Send

This lesson discusses sending values to a generator function.

Send

In the previous section, we formally introduced generators. Interestingly, we can also pass data to a generator function using the **`send()`** method defined on the associated generator object. The generator function can receive the value using the following syntax:

```
    item = yield
```

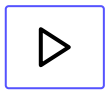
The **`send()`** method can also return a value to the caller. Consider the example program below:

```
def generator_function():
    while True:
        item = yield
        print("received " + str(item))


if __name__ == "__main__":
    gen = generator_function()
    next(gen)
    gen.send(37)
```


```
def generator_function():
    while True:
        item = yield
        print("received " + str(item))


if __name__ == "__main__":
    gen = generator_function()
    next(gen)
    gen.send(37)
```




Running the code above will produce an output of 37 in the console.

Note that before executing **`send()`** on the generator object we invoke **`next()`** one **line#9**. The reason is that when the generator is starting out, there is no **`yield`** assignment statement that the generator is waiting on to receive a value. If you comment out **line#9** you'll see an exception being thrown. But if you replace the value 37 being passed-in with None, the exception would go away. Another way we could have started the generator is to send a None value initially instead of invoking **`next()`**. The code change would be:

Starting a generator using send

```
def generator_function():
    while True:
        item = yield
        print("received " + str(item))


if __name__ == "__main__":
    gen = generator_function()
    # start a generator by sending None
    # which is not received but advances
    # the generator function to the first
    # yield statement
    gen.send(None)
    # send a value
    gen.send(37)
```

```
def generator_function():
    while True:
        item = yield
        print("received " + str(item))


if __name__ == "__main__":
    gen = generator_function()
    gen.send(None)
    gen.send(37)
```

When we execute `gen.send(37)` on **line#10** the generator function resumes execution and 37 is assigned to the variable `item`.

The `send()` method assigns the value within the generator function and then returns the next value yielded by the generator. If no value is yielded and the generator function exits, a `StopIteration` exception

is raised. Consider the following changes to the previous example and observe it throw an exception now.

```
def generator_function():
    item = yield
    print("received " + str(item))


if __name__ == "__main__":
    gen = generator_function()
    next(gen)
    gen.send(37)
```

```
def generator_function():
    item = yield
    print("received " + str(item))


if __name__ == "__main__":
    gen = generator_function()
    next(gen)
    gen.send(37)
```

Generators become interesting when we can send and receive from them. Let's try to combine the two functionalities in the next lesson.

Back
Generator

Next
Sending and Receiving

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