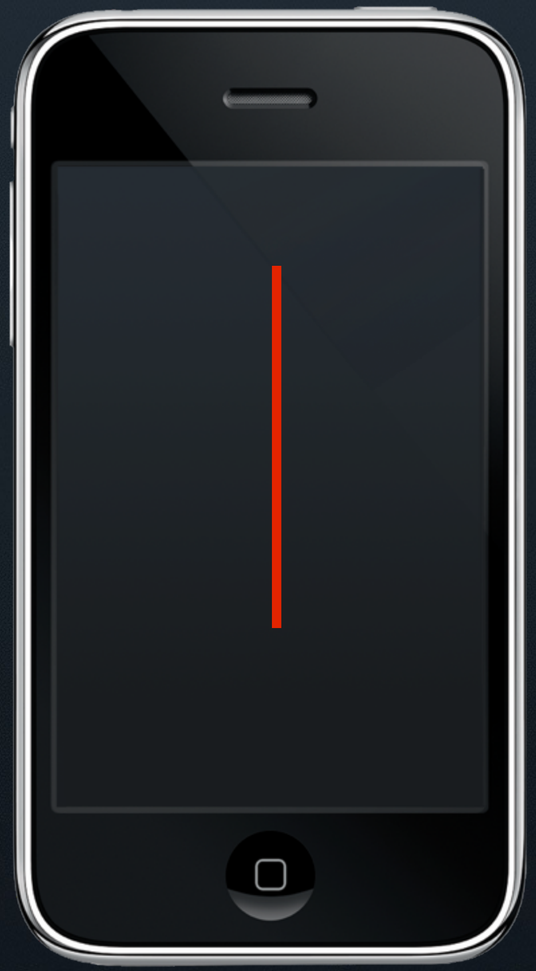
터치와 이벤트

하나의 터치 시퀀스



UITouch : NSObject

손가락 하나당 UITouch오브젝트 하나

```
@property(nonatomic,readonly) NSTimeInterval          timestamp;
@property(nonatomic,readonly) UITouchPhase             phase;
@property(nonatomic,readonly) NSUInteger              tapCount;

@property(notatomic,readonly,retain) UIWindow         *window;
@property(notatomic,readonly,retain) UIView           *view;
```

```
- (CGPoint)locationInView:(UIView *) view;
- (CGPoint)previousLocationInView:(UIView *) view;
```

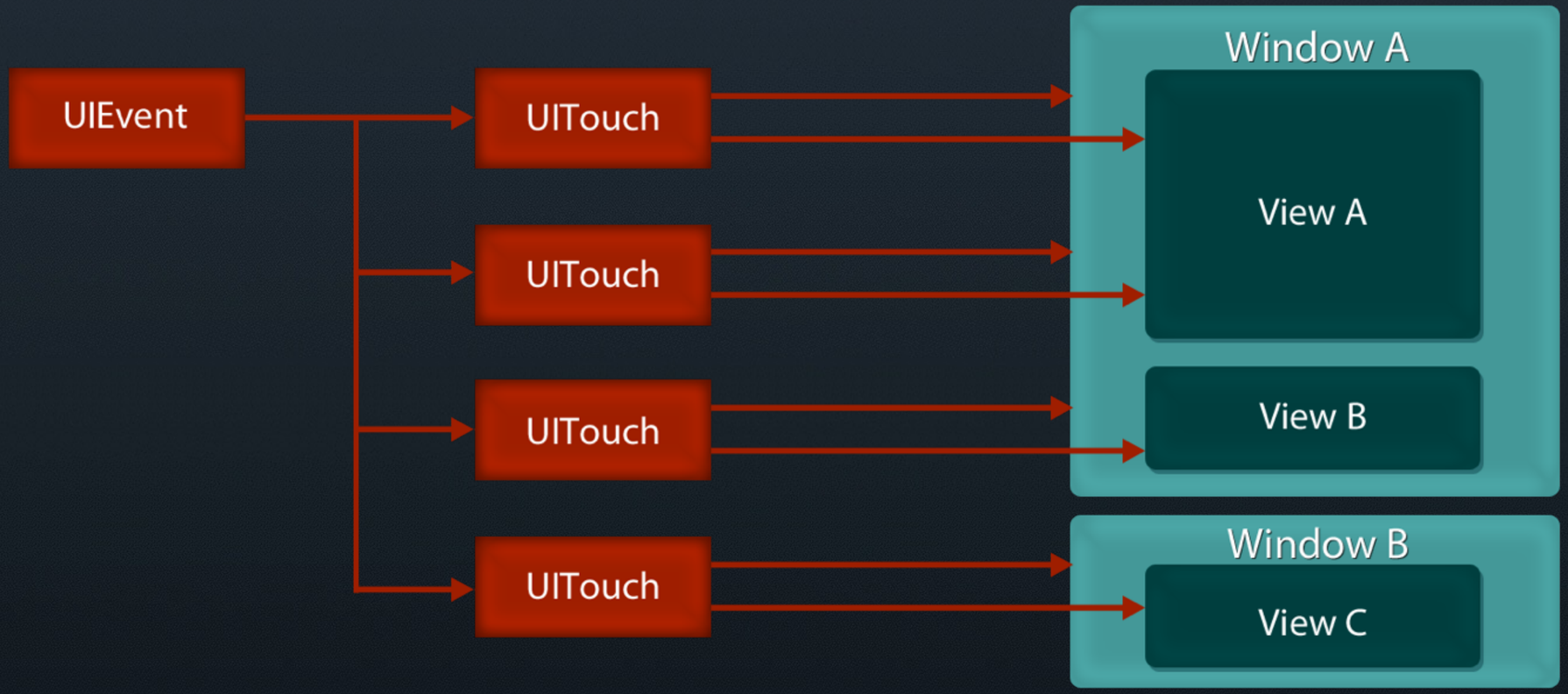
UIEvent : NSObject

모든 손가락을 알고 있는 컨테이너 클래스

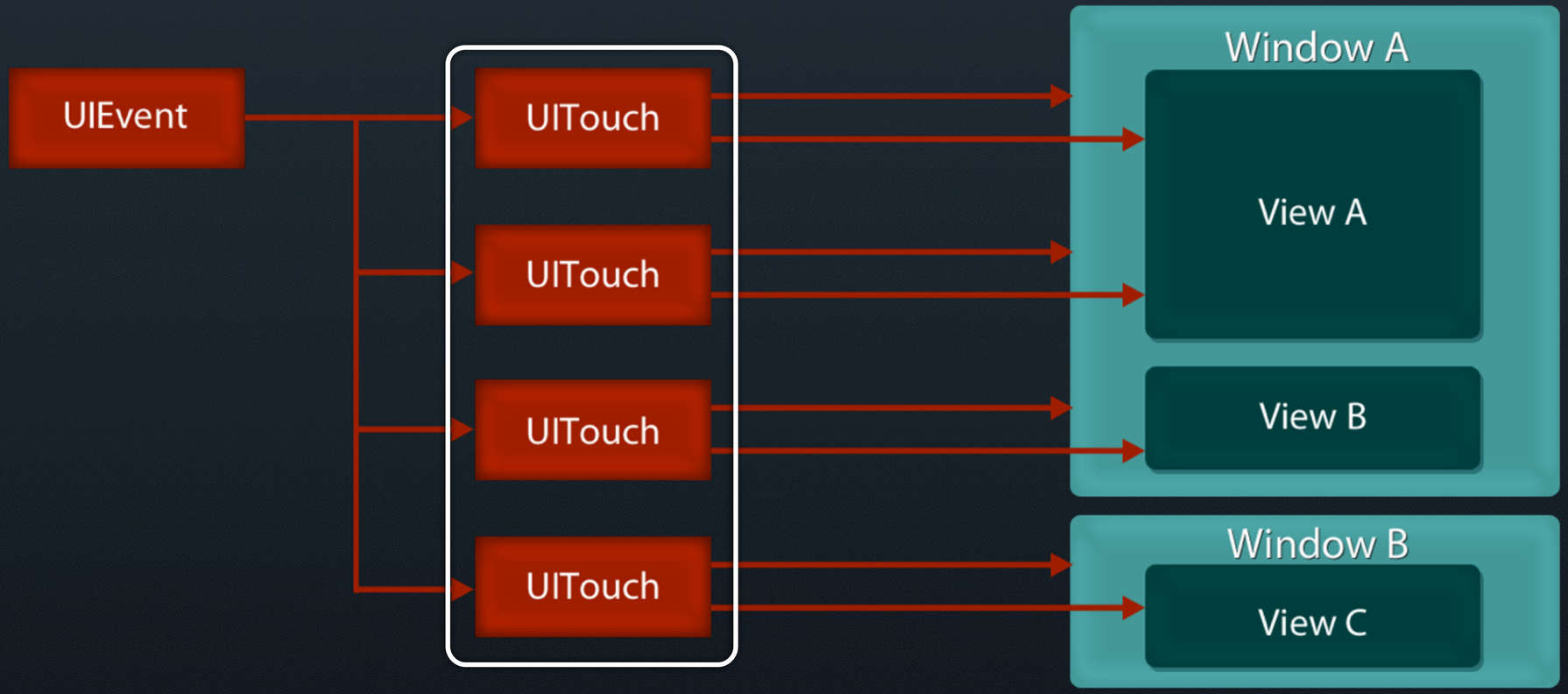
```
@property(nonatomic,readonly) NSTimeInterval          timestamp;
```

```
- (NSSet *) allTouches;
- (NSSet *) touchesForWindow:(UIWindow *)window;
- (NSSet *) touchesForView:(UIView *)view;
```

