

```
1. //
2. // HelloLabelAppDelegate.h
3. // HelloLabel
4. //
5. // David J. Malan
6. // Harvard University
7. // dmalan@harvard.edu
8. //
9. // Demonstrates a Window-based Application with a UILabel.
10. //
11.
12. #import <UIKit/UIKit.h>
13.
14. @interface HelloLabelAppDelegate : NSObject <UIApplicationDelegate> {
15. }
16.
17. @property (nonatomic, retain) IBOutlet UIWindow *window;
18.
19. @end
```

```
1. //
2. //  HelloLabelAppDelegate.m
3. //  HelloLabel
4. //
5. //  David J. Malan
6. //  Harvard University
7. //  dmalan@harvard.edu
8. //
9. //  Demonstrates a Window-based Application with a UILabel.
10. //
11.
12. #import "HelloLabelAppDelegate.h"
13.
14. @implementation HelloLabelAppDelegate
15.
16. @synthesize window=_window;
17.
18. - (BOOL)application:(UIApplication *)application didFinishLaunchingWithOptions:(NSDictionary *)launchOptions
19. {
20.     [self.window makeKeyAndVisible];
21.     return YES;
22. }
23.
24. - (void)dealloc
25. {
26.     [_window release];
27.     [super dealloc];
28. }
29.
30. @end
```

```
1. //
2. // LeakyAppDelegate.h
3. // Leaky
4. //
5. // David J. Malan
6. // Harvard University
7. // dmalan@harvard.edu
8. //
9. // Demonstrates memory leak.
10. //
11.
12. #import <UIKit/UIKit.h>
13.
14. @class LeakyViewController;
15.
16. @interface LeakyAppDelegate : NSObject <UIApplicationDelegate> {
17. }
18.
19. @property (nonatomic, retain) IBOutlet LeakyViewController *viewController;
20. @property (nonatomic, retain) IBOutlet UIWindow *window;
21.
22. @end
```

```
1. //
2. // LeakyAppDelegate.m
3. // Leaky
4. //
5. // David J. Malan
6. // Harvard University
7. // dmalan@harvard.edu
8. //
9. // Demonstrates memory leak.
10. //
11.
12. #import "LeakyAppDelegate.h"
13. #import "LeakyViewController.h"
14.
15. @implementation LeakyAppDelegate
16.
17. @synthesize viewController=_viewController;
18. @synthesize window=_window;
19.
20. - (BOOL)application:(UIApplication *)application didFinishLaunchingWithOptions:(NSDictionary *)launchOptions
21. {
22.     self.window.rootViewController = self.viewController;
23.     [self.window makeKeyAndVisible];
24.     return YES;
25. }
26.
27. - (void)dealloc
28. {
29.     [_viewController release];
30.     [_window release];
31.     [super dealloc];
32. }
33.
34. @end
```

```
1. //
2. // LeakyViewController.h
3. // Leaky
4. //
5. // David J. Malan
6. // Harvard University
7. // dmalan@harvard.edu
8. //
9. // Demonstrates memory leak.
10. //
11.
12. #import <UIKit/UIKit.h>
13.
14. @interface LeakyViewController : UIViewController {
15. }
16.
17. - (IBAction)press:(id)sender;
18.
19. @end
```

```
1. //
2. // LeakyViewController.m
3. // Leaky
4. //
5. // David J. Malan
6. // Harvard University
7. // dmalan@harvard.edu
8. //
9. // Demonstrates memory leak.
10. //
11.
12. #import "LeakyViewController.h"
13.
14. @implementation LeakyViewController
15.
16. - (IBAction)press:(id)sender
17. {
18.     // log how many times button's been pressed
19.     static int n = 0;
20.     NSString *s = [[NSString alloc] initWithFormat:@"%d", n];
21.     NSLog(@"%@", s);
22.     n++;
23. }
24.
25. @end
```

```
1. //
2. //  Controller.h
3. //  Nib1
4. //
5. //  David J. Malan
6. //  Harvard University
7. //  dmalan@harvard.edu
8. //
9. //  Demonstrates a Window-based Application implemented with a nib, plus IBAction and IBOutlet.
