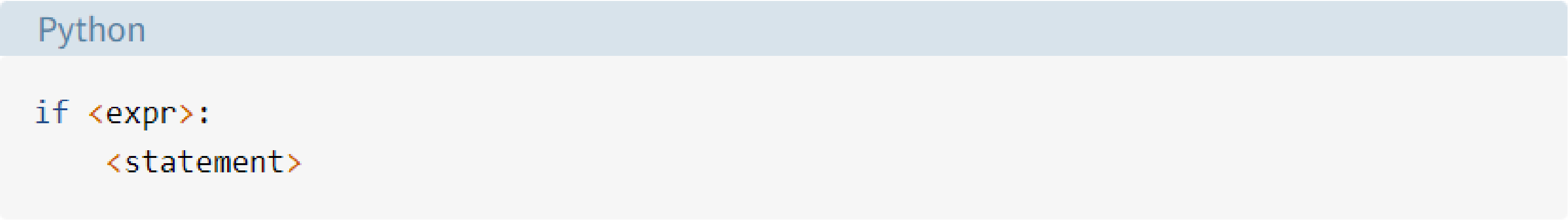
Conditional Statements in Python

The conditions are evaluated and processed as true or false. If this is found to be true, the program is run as needed. If the condition is found to be false, the statement following the If condition is executed.

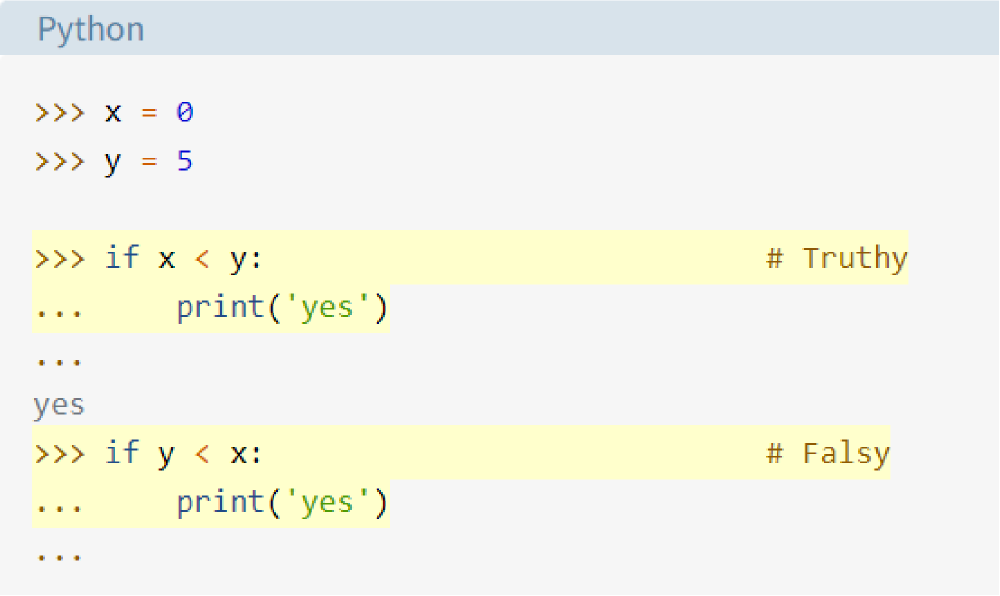
1. If the statement
2. If else statement
3. Nested if statement
4. If…Elif ladder
5. Short Hand if statement
6. Short Hand if-else statement

If statement

The If statement is the most fundamental decision-making statement, in which the code is executed based on whether it meets the specified condition. It has a code body that only executes if the the condition in the if statement is true. The statement can be a single line or a block of code.