UIEvent

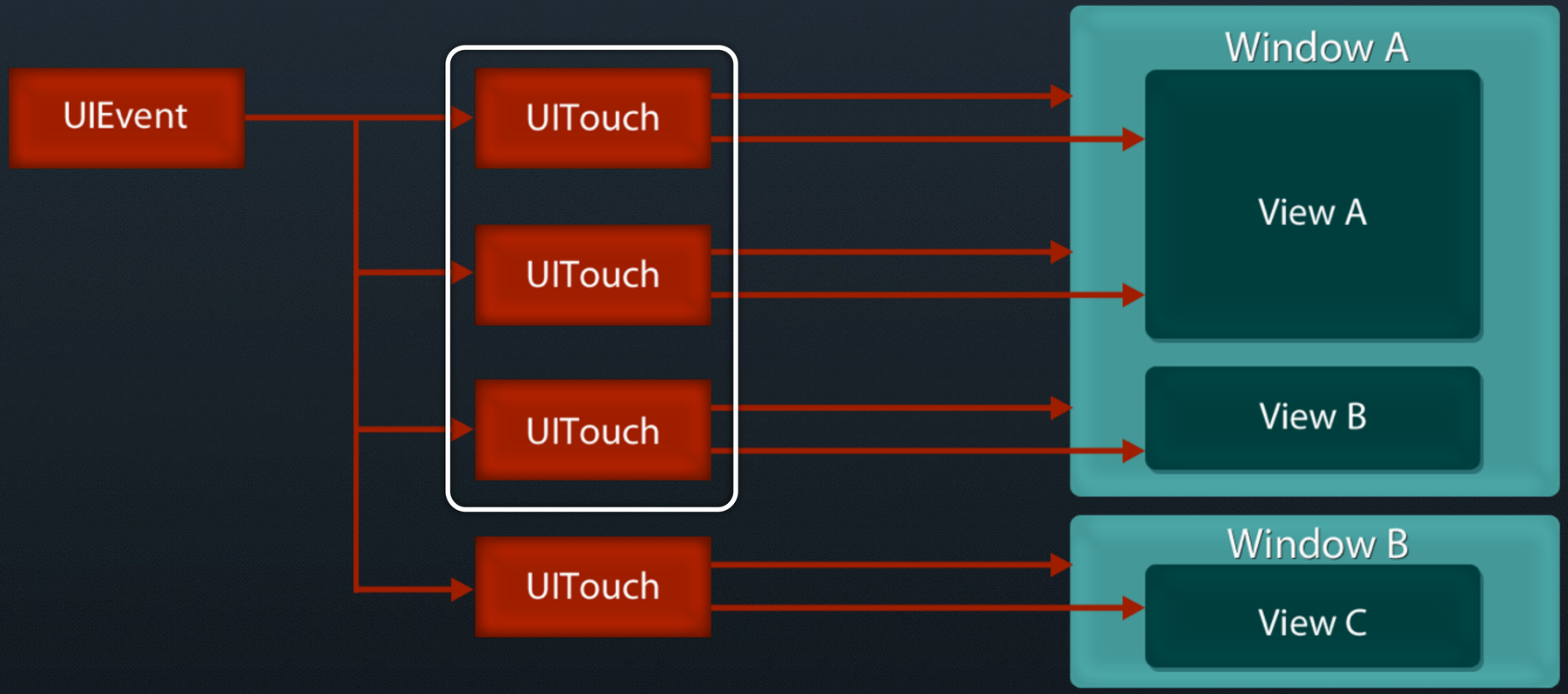

UIEvent
UITouch
UITouch
UITouch
UITouch
Window A
View A
View B
Window B
View C

UIEvent



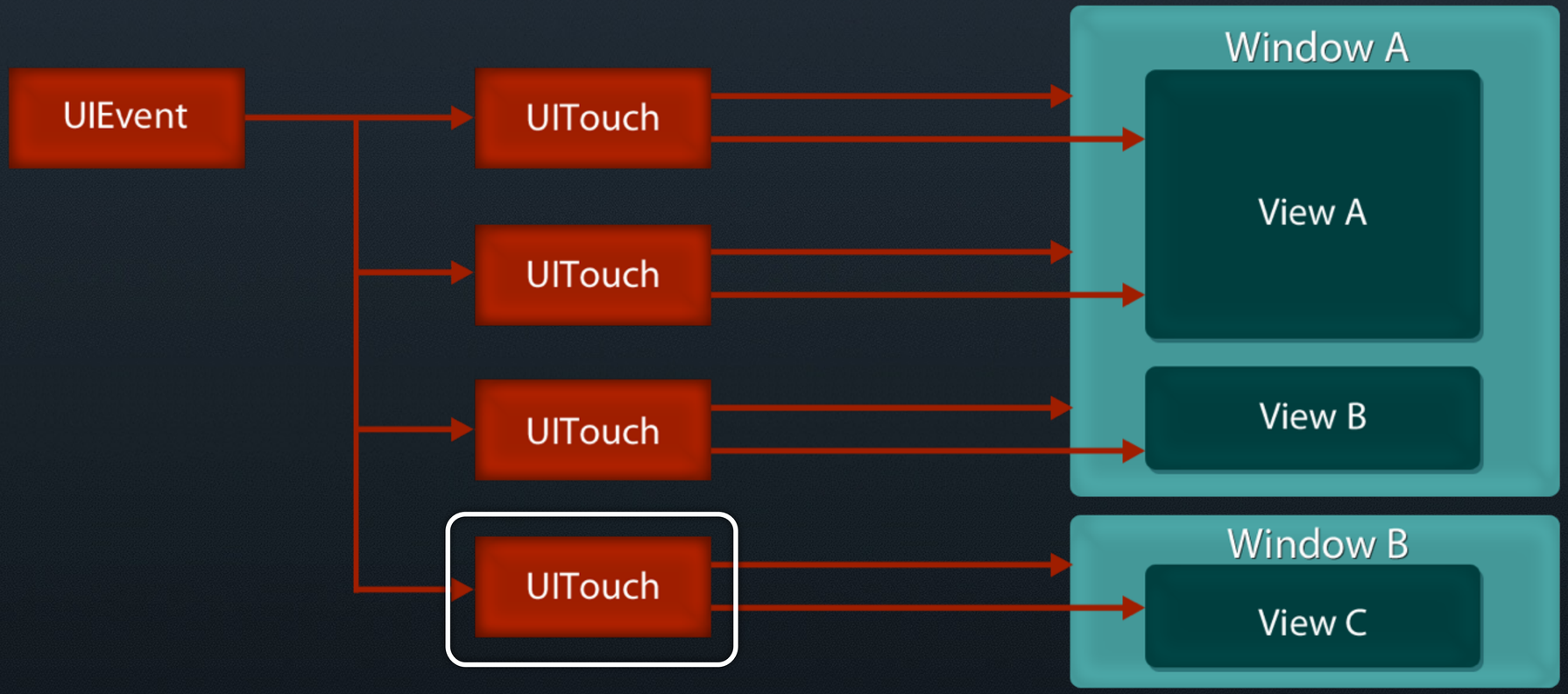

```
- (NSSet *)allTouches;
```

