

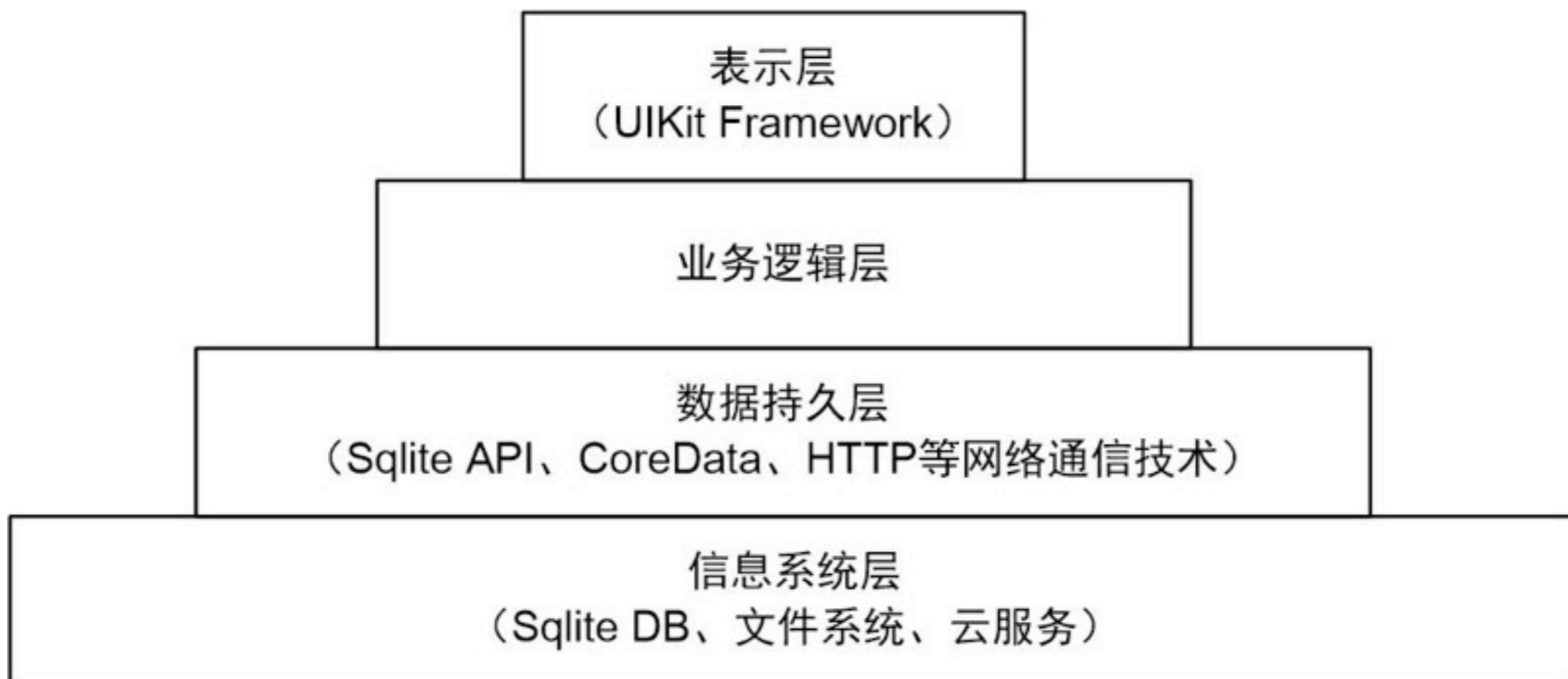
iOS单元测试最佳实践



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iOS单元测试策略

iOS平台信息处理应用分层架构设计



测试框架与应用分层架构

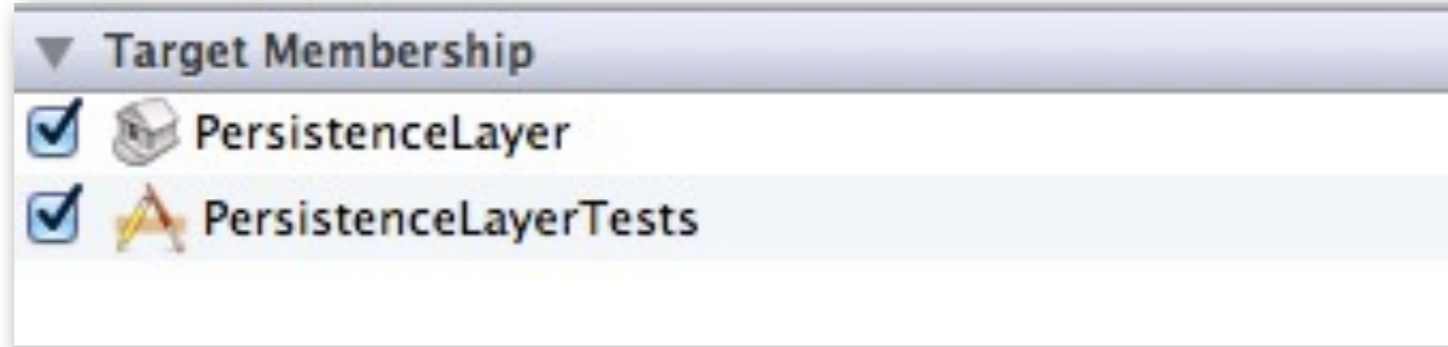
测试框架	表示层	业务逻辑层	数据持久层
OCUnit	逻辑测试、应用测试	逻辑测试	逻辑测试
GHUnit	逻辑测试	逻辑测试	逻辑测试
OCMock	逻辑测试提供伪对象	逻辑测试提供伪对象	逻辑测试提供伪对象