Python

```python
if <expr>:
    <statement>
```


Python

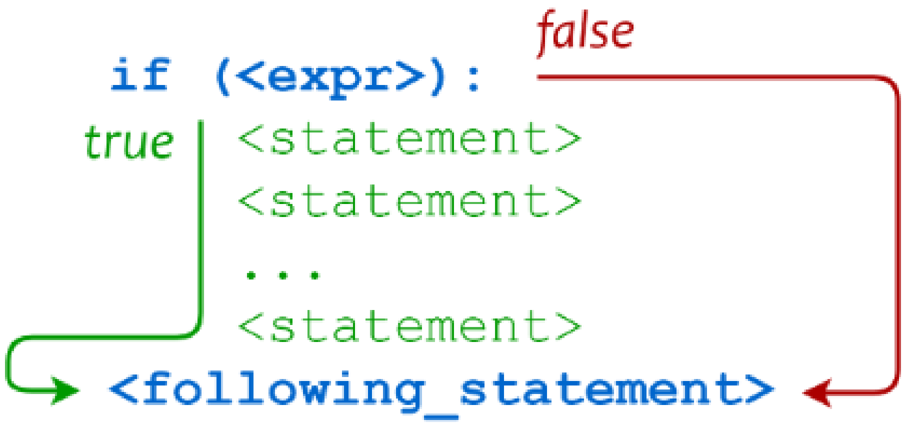
```python
>>> x = 0
>>> y = 5

>>> if x < y:                            # Truthy
...     print('yes')
...
yes
>>> if y < x:                            # Falsy
...     print('yes')
...
```

Python

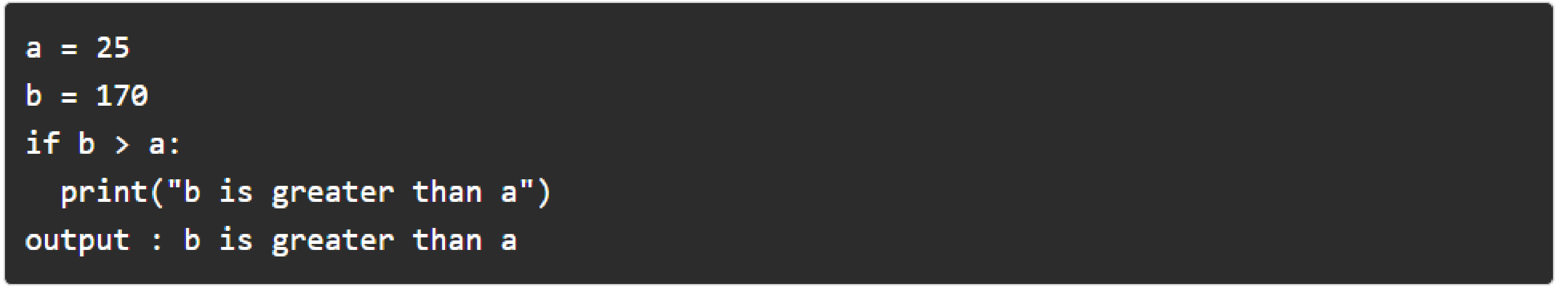
```python
1  if <expr>:
2      <statement>
3      <statement>
4      ...
5      <statement>
6  <following_statement>
```

Here, all the statements at the matching indentation level (lines 2 to 5) are considered part of the same block. The entire block is executed if `<expr>` is true, or skipped over if `<expr>` is false. Either way, execution proceeds with `<following_statement>` (line 6) afterward.



```
if (<expr>):
    <statement>
    <statement>
    ...
    <statement>
<following_statement>
```

