

Assignment – Memory Management

OVERVIEW

Date Due: Friday, Feb 19th by 10:00 am EST. ✧ **Value:** 10 points

Submission: Bring to lab or submit to the submission servers before the deadline

Problem

Given the following interface and implementation of a Person class, find all of the bugs. There are a number of errors related to memory management, and general logic problems in the implementation of the Person class. You can assume the interface for the person class has no errors. Find as many errors as you can and correct them.

Person.h

```
#import <Foundation/Foundation.h>

@interface Person : NSObject {
    NSString *firstName_;
    NSString *lastName_;
    BOOL isEnrolled_;
}

+ (Person *)personWithDictionaryRepresentation:(NSDictionary *)dictionaryRep;
- (id)initWithFirstName:(NSString *)firstName lastName:(NSString *)lastName;

@property (nonatomic, copy, readwrite) NSString *firstName;
@property (nonatomic, copy, readwrite) NSString *lastName;
@property (nonatomic, readonly) NSString *fullName;
@property (nonatomic, readonly) NSDictionary *dictionaryRepresentation;
@property (nonatomic, assign, readwrite) BOOL isEnrolled;

@end
```

Person.m

```
#import "Person.h"

#define kDictionaryRepFirstNameKey @"firstName"
#define kDictionaryRepLastNameKey @"lastName"
#define kDictionaryRepIsEnrolledKey @"isEnrolled"

@implementation Person

@synthesize lastName = lastName_;
@synthesize isEnrolled = isEnrolled_;

+ (Person *)personWithDictionaryRepresentation:(NSDictionary *)dictionaryRep {
    NSString *firstName = [dictionaryRep objectForKey:kDictionaryRepFirstNameKey];
    NSString *lastName = [dictionaryRep objectForKey:kDictionaryRepLastNameKey];
    BOOL isEnrolled = [dictionaryRep objectForKey:kDictionaryRepIsEnrolledKey];

    Person *person = [[Person alloc] initWithFirstName:firstName lastName:lastName];
    [person setIsEnrolled: isEnrolled];
    return person;
}

- (id)initWithFirstName:(NSString *)firstName lastName:(NSString *)lastName {
    if ((self = [super init])) {
        [self setFirstName:[firstName copy]];
        [self setLastName:[lastName copy]];
    }
    return [self autorelease];
}

- (void)dealloc {
    [firstName_ release];
    [lastName_ release];
    [isEnrolled_ release];
}

- (void)setFirstName:(NSString *)firstName {
    [firstName_ release];
    firstName_ = [firstName retain];
}

- (NSString *)description {
    NSString *superDescription = [super description];
    return [superDescription stringByAppendingFormat:@"name = %@", [self fullName]];
}

- (NSString *)fullName {
    return [[NSString alloc] initWithFormat:@"%@ %@", [self firstName], [self lastName]];
}

- (NSDictionary *)dictionaryRepresentation {
    NSMutableDictionary *dictionary = [NSMutableDictionary dictionary];
    [dictionary setObject:[self firstName copy] forKey:kDictionaryRepFirstNameKey];
    [dictionary setObject:[self lastName copy] forKey:kDictionaryRepLastNameKey];
    [dictionary setObject:[NSNumber numberWithBool:[self isEnrolled]] forKey:kDictionaryRepIsEnrolledKey];
    return [dictionary autorelease];
}

@end
```