PYTHON IS FOR EVERYONE

Tutorial 5:

PYTHON PROGRAMMING - LOOPS IN GOOGLE COLAB

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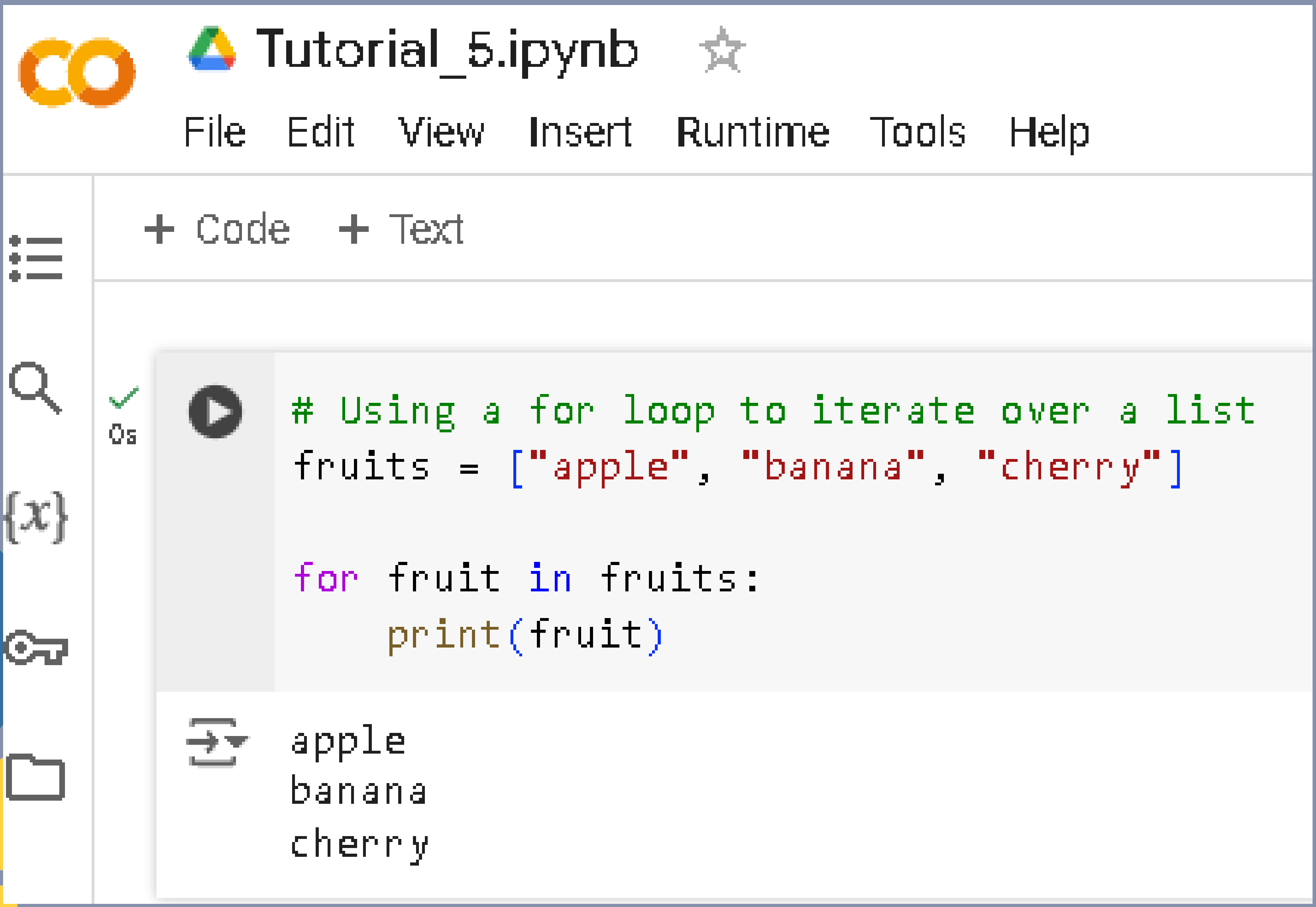
Objectives

- Understand the two main types of loops in Python: “for” loops and “while” loops.
- Learn how to use loops to iterate over sequences and perform repetitive tasks.
- Practice writing loops in Python.