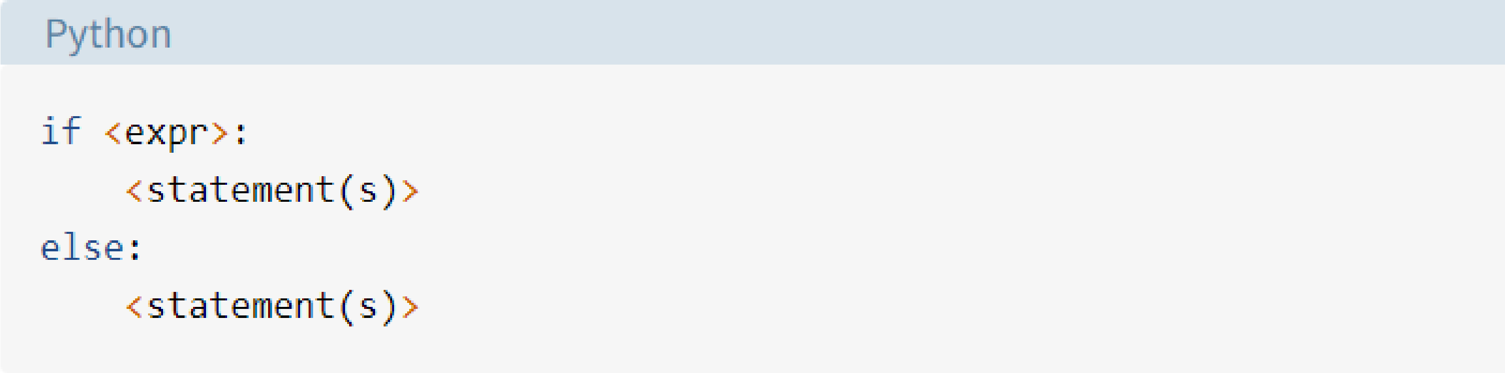
Example



```
a = 25
b = 170
if b > a:
  print("b is greater than a")
output : b is greater than a
```

If Else Statement

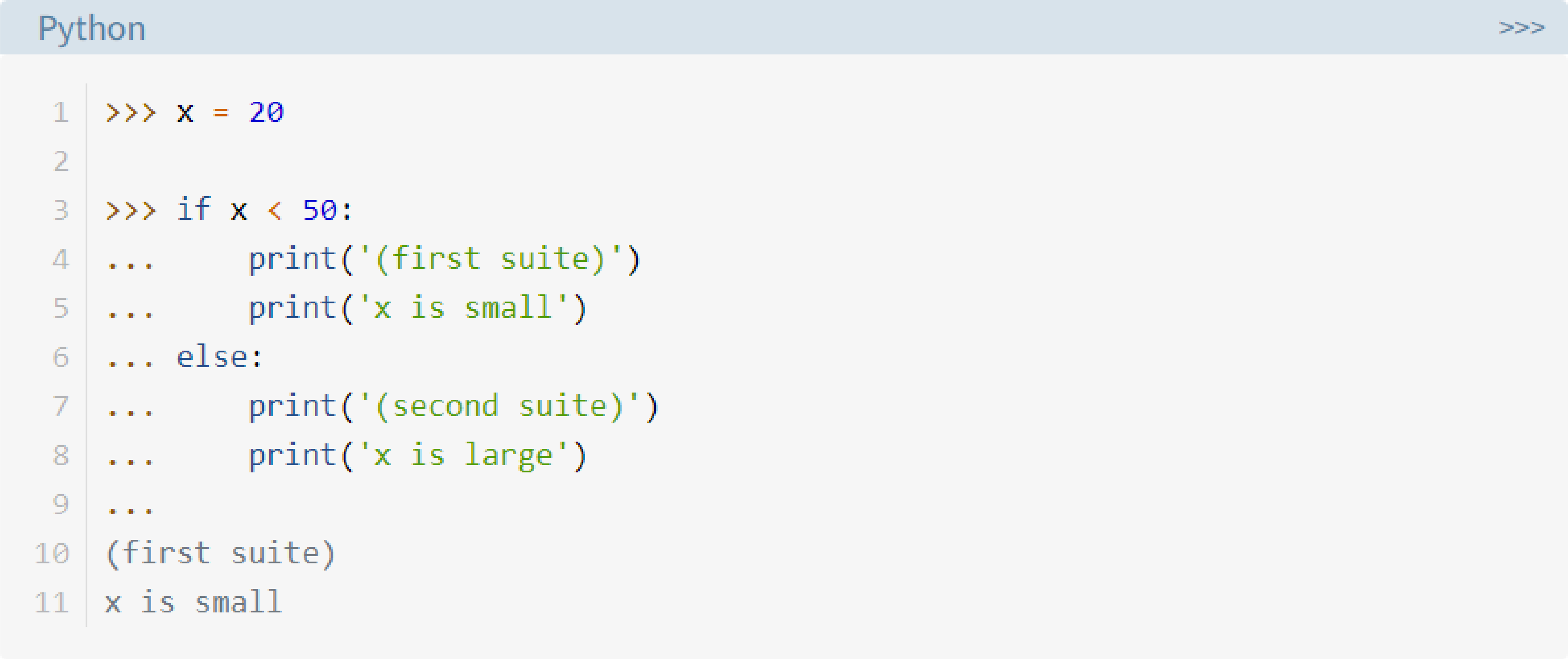
This statement is used when both the true and false parts of a given condition are specified to be executed. When the condition is true, the statement inside the if block is executed; if the condition is false, the statement outside the if block is executed.



