

Lambdas

A large, stylized, purple lambda symbol (λ) is centered on the slide. The symbol is drawn with a thick, rounded stroke, giving it a hand-drawn or calligraphic appearance. It is positioned in the lower half of the slide, below the title bar.

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 - ▶ Allow us to create a function without belonging to any class
 - ▶ An expression that can be passed around as if it were an object and executed on demand
 - ▶ Simpler than anonymous classes with a single method.
However Lambdas do not have state but anonymous classes may

Lambda Expression Syntax

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- ▶ A two-parameter lambda expression.

```
(p, q) -> System.out.println("Multiple parameters: "  
    + p + q);
```

- ▶ See example: [SimpleLambdas.java](#) in class repo

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- ▶ Example: [StoringLambdasExample1.java](#)
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- ▶ We can also pass lambda expression to threads. See example: [ThreadLambdaExample1.java](#)

Method References (1)

- ▶ Consider the following typical use of a lambda.

```
public interface MyPrinter{  
    public void print(String s);  
}  
MyPrinter myPrinter = s -> System.out.println(s);
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- ▶ The lambda can be replaced by a reference to the `println` method as it simply forwards the string parameter to the `println` method. The double-colon tells the compiler that what follows is a reference to a method.

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- ▶ Following types of method references may be used:
 - ▶ Static method
 - ▶ Parameter method
 - ▶ Instance method
 - ▶ Constructor

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public interface Finder {  
    public int find(String s1, String s2);  
}  
Finder finder = String::indexOf;  
//Finder finder = (s1, s2) -> s1.indexOf(s2);
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- ▶ Instance method

```
public interface Deserializer {  
    public int deserialize(String v1);  
}  
public class StringConverter {  
    public int convertToInt(String v1){  
        return Integer.valueOf(v1);  
    }  
}  
StringConverter stringConverter = new StringConverter();  
Deserializer des = stringConverter::convertToInt;
```

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StringConverter stringConverter = new StringConverter();  
Deserializer des = stringConverter::convertToInt;
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- ▶ Constructors: use the class name followed by `::new`

```
public interface Factory {  
    public String create(char[] val); // matches String  
    constructor  
}  
Factory factory = String::new;  
//Factory factory = chars -> new String(chars);
```

More Examples

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- ▶ Example: `User.java`, `UserTest.java`, `UserTestWithLambdas.java`