10. //
11.
12. #import <Foundation/Foundation.h>
13.
14. @interface Controller : NSObject {
15. }
16.
17. @property (nonatomic, retain) IBOutlet UITextField *textField;
18.
19. - (IBAction)done:(id)sender;
20. - (IBAction)go:(id)sender;
21.
22. @end
```

```
1. //
2. // Controller.m
3. // Nib1
4. //
5. // David J. Malan
6. // Harvard University
7. // dmalan@harvard.edu
8. //
9. // Demonstrates a Window-based Application implemented with a nib, plus IBAction and IBOutlet.
10. //
11.
12. #import "Controller.h"
13.
14. @implementation Controller
15.
16. @synthesize textField=_textField;
17.
18. - (IBAction)done:(id)sender
19. {
20.     // hide keyboard
21.     [sender resignFirstResponder];
22. }
23.
24. - (IBAction)go:(id)sender
25. {
26.     // hide keyboard
27.     [self.textField resignFirstResponder];
28.
29.     // show alert
30.     NSString *s = [NSString stringWithFormat:@"Hello, %@", self.textField.text];
31.     UIAlertView *alert = [[UIAlertView alloc] initWithTitle:@"Hello"
32.                                     message:s
33.                                     delegate:nil
34.                                     cancelButtonTitle:@"Thanks!"
35.                                     otherButtonTitles:nil];
36.     [alert show];
37.     [alert release];
38. }
39.
40. - (void)dealloc
41. {
42.     [_textField release];
43.     [super dealloc];
44. }
45.
46. @end
```



```
1. //
2. //  Nib1AppDelegate.h
3. //  Nib1
4. //
5. //  David J. Malan
6. //  Harvard University
7. //  dmalan@harvard.edu
8. //
9. //  Demonstrates a Window-based Application implemented with a nib, plus IBAction and IBOutlet.
10. //
11.
12. #import <UIKit/UIKit.h>
13. #import "Controller.h"
14.
15. @interface Nib1AppDelegate : NSObject <UIApplicationDelegate> {
16. }
17.
18. @property (nonatomic, retain) IBOutlet Controller *controller;
19. @property (nonatomic, retain) IBOutlet UIWindow *window;
20.
21. @end
```

```
1. //
2. //  Nib1AppDelegate.m
3. //  Nib1
4. //
5. //  David J. Malan
6. //  Harvard University
7. //  dmalan@harvard.edu
8. //
9. //  Demonstrates a Window-based Application implemented with a nib, plus IBAction and IBOutlet.
10. //
11.
12. #import "Nib1AppDelegate.h"
13.
14. @implementation Nib1AppDelegate
15.
16. @synthesize controller=_controller;
17. @synthesize window=_window;
18.
19. - (BOOL)application:(UIApplication *)application didFinishLaunchingWithOptions:(NSDictionary *)launchOptions
20. {
21.     [self.window makeKeyAndVisible];
22.     return YES;
23. }
24.
25. - (void)dealloc
26. {
27.     [_controller release];
28.     [_window release];
29.     [super dealloc];
30. }
31.
32. @end
```

```
1. //
2. // Controller.h
3. // Nib2
4. //
5. // David J. Malan
6. // Harvard University
7. // dmalan@harvard.edu
8. //
9. // Demonstrates a Window-based Application implemented with a nib, plus
10. // UIAlertViewDelegate and reuse of IBAction.
11. //
12.
13. #import <Foundation/Foundation.h>
14.
15. @interface Controller : NSObject <UIAlertViewDelegate> {
16. }
17.
18. @property (nonatomic, retain) IBOutlet UITextField *textField;
19.
20. - (void)alertView:(UIAlertView *)alertView didDismissWithButtonIndex:(NSInteger)buttonIndex;
21. - (IBAction)go:(id)sender;
22.
23. @end
```

```
1. //
2. // Controller.m
3. // Nib2
4. //
5. // David J. Malan
6. // Harvard University
7. // dmalan@harvard.edu
8. //
9. // Demonstrates a Window-based Application implemented with a nib, plus
10. // UIAlertViewDelegate and reuse of IBAction.
