



## Object-Oriented Design Lecture

# Stone Paper Scissors

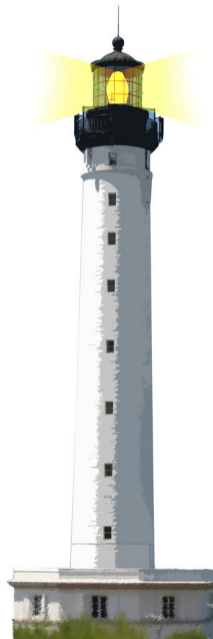
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# Objectives

- Another look at double dispatch
- Basis for Visitor Design pattern
- Avoid hardcoding conditionals

```
(Stone new play: Paper new)  
>>> #paper
```

# Stone Paper Scissors via Tests

```
StonePaperScissorsTest >> testPaperIsWinning  
self assert: (Stone new play: Paper new) equals: #paper
```

# Stone Paper Scissors via Tests

```
StonePaperScissorsTest >> testPaperIsWinning  
self assert: (Stone new play: Paper new) equals: #paper
```

```
StonePaperScissorsTest >> testStoneAgainstStone  
self assert: (Stone new play: Stone new) equals: #draw
```

```
StonePaperScissorsTest >> testStoneIsWinning  
self assert: (Stone new play: Scissors new) equals: #stone
```

# Let us start

```
StonePaperScissorsTest >> testPaperIsWinning  
  self assert: (Stone new play: Paper new) equals: #paper
```

```
Stone >> play: anotherTool  
  ^ ...
```

# Paper playAgainstStone:

```
StonePaperScissorsTest >> testPaperIsWinning  
  self assert: (Stone new play: Paper new) equals: #paper
```

```
Stone >> play: anotherTool  
  ^ anotherTool playAgainstStone: self
```

```
Paper >> playAgainstStone: aStone
```

...

# Paper playAgainstStone:

```
StonePaperScissorsTest >> testPaperIsWinning  
  self assert: (Stone new play: Paper new) equals: #paper
```

```
Stone >> play: anotherTool  
  ^ anotherTool playAgainstStone: self
```

```
Paper >> playAgainstStone: aStone  
  ^ #paper
```

# Other playAgainstStone:

```
Scissors >> playAgainstStone: aStone  
^ #stone
```

```
Stone >> playAgainstStone: aStone  
^ #draw
```



# Scissors now

```
StonePaperScissorsTest >> testScissorsIsWinning  
self assert: (Scissors new play: Paper new) = #scissors
```

```
Scissors >> play: anotherTool  
^ anotherTool playAgainstScissors: self
```

```
Scissors >> playAganstScissors: aScissors  
^ #draw
```

```
Paper >> playAgainstScissors: aScissors  
^ #scissors
```

```
Stone >> playAgainstScissors: aScissors  
^ #stone
```

# Paper now

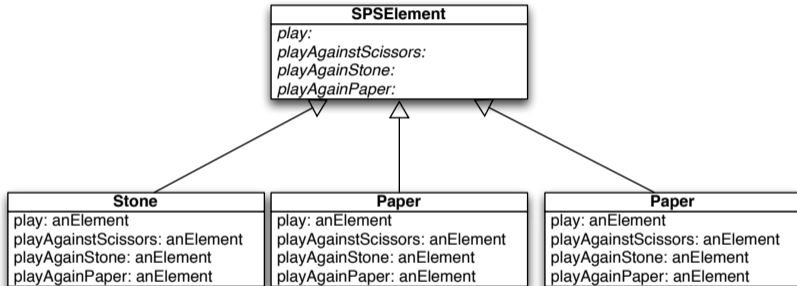
```
Paper >> play: anotherTool  
  ^ anotherTool playAgainstPaper: self
```

```
Scissors >> playAgainstPaper: aPaper  
  ^ #scissors
```

```
Paper >> playAgainstPaper: aPaper  
  ^ #draw
```

```
Stone >> playAgainstPaper: aPaper  
  ^ #paper
```

# Overview



# Remark

In this example we do not need to pass the argument during the double dispatch

```
Scissors >> playAgainstPaper: aPaper  
^ #scissors
```

```
Scissors >> playAgainstPaper  
^ #scissors
```

# Thinking more...

When we return a token or a number we should check to do something after. So passing blocks may be better.

```
Paper new competeWith: Paper new  
  onDraw: [ Game incrementDraw ]  
  onReceiverWin: []  
  onReceiverLose: []
```

# Conclusion

- Powerful
- Modular
- Just sending an extra message to an argument and using late binding



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