

Lesson 7

Variables: Keeping Track

```
var gemCounter = 0
```

```
moveForward()  
moveForward()  
collectGem()  
gemCounter = 1
```

Variables: Bump Up the Value

```
var gemCounter = 0
```

```
moveForward()  
collectGem()  
gemCounter = 1  
moveForward()  
collectGem()  
gemCounter = 2  
moveForward()  
collectGem()  
gemCounter = 3  
moveForward()  
collectGem()  
gemCounter = 4  
moveForward()  
collectGem()  
gemCounter = 5
```



Lesson 7

Variables: Incrementing the Value

```
var gemCounter = 0
```

```
while !isBlocked {  
  while !isBlocked {  
    if isOnGem {  
      collectGem()  
      gemCounter = gemCounter + 1  
    }  
    moveForward()  
  }  
  turnRight()  
}
```

Variables: Seeking Seven Gems

```
while gemCounter < 7 {  
  if isOnGem {  
    collectGem()  
    gemCounter = gemCounter + 1  
  }  
  if isBlocked {  
    turnRight()  
    turnRight()  
  }  
  moveForward()  
}
```



Lesson 7

Variables: Incrementing the Value

```
var gemCounter = 0
```

```
while !isBlocked {  
  while !isBlocked {  
    if isOnGem {  
      collectGem()  
      gemCounter = gemCounter + 1  
    }  
    moveForward()  
  }  
  turnRight()  
}
```

Variables: Seeking Seven Gems

```
while gemCounter < 7 {  
  if isOnGem {  
    collectGem()  
    gemCounter = gemCounter + 1  
  }  
  if isBlocked {  
    turnRight()  
    turnRight()  
  }  
  moveForward()  
}
```



Lesson 7

Variables: Three Gems, Four Switches

```
var gemCounter = 0
var switchCounter = 0
```

```
while gemCounter != 3 || switchCounter != 4 {
  if gemCounter != 3 && isOnGem {
    collectGem()
    gemCounter = gemCounter + 1
  } else if switchCounter != 4 &&
isOnClosedSwitch {
    toggleSwitch()
    switchCounter = switchCounter + 1
  }
  if isBlocked {
    turnRight()
    if isBlocked {
      turnLeft()
      turnLeft()
    }
  }
  moveForward()
}
```

Variables: Checking for Equal Values

```
let switchCounter = numberOfSwitches
var gemCounter = 0
```

```
while gemCounter < switchCounter {
  if isOnGem {
    collectGem()
    gemCounter = gemCounter + 1
  }
  if isBlocked {
    turnRight()
  }
  moveForward()
}
```



Lesson 7

Variables: Three Gems, Four Switches

```
var gemCounter = 0
var switchCounter = 0
```

```
while gemCounter != 3 || switchCounter != 4 {
  if gemCounter != 3 && isOnGem {
    collectGem()
    gemCounter = gemCounter + 1
  } else if switchCounter != 4 &&
isOnClosedSwitch {
    toggleSwitch()
    switchCounter = switchCounter + 1
  }
  if isBlocked {
    turnRight()
    if isBlocked {
      turnLeft()
      turnLeft()
    }
  }
  moveForward()
}
```

Variables: Checking for Equal Values

```
let switchCounter = numberOfSwitches
var gemCounter = 0
```

```
while gemCounter < switchCounter {
  if isOnGem {
    collectGem()
    gemCounter = gemCounter + 1
  }
  if isBlocked {
    turnRight()
  }
  moveForward()
}
```



Lesson 7

Variables: Round Up the Switches

```
var gemCounter = 0
```

```
var switchCounter = 0
```

```
while !isOnClosedSwitch {  
  while !isBlocked {  
    if isOnGem {  
      collectGem()  
      gemCounter = gemCounter + 1  
    }  
    moveForward()  
  }  
  turnRight()  
}
```

```
while switchCounter < gemCounter {  
  while !isBlocked {  
    if isOnClosedSwitch {  
      toggleSwitch()  
      switchCounter = switchCounter - 1  
    }  
    moveForward()  
  }  
  turnRight()  
}
```



Lesson 7

Variables: Round Up the Switches

```
var gemCounter = 0
```

```
var switchCounter = 0
```

```
while !isOnClosedSwitch {  
  while !isBlocked {  
    if isOnGem {  
      collectGem()  
      gemCounter = gemCounter + 1  
    }  
    moveForward()  
  }  
  turnRight()  
}
```

```
while switchCounter < gemCounter {  
  while !isBlocked {  
    if isOnClosedSwitch {  
      toggleSwitch()  
      switchCounter = switchCounter - 1  
    }  
    moveForward()  
  }  
  turnRight()  
}
```



Lesson 7

Variables: Collect the Total

```
var gemCounter = 0
```

```
while gemCounter < totalGems {  
  if isOnGem {  
    collectGem()  
    gemCounter = gemCounter + 1  
  }  
  if isBlocked {  
    turnRight()  
    if isBlocked {  
      turnLeft()  
      turnLeft()  
      if isBlocked {  
        turnLeft()  
      }  
    }  
  }  
  moveForward()  
}
```

***Some puzzles may have multiple solutions**

Lesson 7

Variables: Collect the Total

```
var gemCounter = 0
```

```
while gemCounter < totalGems {  
  if isOnGem {  
    collectGem()  
    gemCounter = gemCounter + 1  
  }  
  if isBlocked {  
    turnRight()  
    if isBlocked {  
      turnLeft()  
      turnLeft()  
      if isBlocked {  
        turnLeft()  
      }  
    }  
  }  
  moveForward()  
}
```

***Some puzzles may have multiple solutions**

