PROGRAMMING PARADIGMS

WHICH ONE IS THE BEST?

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iOS

PROGRAMMING PARADIGMS

WAY OF LOOKING AT CONTROL FLOW AND EXECUTION OF A PROGRAM

1. OBJECT-ORIENTED PROGRAMMING

PROGRAM IS DEFINED BY
OBJECTS WHICH COMBINE
STATE AND BEHAVIOR

3 ASSUMPTIONS

1. ABSTRACTION
2. ENCAPSULATION
3. INHERITANCE

1. ABSTRACTION

2. ENCAPSULATION

3. INHERITANCE

```swift
protocol Shape {
  var area: Double
}

func printShapeArea(shape: Shape) {
  println("area = \(shape.area)")
}
```

```swift
struct Square: Shape {
  let side: Double
  let area: Double {
    return side * side
  }
}

printShapeArea(Square(side: 4)) // 16.0
```

```swift
struct Circle: Shape {
  var radius: Double
  var area: Double {
    return M_PI * radius * radius
  }
}

printShapeArea(Circle(radius: 2)) // 12.56
```

```swift
struct Plane: Shape {
  var area: Double {
    return Double.infinity
  }
}

printShapeArea(Plane()) // infinity
```

~~1. ABSTRACTION~~

2. ENCAPSULATION

3. INHERITANCE

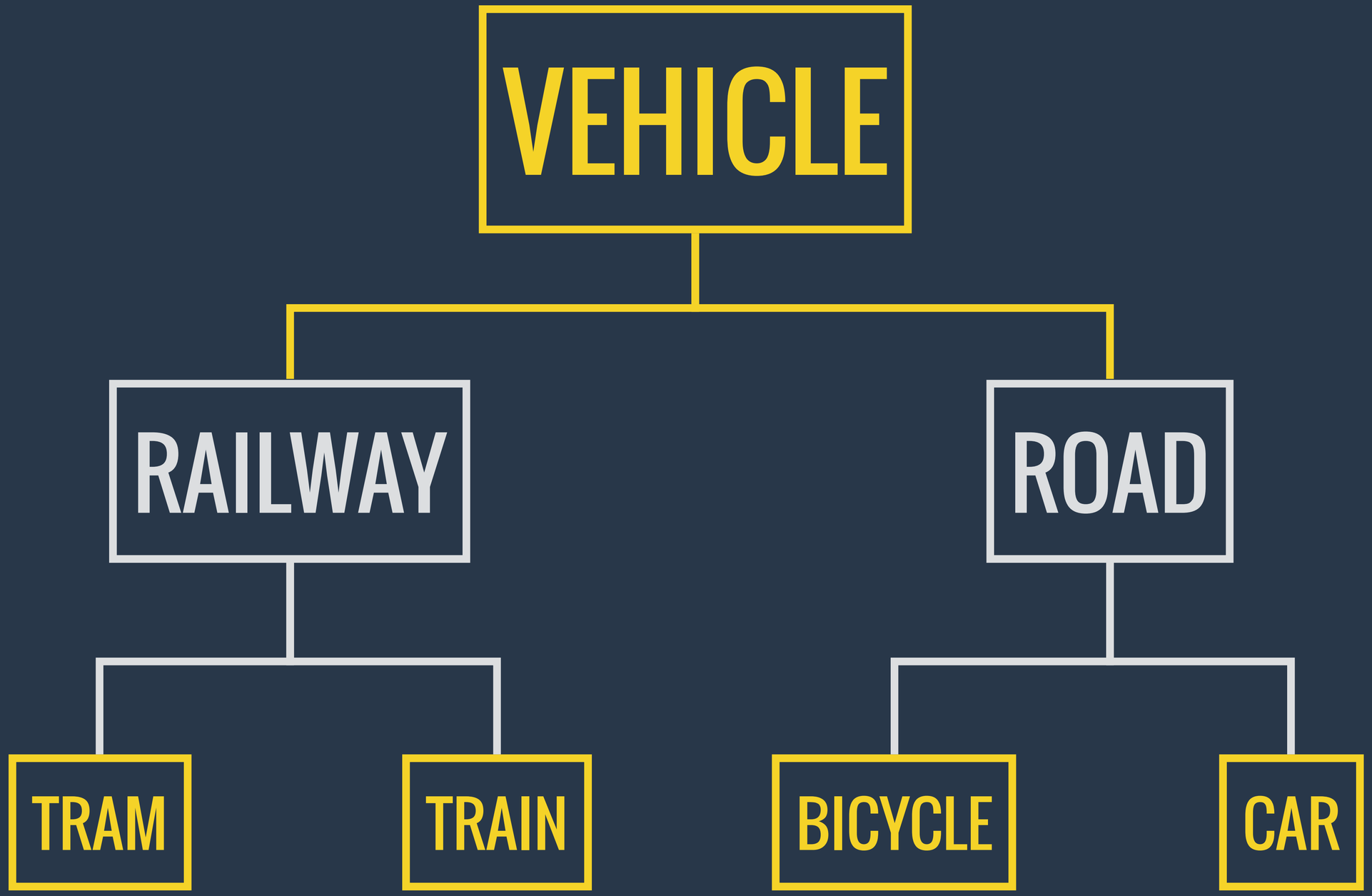
```
class EncryptionAssistant {
  private var key = "420mlg$crub"
  public func encrypt(pass: String) -> String {
    return rsaEncrypt(pass, key)
  }
}
```

```
let assistant = EncryptionAssistant()
assistant.encrypt("secret") // 1Ll00Myn4RtY
assistant.key // compile error!
```