UIEvent



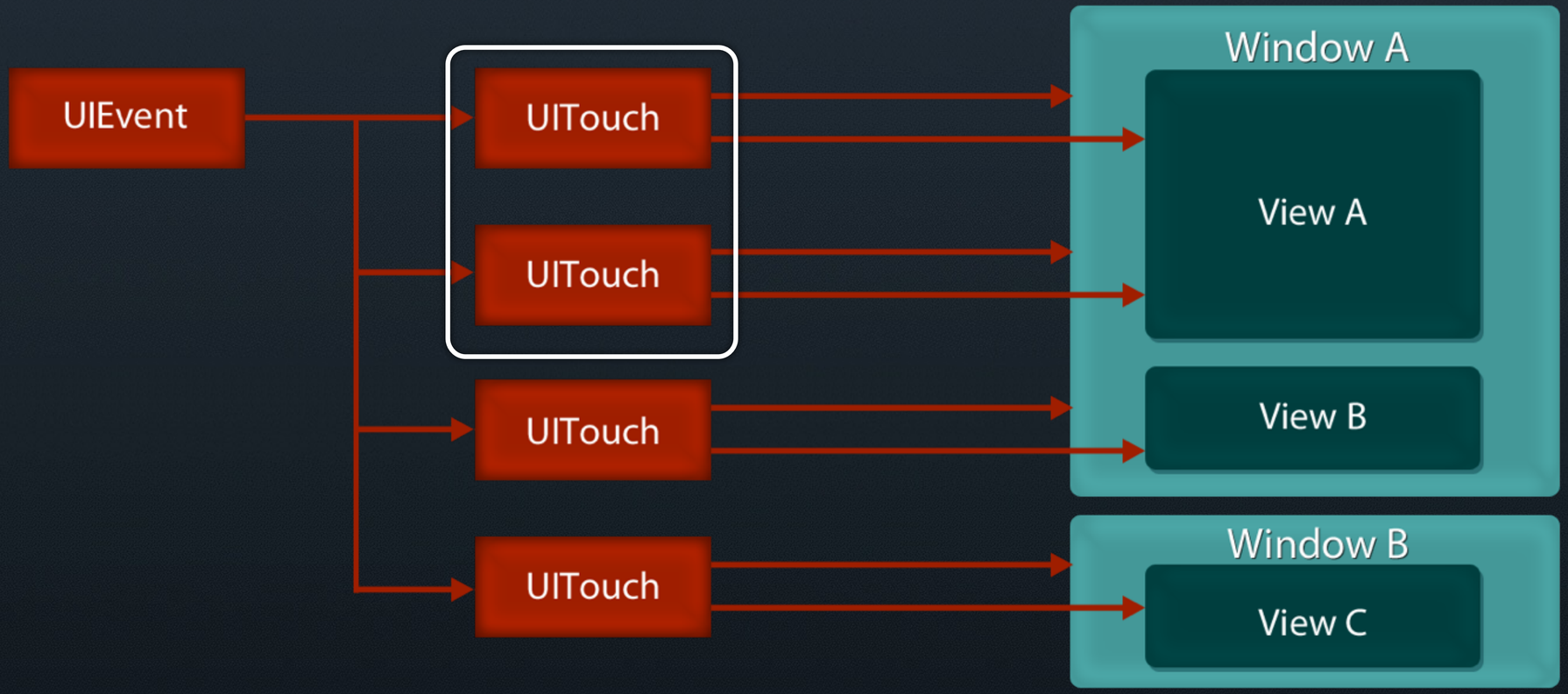

```
- (NSSet *)touchesForWindow:(UIWindow *)window;
```

UIEvent



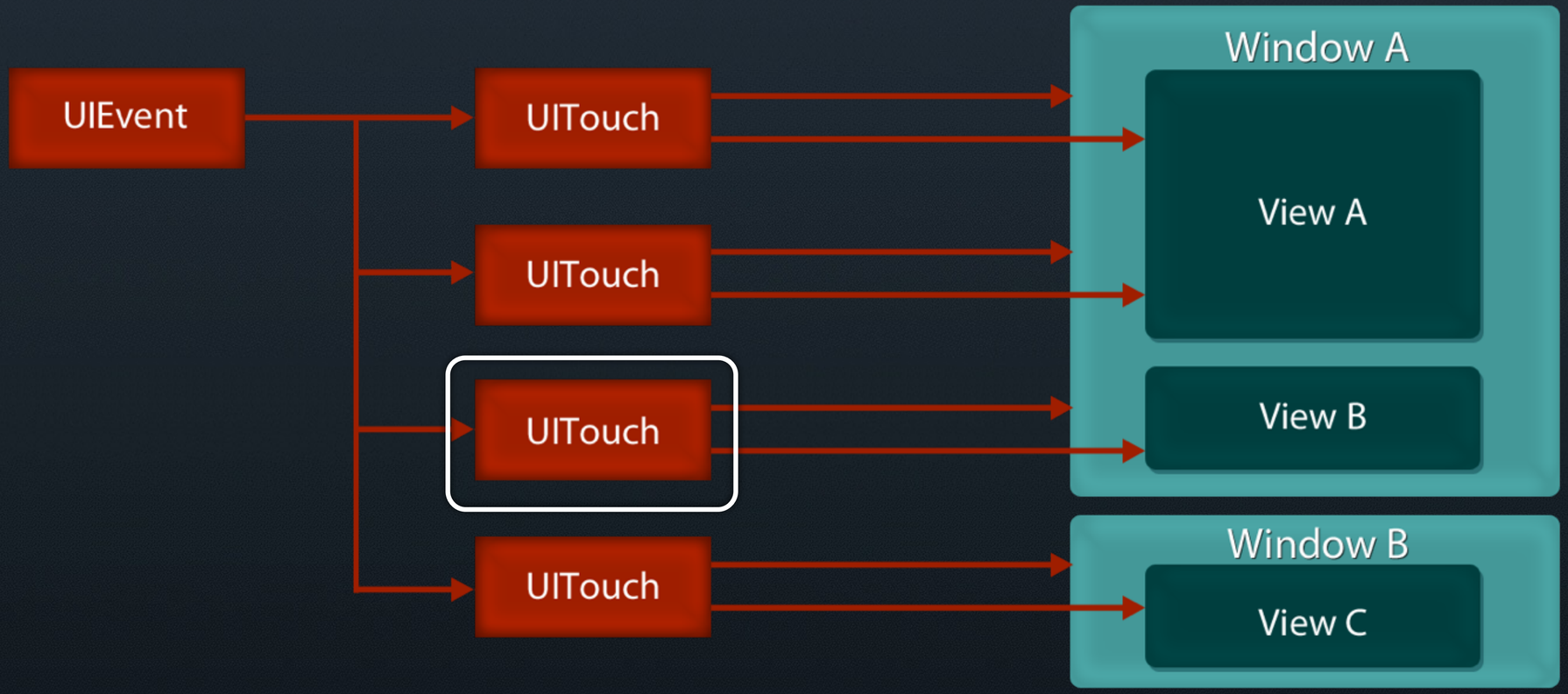

```
- (NSSet *)touchesForWindow:(UIWindow *)window;
```