11. //
12.
13. #import "Controller.h"
14.
15. @implementation Controller
16.
17. @synthesize textField=_textField;
18.
19. - (void)alertView:(UIAlertView *)alertView didDismissWithButtonIndex:(NSInteger)buttonIndex
20. {
21.     // clear text field
22.     self.textField.text = nil;
23. }
24.
25. - (IBAction)go:(id)sender
26. {
27.     // hide keyboard
28.     [self.textField resignFirstResponder];
29.
30.     // show alert
31.     NSString *s = [NSString stringWithFormat:@"Hello, %@", self.textField.text];
32.     UIAlertView *alert = [[UIAlertView alloc] initWithTitle:@"Hello"
33.                                                             message:s
34.                                                             delegate:self
35.             cancelButtonTitle:@"Thanks!"
36.             otherButtonTitles:nil];
37.     [alert show];
38.     [alert release];
39. }
40.
41. - (void)dealloc
42. {
43.     [_textField release];
44.     [super dealloc];
45. }
46.
47. @end
```

```
1. //
2. //  Nib2AppDelegate.h
3. //  Nib2
4. //
5. //  David J. Malan
6. //  Harvard University
7. //  dmalan@harvard.edu
8. //
9. //  Demonstrates a Window-based Application implemented with a nib, plus
10. //  UIAlertViewDelegate and reuse of IBAction.
11. //
12.
13. #import <UIKit/UIKit.h>
14. #import "Controller.h"
15.
16. @interface Nib2AppDelegate : NSObject <UIApplicationDelegate> {
17. }
18.
19. @property (nonatomic, retain) IBOutlet Controller *controller;
20. @property (nonatomic, retain) IBOutlet UIWindow *window;
21.
22. @end
```

```
1. //
2. // Nib2AppDelegate.m
3. // Nib2
4. //
5. // David J. Malan
6. // Harvard University
7. // dmalan@harvard.edu
8. //
9. // Demonstrates a Window-based Application implemented with a nib, plus
10. // UIAlertViewDelegate and reuse of IBAction.
11. //
12.
13. #import "Nib2AppDelegate.h"
14.
15. @implementation Nib2AppDelegate
16.
17. @synthesize controller=_controller;
18. @synthesize window=_window;
19.
20. - (BOOL)application:(UIApplication *)application didFinishLaunchingWithOptions:(NSDictionary *)launchOptions
21. {
22.     [self.window makeKeyAndVisible];
23.     return YES;
24. }
25.
26. - (void)dealloc
27. {
28.     [_controller release];
29.     [_window release];
30.     [super dealloc];
31. }
32.
33. @end
```

```
1. //
2. //  Controller.h
3. //  NoNib
4. //
5. //  David J. Malan
6. //  Harvard University
7. //  dmalan@harvard.edu
8. //
9. //  Demonstrates a Window-based Application implemented programmatically.
10. //
11.
12. #import <Foundation/Foundation.h>
13.
14. @interface Controller : NSObject <UIAlertViewDelegate> {
15. }
16.
17. @property (nonatomic, retain) UITextField *textField;
18. @property (nonatomic, retain) UIView *view;
19.
20. - (void)alertView:(UIAlertView *)alertView didDismissWithButtonIndex:(NSInteger)buttonIndex;
21. - (void)go:(id)sender;
22.
23. @end
```

```
1. //
2. // Controller.m
3. // NoNib
4. //
5. // David J. Malan
6. // Harvard University
7. // dmalan@harvard.edu
8. //
9. // Demonstrates a Window-based Application implemented programmatically.
10. //
11.
12. #import "Controller.h"
13.
14. @implementation Controller
15.
16. @synthesize textField=_textField;
17. @synthesize view=_view;
18.
19. - (id)init
20. {
21.     // create view
22.     self.view = [[UIView alloc] initWithFrame:[UIScreen mainScreen].applicationFrame];
23.
