

# **Unit 3—Lesson 1:**

## **Optionals**

# nil

```
struct Book {  
  let name: String  
  let publicationYear: Int  
}  
  
let firstHarryPotter = Book(name: "Harry Potter and the Sorcerer's Stone",  
                             publicationYear: 1997)  
let secondHarryPotter = Book(name: "Harry Potter and the Chamber of Secrets",  
                              publicationYear: 1998)  
  
let books = [firstHarryPotter, secondHarryPotter]
```

**nil**

```
let unannouncedBook = Book(name: "Rebels and Lions",  
                             publicationYear: ???)
```

**nil**

```
let unannouncedBook = Book(name: "Rebels and Lions",  
                             publicationYear: 0)
```

**nil**

```
let unannouncedBook = Book(name: "Rebels and Lions",  
                             publicationYear: 2019)
```

# nil

```
let unannouncedBook = Book(name: "Rebels and Lions",  
                             publicationYear: nil)
```

! Nil is not compatible with expected argument type 'Int'

```
struct Book {  
    let name: String  
    let publicationYear: Int?  
}
```

```
let firstHarryPotter = Book(name: "Harry Potter and the Sorcerer's Stone",  
                             publicationYear: 1997)
```

```
let secondHarryPotter = Book(name: "Harry Potter and the Chamber of Secrets",  
                              publicationYear: 1998)
```

```
let books = [firstHarryPotter, secondHarryPotter]
```

```
let unannouncedBook = Book(name: "Rebels and Lions", publicationYear: nil)
```

# Specifying the type of an optional

```
var serverResponseCode = 404
```

```
var serverResponseCode = nil
```

! 'nil' requires a contextual type

```
var serverResponseCode: Int? = 404
```

```
var serverResponseCode: Int? = nil
```



# Working with optional values

## Force-unwrap

```
if publicationYear != nil {  
    let actualYear = publicationYear!  
    print(actualYear)  
}
```

```
let unwrappedYear = publicationYear!
```



error: Execution was interrupted

# Working with optional values

## Optional binding

```
if let constantName = someOptional {  
    //constantName has been safely unwrapped for use within the braces.  
}
```

```
if let unwrappedPublicationYear = book.publicationYear {  
    print("The book was published in \$(unwrappedPublicationYear)")  
}  
else {  
    print("The book does not have an official publication date.")  
}
```

# Functions and optionals

## Return values

```
let string = "123"  
let possibleNumber = Int(string)
```

```
let string = "Cynthia"  
let possibleNumber = Int(string)
```

# Functions and optionals

## Defining

```
func printFullName(firstName: String, middleName: String?, lastName: String)
```

```
func textFromURL(url: URL) -> String?
```

# Failable initializers

```
struct Toddler {  
    var birthName: String  
    var monthsOld: Int  
}
```

# Failable initializers

```
struct Toddler {  
  var birthName: String  
  var monthsOld: Int  
  
  init?(birthName: String, monthsOld: Int) {  
    if monthsOld < 12 || monthsOld > 36 {  
      return nil  
    } else {  
      self.birthName = birthName  
      self.monthsOld = monthsOld  
    }  
  }  
}
```

# Failable initializers

```
let possibleToddler = Toddler(birthName: "Joanna", monthsOld: 14)
if let toddler = possibleToddler {
    print("\(toddler.birthName) is \(toddler.monthsOld) months old")
} else {
    print("The age you specified for the toddler is not between 1 and 3 yrs of age")
}
```

# Optional chaining

```
struct Person {  
  var age: Int  
  var residence: Residence?  
}  
  
struct Residence {  
  var address: Address?  
}  
  
struct Address {  
  var buildingNumber: String?  
  var streetName: String?  
  var apartmentNumber: String?  
}
```



# Optional chaining

```
if let theResidence = person.residence {  
    if let theAddress = theResidence.address {  
        if let theApartmentNumber = theAddress.apartmentNumber {  
            print("He/she lives in apartment number \(theApartmentNumber).")  
        }  
    }  
}
```

# Optional chaining

```
if let theApartmentNumber = person.residence?.address?.apartmentNumber {  
    print("He/she lives in apartment number \(theApartmentNumber).")  
}
```

# Implicitly Unwrapped Optionals

```
class ViewController: UIViewController {  
    @IBOutlet var label: UILabel!  
}
```

Unwraps automatically

Should only be used when need to initialize an object without supplying the value and you'll be giving the object a value soon afterwards

# Unit 3, Lesson 1

## Lab: Optionals.playground



Open and complete the exercises in Lab – `Optionals.playground`