UIEvent



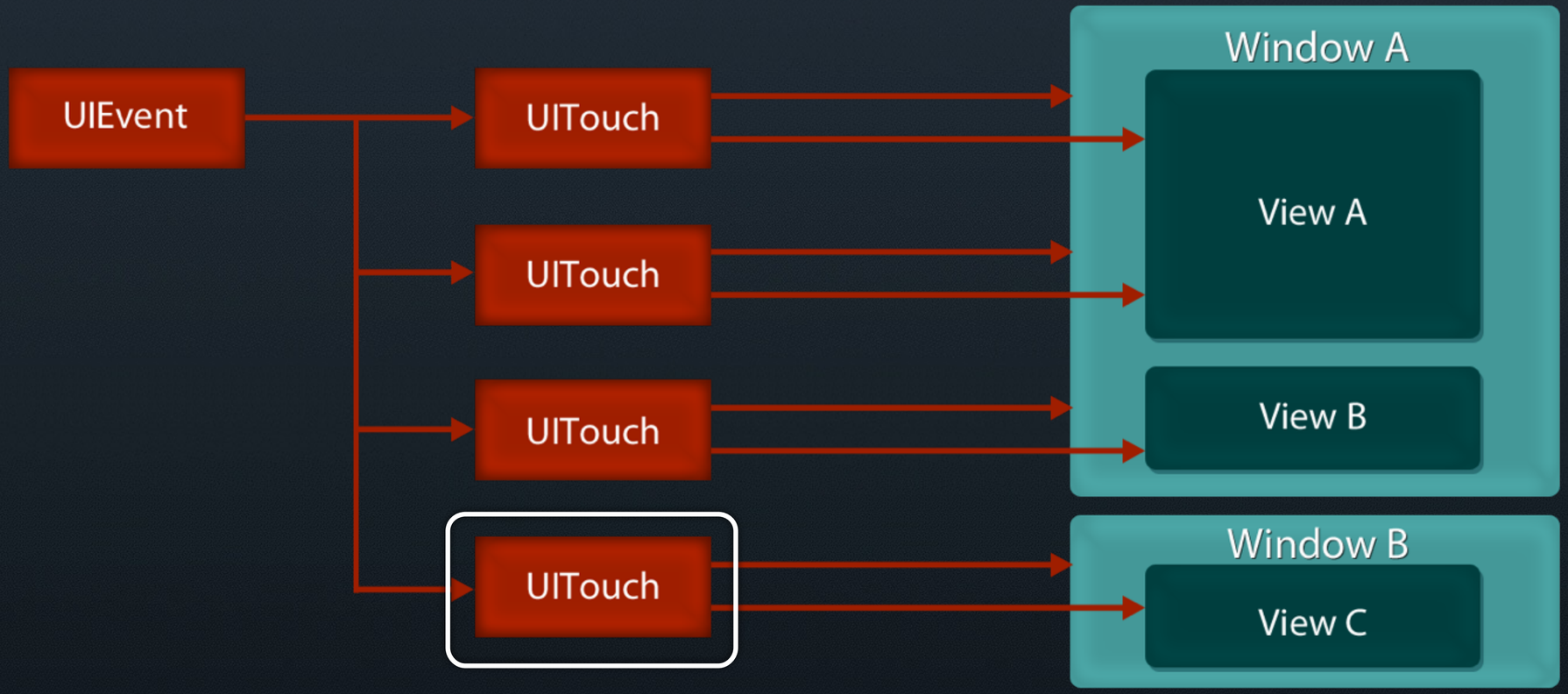

```
- (NSSet *)touchesForView:(UIView *)view;
```

UIEvent




```
- (NSSet *)touchesForView:(UIView *)view;
```

UIEvent



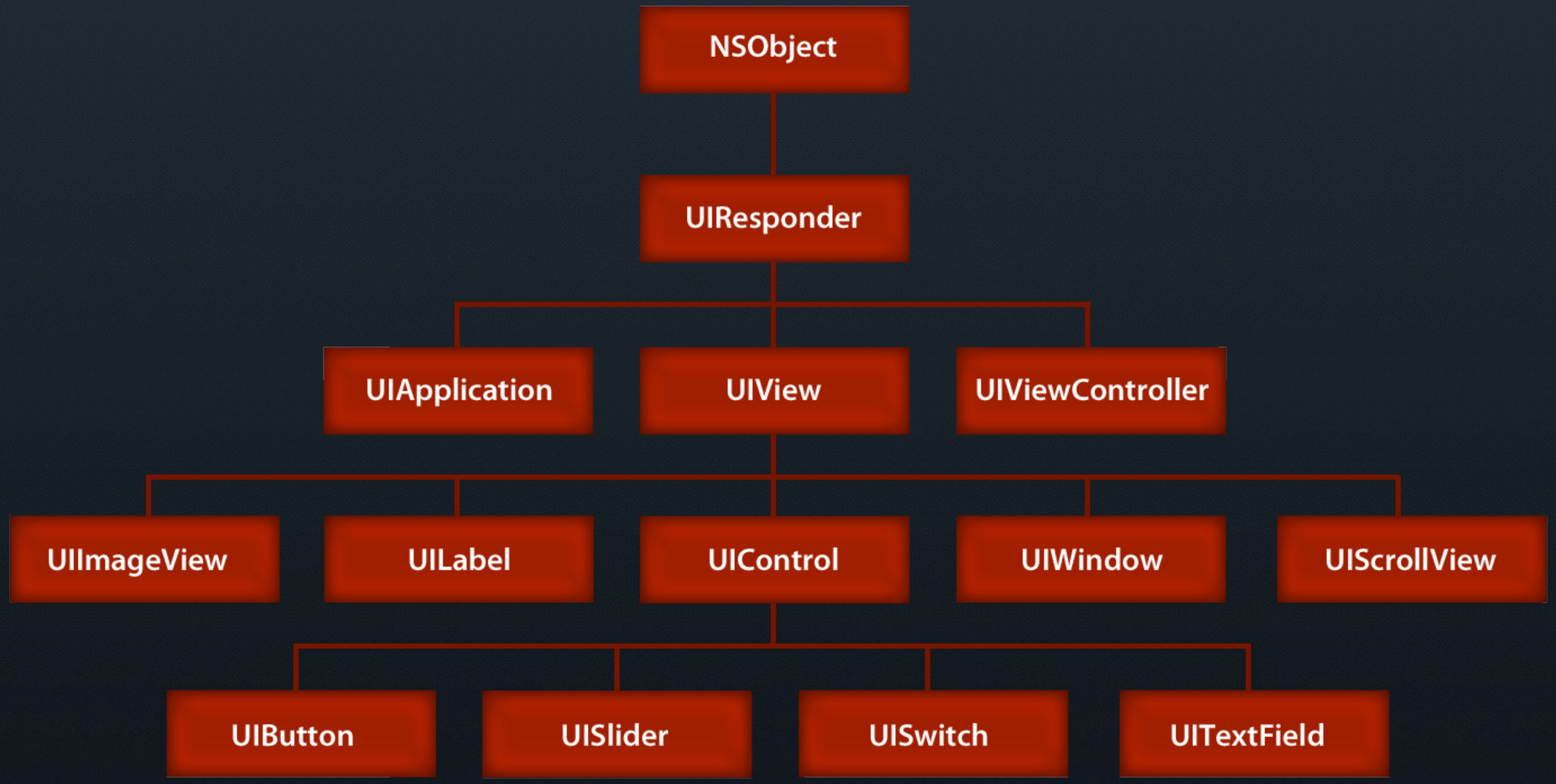

```
- (NSSet *)touchesForView:(UIView *)view;
```

