Lambda Expressions and Method References

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Syntax of Lambda Expressions

```
public int compare(String first, String second) {
    return Integer.compare(first.length(), second.length());
}
```

Access specifier **Return type** **Method name** **Parameter list** **Body**

```
(String first, String second) -> {
    return Integer.compare(first.length(), second.length());
}
```

Parameter list **Arrow** **Body**

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Syntax of Lambda Expressions

```
public int compare(String first, String second) {
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}
```

Access specifier **Return type** **Method name** **Parameter list** **Body**

```
(var first, var second) -> {
    return Integer.compare(first.length(), second.length());
}
```

Parameter list **Arrow** **Body**

Syntax of Lambda Expressions

```
() -> {
    System.out.println("Hello from Pluralsight");
}
```

Lambda without parameters

```
name -> System.out.println("Hello, " + name);
```

Lambda with a single parameter

Syntax of Lambda Expressions

```
(first, second) -> {
    return Integer.compare(first.length(), second.length());
}
```

Body as a block

```
(first, second) -> Integer.compare(first.length(), second.length())
```

Body as a single expression

Functional Interfaces

Lambda Expressions and Functional Interfaces

A lambda expression implements a functional interface

```
(first, second) -> Integer.compare(first.length(), second.length())
```

implements

```
public interface Comparator<T> {
    int compare(T o1, T o2);
}
```

Lambda Expressions and Functional Interfaces

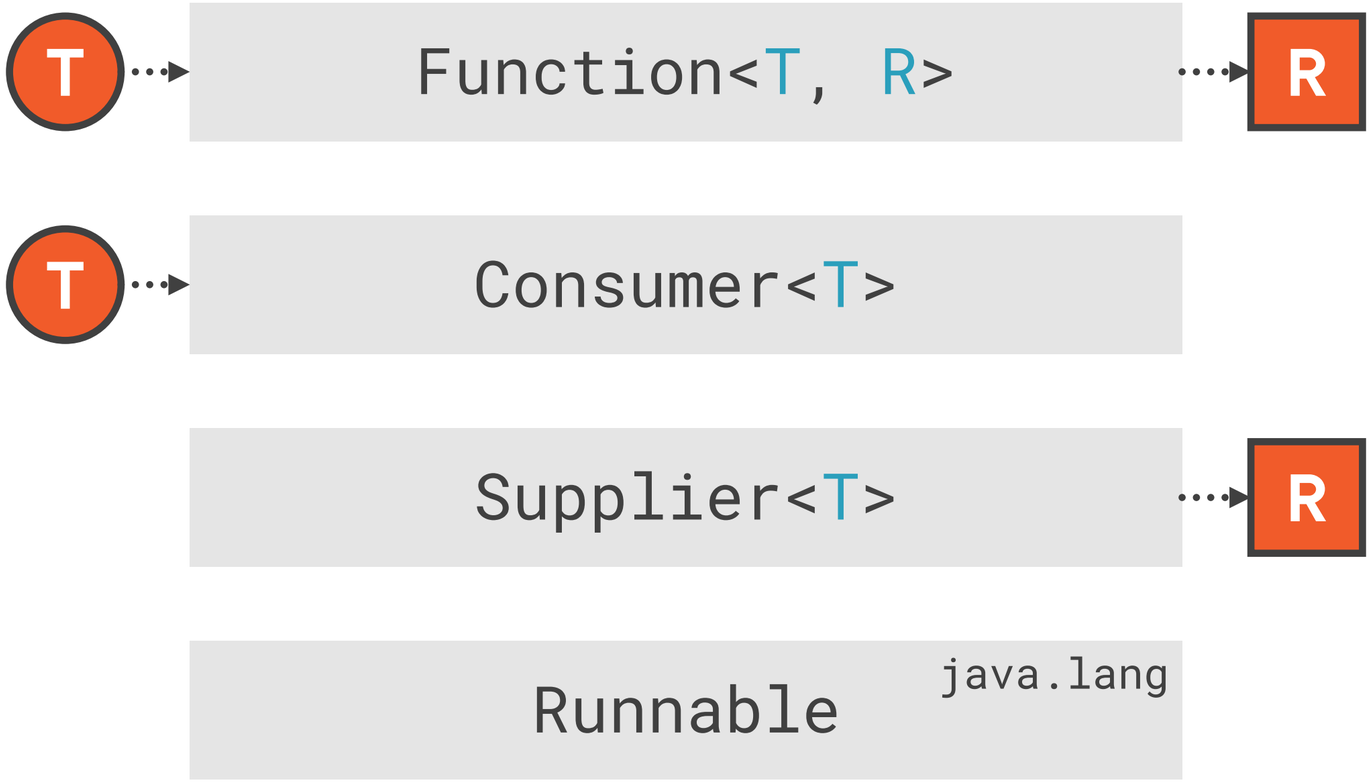
You cannot assign a lambda expression to a variable declared with var

```
// Error: cannot infer type for local variable comparator
//          (lambda expression needs an explicit target-type)
var comparator = (String first, String second) ->
    Integer.compare(first.length(), second.length());
```