复习： 分层架构案例MyNotes

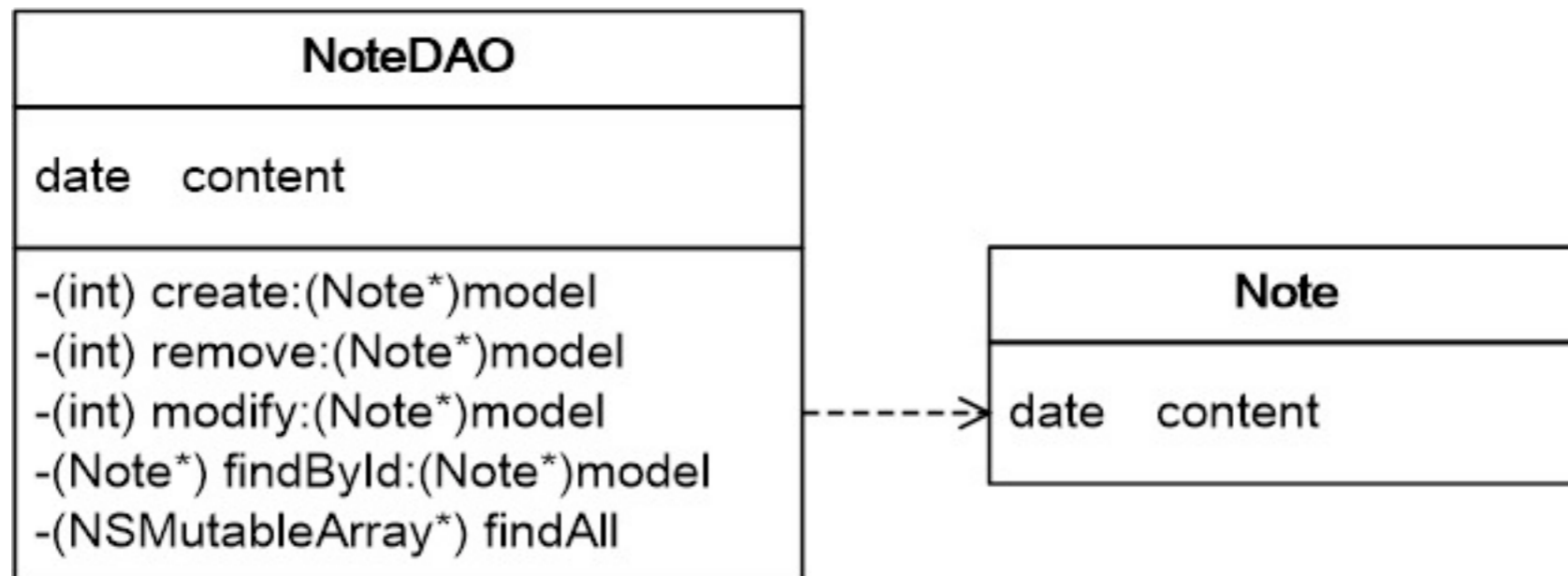
测试数据持久层

创建的测试工程

PersistenceLayerTests



数据持久层类图



数据持久层测试用例

测试用例	测试方法	输入条件	输出结果
1	createNote	cdate=2000-06-0308:20:38 content=welcome www.51work6.com	查询记录数为1
2	findAll	无	查询记录数为1, 第1条记录的 cdate=2000-06-0308:20:38 content= welcome www.51work6.com
3	remove	cdate=2000-06-0308:20:38	查询记录数为0

测试类NoteDAOTests

```
#import <GHUnitIOS/GHUnit.h>
#import "NoteDAO.h"
#import "Note.h"

@interface NoteDAOTests: GHTestCase {

}

@property (nonatomic, strong) NSDateFormatter * dateFormatter;
@property (nonatomic, strong) NoteDAO * dao;

@property (nonatomic, strong) NSString* theContent;
@property (nonatomic, strong) NSDate* theDate;

@end
```

```
- (void)setUpClass {
    self.dateFormatter = [[NSDateFormatter alloc] init];
    [self.dateFormatter setDateFormat:@"yyyy-MM-dd HH:mm:ss"];

    self.dao = [NoteDAO sharedManager];

    self.theContent = @"welcome www.51work6.com";
    self.theDate = [self.dateFormatter dateFromString:@"2000-06-03
08:20:38"];
}

- (void)tearDownClass {
    self.dateFormatter = nil;
    self.dao = nil;
}

- (void)setUp {}

- (void)tearDown { }
```