UIResponder : NSObject

이벤트의 시작점

```
- (void)touchesBegan:(NSSet *)touches withEvent:(UIEvent *)event;
- (void)touchesMoved:(NSSet *)touches withEvent:(UIEvent *)event;
- (void)touchesEnded:(NSSet *)touches withEvent:(UIEvent *)event;
- (void)touchesCancelled:(NSSet *)touches withEvent:(UIEvent *)event;
```

뷰 클래스의 계층도


NSObject
UIResponder
UIApplication
UIView
UIViewController
UIImageView
UILabel
UIControl
UIWindow
UIScrollView
UIButton
UISlider
UISwitch
UITextField

하나의 터치 시퀀스

하나의 터치 시퀀스

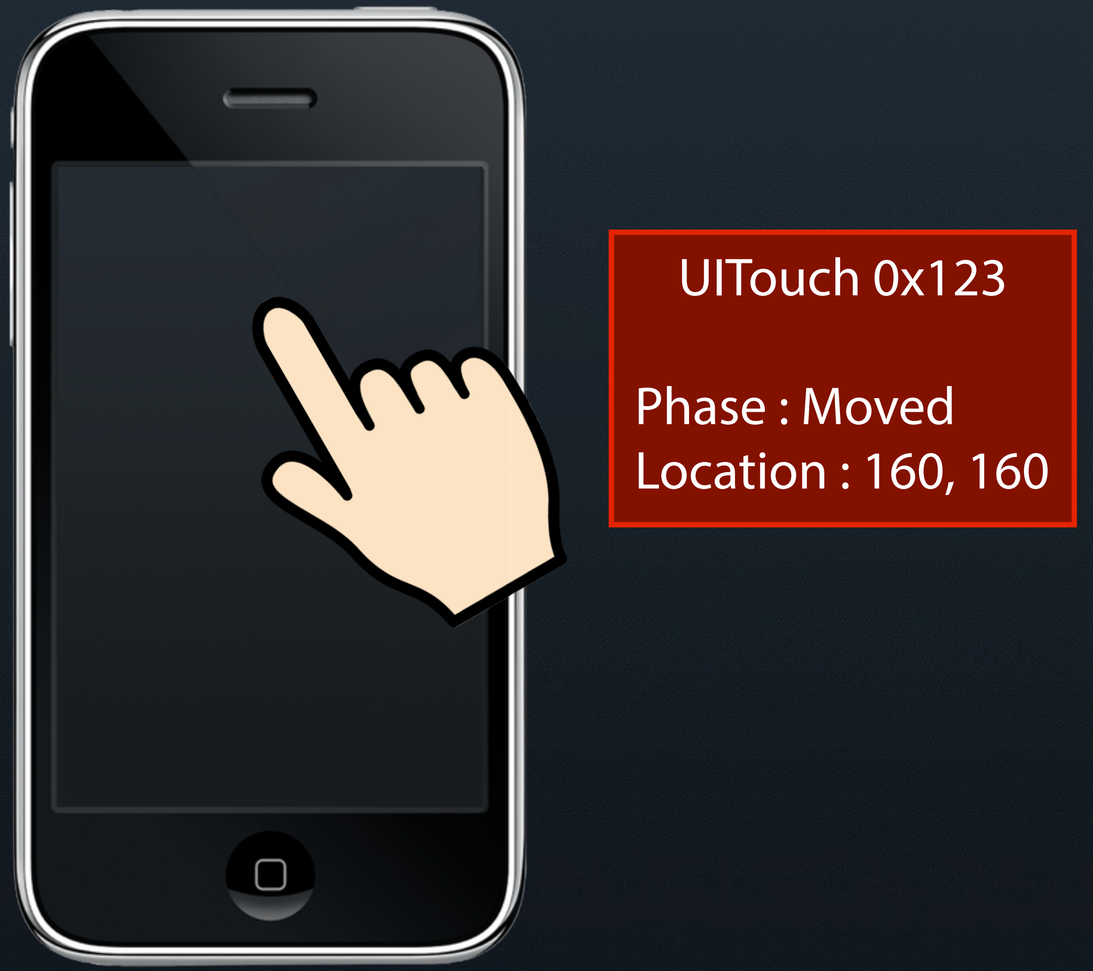
```
touchesBegan:withEvent;
```

UITouch 0x123

Phase : Began
Location : 160, 120

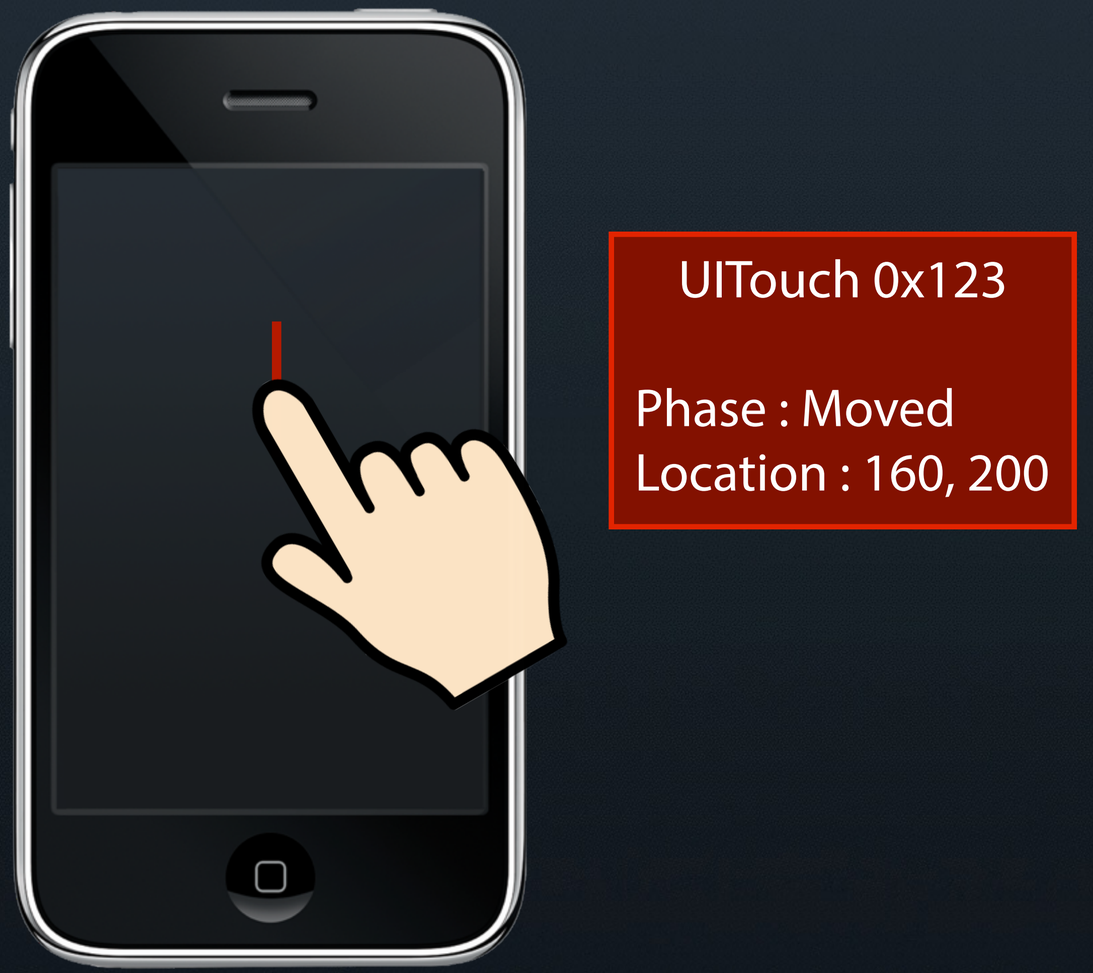
하나의 터치 시퀀스

```
touchesMoved:withEvent;
```