The “for” Loop

The “for” loop is used to iterate over a sequence (like a list, tuple, string, or range). It allows you to execute a block of code for each item in the sequence.

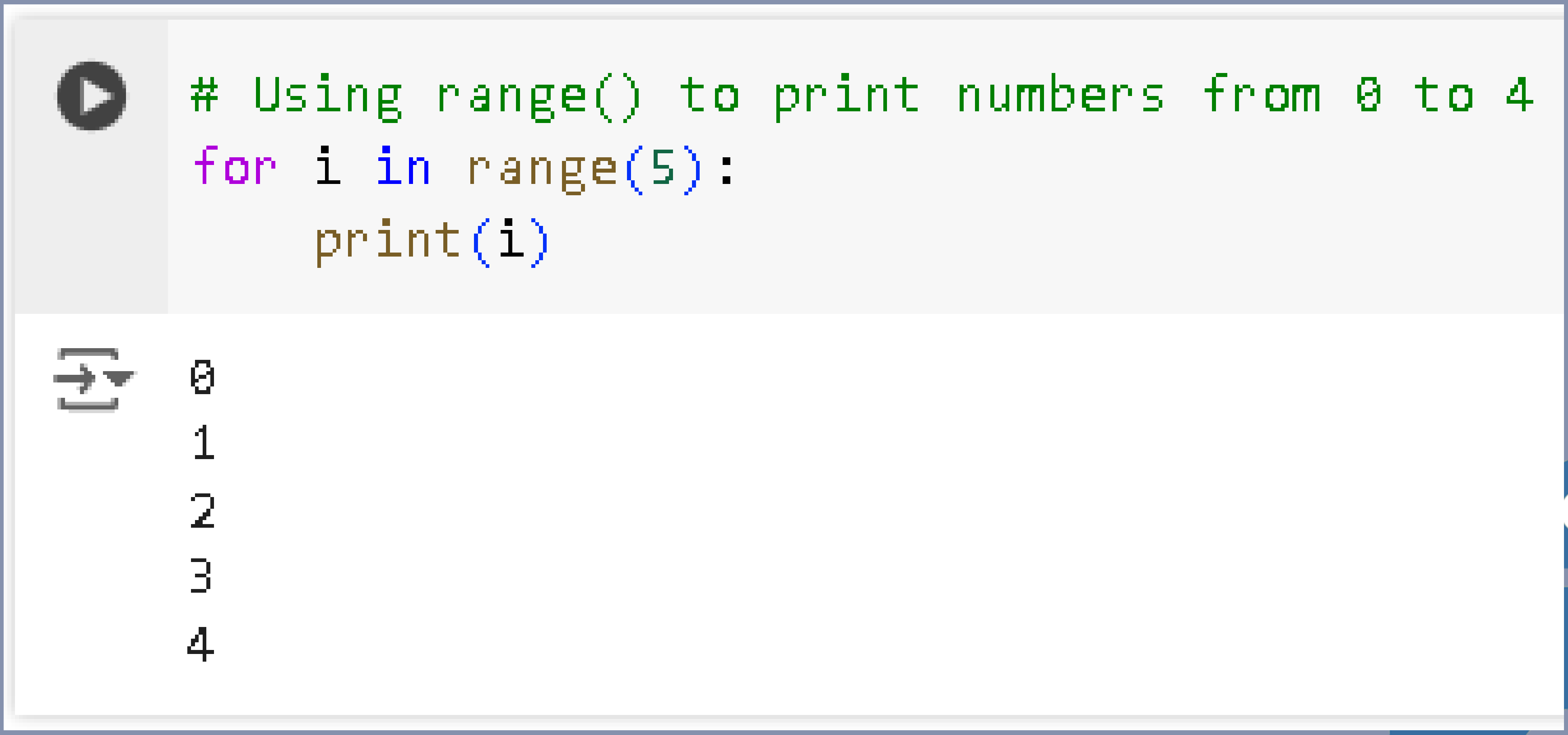


```
# Using a for loop to iterate over a list
fruits = ["apple", "banana", "cherry"]

for fruit in fruits:
    print(fruit)
```

```
apple
banana
cherry
```

The “range()” Function

The “range()” function generates a sequence of numbers, which is often used with for loops.