测试create方法

```
//测试 插入Note方法
-(void) testCreate
{
    //创建Note对象
    Note *note = [[Note alloc] init];
    note.date = self.theDate;
    note.content = self.theContent;

    int res = [self.dao create:note];
    //断言 无异常, 返回值为0,
    GHAssertTrueNoThrow(res == 0, @"数据插入失败");
}
```

根据测试用例要求断言无异常, 返回值为0, GHAssertTrueNoThrow(res == 0, @"数据插入失败")语句实现了这个断言。

测试业务逻辑层

创建的测试工程

User Header Search Paths

User Header Search Paths是指定用户提供类库的头文件搜索路径，设置编译参数User Header Search Paths，选择TARGETS中的BusinessLogicLayerTests→Build Settings→User Header Search Paths，改为\$(BUILT_PRODUCTS_DIR)。

Library Search Paths

Library Search Paths是设定类库搜索路径，这里我们需要清除原来的内容，因为它依赖的类库文件libPersistenceLayer.a在编译的时候会拷贝到BusinessLogicLayerTests编译目录下。清除Library Search Paths内容，选择TARGETS中的BusinessLogicLayerTests→Build Settings→Library Search Paths，删除内容。

业务逻辑层类图

NoteBL

```
-(NSMutableArray*) createNote:(Note*)model  
-(NSMutableArray*) remove:(Note*)model  
-(NSMutableArray*) findAll
```

业务逻辑层测试用例

测试用例	测试方法	输入条件	输出结果
1	createNote	cdate=2000-06-0308:20:38 content=welcome www.51work6.com	查询记录数为1
2	findAll	无	查询记录数为1，第1条记录的 cdate=2000-06-0308:20:38 content= welcome www.51work6.com
3	remove	cdate=2000-06-0308:20:38	查询记录数为0

测试类NoteBLTests

```
#import <GHUnitIOS/GHUnit.h>
#import "NoteDAO.h"
#import "Note.h"
#import "NoteBL.h"

@interface NoteBLTests : GHTestCase {

}

@property (nonatomic,strong) NSDateFormatter * dateFormatter;
@property (nonatomic,strong) NoteBL * bl;

@property (nonatomic,strong) NSString* theContent;
@property (nonatomic,strong) NSDate* theDate;

@end
```

```
@implementation NoteBLTests
```

```
- (void)setUpClass {  
    self.dateFormatter = [[NSDateFormatter alloc] init];  
    [self.dateFormatter setDateFormat:@"yyyy-MM-dd HH:mm:ss"];  
  
    self.bl = [[NoteBL alloc] init];  
  
    self.theContent = @"welcome www.51work6.com";  
    self.theDate = [self.dateFormatter dateFromString:@"2000-06-03  
08:20:38"];  
}  
  
- (void)tearDownClass {  
    self.dateFormatter = nil;  
    self.bl = nil;  
}  
  
- (void)setUp { }  
  
- (void)tearDown { }
```

测试create方法

```
//测试 插入Note方法
-(void) testCreateNote
{
    //创建Note对象
    Note *note = [[Note alloc] init];
    note.date = self.theDate;
    note.content = self.theContent;

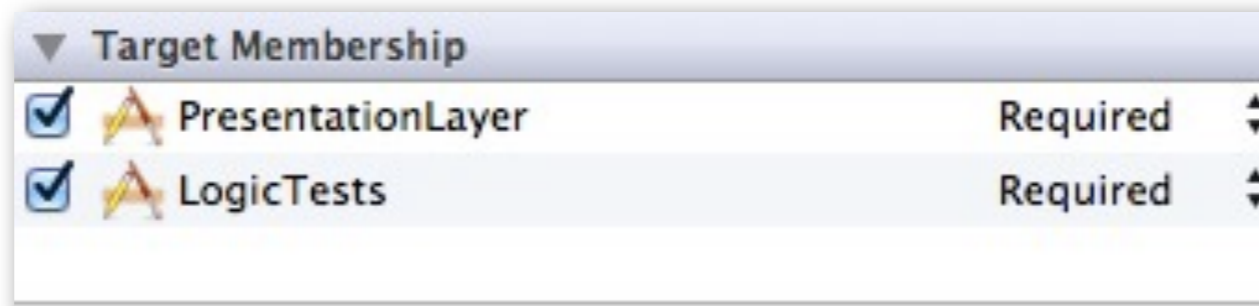
    NSArray* list = [self.bl createNote:note];
    //断言 查询记录数为1
    GHAssertTrue([list count] == 1, @"查询记录数期望值为: 1 实际值为: %i", [list
count]);
}
```