~~1. ABSTRACTION~~

~~2. ENCAPSULATION~~

3. INHERITANCE


VEHICLE
RAILWAY
ROAD
TRAM
TRAIN
BICYCLE
CAR

```
class Car {
  var color: String = "red"
  var name: String {
    return "\(color) car"
  }
}

class BlueCar: Car {
  override var color = "blue"
}
```

```
Car().name // red car
BlueCar().name // blue car
```

~~1. ABSTRACTION~~

~~2. ENCAPSULATION~~

~~3. INHERITANCE~~

2. IMPERATIVE PROGRAMMING

IMPERATIVE PHRASES WHICH CHANGE THE GLOBAL STATE OF A PROGRAM

```
let numbers = [1, 2, 3, 4, 5, 6]
var sum = 0
var odds: [Int] = []
for number in numbers {
  sum += number
  if number % 2 == 1 {
    odds.append(number)
  }
}
```

```
getRemoteData("url", { data, error in
  if error == nil {
    parseData(data, { parsed, error in
      if error == nil {
        handleParsedData(parsed)
      } else {
        displayError(error)
      }
    })
  } else {
    displayError(error)
  }
})
```

IMPERATIVE
PROGRAMMING IS
THE MOST POPULAR

IMPERATIVE
PROGRAMMING IS
THE EASIEST

IMPERATIVE PROGRAMMING IS THE WORST

1. ERROR-PRONE
2. NOT SCALABLE
3. TOO COMPLICATED

```
getRemoteData("example.com", { data, error in
  if error == nil {
    parseData(data, { parsed, error in
      if error == nil {
        handleParsedData(parsed)
      } else {
        displayError(error)
      }
    })
  } else {
    displayError(error)
  }
})
```

```
getRemoteData("example.com", { data, error in
  if error == nil {
    parseData(data, { parsed, error in
      if error == nil {
        if parsedDataValid(parsed) {
          handleParsedData(parsed)
        }
      } else {
        displayError(error)
      }
    })
  } else {
    displayError(error)
  }
})
```

```
getRemoteData("example.com", { data, error in
  if error == nil {
    parseData(data, { parsed, error in
      if error == nil {
        if parsedDataValid(parsed) {
          saveParsedDataInCache(parsed, { error in
            if error == nil {
              handleParsedData(parsed)
            } else {
              displayError(error)
            }
          })
        }
      } else {
        displayError(error)
```

```
getRemoteData("example.com", { data, error in
  if error == nil {
    parseData(data, { parsed, error in
      if error == nil {
        if parsedDataValid(parsed) {
          saveParsedDataInCache(parsed, { error in
            if error == nil {
              handleParsedData(parsed, { error in
                if error == nil {
                  displaySuccess()
                } else {
                  displayError(error)
                }
              })
            } else {
```

3. DECLARATIVE PROGRAMMING

DECLARE WHAT YOU'RE TRYING TO ACCOMPLISH, NOT HOW TO DO IT

```
let numbers = [1, 2, 3, 4, 5, 6]
var sum = 0
var odds: [Int] = []
for number in numbers {
  sum += number
  if number % 2 == 1 {
    odds.append(number)
  }
}
```