Python

```
if <expr>:
    <statement(s)>
else:
    <statement(s)>
```

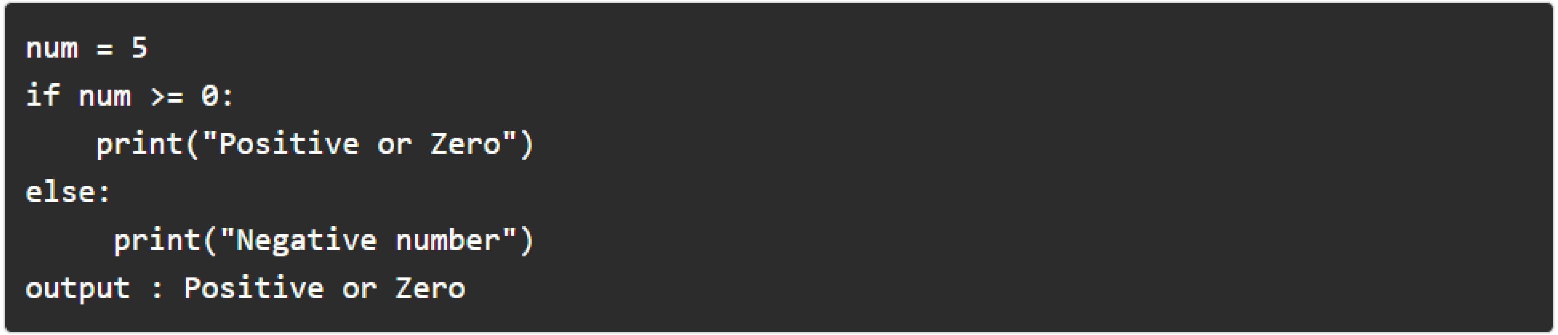
In this example, `x` is less than `50`, so the first suite (lines 4 to 5) are executed, and the second suite (lines 7 to 8) are skipped:



Python

```
 1  >>> x = 20
 2  
 3  >>> if x < 50:
 4  ...     print('(first suite)')
 5  ...     print('x is small')
 6  ... else:
 7  ...     print('(second suite)')
 8  ...     print('x is large')
 9  ...
10  (first suite)
11  x is small
```