测试表示层

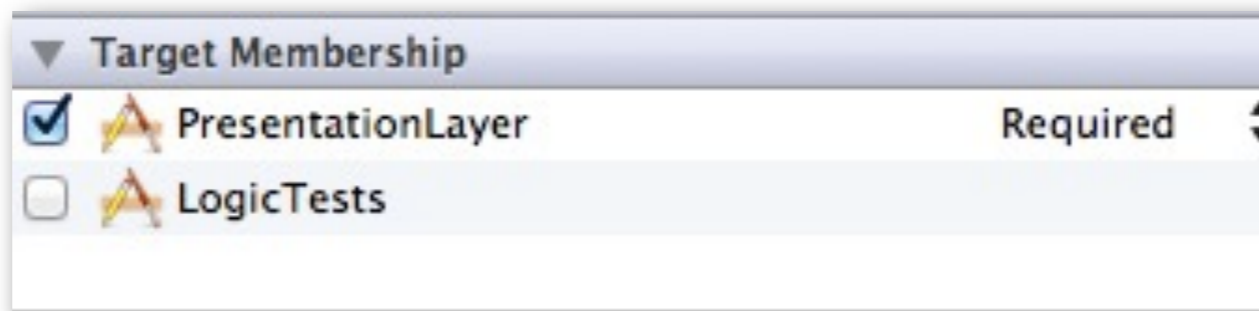
环境的配置

逻辑测试的Target

逻辑测试的Target会用于GHUnit和OCMock



libBusinessLogicLayer.a设置Target Membership

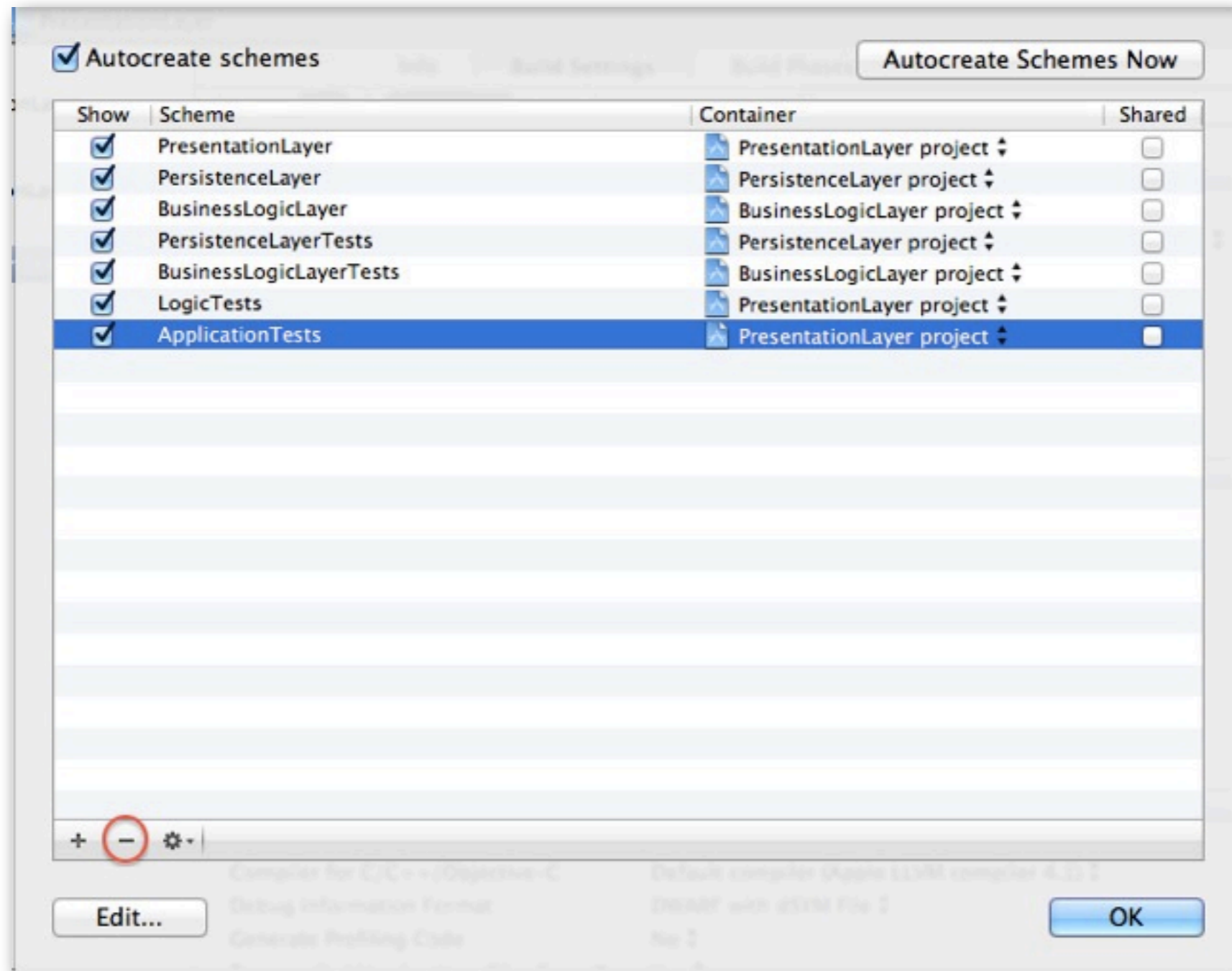


libPersistenceLayer.a设置Target Membership

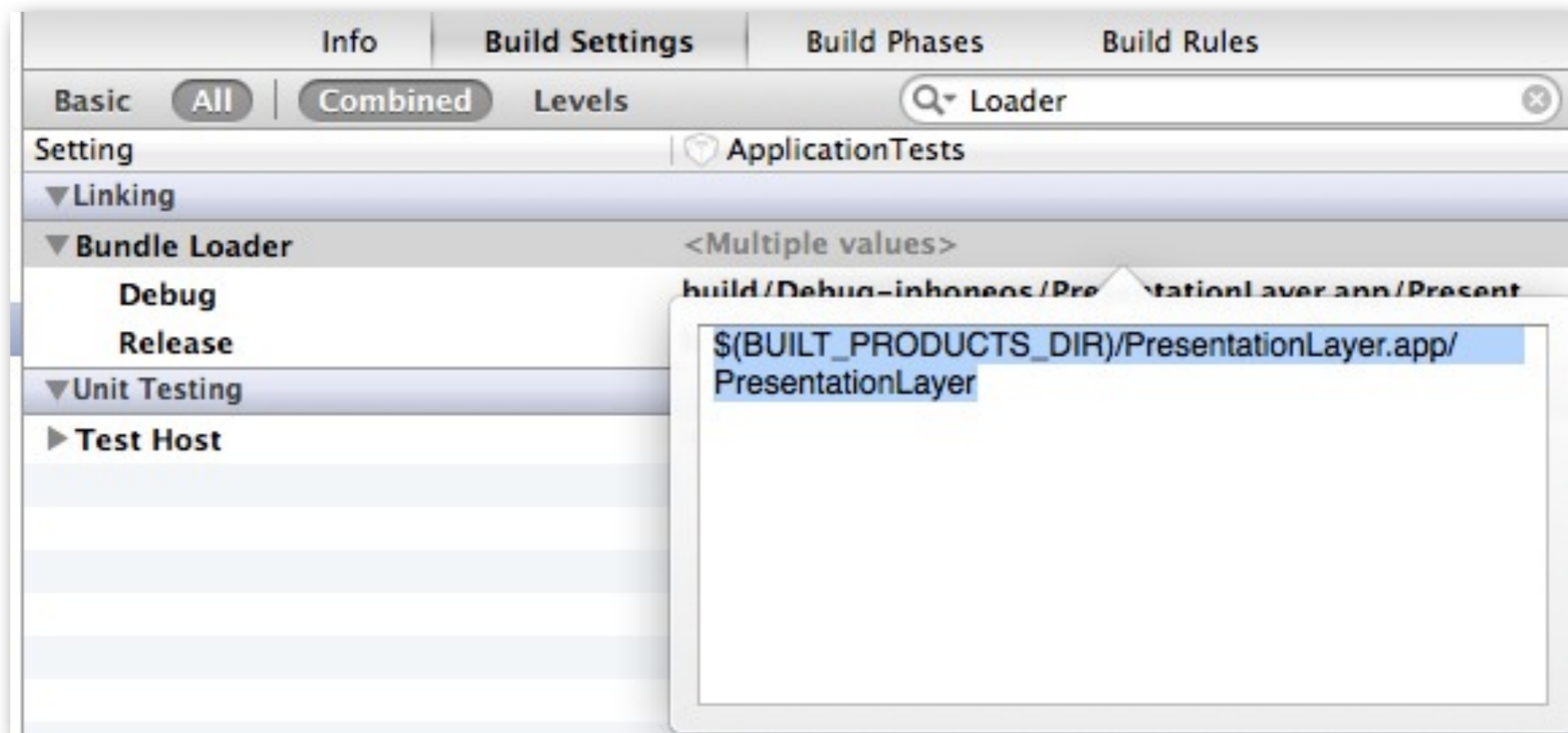
应用测试的Target

应用测试不能使用GJUnit，所以我们只需要添加OCMock到MyNotesWorkspace的工程PresentationLayer中。

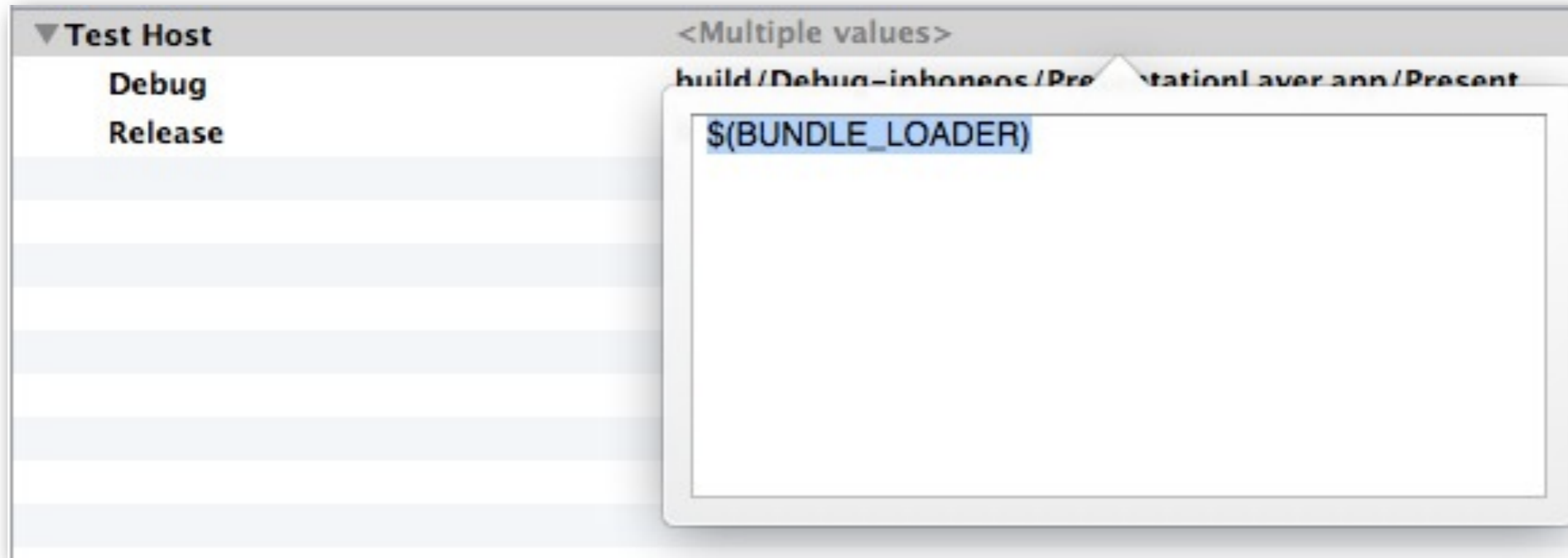
逻辑测试升级为应用测试



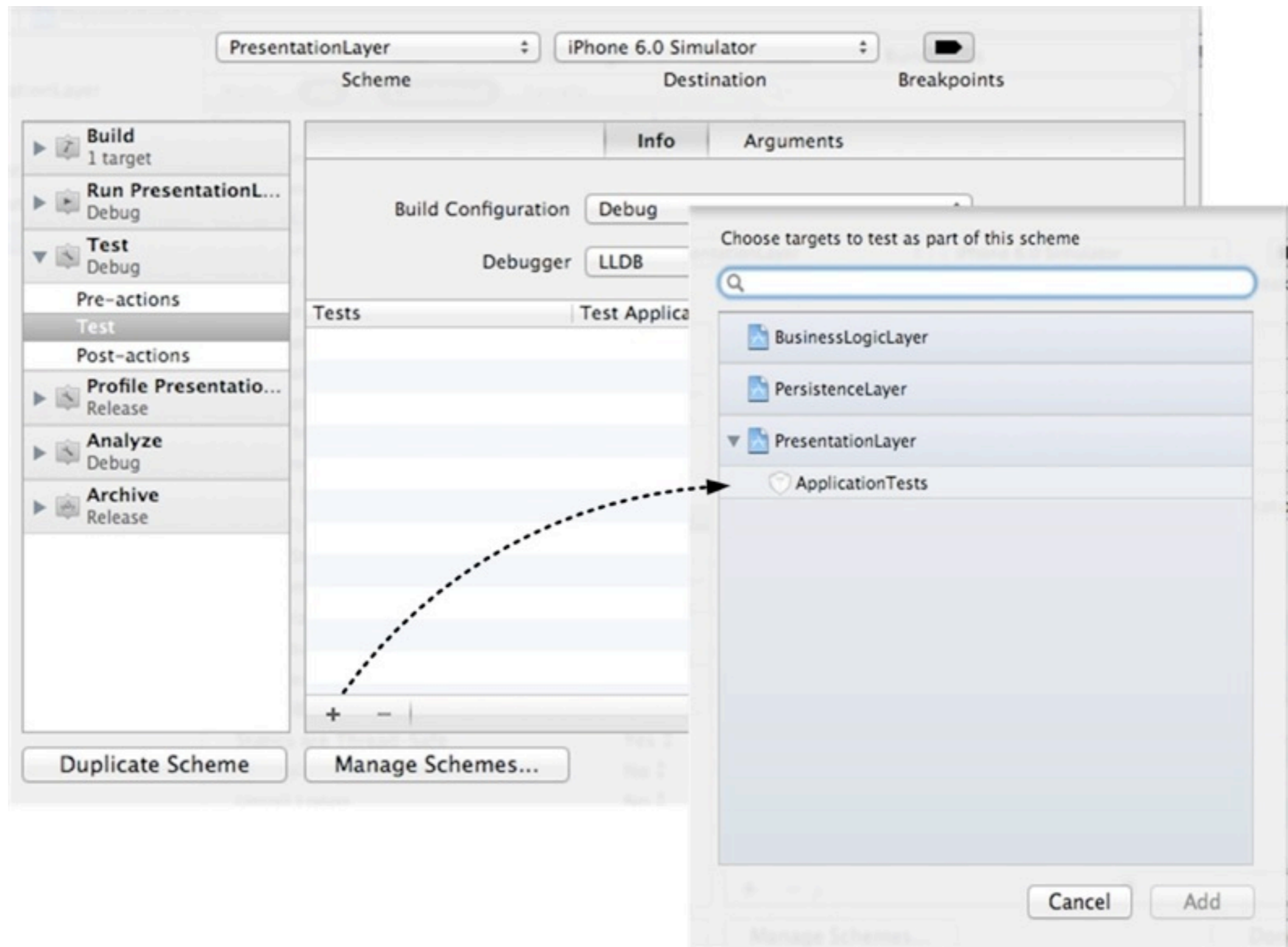
Scheme管理对话框



修改编译参数Bundle Loader



修改编译参数Test Host



修改PresentationLayer Scheme

应用测试

ApplicationTests

```
#import <SenTestingKit/SenTestingKit.h>
#import <OCMock/OCMock.h>
#import "MasterViewController.h"
#import "DetailViewController.h"
#import "Note.h"
#import "AppDelegate.h"

@interface ApplicationTests : SenTestCase

@property (nonatomic, strong) MasterViewController *masterViewController;

@end
```

```

- (void)setUp {
    [super setUp];
    AppDelegate *appDelegate = [[UIApplication sharedApplication] delegate];