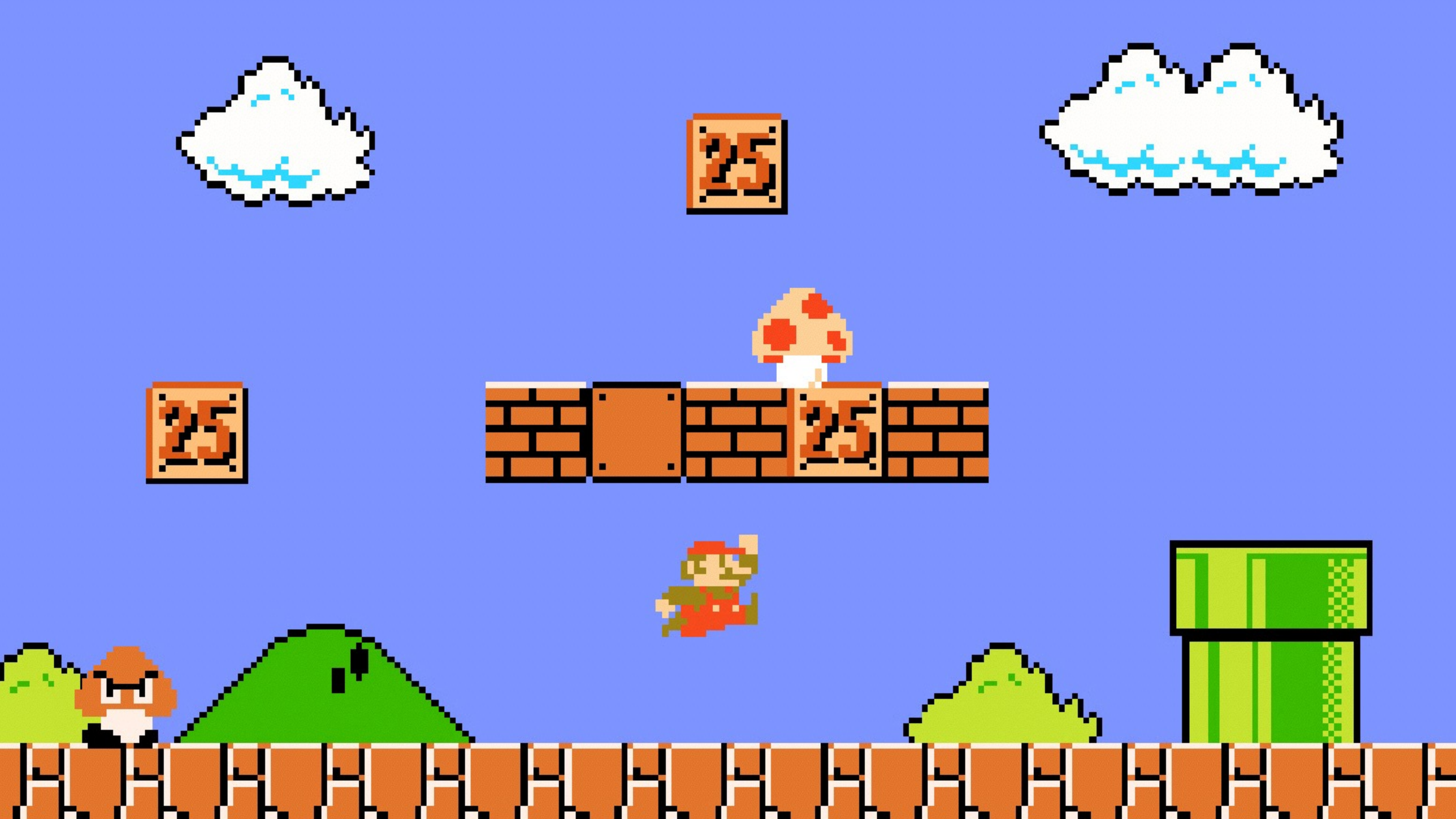
```
var sum = 0
var odds: [Int] = []
let numbers = [1, 2, 3, 4, 5, 6]
for number in numbers {
  sum += number // reduction
  if number % 2 == 1 { // filtration
    odds.append(number)
  }
}
```

```
let numbers = [1, 2, 3, 4, 5, 6]
let sum = reduce(numbers, 0, { memo, number in
  return memo + number
})
let odds = filter(numbers, { number in
  return number % 2 == 1
})
```