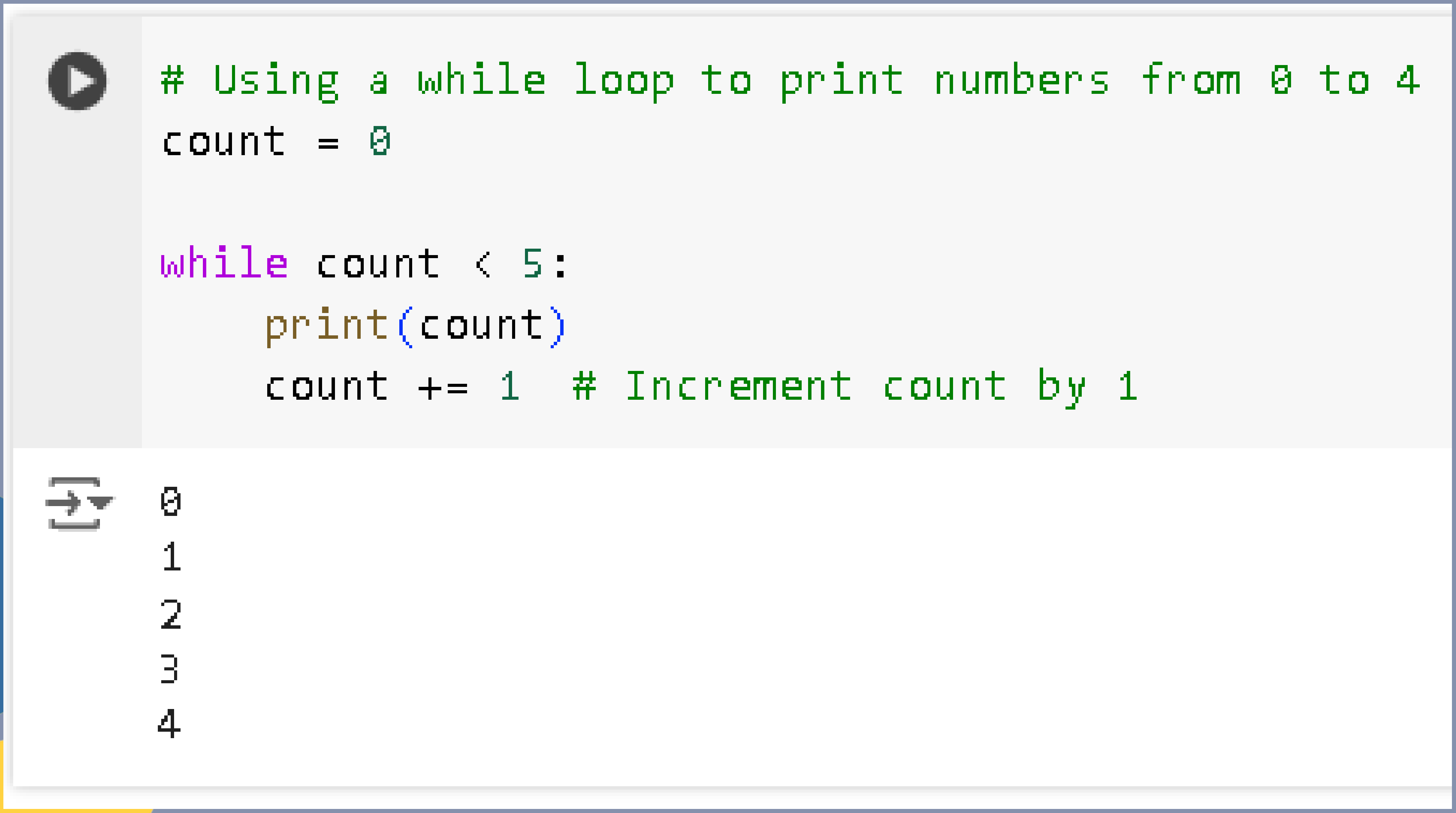


```
# Using range() to print numbers from 0 to 4
for i in range(5):
    print(i)
```

```
0
1
2
3
4
```

The “while” Loop

The “while” loop continues to execute a block of code as long as a specified condition is True.