Example

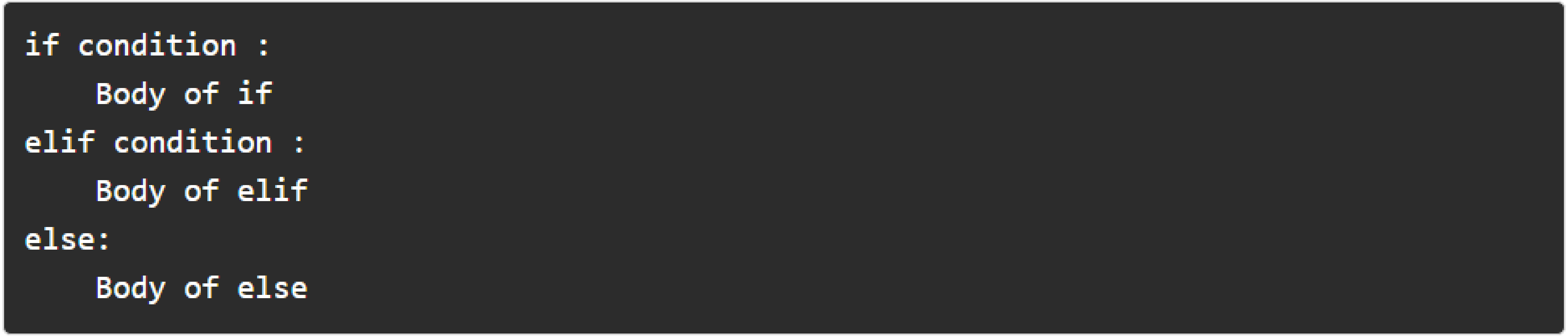


```
num = 5
if num >= 0:
    print("Positive or Zero")
else:
     print("Negative number")
output : Positive or Zero
```

If…Elif..else Statement

In this case, the If condition is evaluated first. If it is false, the Elif statement will be executed; if it also comes false, the Else statement will be executed.

The If…Elif..else statement in Python has the subsequent syntax:



```
if condition :
    Body of if
elif condition :
    Body of elif
else:
    Body of else
```

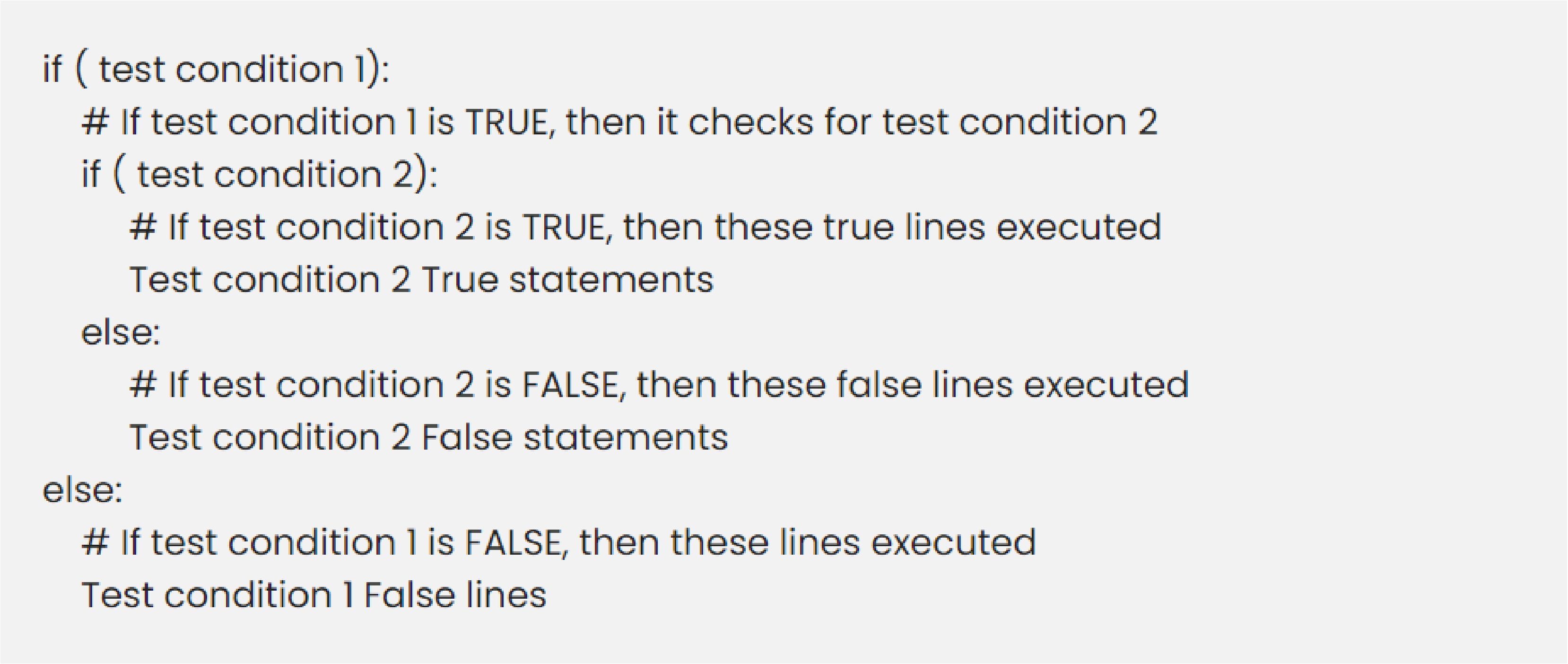
We will check if the number is positive, negative, or zero.

```
num = 7
if num > 0:
    print("Positive number")
elif num == 0:
    print("Zero")
else:
    print("Negative number")
output:  Positive number
```

