Part 2: Lambda

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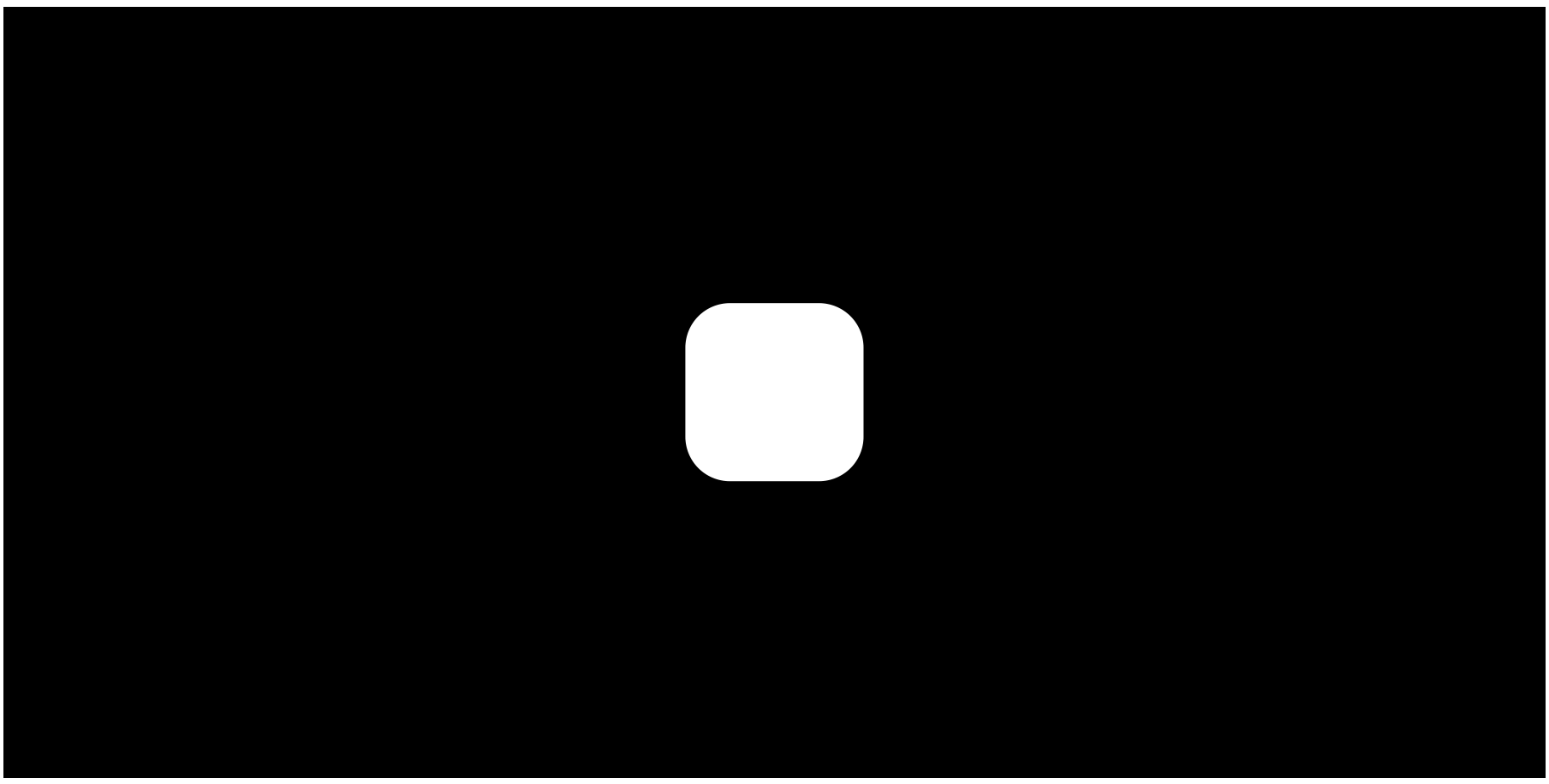

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The Lambda special form is Python's syntax for creating an unnamed function --- a function without a name. This is its general form:

```
lambda arguments: expression
```

The function evaluates to the result of the expression. Here is a lambda that adds one to its argument:

```
lambda x: x + 1
```

Here is a lambda that adds its two arguments together:

```
lambda x, y: x + y
```

Compare this syntax to that of a standard function definition:

```
def my_sum(x, y):
    return x + y
```

This simple function does nothing more than return the value of the expression in the 'return', so it is viable written on a single line.

```
def my_sum(x, y): return x + y
```

Notice how this named function maps directly to its unnamed, lambda equivalent:

```
lambda x, y: x + y
```

Now, unlike most code snippets, if you were to type these examples into your favorite python interpreter by themselves

they would not accomplish much.

```
>>> lambda x, y: x + y
<function <lambda> at 0x104f61e18>
```

You can't call that, because it has no name. For all intents and purposes the anonymous functions were defined, recognized by the python interpreter as valid, syntactically correct python code, and then discarded, never to be seen or used again. You could, however, use the function immediately by calling it with its required arguments:

‹ Previous Next ›

```
>>> (lambda x, y: x + y)(2, 3)
5
```


In this case python defines the anonymous function, calls it with the supplied arguments and prints the result, but this feels like we're using the python interpreter as little more than a calculator; we are not writing useful code. Indeed simply entering '2 + 3' in the interpreter provides the same result with a lot less typing. So what's the point? Where are lambdas useful?

Lambdas are only useful within larger code constructs --- specifically when defined inline --- and generally as an argument to a function or method which is expecting a function.

What is so special about Lambda? Here is the secret about Lambda: there is no secret to lambda. There is nothing it can do that a standard named function cannot do. It has no special powers aside from its ability to be defined inline. Wherever you can use a Lambda you could instead choose to use a standard named function. However, lambda is a succinct way to create functions on the fly, with low ceremony. It can be very handy in several situations, not least when entering Python code in the Python shell.