24.     // create text field
25.     CGRect frame = CGRectMake(20, 20, 280, 31);
26.     self.textField = [[UITextField alloc] initWithFrame:frame];
27.     self.textField.autocapitalizationType = UITextAutocapitalizationTypeWords;
28.     self.textField.autocorrectionType = UITextAutocorrectionTypeNo;
29.     self.textField.borderStyle = UITextBorderStyleRoundedRect;
30.     self.textField.contentVerticalAlignment = UIControlContentVerticalAlignmentCenter;
31.     self.textField.font = [UIFont systemFontOfSize:[UIFont systemFontOfSize]];
32.     self.textField.placeholder = @"Name";
33.     self.textField.returnKeyType = UIReturnKeyGo;
34.
35.     // listen for Did End on Exit
36.     [self.textField addTarget:self action:@selector(go:) forControlEvents:UIControlEventEditingDidEndOnExit];
37.
38.     // add text field to view
39.     [self.view addSubview:self.textField];
40.
41.     // create button
42.     frame = CGRectMake(124, 59, 72, 37);
43.     UIButton *button = [UIButton buttonWithType:UIButtonTypeRoundedRect];
44.     button.frame = frame;
45.     [button setTitle:@"Go" forState:UIControlStateNormal];
46.
47.     // listen for Touch Up Inside
48.     [button addTarget:self action:@selector(go:) forControlEvents:UIControlEventTouchUpInside];
```



```
49.
50.     // add button to view
51.     [self.view addSubview:button];
52.
53.     return self;
54. }
55.
56. - (void)alertView:(UIAlertView *)alertView didDismissWithButtonIndex:(NSInteger)buttonIndex
57. {
58.     // clear text field
59.     self.textField.text = nil;
60. }
61.
62. - (void)go:(id)sender
63. {
64.     // hide keyboard
65.     [self.textField resignFirstResponder];
66.
67.     // show alert
68.     NSString *s = [NSString stringWithFormat:@"Hello, %@", self.textField.text];
69.     UIAlertView *alert = [[UIAlertView alloc] initWithTitle:@"Hello"
70.                                                            message:s
71.                                                            delegate:self
72.                   cancelButtonTitle:@"Thanks!"
73.                   otherButtonTitles:nil];
74.     [alert show];
75.     [alert release];
76. }
77.
78. - (void)dealloc
79. {
80.     [_textField release];
81.     [_view release];
82.     [super dealloc];
83. }
84.
85. @end
```

```
1. //
2. //  NoNibAppDelegate.h
3. //  NoNib
4. //
5. //  David J. Malan
6. //  Harvard University
7. //  dmalan@harvard.edu
8. //
9. //  Demonstrates a Window-based Application implemented programmatically.
10. //
11.
12. #import <UIKit/UIKit.h>
13. #import "Controller.h"
14.
15. @interface NoNibAppDelegate : NSObject <UIApplicationDelegate> {
16. }
17.
18. @property (nonatomic, retain) Controller *controller;
19. @property (nonatomic, retain) IBOutlet UIWindow *window;
20.
21. @end
```

```
1. //
2. //  NoNibAppDelegate.m
3. //  NoNib
4. //
5. //  David J. Malan
6. //  Harvard University
7. //  dmalan@harvard.edu
8. //
9. //  Demonstrates a Window-based Application implemented programmatically.
10. //
11.
12. #import "Controller.h"
13. #import "NoNibAppDelegate.h"
14.
15. @implementation NoNibAppDelegate
16.
17. @synthesize controller=_controller;
18. @synthesize window=_window;
19.
20. - (BOOL)application:(UIApplication *)application didFinishLaunchingWithOptions:(NSDictionary *)launchOptions
21. {
22.     self.controller = [[Controller alloc] init];
23.     [self.window addSubview:self.controller.view];
24.     [self.window makeKeyAndVisible];
25.     return YES;
26. }
27.
28. - (void)dealloc
29. {
30.     [_controller release];
31.     [_window release];
32.     [super dealloc];
33. }
34.
