

Objects

Learn what makes Objective-C different from C

Outline

- Objects
- `NSLog ()`
- Methods
- `id`
- `nil`

Objects

Object Name

1. Methods
2. Variables

Objects

Object Name

1. Methods
2. Variables

Car

```
drive()  
stop()  
float speed
```


Objects

Object Name

1. Methods
2. Variables

Car

```
drive()  
stop()  
float speed
```

Robot

```
pickup()  
putdown()  
float battery
```

Objects

- **Class**

- Blueprint
 - Number rooms
 - Estimated cost

- **Instance**

- Building
 - Employees
 - Electricity usage


```
NSDate *date = [NSDate date];
```

The Stack

The Heap

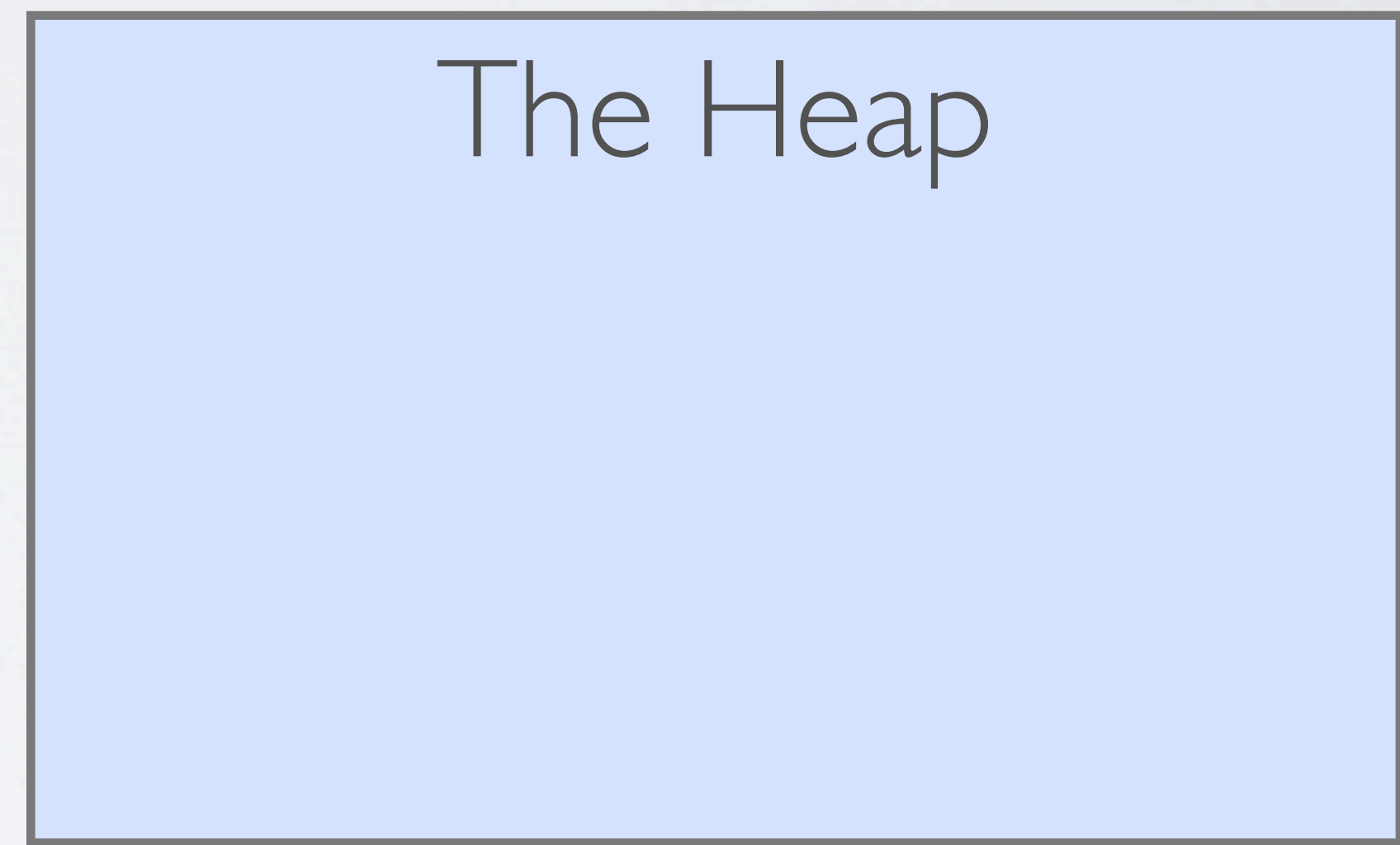
class pointer

```
NSDate *date = [NSDate date];
```