Nested If statement

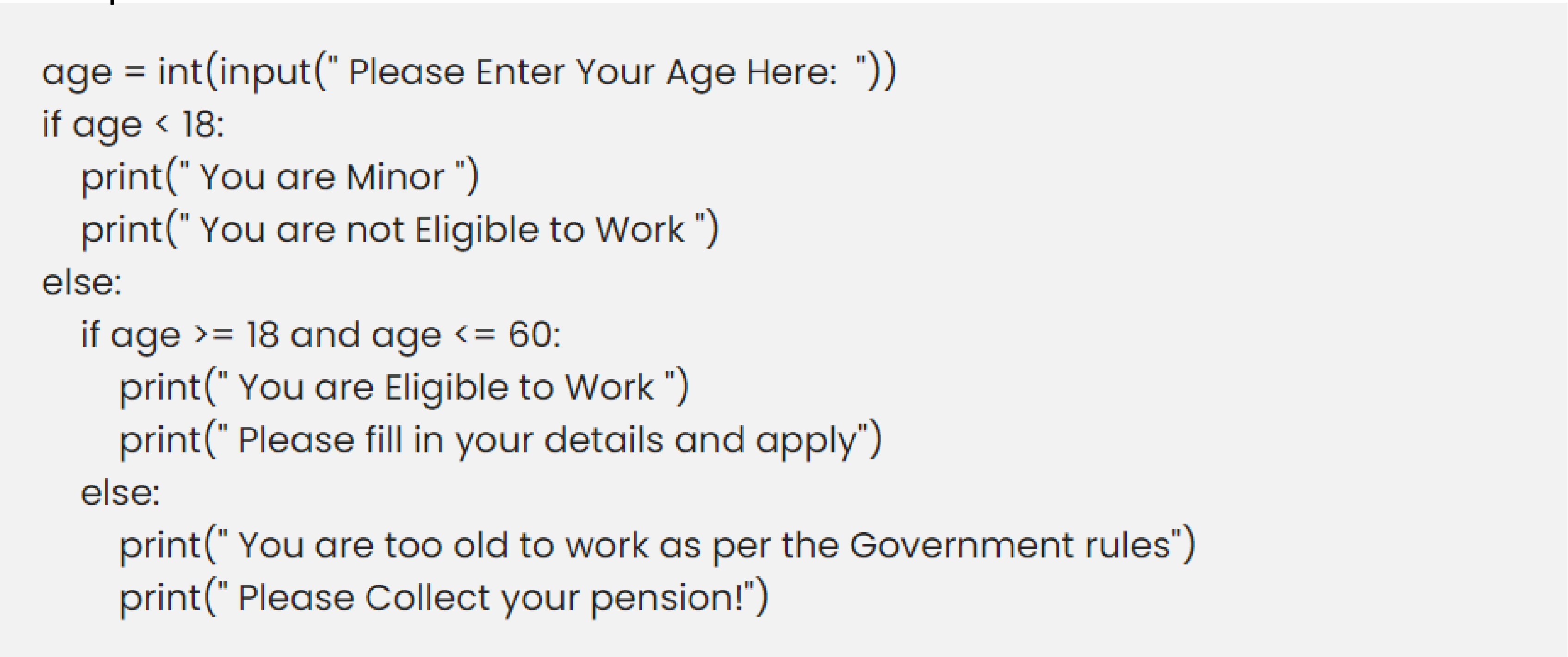
A nested if is a flow control statement that’s the target of another **if-statement**.
By **nested-if statements,** we mean to use an **if-statement** inside another **if-statement**. In Python, it is possible to place one **if-statement** inside the other **if-statement**.