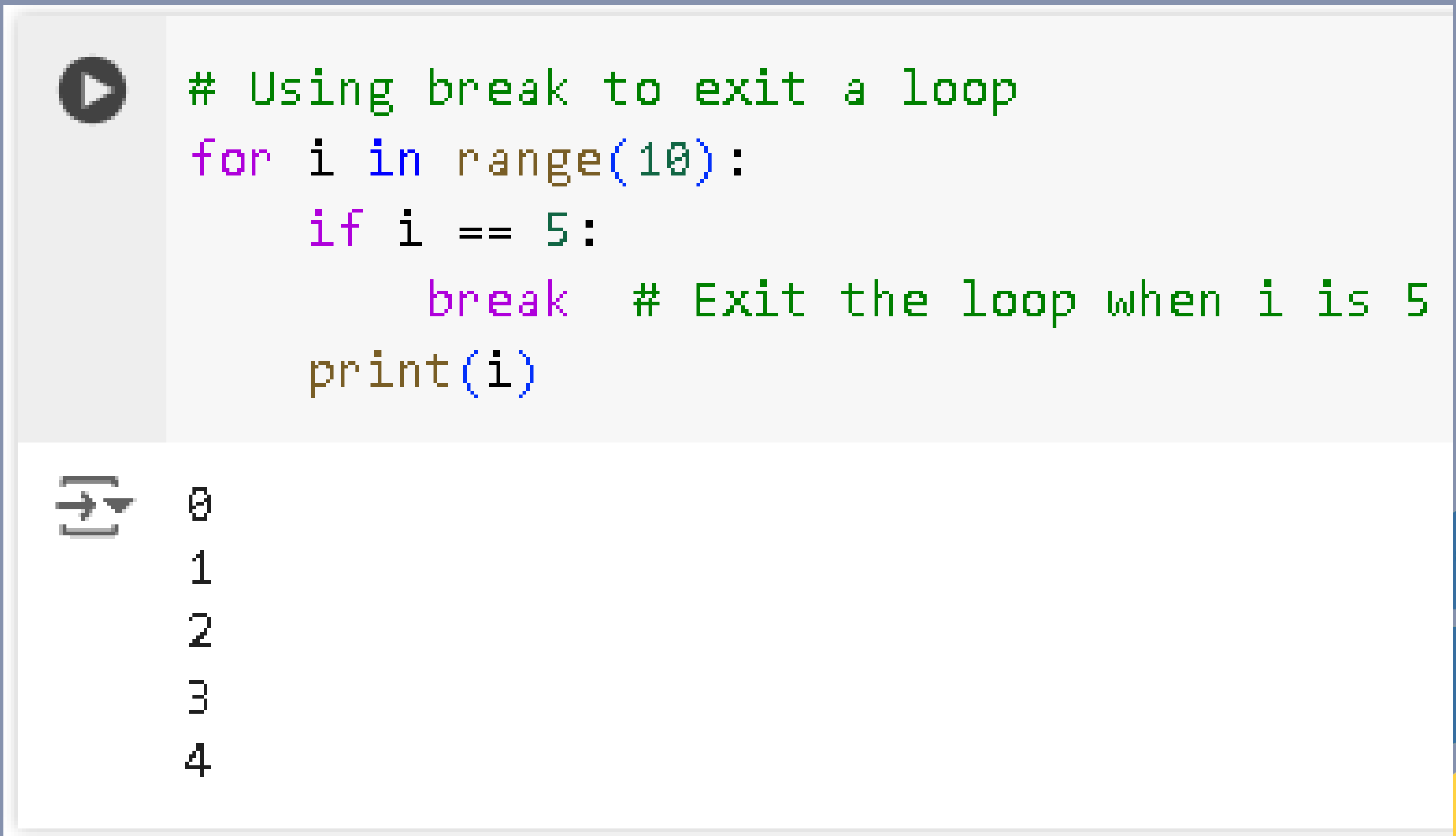


```
# Using a while loop to print numbers from 0 to 4
count = 0

while count < 5:
    print(count)
    count += 1  # Increment count by 1
```

```
0
1
2
3
4
```

Breaking Out of Loops

You can use the break statement to exit a loop prematurely.