35. @end
```

```
1. //
2. //  ViewControllerAppDelegate.h
3. //  ViewController
4. //
5. //  David J. Malan
6. //  Harvard University
7. //  dmalan@harvard.edu
8. //
9. //  Demonstrates a View-based Application implemented with two nibs, plus
10. //  UIAlertViewDelegate and reuse of IBAction.
11. //
12.
13. #import <UIKit/UIKit.h>
14.
15. @class ViewControllerViewController;
16.
17. @interface ViewControllerAppDelegate : NSObject <UIApplicationDelegate> {
18. }
19.
20. @property (nonatomic, retain) IBOutlet ViewControllerViewController *viewController;
21. @property (nonatomic, retain) IBOutlet UIWindow *window;
22.
23. @end
```

```
1. //
2. //  ViewControllerAppDelegate.m
3. //  ViewController
4. //
5. //  David J. Malan
6. //  Harvard University
7. //  dmalan@harvard.edu
8. //
9. //  Demonstrates a View-based Application implemented with two nibs, plus
10. //  UIAlertViewDelegate and reuse of IBAction.
11. //
12.
13. #import "ViewControllerAppDelegate.h"
14. #import "ViewControllerViewController.h"
15.
16. @implementation ViewControllerAppDelegate
17.
18. @synthesize viewController=_viewController;
19. @synthesize window=_window;
20.
21. - (BOOL)application:(UIApplication *)application didFinishLaunchingWithOptions:(NSDictionary *)launchOptions
22. {
23.     self.window.rootViewController = self.viewController;
24.     [self.window makeKeyAndVisible];
25.     return YES;
26. }
27.
28. - (void)dealloc
29. {
30.     [_viewController release];
31.     [_window release];
32.     [super dealloc];
33. }
34.
35. @end
```

```
1. //
2. //  ViewControllerViewController.h
3. //  ViewController
4. //
5. //  David J. Malan
6. //  Harvard University
7. //  dmalan@harvard.edu
8. //
9. //  Demonstrates a View-based Application implemented with two nibs, plus
10. //  UIAlertViewDelegate and reuse of IBAction.
11. //
12.
13. #import <UIKit/UIKit.h>
14.
15. @interface ViewControllerViewController : UIViewController <UIAlertViewDelegate> {
16. }
17.
18. @property (nonatomic, retain) IBOutlet UITextField *textField;
19.
20. - (void)alertView:(UIAlertView *)alertView didDismissWithButtonIndex:(NSInteger)buttonIndex;
21. - (IBAction)go:(id)sender;
22.
23. @end
```

```
1. //
2. // ViewControllerViewController.m
3. // ViewController
4. //
5. // David J. Malan
6. // Harvard University
7. // dmalan@harvard.edu
8. //
9. // Demonstrates a View-based Application implemented with two nibs, plus
10. // UIAlertViewDelegate and reuse of IBAction.
11. //
12.
13. #import "ViewControllerViewController.h"
14.
15. @implementation ViewControllerViewController
16.
17. @synthesize textField=_textField;
18.
19. - (void)alertView:(UIAlertView *)alertView didDismissWithButtonIndex:(NSInteger)buttonIndex
20. {
21.     // clear text field
22.     self.textField.text = nil;
23. }
24.
25. - (IBAction)go:(id)sender
26. {
27.     // hide keyboard
28.     [self.textField resignFirstResponder];
29.
30.     // show alert
31.     NSString *s = [NSString stringWithFormat:@"Hello, %@", self.textField.text];
32.     UIAlertView *alert = [[UIAlertView alloc] initWithTitle:@"Hello"
33.                                                             message:s
34.                                                             delegate:self
35.             cancelButtonTitle:@"Thanks!"
36.             otherButtonTitles:nil];
37.     [alert show];
38.     [alert release];
39. }
40.
41. - (BOOL)shouldAutorotateToInterfaceOrientation:(UIInterfaceOrientation)interfaceOrientation
42. {
43.     // support all orientations
44.     return YES;
45. }
46.
47. - (void)dealloc
48. {
```

```
49.     [_textField release];
50.     [super dealloc];
51. }
52.
53. @end
```