

# Give protocol property a default value.

淺談 Associated Object

Rick Huang

# POP on Swift

```
protocol Request {  
    var baseUrl: String { get }  
  
    var path: String { get }  
  
    var urlParameter: [String: Any] { get }  
  
    var formatRequest: URLRequest? { get set }  
  
    func buildFormatRequest()  
}
```

```
struct ARequest: Request {  
  
    var baseURL: String {  
        return "http://ios.taipei"  
    }  
  
    var path: String {  
        return "/api/any"  
    }  
  
    var urlParameter: [String : Any] {  
        return [:]  
    }  
  
    var formatRequest: URLRequest?  
  
    func buildFormatRequest() {  
        // do something to build URLRequest ...  
    }  
}
```

```
protocol Request {  
    var baseUrl: String { get }  
    var path: String { get }  
    var urlParameter: [String: Any] { get }  
    var formatRequest: URLRequest? { get set }  
    func buildFormatRequest()  
}  
  
extension Request {  
    func buildFormatRequest() {  
        // do some thing ...  
    }  
}
```

```
struct ARequest: Request {  
    var baseURL: String {  
        return "http://ios.taipei"  
    }  
  
    var path: String {  
        return "/api/any"  
    }  
  
    var urlParameter: [String : Any] {  
        return [:]  
    }  
  
    var formatRequest: URLRequest? // Who am I? 24601  
}
```

Method 可以有預設行為  
那

Property 可以有預設值嗎？

```
protocol Request {  
    var baseUrl: String { get }  
    var path: String { get }  
    var urlParameter: [String: Any] { get }  
    var formatRequest: URLRequest? { get set }  
    func buildFormatRequest()  
}  
  
extension Request {  
    var baseUrl: String { return "http://ios.taipei" }  
    var formatRequest: URLRequest? = nil  
}
```



Extensions must not contain stored properties

```
extension Request {  
    var formatRequest: URLRequest? {  
        get {  
            return nil  
        }  
        set {  
        }  
    }  
}
```



# Let's talk about Associated Object

Function

## objc\_setAssociatedObject

Sets an associated value for a given object using a given key and association policy.

---

### Declaration

```
void objc_setAssociatedObject(id object, const void *key, id value, objc_AssociationPolicy policy);
```

### Parameters

**object**

The source object for the association.

**key**

The key for the association.

**value**

The value to associate with the key `key` for `object`. Pass `nil` to clear an existing association.

**policy**

The policy for the association. For possible values, see [objc\\_AssociationPolicy](#).

```
extension Request {  
  
    var formatRequest: URLRequest? {  
        get {  
            return nil  
        }  
  
        set {  
            objc_setAssociatedObject(object: Any,  
                                     key: UnsafeRawPointer,  
                                     value: Any?,  
                                     policy: objc_AssociationPolicy)  
        }  
    }  
}
```

```
objc_setAssociatedObject(object: Any,  
                        key: UnsafeRawPointer,  
                        value: Any?,  
                        policy: objc_AssociationPolicy)
```

## AssociationsManager

AssociationsHashMap \*\_map;

## AssociationsHashMap

disguised_ptr_t	ObjectAssociationMap
disguised_ptr_t	ObjectAssociationMap

...

...

DISGUISE(object)

## AssociationsMap

void *	ObjectAssociation
void *	ObjectAssociation

...

...

key

## ObjectAssociation

uintptr_t _policy;	policy
id _value;	value

<https://blog.csdn.net/wj040674226>

<b>objc_AssociationPolicy</b>	<b>@property Equivalent</b>
OBJC_ASSOCIATION_ASSIGN	@property (assign)
OBJC_ASSOCIATION_RETAIN_NONATOMIC	@property (nonatomic, strong)
OBJC_ASSOCIATION_COPY_NONATOMIC	@property (nonatomic, copy)
OBJC_ASSOCIATION_RETAIN	@property (atomic, strong)
OBJC_ASSOCIATION_COPY	@property (atomic, copy)

```
enum AssociatedKey {
    static var formatRequest = "formatRequest"
}

extension Request {

    var formatRequest: URLRequest? {
        get {
            return objc_getAssociatedObject(self,
                                            &AssociatedKey.formatRequest) as? URLRequest
        }

        set {
            objc_setAssociatedObject(self,
                                    &AssociatedKey.formatRequest,
                                    newValue,
                                    .OBJC_ASSOCIATION_RETAIN)
        }
    }
}
```

Function

# objc\_removeAssociatedObjects

Removes all associations for a given object.

## Declaration

```
void objc_removeAssociatedObjects(id object);
```

## Parameters

**object**

An object that maintains associated objects.

## Discussion

The main purpose of this function is to make it easy to return an object to a "pristine state". You should not use this function for general removal of associations from objects, since it also removes associations that other clients may have added to the object. Typically you should use [objc\\_setAssociatedObject](#) with a `nil` value to clear an association.

SDKs

iOS 3.1+

macOS 10.6+

Mac Catalyst 13.0+

tvOS 9.0+

watchOS 2.0+

Framework

Objective-C Runtime

On This Page

[Declaration](#) ⌵

[Parameters](#) ⌵

[Discussion](#) ⌵

[See Also](#) ⌵

- Stored Property in **Other use cases**

```
public extension UIView {  
  
    private static var trackingIDKey = "trackingIDKey"  
  
    var trackingID: String {  
        get {  
            return objc_getAssociatedObject(self,  
                                            &UIView.trackingIDKey) as! String  
        }  
  
        set {  
            objc_setAssociatedObject(self,  
                                    &UIView.trackingIDKey,  
                                    newValue,  
                                    .OBJC_ASSOCIATION_RETAIN)  
        }  
    }  
}
```



# Reference

- <http://blog.girappe.com/?swiftStoredProtocols/>
- [https://halfrost.com/how to use runtime/#associatedobject](https://halfrost.com/how_to_use_runtime/#associatedobject)
- [https://developer.apple.com/documentation/objectivec/1418509-objc\\_setassociatedobject?language=objc](https://developer.apple.com/documentation/objectivec/1418509-objc_setassociatedobject?language=objc)
- [https://developer.apple.com/documentation/objectivec/1418865-objc\\_getassociatedobject?language=objc](https://developer.apple.com/documentation/objectivec/1418865-objc_getassociatedobject?language=objc)
- [https://developer.apple.com/documentation/objectivec/1418683-objc\\_removeassociatedobjects?language=objc](https://developer.apple.com/documentation/objectivec/1418683-objc_removeassociatedobjects?language=objc)