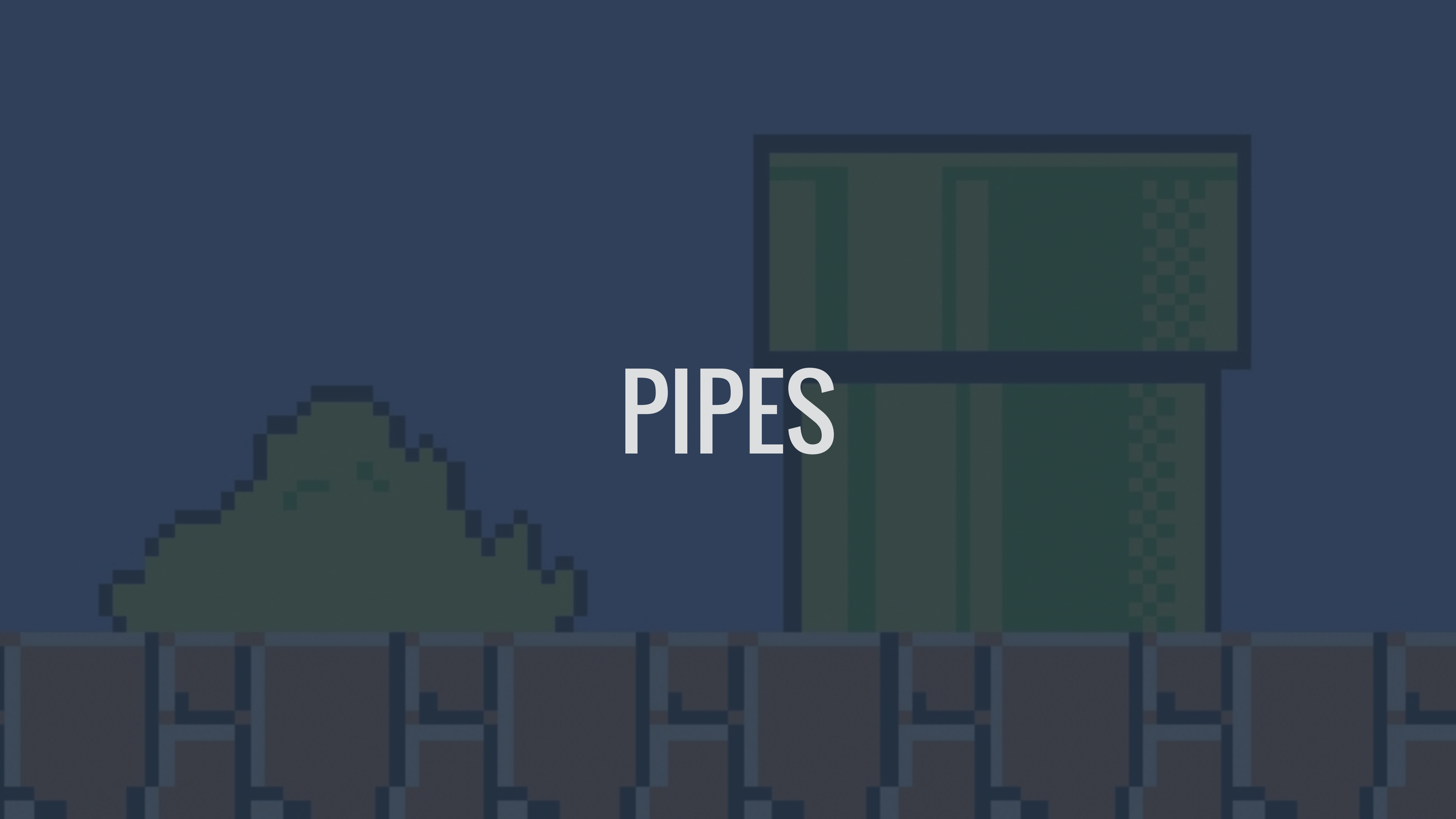
```
let numbers = [1, 2, 3, 4, 5, 6]
let sum = reduce(numbers, 0, +)
let odds = filter(numbers, { $0 % 2 == 1 })
```

```
getRemoteData("example.com",
  if error == nil {
    parseData(data, { parsed,
      if error == nil {
        if parsedDataValid(pars
          saveParsedDataInCach
            if error == nil {
              handleParsedData(
                if error == nil {
                  displaySuccess
                } else {
                  displayError(er
                }
              })
            } else {
              displayError(error)
            }
          })
        }
      } else {
        displayError(error)
      }

      se {
      splayError(error)
      }
    })
```


