

Refactoring with First-Class Functions



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Working Example



Order Processing System

Order

Order Items

Customer

Indicators

- Expedited
- Shipped
- Enterprise customer
- Item backordered

State information

- Order id
- Shipping address

Demo



Higher-order Functions in Python

A higher-order function is one that takes a function as a parameter or returns a function as a result, or both.

```
def f(x):  
    return x + 2  
  
def g(h, x):  
    return h(x) * 2  
  
print(g(f, 42))
```

Composition

```
def addx(x):  
    def _(y):  
        return x + y  
    return _  
  
add2 = addx(2)  
add3 = addx(3)  
  
print(add2(2), add3(3))
```

Closure

```
def f(x, y):  
    return x*y  
  
def f2(x):  
    def _(y):  
        return f(x, y)  
    return _  
  
print(f2(2))  
print(f2(2)(3))
```

Currying

Demo



Summary



Order class with repeated code

New functionality = more duplication

Higher-order functions

- Composition
- Closures
- Currying

Refactored the Order class

Using calls to helper functions

Original functions became higher-order