The Nested If Statement Syntax is



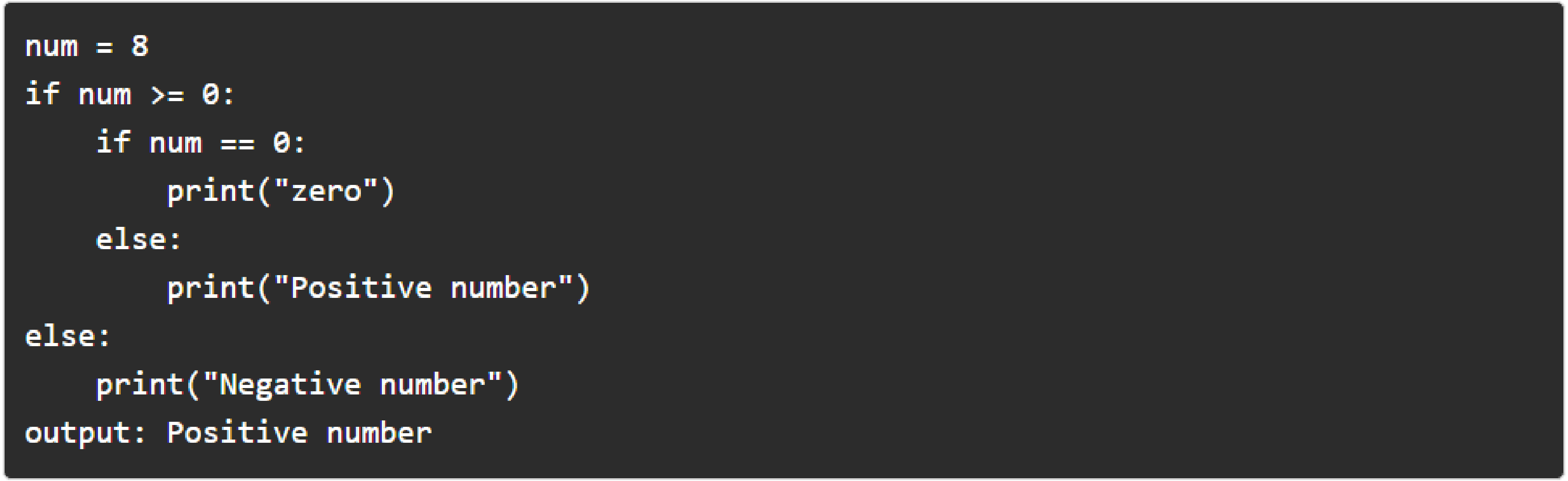
```
if ( test condition 1):
   # If test condition 1 is TRUE, then it checks for test condition 2
   if ( test condition 2):
       # If test condition 2 is TRUE, then these true lines executed
       Test condition 2 True statements
   else:
       # If test condition 2 is FALSE, then these false lines executed
       Test condition 2 False statements
else:
   # If test condition 1 is FALSE, then these lines executed
   Test condition 1 False lines
```