25
25
25

PIPES



DOWNLOAD PARSE SAVE IN CACHE DISPLAY

ERRORS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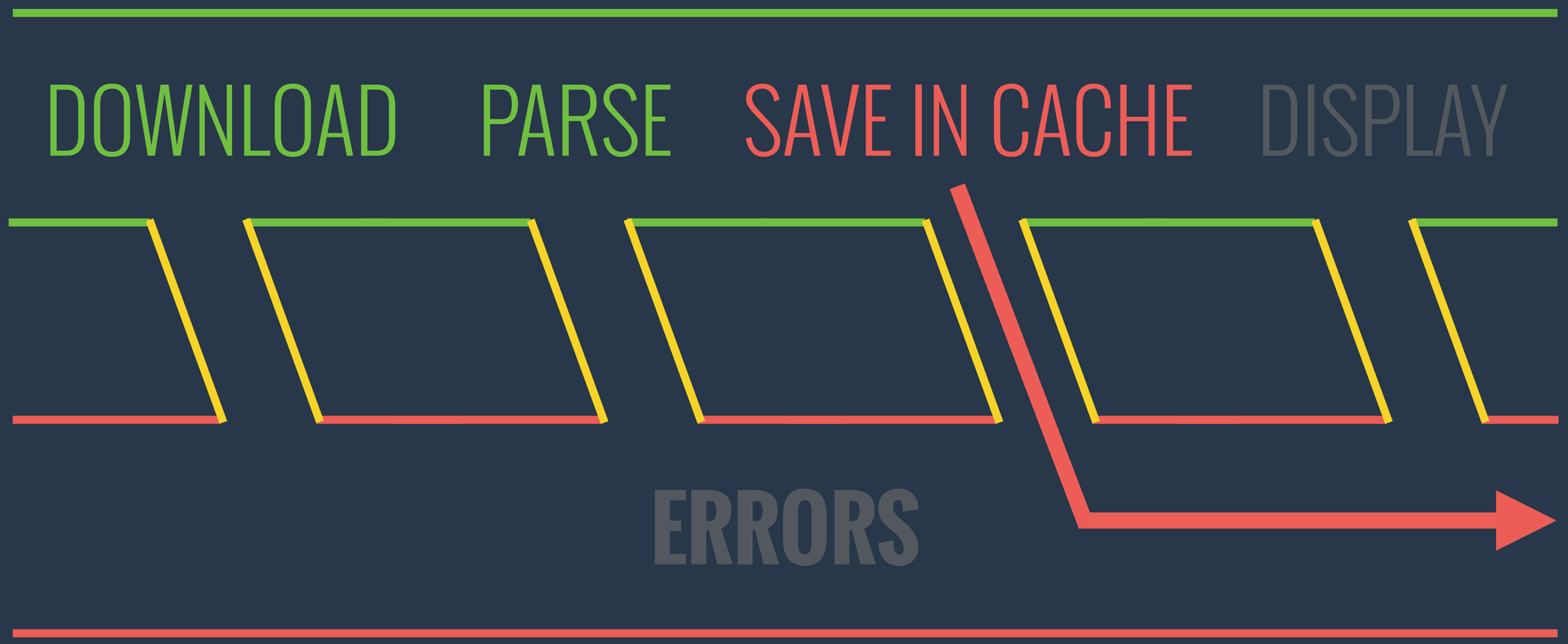
DOWNLOAD
PARSE
SAVE IN CACHE
DISPLAY
ERRORS

```
getRemoteData("example.com")
  .then({ data in parseData(data) })
  .filter({ parsed in parsedDataValid(parsed) })
  .then({ parsed in saveInCache(parsed) })
  .then({ parsed in handleParsedData(parsed) })
  .error({ error in displayError(error) })
```

```
getRemoteData("example.com")
  .then({ data in parseData(data) })
  .filter({ parsed in parsedDataValid(parsed) })
  .filter({ parsed in !alreadyInCache(parsed) })
  .then({ parsed in saveInCache(parsed) })
  .then({ parsed in handleParsedData(parsed) })
  .error({ error in displayError(error) })
```

```
getRemoteData("example.com")
  .then({ data in parseData(data) })
  .filter({ parsed in parsedDataValid(parsed) })
  .filter({ parsed in !alreadyInCache(parsed) })
  .then({ parsed in saveInCache(parsed) })
  .then({ parsed in handleParsedData(parsed) })
  .error({ error in displayError(error) })
```

DECLARATIVE PROGRAMMING IS MUCH SIMPLER

DECLARATIVE PROGRAMMING IS MUCH SAFER

DECLARATIVE PROGRAMMING IS MORE SCALABLE

WHICH PARADIGM IS THE BEST?

1. OBJECT-ORIENTED
2. IMPERATIVE
3. DECLARATIVE

~~1. OBJECT-ORIENTED~~

2. IMPERATIVE

3. DECLARATIVE

~~1. OBJECT-ORIENTED~~

~~2. IMPERATIVE~~

3. DECLARATIVE

~~1. OBJECT-ORIENTED~~

~~2. IMPERATIVE~~

3. DECLARATIVE

TOGETHER

THANK YOU

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github.com/akashivskyy/talks