The Stack

The Heap

class pointer
`NSDate *date = [NSDate date];`
receiver



class pointer
selector

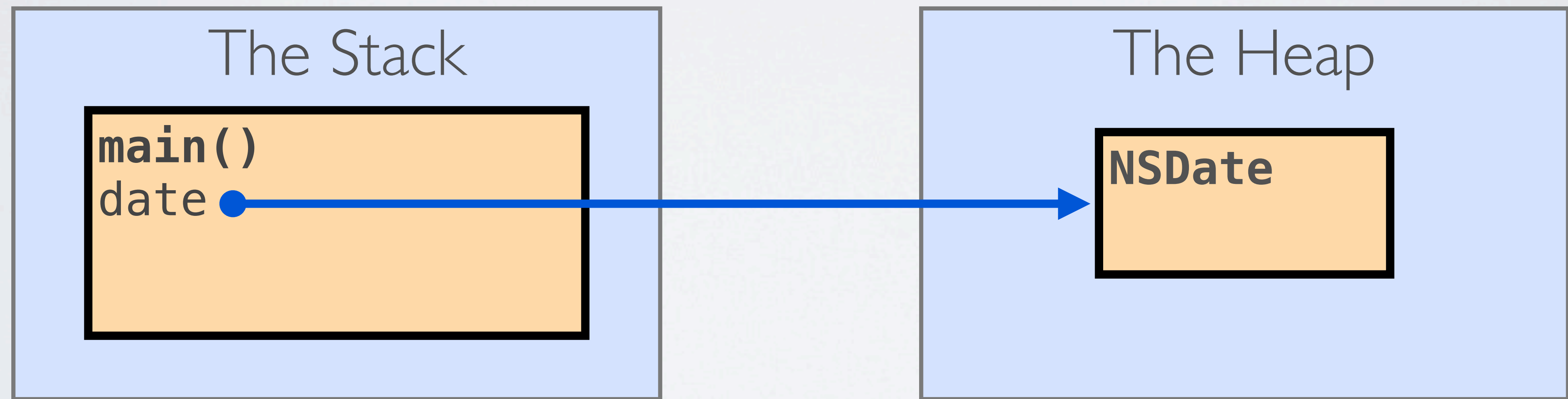
```
NSDate *date = [NSDate date];
```

receiver

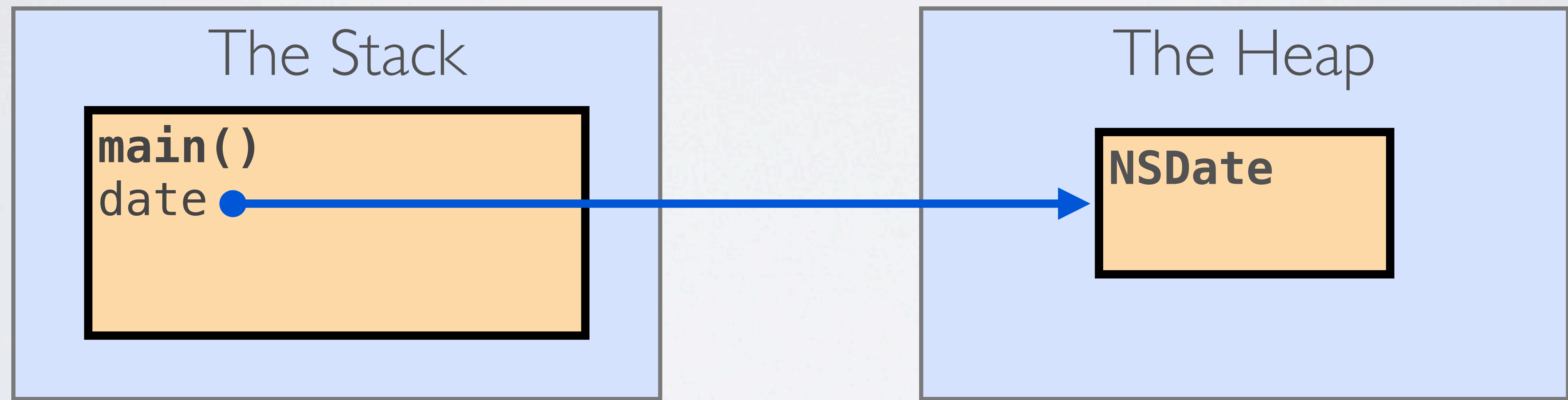
The Stack

The Heap

class pointer
[NSDate *date = [NSDate date];
receiver selector



```
NSDate *date = [NSDate date];
```



NSLog ()

```
NSLog(@"Today is: %@", date);
```

NSLog ()

string literal

```
NSLog(@"Today is: %@", date);
```


NSLog ()

string literal

```
NSLog(@"Today is: %@", date);
```

object token

NSLog()

string literal

```
NSLog(@"Today is: %@", date);
```

object token

```
2013-04-16 17:24:01.499 Dates[9842:303] Today is: 2013-04-16 21:24:01 +0000
```


Methods

- Class Method

```
NSDate *date = [NSDate date];
```

- Instance Method

```
double seconds = [date timeIntervalSince1970];
```

Methods

- Class Method

```
NSDate *date = [NSDate date];
```

class name

- Instance Method

```
double seconds = [date timeIntervalSince1970];
```


Methods

- Class Method

```
NSDate *date = [NSDate date];
```

class name

- Instance Method

```
double seconds = [date timeIntervalSince1970];
```

pointer name

Nested Methods

```
NSDate *today = [[NSDate alloc] init];
```


Nested Methods

```
NSDate *today = [[NSDate alloc] init];
```

└──────────────────┘
returns memory address

Nested Methods

```
NSDate *today = [[NSDate alloc] init];
```


Nested Methods

initialize object

```
NSDate *today = [[NSDate alloc] init];
```

Nested Methods

```
NSDate *today = [[NSDate alloc] init];
```


id

```
// Type id means pointer (without *)  
id anyObject = [NSDate date];
```

`nil` and Methods

```
Car *car = nil;  
[car driveHome];
```

```
Person *owner = nil;  
owner = [car driver];
```


`nil` and Methods

```
Car *car = nil;  
[car driveHome];
```

method send is ignored

```
Person *owner = nil;  
owner = [car driver];
```

`nil` and Methods

```
Car *car = nil;  
[car driveHome];
```

```
Person *owner = nil;  
owner = [car driver];  
└───┘  
not valid
```


`nil` and Methods

```
Car *car = nil;  
[car driveHome];
```

```
Person *owner = nil;  
owner = [car driver];
```

Review

- Objects
- `NSLog ()`
- Methods
- `id`
- `nil`

