Double dispatch

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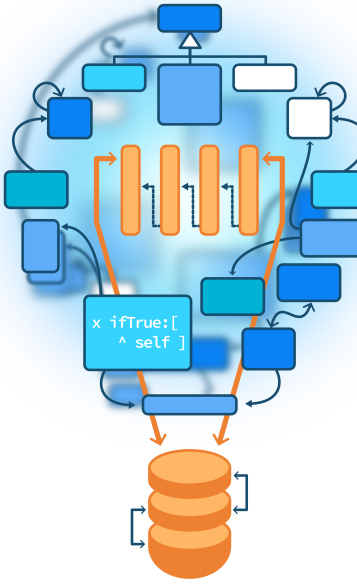


Goals

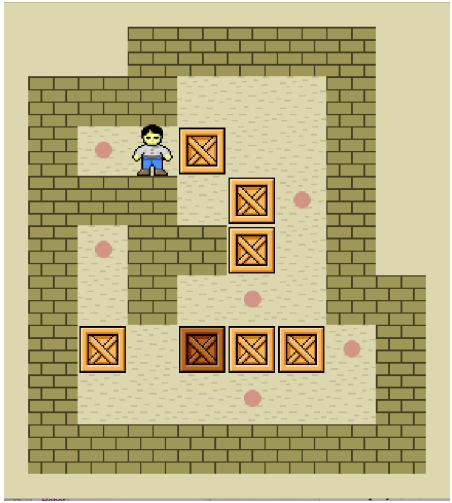
- Look at double dispatch
- Double dispatch does not have to be symmetrical

Remember

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

```
> (Scissors new vs: Paper new)
#scissors
```

Imagine a game model



Block

- Box
- BoxOnTarget
- EmptyBlock
- Player
- Wall

Too many ifs....

```
GameView >> drawBlock: aBlock on: aCanvas
  aBlock isWall
    ifTrue: [ self drawWall: aCanvas ]
    ifFalse: [ aBlock isEmptyBlock
      ifTrue: [ aBlock hasPlayer
          ifTrue: [ aBlock hasTarget
              ifTrue: [ self drawTargetAndPlayer: aCanvas ]
              ifFalse: [ self drawPlayer: aCanvas ]]
          ifFalse: [ aBlock hasBox
            ifTrue: [ aBlock hasTarget
              ifTrue: [ self drawTargetAndBox: aCanvas ]
              ifFalse: [ self drawBox: aCanvas ]]
          ifFalse: [
            aBlock hasTarget
              ifTrue: [ self drawTarget: aCanvas ]
            ifFalse: [ self drawEmptyBlock: aCanvas ]]]
```

A nicer solution

```
GameView >> drawBlock: aBlock on: aCanvas
  aBlock isWall ifTrue: [ self drawWall: aCanvas ].
  aBlock isEmptyBlock ifTrue: [
  aBlock hasPlayer ifTrue: [ ...
```

Becomes

```
GameView >> drawBlock: aBlock on: aCanvas
  aBlock drawOn: aCanvas view: self

Wall >> drawOn: aCanvas view: aView
  aView drawWall: aCanvas

EmptyBlock >> drawOn: aCanvas view: aView
  aView drawEmptyBlock: aCanvas
```

Double dispatch

Each block **tells** the view how to draw it

```
GameView >> drawBlock: aBlock on: aCanvas
  aBlock drawOn: aCanvas view: self

Wall >> drawOn: aCanvas view: aView
  aView drawWall: aCanvas

EmptyBlock >> drawOn: aCanvas view: aView
  aView drawEmptyBlock: aCanvas
```

- We **tell** a block to draw itself and it **tells** how to the canvas
- Sending messages is powerful
- Modular

Conclusion

- Double dispatch is creating a variation point without hardcoding the path
- Modular
- Can be asymmetrical

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