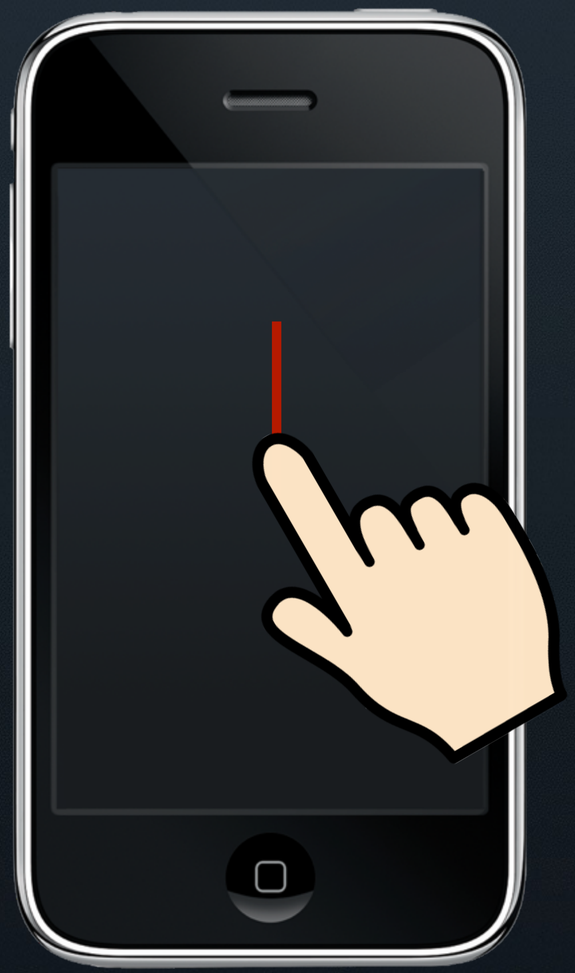
하나의 터치 시퀀스

```
touchesMoved:withEvent;
```