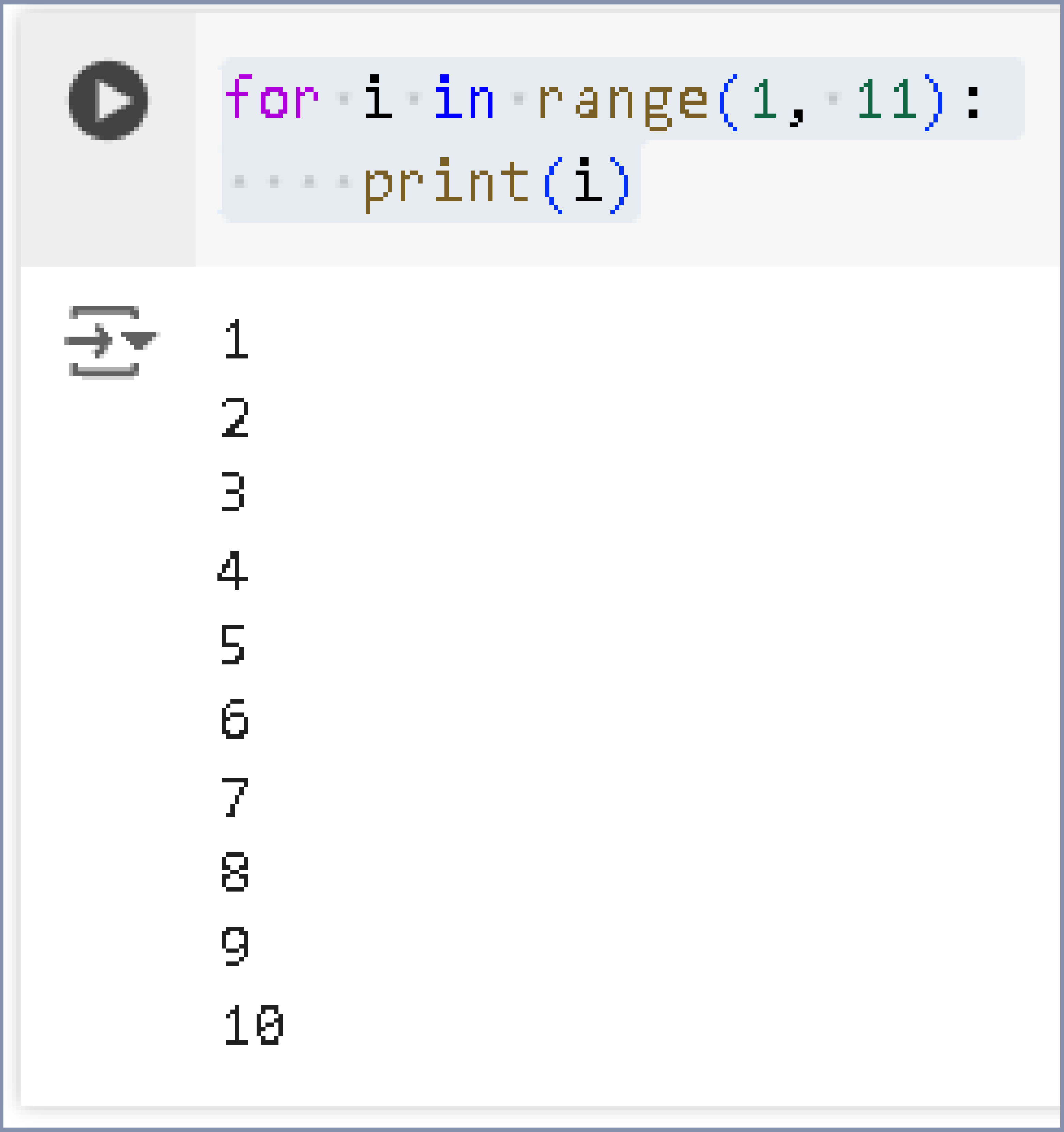


```python
# Using break to exit a loop
for i in range(10):
    if i == 5:
        break  # Exit the loop when i is 5
    print(i)
```

```
0
1
2
3
4
```

Practice Exercises

Write a program that uses a “for” loop to print the numbers from 1 to 10.