    UIWindow *window = [appDelegate window];

    UINavigationController *navController
        = (UINavigationController*)window.rootViewController;
    self.masterViewController
        = (MasterViewController*)navController.topViewController;
    //准备测试数据
    NSDateFormatter* dateFormatter = [[NSDateFormatter alloc] init];
    [dateFormatter setDateFormat:@"yyyy-MM-dd HH:mm:ss"];
    //插入测试数据 cdate=2000-06-03 08:20:38 , content=welcome www.51work6.com
    NSString *theContent = @"welcome www.51work6.com";
    NSDate* theDate = [dateFormatter dateFromString:@"2000-06-03 08:20:38"];
    //创建Note对象
    Note *note = [[Note alloc] init];
    note.date = theDate;
    note.content = theContent;
    [[NoteDAO sharedManager] create:note];
    //插入测试数据 cdate=2001-06-03 08:20:38 , content=www.51work6.com
    theContent = @"www.51work6.com";
    theDate = [dateFormatter dateFromString:@"2001-06-03 08:20:38"];
    //创建Note对象
    note = [[Note alloc] init];
    note.date = theDate;
    note.content = theContent;
    [[NoteDAO sharedManager] create:note];
}

```

```
- (void)tearDown
{
    [super tearDown];

    //删除测试数据
    NSArray* list = [[NoteDAO sharedInstance] findAll];
    for (Note* note in list) {
        [[NoteDAO sharedInstance] remove:note];
    }
}
```


测试方法testInitViewController

```
- (void)testInitViewController
{
    //断言 MasterViewController非空
    XCTAssertNotNil(self.masterViewController, @"MasterViewController非空");
    //断言 MasterViewController中listData属性非空
    XCTAssertNotNil(self.masterViewController.listData,
@"MasterViewController中listData属性非空");
    //断言 MasterViewController中bl属性非空
    XCTAssertNotNil(self.masterViewController.bl, @"MasterViewController中bl属
性非空");
}
```

测试方法testMasterViewControllerReturnsCorrectNumberOfRows

```
- (void)testMasterViewControllerReturnsCorrectNumberOfRows
{
    [self.masterViewController.tableView reloadData];
    //断言 表视图返回行数为2
    STAssertEquals(2,
        [self.masterViewController tableView:nil numberOfRowsInSection:0],
        @"应该返回行数为2");
}
```

测试方法testMasterViewControllerTableViewCanEditRowAtIndexPath

```
- (void)testMasterViewControllerTableViewCanEditRowAtIndexPath
{
    //断言 表视图返回行数为2
    STAssertTrue([self.masterViewController tableView:nil
                  canEditRowAtIndexPath:nil], @"应该返回True");
}
```

测试方法testMasterViewControllerReturnsTableViewCell

```
- (void)testMasterViewControllerReturnsTableViewCell
{
    NSIndexPath *indexPath = [NSIndexPath indexPathForRow:0 inSection:0];

    UITableViewCell *cell = [self.masterViewController
tableView:self.masterViewController.tableView
                      cellForRowAtIndexPath:indexPath];

    //断言 单元格应该返回非空
    XCTAssertNotNil(cell, @"单元格应该返回非空");
    //断言 标签为非空
    XCTAssertEqualObjects(@"welcome www.51work6.com", cell.textLabel.text, @"标
签为非空");
}
```