하나의 터치 시퀀스

```
touchesMoved:withEvent;
```

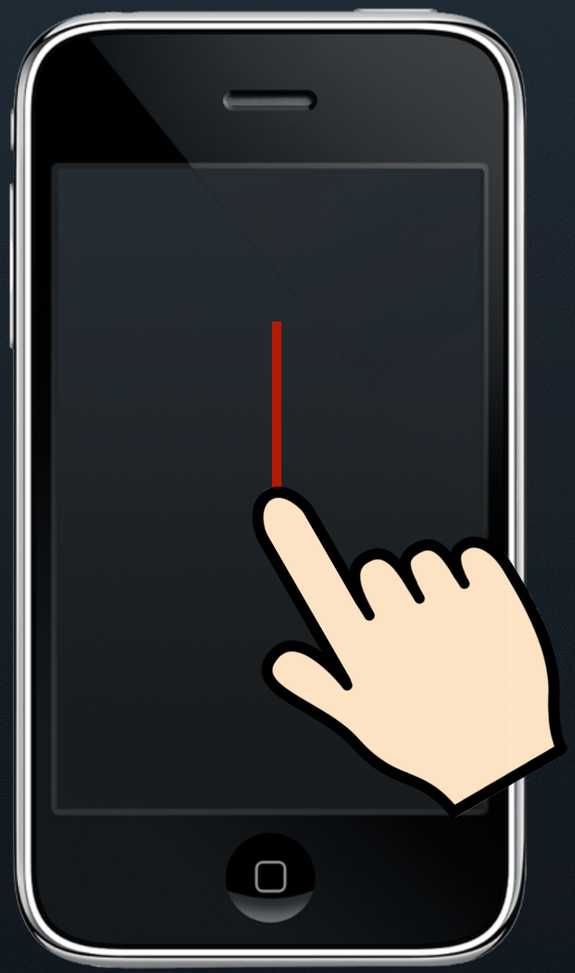


UITouch 0x123

Phase : Moved
Location : 160, 240

하나의 터치 시퀀스

```
touchesEnded:withEvent;
```



UITouch 0x123

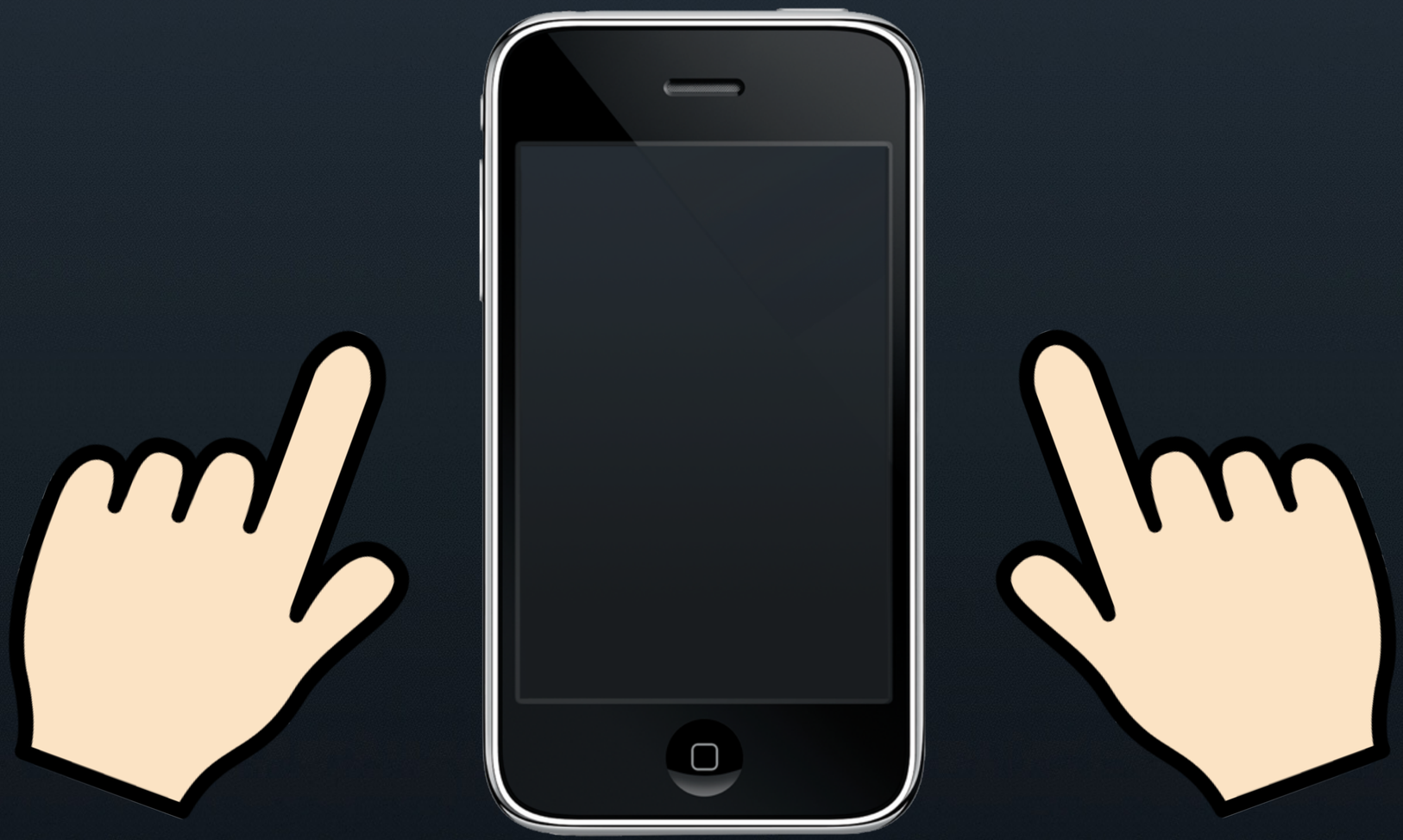
Phase : Ended
Location : 160, 240

멀티터치 이용하기

UIView

```
- BOOL multipleTouchEnabled;
```

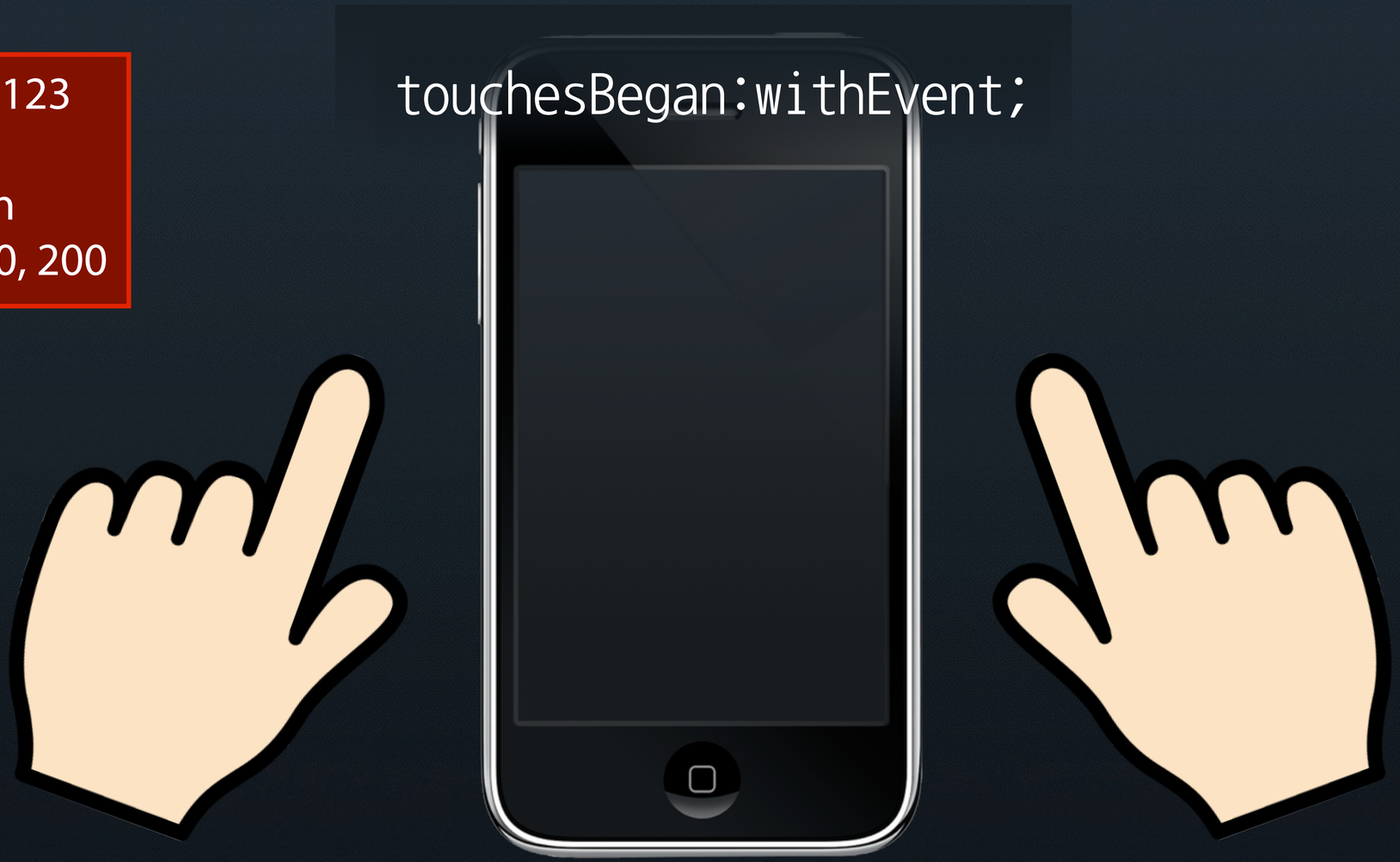
멀티 터치 시퀀스



멀티 터치 시퀀스

UITouch 0x123

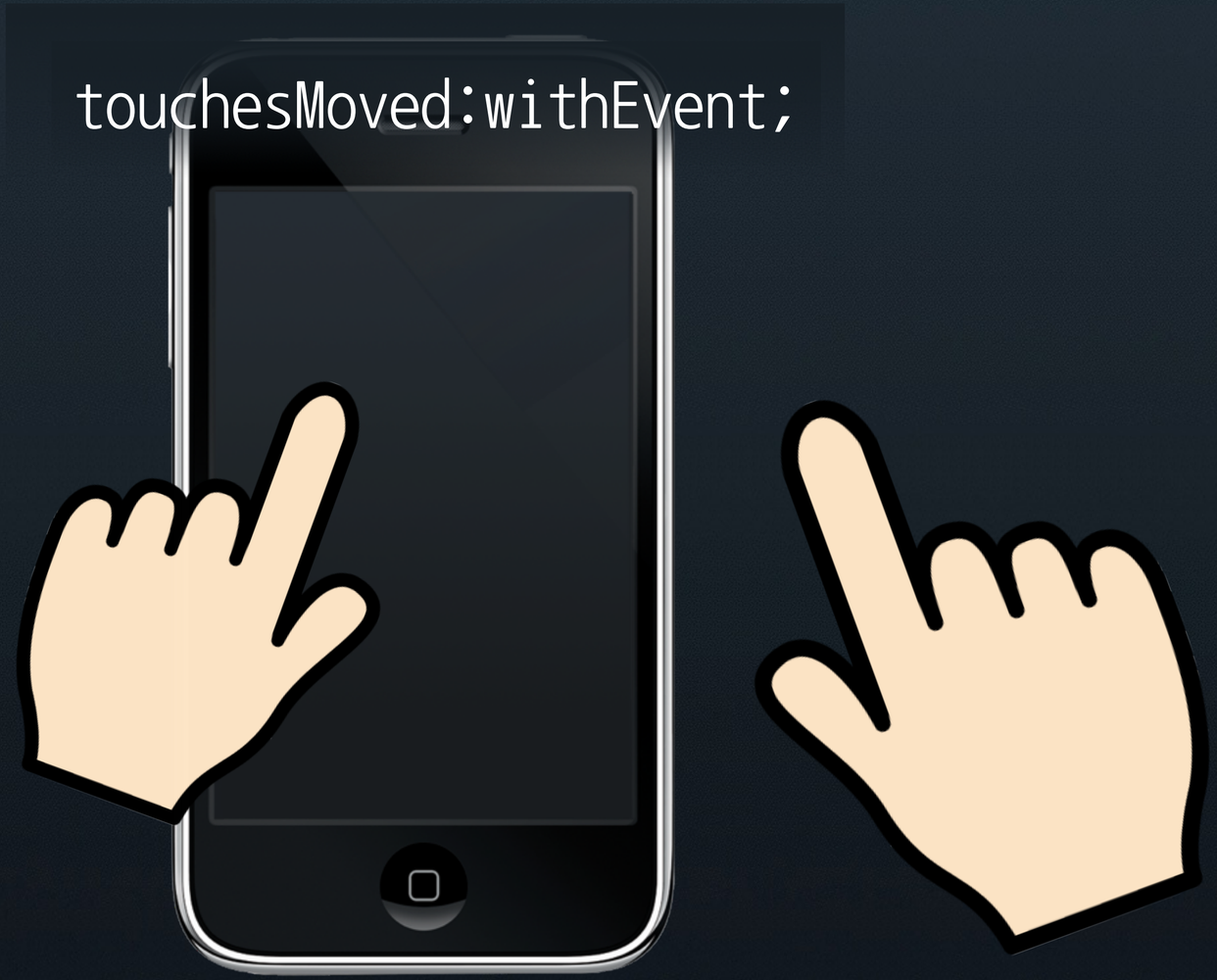
Phase : Began
Location : 120, 200



멀티 터치 시퀀스

UITouch 0x123

Phase : Moved
Location : 120, 240

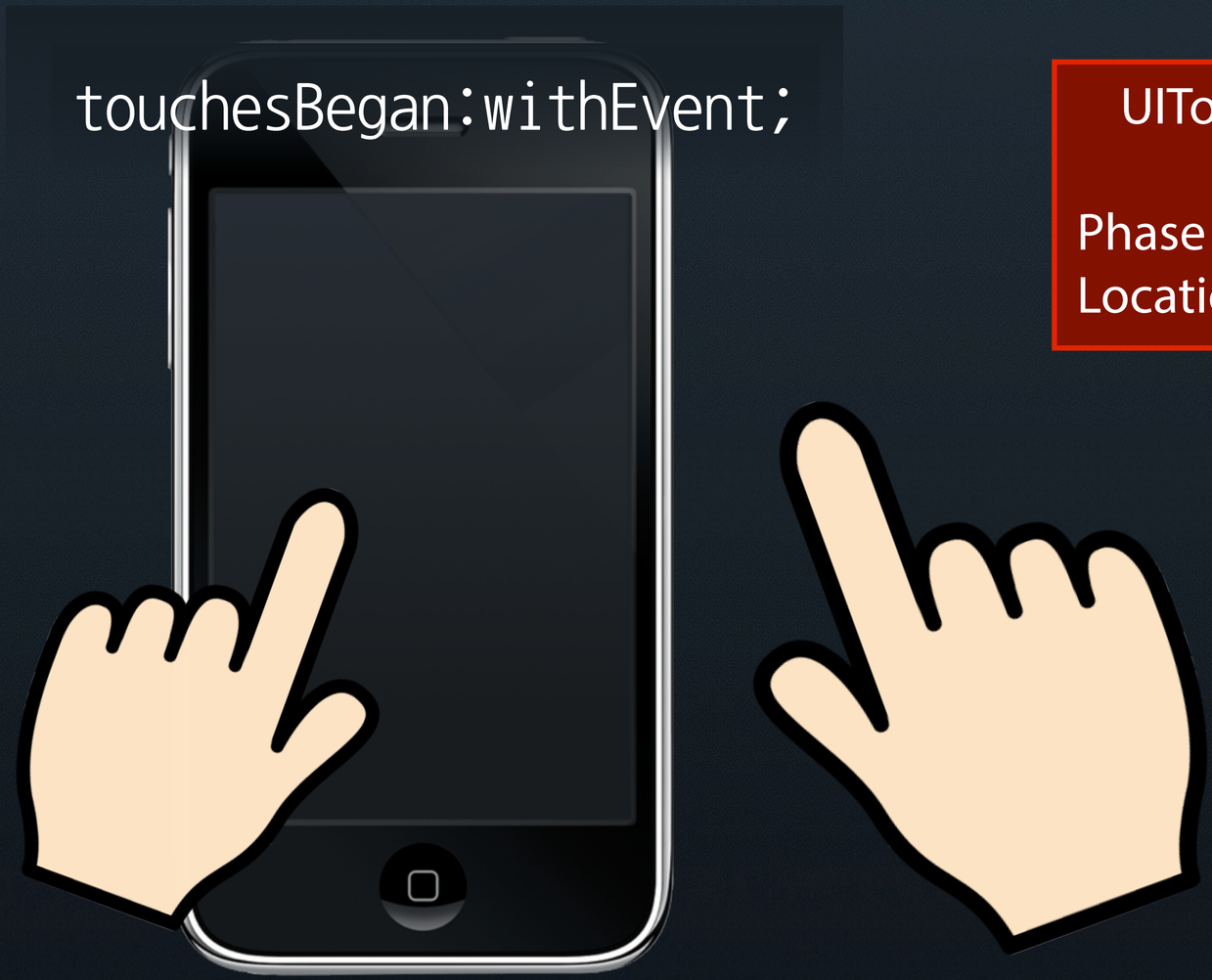