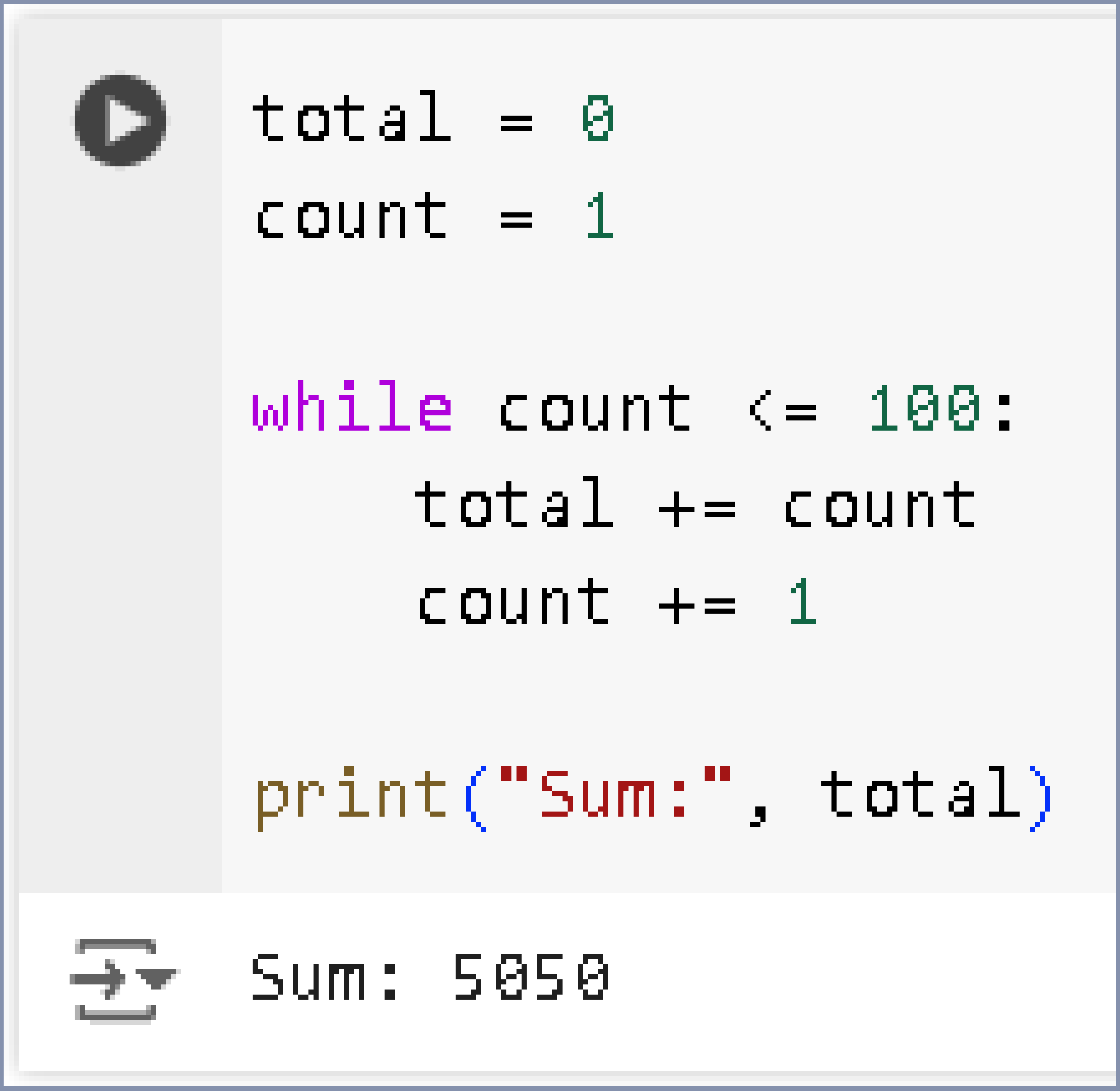


```
for i in range(1, 11):
    print(i)
```

```
1
2
3
4
5
6
7
8
9
10
```

Practice Exercises

Write a program that calculates the sum of numbers from 1 to 100 using a “while” loop.