测试方法testPrepareForSegue

```
- (void)testPrepareForSegue {
    id mockDetailViewController
        = [OCMockObject mockForClass:[DetailViewController class]];
    id mockStoryboardSegue
        = [OCMockObject mockForClass:[UIStoryboardSegue class]];

    [[[mockStoryboardSegue stub] andReturn:@"showDetail"] identifier];
    [[[mockStoryboardSegue stub] andReturn:mockDetailViewController]
        destinationViewController];
    NSIndexPath *indexPath = [NSIndexPath indexPathForRow:0 inSection:0];
    Note *note = self.masterViewController.listData[indexPath.row];
    [[mockDetailViewController expect] setDetailItem:note];
    [self.masterViewController.tableView
        selectRowAtIndexPath:indexPath animated:NO
        scrollPosition:UITableViewScrollPositionNone];
    [self.masterViewController prepareForSegue:mockStoryboardSegue
        sender:OCMOCK_ANY];

    //验证
    [mockStoryboardSegue verify];
    [mockDetailViewController verify];
}
```

逻辑测试

DetailViewControllerTests

```
#import <GHIOS/GHUnit.h>
#import <OCMock/OCMock.h>
#import "DetailViewController.h"
#import "NoteDAO.h"
#import "Note.h"

@interface DetailViewControllerTests : GHTestCase {
}

@property (nonatomic, strong) NSDateFormatter * dateFormatter;

@property (nonatomic, strong) NSString* theContent;
@property (nonatomic, strong) NSDate* theDate;

@end
```

@implementation DetailViewControllerTests

```
- (void)setUpClass {
    self.dateFormatter = [[NSDateFormatter alloc] init];
    [self.dateFormatter setDateFormat:@"yyyy-MM-dd HH:mm:ss"];

    self.theContent = @"welcome www.51work6.com";
    self.theDate = [self.dateFormatter dateFromString:@"2000-06-03
08:20:38"];
}
- (void)tearDownClass {
    self.dateFormatter = nil;
    self.theContent= nil;
    self.theDate= nil;
}
- (void)setUp { }
- (void)tearDown { }
```



```

//测试 setDetailItem方法
-(void) testSetDetailItem
{
    DetailViewController *detailViewController = [[DetailViewController
alloc] init];

    id mockDetailDescriptionLabel = [OCMockObject mockForClass:[UILabel
class]];

    detailViewController.detailDescriptionLabel =
mockDetailDescriptionLabel;

    [[[mockDetailDescriptionLabel stub] andReturn:self.theContent] text];

    //创建Note对象
    Note *note = [[Note alloc] init];
    note.date = self.theDate;
    note.content = self.theContent;

    [[[mockDetailDescriptionLabel expect] setText:self.theContent];

    [detailViewController setDetailItem:note];
    //验证
    [mockDetailDescriptionLabel verify];
}
@end

```

AddViewControllerTests

```
#import <GHUnitIOS/GHUnit.h>
#import <OCMock/OCMock.h>
#import "AddViewController.h"
#import "NoteDAO.h"
#import "Note.h"

@interface AddViewControllerTests : GHTestCase {
}

@property (nonatomic, strong) NSDateFormatter * dateFormatter;

@property (nonatomic, strong) NSString* theContent;
@property (nonatomic, strong) NSDate* theDate;

@end
```

```
//测试 onclickSave方法
-(void) testOnClickSave
{
    AddViewController *addViewController = [[AddViewController alloc] init];

    id mockTextView = [OCMockObject mockForClass:[UITextView class]];
    addViewController.txtView = mockTextView;
    [[[mockTextView stub] andReturn:@"welcome www.51work6.com"] text];
    [[mockTextView expect] resignFirstResponder];

    //测试 通知
    id mock = [OCMockObject observerMock];
    [[NSNotificationCenter defaultCenter] addMockObserver:mock
                                         name:@"reloadViewNotification" object:nil];
    [[mock expect] notificationWithName:@"reloadViewNotification"
                                     object:OCMOCK_ANY userInfo:OCMOCK_ANY];

    [addViewController onclickSave:OCMOCK_ANY];

    //验证
    [mockTextView verify];
    [mock verify];

    [[NSNotificationCenter defaultCenter] removeObserver:mock];
}
```

```
-(void)testTextView
{
    AddViewController *addViewController = [[AddViewController alloc] init];
    id mockTextView = [OCMockObject mockForClass:[UITextView class]];

    [[mockTextView expect] resignFirstResponder];
    BOOL res = [addViewController textView:mockTextView
                shouldChangeTextInRange:NSMakeRange(0,0) replacementText:@"\n"];

    GHAssertFalse(res,@"输入回车符号");

    [mockTextView verify];
}
@end
```

谢谢