Messages for Java Programmers

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http://www.pharo.org

Only Objects and Messages

- code in Pharo **only** manipulates objects: mouse, booleans, arrays, numbers, compressed, strings, windows, scrollbars, canvas, files, trees, compiler, sound, url, socket, fonts, text, collections, stack, shortcut, streams, ...
- messages and assignments are the only way to do something

Equivalence

In Java

```
ArrayList<String> strings = new ArrayList<String>();
```

In Pharo

```
strings := OrderedCollection new.
```

- 1 assignment, 1 message sent
- `new` is a message sent to a class
- no static typing
- no generics

Equivalence

In Java

```java
Thread regThread = new Thread(
 new Runnable() {
  @Override
  public void run() {
   this.doSomething();
  }
 });
regThread.start();
```

In Pharo

```
[ self doSomething ] fork
```

Equivalence

In Java 8

```
new Thread(() -> this.doSomething()).start();
```

In Pharo

```
[ self doSomething ] fork
```

Three Kinds of Messages

- Unary

```
5 factorial
Transcript cr
```

- Binary

```
3 + 4
5 −> 10
```

- Keyword-based

```
Transcript show: 'hello world'
2 between: 0 and: 5
```

Keyword Messages for Java developers

In Java

```
receiver.keyword1keyword2(arg1, arg2)
```

In Pharo

```
anObject keyword1: arg1 keyword2: arg2
```

Keyword Messages for Java developers

In Java

```
postman.send(mail,recipient);
```

Keyword Messages for Java developers

```
postman.send(mail,recipient);
postman . send ( mail , recipient );
```

Keyword Messages for Java developers

```
postman.send(mail,recipient);
postman . send ( mail , recipient );
postman send mail recipient
```

Keyword Messages for Java developers

```
postman.send(mail,recipient);
postman . send ( mail , recipient );
postman send mail recipient
postman send mail to recipient
```

Keyword Messages for Java developers

```
postman.send(mail,recipient);
postman . send ( mail , recipient );
postman send mail recipient
postman send mail to recipient
postman send: mail to: recipient
```

Keyword Messages for Java developers

In Java

```
postman.send(mail,recipient);
```

In Pharo

```
postman send: mail to: recipient
```

- the message
  - is named send:to:
  - is sent to postman
  - includes two arguments (mail and recipient)

Conditionals are Just Messages

- in Java, if, else, for, while, do, ... are language keywords
- in Pharo, conditional expressions are messages
- booleans are objects

```
fullName isEmpty
  ifTrue: [ 'FirstnameLastname' ]
  ifFalse: [ fullName ]
```

Loops are Just Messages

```
4 timesRepeat: [ self doSomething ]
```

```
0 to: 100 do: [ :i | ... ]
```

```
0 to: 100 by: 3 do: [ :i | ... ]
```

```
aCollection do: [ :each | ... ]
```

Summary

- Three kinds of messages: unary, binary and keywords
- () > unary > binary > keywords
- Conditionals are messages
- Loops too

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