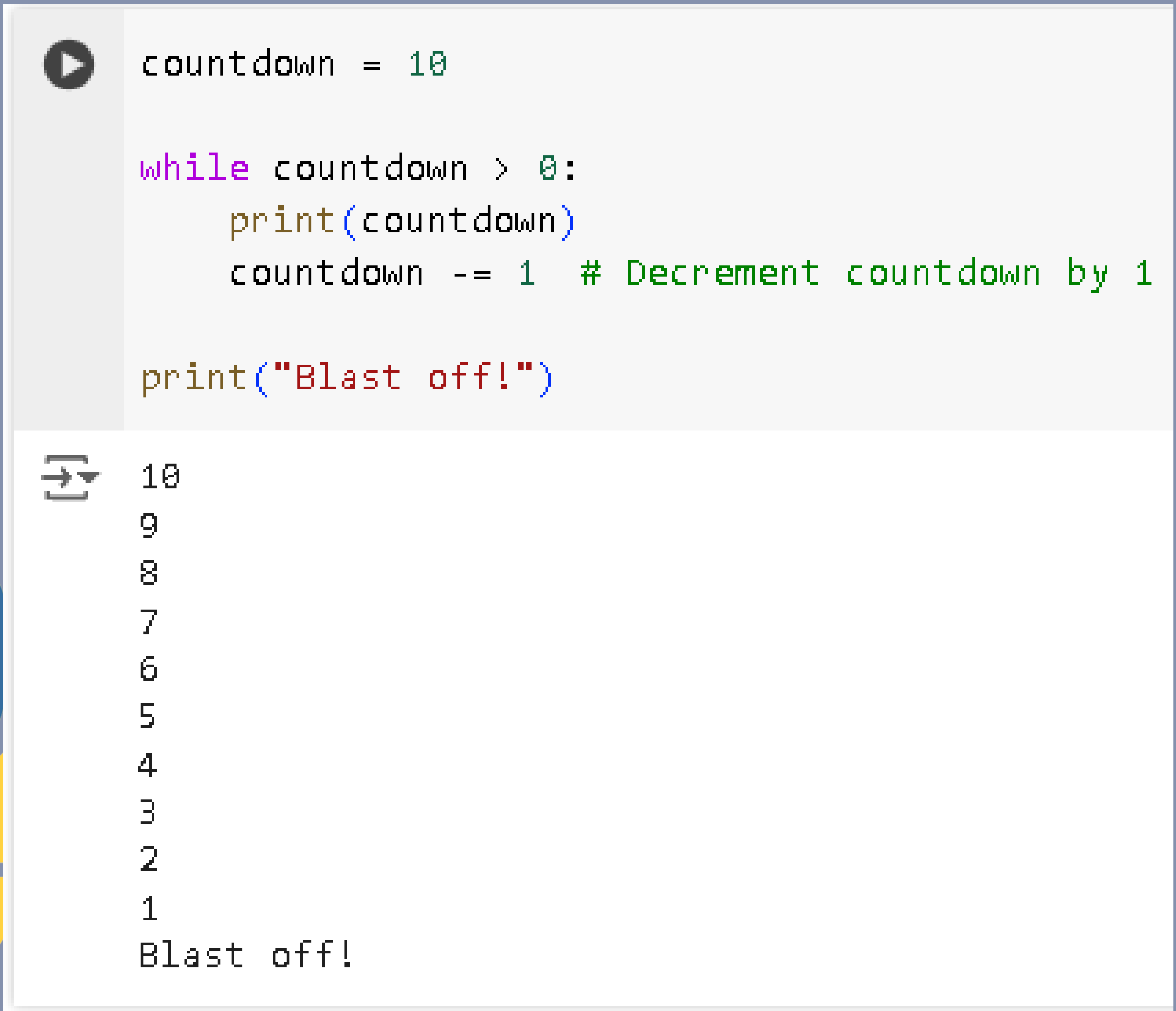


```python
total = 0
count = 1

while count <= 100:
    total += count
    count += 1

print("Sum:", total)
```

```
Sum: 5050
```

Practice Exercises

Write a program that counts down from 10 to 1 using a while loop and prints "Blast off!" after the countdown.

