

## Section 3

# *Pattern Matching*



In this Section, we are going to take a look at...

- Fundamentals of pattern matching
- Difference from assignment
- Forms of pattern matching
- Practical use cases

Video 3.1

## *Pattern Matching versus Assignment*



In this video, we are going to take a look at...

- What is pattern matching
- How does it differ from assignment

Wind 5s

```
list = [1,2,3,4,5]
```

```
list = [1,2,3,4,5]
```

Assign the value of the list to the variable named `list`

**x** = **1**

We can do this with any type

$$x = 1$$

$$1 = x$$



$$x = 1$$

$$1 = x$$

$$1 = 1$$

# The Match Operator

**x** **=** **y**

↑  
Match  
Operator

# The Match Operator



# The Match Operator

**x** = *y*

Match the left hand side  
with the value on the right hand side

# The Match Operator

## Terminal

```
iex(1)> x = [1,2,3,4,5]
```

```
[1,2,3,4,5]
```

```
iex(2)> x
```

```
[1,2,3,4,5]
```

```
iex(3)> [1,2,3,4,5] = x
```

```
[1,2,3,4,5]
```

# The Match Operator

## Terminal

```
iex(4)> x = 3
```

```
3
```

```
iex(5)> x
```

```
3
```

```
iex(6)> [1,2,3,4,5] = x
```

```
** (MatchError) no match of right hand side value: 3
```


# Matching Rules

$$x = 1$$



If the left hand side contains a variable,  
the variable on the right hand side  
is bound to the variable

# Matching Rules

$$x = y$$


If the right hand side contains a name, the left hand side is matched to the value of the variable with that name or a function with the same name, if it exists



# Matching Rules

$x = 1$

$x = 2$

A variable can be "re-assigned" with a different value on a subsequent match

# Pin Operator

Pin  
Operator  $\longrightarrow \wedge x = y$

## Pin Operator

Pin  
Operator  $\longrightarrow \wedge x = y$

Strict check for a match, no binding of variables

# Pin Operator

## Terminal

```
iex(1)> x = "hello"
```

```
"hello"
```

```
iex(2)> x = "hey"
```

```
"hey"
```

```
iex(3)> ^x = "oi"
```

```
** (MatchError) no match of right hand side value: "oi"
```

# Pin Operator

## Terminal

```
iex(4)> ^y = "hello"
```

```
** (CompileError) iex:4: unbound variable ^y
```