멀티 터치 시퀀스

UITouch 0x123

Phase : Stationary
Location : 120, 240

touchesBegan:withEvent;



UITouch 0xabc

Phase : Began
Location : 200, 200

멀티 터치 시퀀스

UITouch 0x123

Phase : Moved
Location : 120, 280

touchesMoved:withEvent;

UITouch 0xabc

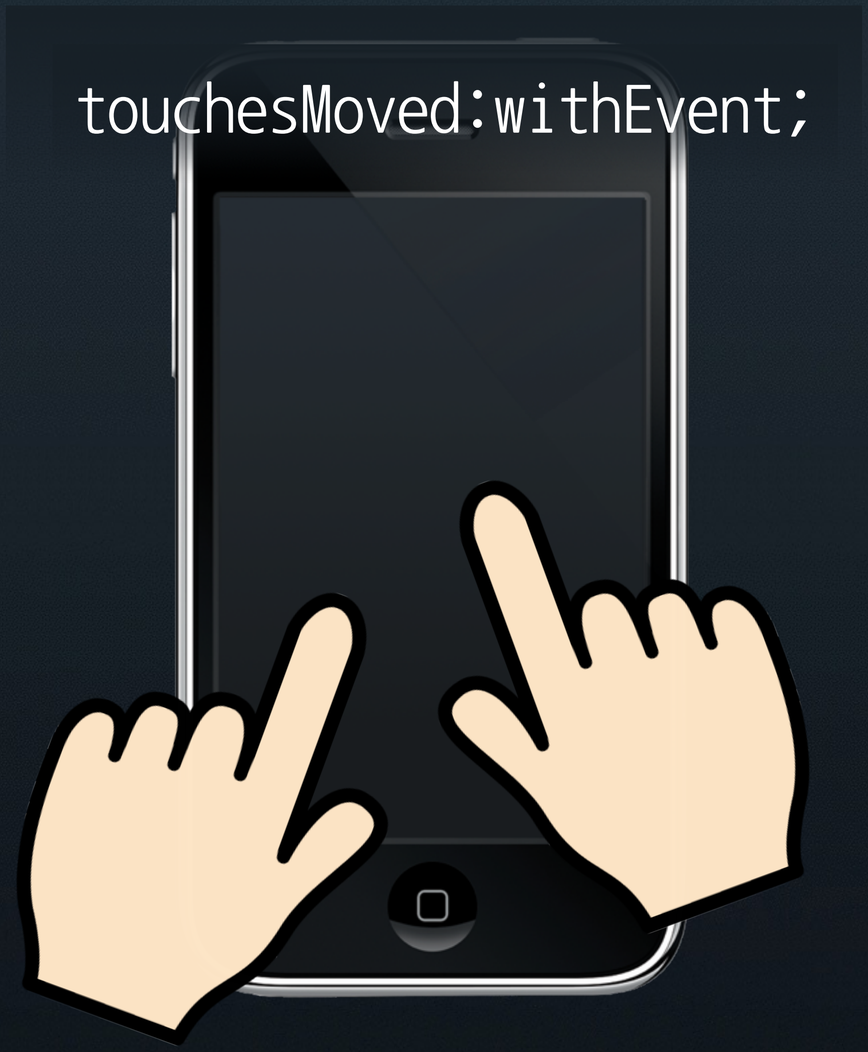
Phase : Moved
Location : 200, 240

멀티 터치 시퀀스

UITouch 0x123

Phase : Stationary
Location : 120, 280

touchesMoved:withEvent;



UITouch 0xabc

Phase : Moved
Location : 200, 280

멀티 터치 시퀀스

UITouch 0x123

Phase : Ended
Location : 120, 280

UITouch 0xabc

Phase : Ended
Location : 200, 280