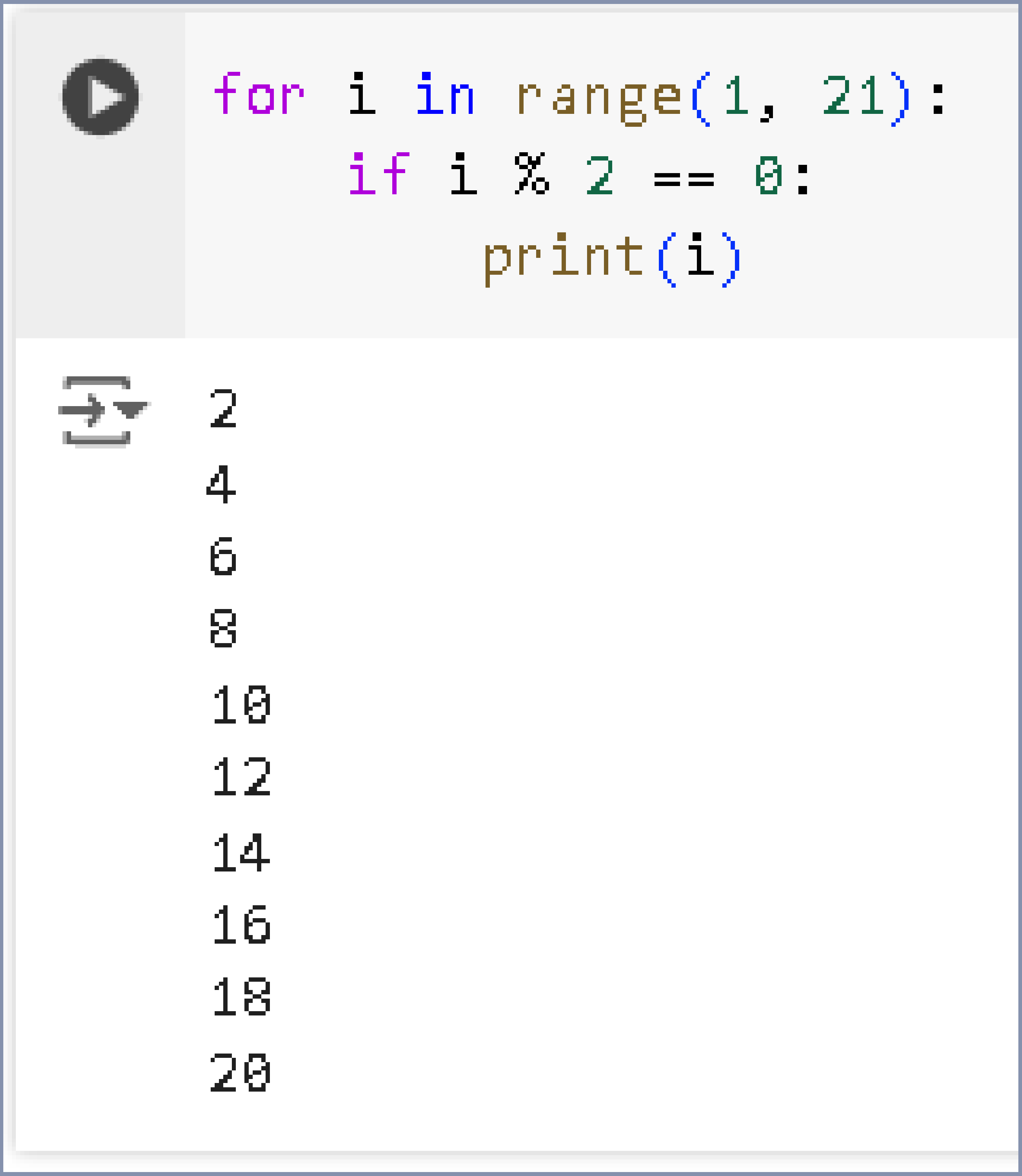


```
countdown = 10

while countdown > 0:
    print(countdown)
    countdown -= 1  # Decrement countdown by 1

print("Blast off!")
```

```
10
9
8
7
6
5
4
3
2
1
Blast off!
```

Practice Exercises

Write a program that prints all even numbers from 1 to 20 using a “for” loop.



```
for i in range(1, 21):
    if i % 2 == 0:
        print(i)
```

```
2
4
6
8
10
12
14
16
18
20
```

Conclusion

In this tutorial, you learned about loops in Python, specifically “for” loops and “while” loops. You practiced writing loops to perform repetitive tasks and explored how to break out of loops when needed.

Next Steps

In tutorial 6, we will explore defining and using functions to organize your code into reusable blocks.

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