Unicode -> #Lt
Unicode -> #Lu
Unicode -> #Mc
Unicode -> #Me
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Unicode -> #Nd
Unicode -> #Nl

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 Unicode -> #Sm
 Unicode -> #So
 Unicode -> #ToCasefold
 Unicode -> #ToLower
 Unicode -> #ToUpper
 Unicode -> #Zl
 Unicode -> #Zp
 Unicode -> #Zs
 ZipConstants -> #BaseDistance
 ZipConstants -> #BaseLength
 ZipConstants -> #BitLengthOrder
 ZipConstants -> #DistanceCodes
 ZipConstants -> #DynamicBlock
 ZipConstants -> #EndBlock
 ZipConstants -> #ExtraBitLengthBits
 ZipConstants -> #ExtraDistanceBits
 ZipConstants -> #ExtraLengthBits
 ZipConstants -> #FixedBlock
 ZipConstants -> #FixedDistanceTree
 ZipConstants -> #FixedLiteralTree
 ZipConstants -> #HashBits
 ZipConstants -> #HashMask
 ZipConstants -> #HashShift
 ZipConstants -> #MatchLengthCodes
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 ZipConstants -> #MaxBits
 ZipConstants -> #MaxDistCodes
 ZipConstants -> #MaxDistance
 ZipConstants -> #MaxLengthCodes
 ZipConstants -> #MaxLiteralCodes
 ZipConstants -> #MaxMatch
 ZipConstants -> #MinMatch
 ZipConstants -> #NumLiterals
 ZipConstants -> #Repeat11To138
 ZipConstants -> #Repeat3To10
 ZipConstants -> #Repeat3To6
 ZipConstants -> #StoredBlock
 ZipConstants -> #WindowMask
 ZipConstants -> #WindowSize
 ZipFileConstants -> #CentralDirectoryFileHeaderSignature
 ZipFileConstants -> #CompressionDeflated
 ZipFileConstants -> #CompressionLevelDefault
 ZipFileConstants -> #CompressionLevelNone
 ZipFileConstants -> #CompressionStored
 ZipFileConstants -> #DataDescriptorLength
 ZipFileConstants -> #DefaultDirectoryPermissions
 ZipFileConstants -> #DefaultFilePermissions
 ZipFileConstants -> #DeflatingCompressionFast
 ZipFileConstants -> #DeflatingCompressionMaximum
 ZipFileConstants -> #DeflatingCompressionNormal
 ZipFileConstants -> #DeflatingCompressionSuperFast
 ZipFileConstants -> #DirectoryAttrib
 ZipFileConstants -> #EndOfCentralDirectorySignature
 ZipFileConstants -> #FaMsdos
 ZipFileConstants -> #FaUnix
 ZipFileConstants -> #FileAttrib
 ZipFileConstants -> #IfaBinaryFile
 ZipFileConstants -> #IfaTextFile
 ZipFileConstants -> #LocalFileHeaderSignature
 ZnBase64Encoder -> #DefaultAlphabet
 ZnBase64Encoder -> #DefaultInverse
 ZnByteEncoder -> #ByteTextConverters
 ZnConstants -> #HTTPStatusCodes
 ZnHeaders -> #CommonHeaders
 ZnMimeType -> #ExtensionsMap
 ZnUTF8Encoder -> #ByteASCIISet
 ZnUTF8Encoder -> #ByteUTF8Encoding