Standard Functional Interfaces

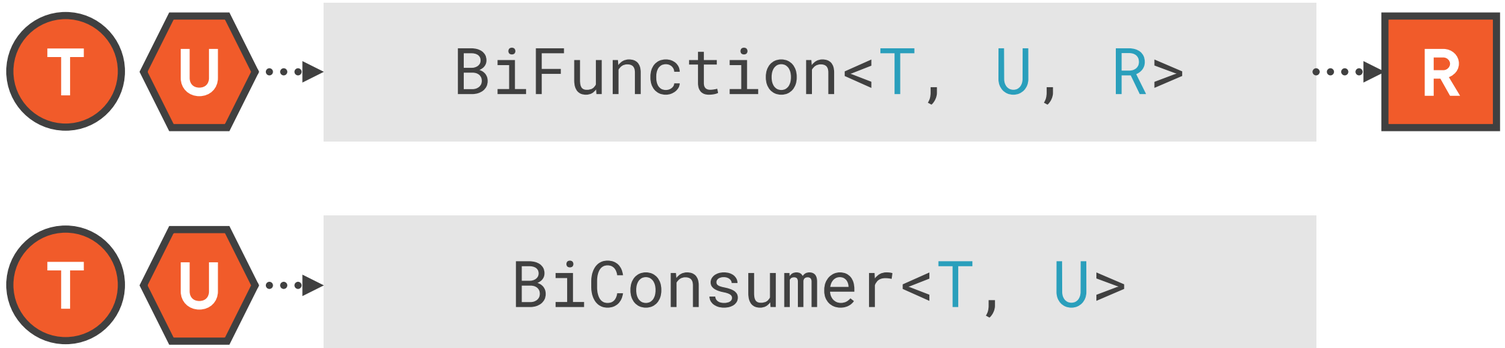
Standard Functional Interfaces

Package java.util.function



Standard Functional Interfaces

Package java.util.function



Standard Functional Interfaces

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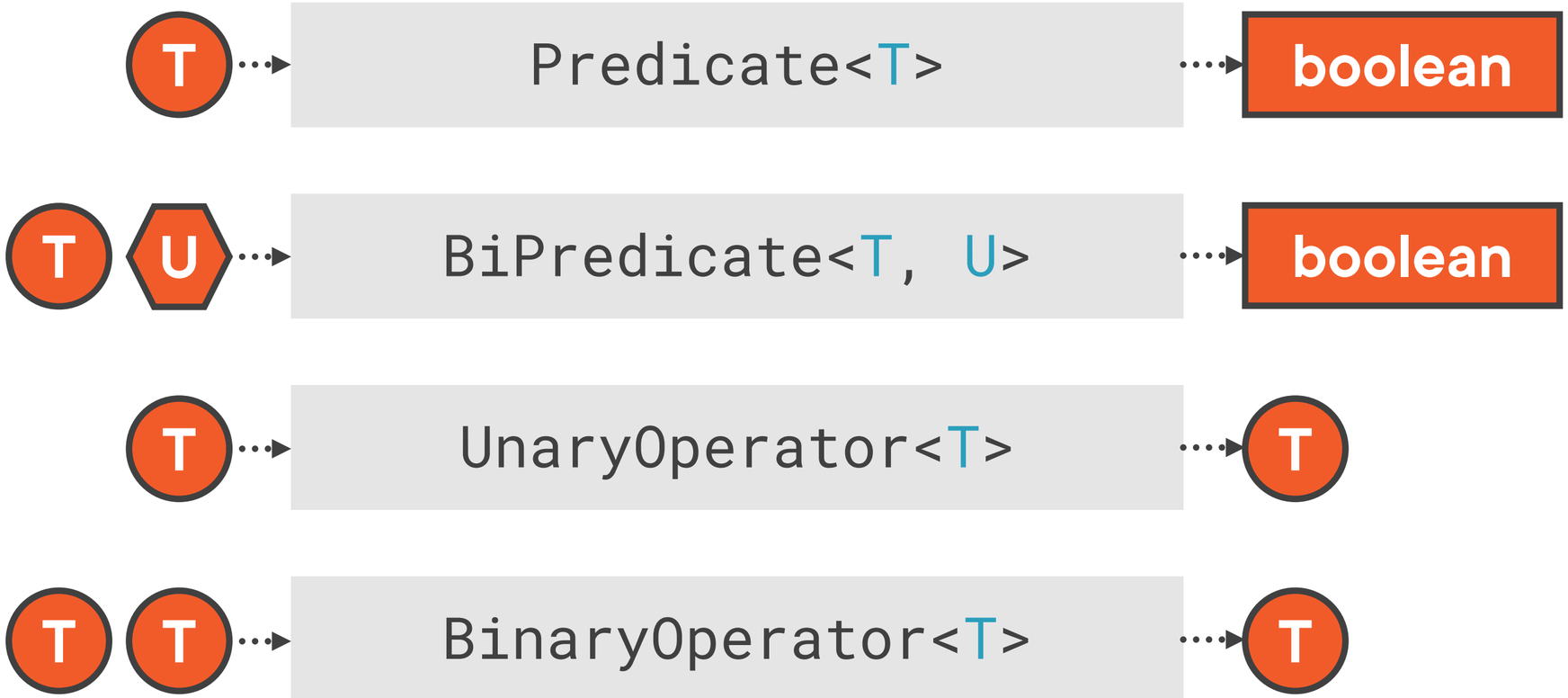

Method References

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```
var names = List.of("Joe Smith", "Susan Miller", "Will Johnson");
```

Method References

```
var names = List.of("Joe Smith", "Susan Miller", "Will Johnson");

// Lambda expression
names.forEach(name -> System.out.println(name));
```

Method References

```
var names = List.of("Joe Smith", "Susan Miller", "Will Johnson");

// Lambda expression
names.forEach(name -> System.out.println(name));

// Method reference
names.forEach(System.out::println);
```

Method References

A method reference implements
a functional interface

Lambda expression:
Defines an anonymous method
on the spot

Method reference:
Points to an existing method

Syntax of Method References

`TypeName::staticMethodName`	**Reference to a static method**
`objectRef::instanceMethodName`	**Reference to an instance method** **of a specific object**
`TypeName::instanceMethodName`	**Reference to an instance method** **context determines the object**
`TypeName::new`	**Reference to a constructor**

Summary

Lambda expressions

- Anonymous method
- Syntax of lambda expressions

Functional interfaces

- Single abstract method
- @FunctionalInterface annotation

Standard functional interfaces

- Package java.util.function

Summary

Capturing local variables

- Effectively final

Principles of functional programming

- No side effects

Working with checked exceptions

Method references

- Four kinds of method references

More Information

Working with Streams and Lambda Expressions in Java

Jesper de Jong

Up Next: Annotations