Objective-C Runtime: немного теории и практическое применение

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objc_class

```
struct objc_class {
    Class isa  OBJC_ISA_AVAILABILITY;

#if !__OBJC2__
    Class super_class                                       OBJC2_UNAVAILABLE;
    const char *name                                        OBJC2_UNAVAILABLE;
    long version                                            OBJC2_UNAVAILABLE;
    long info                                               OBJC2_UNAVAILABLE;
    long instance_size                                      OBJC2_UNAVAILABLE;
    struct objc_ivar_list *ivars                            OBJC2_UNAVAILABLE;
    struct objc_method_list **methodLists                   OBJC2_UNAVAILABLE;
    struct objc_cache *cache                                OBJC2_UNAVAILABLE;
    struct objc_protocol_list *protocols                    OBJC2_UNAVAILABLE;
#endif

} OBJC2_UNAVAILABLE;
```

objc_msgSend

```
id objc_msgSend(id self, SEL op, ...)
```

IMP

```
void generatedMethod(id self, SEL _cmd, id arg0, id arg2, BOOL arg3)
```

Практическое применение

1. Associated objects
2. Method swizzling
3. Serialization / Deserialization
4. Copying

Associated objects

```
- (SLFMomentTextBlock *)firstTextBlock {
    NSNumber *firstTextBlockIndex = objc_getAssociatedObject(self, _cmd);

    if (!firstTextBlockIndex) {
        NSUInteger index = [[self blocks] indexOfObjectPassingTest:^BOOL(id obj, NSUInteger idx, BOOL *stop) {
            return [obj isKindOfClass:[SLFMomentTextBlock class]];
        }];

        firstTextBlockIndex = @(index);

        objc_setAssociatedObject(self, _cmd, firstTextBlockIndex, OBJC_ASSOCIATION_RETAIN_NONATOMIC);
    }

    NSUInteger index = [firstTextBlockIndex unsignedIntegerValue];

    if (index != NSNotFound) {
        return [self blocks][index];
    }

    return nil;
}
```

Method swizzling

```objc
- (void)repeat {
    NSLog(@"repeat");

    static dispatch_once_t onceToken;
    dispatch_once(&onceToken, ^{
        [NSTimer scheduledTimerWithTimeInterval:kTimerInterval target:self selector:_cmd userInfo:nil repeats:YES];
    });
}
```

Популярный способ

```
+ (void)load {
    Method repeatMethod = class_getInstanceMethod([self class], @selector(repeat));
    Method swizzledRepeat = class_getInstanceMethod([self class], @selector(swizzledRepeat));

    method_exchangeImplementations(repeatMethod, swizzledRepeat);
}

- (void)swizzledRepeat {
    NSLog(@"swizzledRepeat");

    [self swizzledRepeat];
}
```

```
2015-02-25 11:32:03.059 SwizzlingTest[11349:1218562] swizzledRepeat
2015-02-25 11:32:03.059 SwizzlingTest[11349:1218562] repeat
2015-02-25 11:32:03.161 SwizzlingTest[11349:1218562] repeat
2015-02-25 11:32:03.261 SwizzlingTest[11349:1218562] repeat
2015-02-25 11:32:03.361 SwizzlingTest[11349:1218562] repeat
2015-02-25 11:32:03.463 SwizzlingTest[11349:1218562] repeat
2015-02-25 11:32:03.561 SwizzlingTest[11349:1218562] repeat
2015-02-25 11:32:03.661 SwizzlingTest[11349:1218562] repeat
2015-02-25 11:32:03.761 SwizzlingTest[11349:1218562] repeat
```

Правильный способ

```
static IMP __originalRepeatImp;

static void __swizzledRepeat(id self, SEL _cmd) {
    NSLog(@"swizzledRepeat");

    ((void (*)(id, SEL))__originalRepeatImp)(self, _cmd);
}

+ (void)load {
    Method repeatMethod = class_getInstanceMethod([self class], @selector(repeat));

    __originalRepeatImp = method_setImplementation(repeatMethod, (IMP)__swizzledRepeat);
}
```

```
2015-02-25 12:16:18.309 SwizzlingTest[11602:1250360] swizzledRepeat
2015-02-25 12:16:18.309 SwizzlingTest[11602:1250360] repeat
2015-02-25 12:16:18.414 SwizzlingTest[11602:1250360] swizzledRepeat
2015-02-25 12:16:18.414 SwizzlingTest[11602:1250360] repeat
2015-02-25 12:16:18.510 SwizzlingTest[11602:1250360] swizzledRepeat
2015-02-25 12:16:18.510 SwizzlingTest[11602:1250360] repeat
2015-02-25 12:16:18.609 SwizzlingTest[11602:1250360] swizzledRepeat
2015-02-25 12:16:18.610 SwizzlingTest[11602:1250360] repeat
2015-02-25 12:16:18.710 SwizzlingTest[11602:1250360] swizzledRepeat
2015-02-25 12:16:18.711 SwizzlingTest[11602:1250360] repeat
```