Classes

Lesson Objectives

- After completing this lesson, you should be able to:

  - Create and instantiate classes in Scala

  - Describe how arguments are passed to Scala class instances

  - Outline the lifespan of class parameters in a Scala class instance

What is a Class?

- A class is a description of a Type
  - Embodies state in an instance of a class
  - Represents behavior for how that state can be transformed
  - Is not concrete until it has been "instantiated" via a call to its constructor via the "new" keyword
  - Multiple instances of a class can exist

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A Simple Scala Class

```scala
scala> class Hello
defined class Hello

scala> new Hello()
res0: Hello = Hello@33bd6867

scala> res0.toString
res1: String = Hello@33bd6867
```

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The Primary Constructor

- Each class gets a primary constructor automatically
  - Defines the "signature" of how to create an instance
  - The body of the class is the implementation of the constructor

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The Primary Constructor

```scala
scala> class Hello {
     |     println("Hello")
     | }
defined class Hello

scala> new Hello()
Hello
res0: Hello = Hello@7f68f33c
```

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Class Parameters

- You can pass values into an instance of a class using one or more parameters to the constructor
  - You must specify the type of the parameter
  - The values are internally visible for the life of the class instance
  - They cannot be accessed from outside of the class instance

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Class Parameters

```scala
scala> class Hello(message: String) {
     |     println(message)
     | }
defined class Hello

scala> new Hello("Hello, world!")
Hello, world!
res0: Hello = Hello@5daef86b

scala> new Hello
<console>:9: error: not enough arguments for constructor Hello:
Unspecified value parameter message.
```


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Class Parameters are not Accessible

```scala
scala> class Hello(message: String)
defined class Hello

scala> new Hello("Hello, world!")
res0: Hello = Hello@1946d5dc

scala> res0.message
<console>:9: error: value message is not a member of Hello
```

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Lesson Summary

- Having completing this lesson, you should be able to:
  - Create and instantiate classes in Scala
  - Describe how arguments are passed to Scala class instances
  - Outline the lifespan of class parameters in a Scala class instance

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