Example



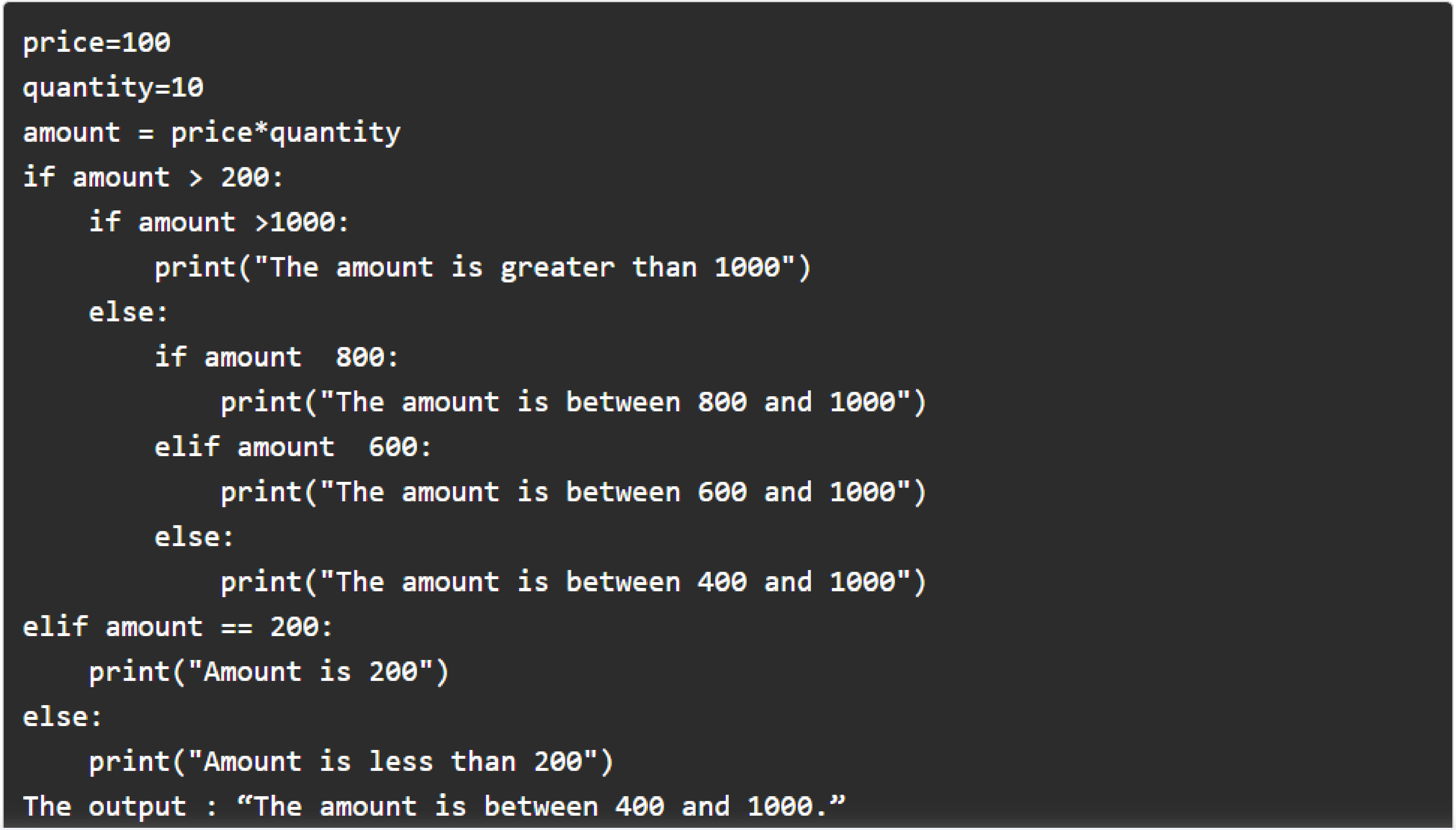
```
age = int(input(" Please Enter Your Age Here:  "))
if age < 18:
    print(" You are Minor ")
    print(" You are not Eligible to Work ")
else:
    if age >= 18 and age <= 60:
        print(" You are Eligible to Work ")
        print(" Please fill in your details and apply")
    else:
        print(" You are too old to work as per the Government rules")
        print(" Please Collect your pension!")
```

Example-1



```
num = 8
if num >= 0:
    if num == 0:
        print("zero")
    else:
        print("Positive number")
else:
    print("Negative number")
output: Positive number
```

Example-2



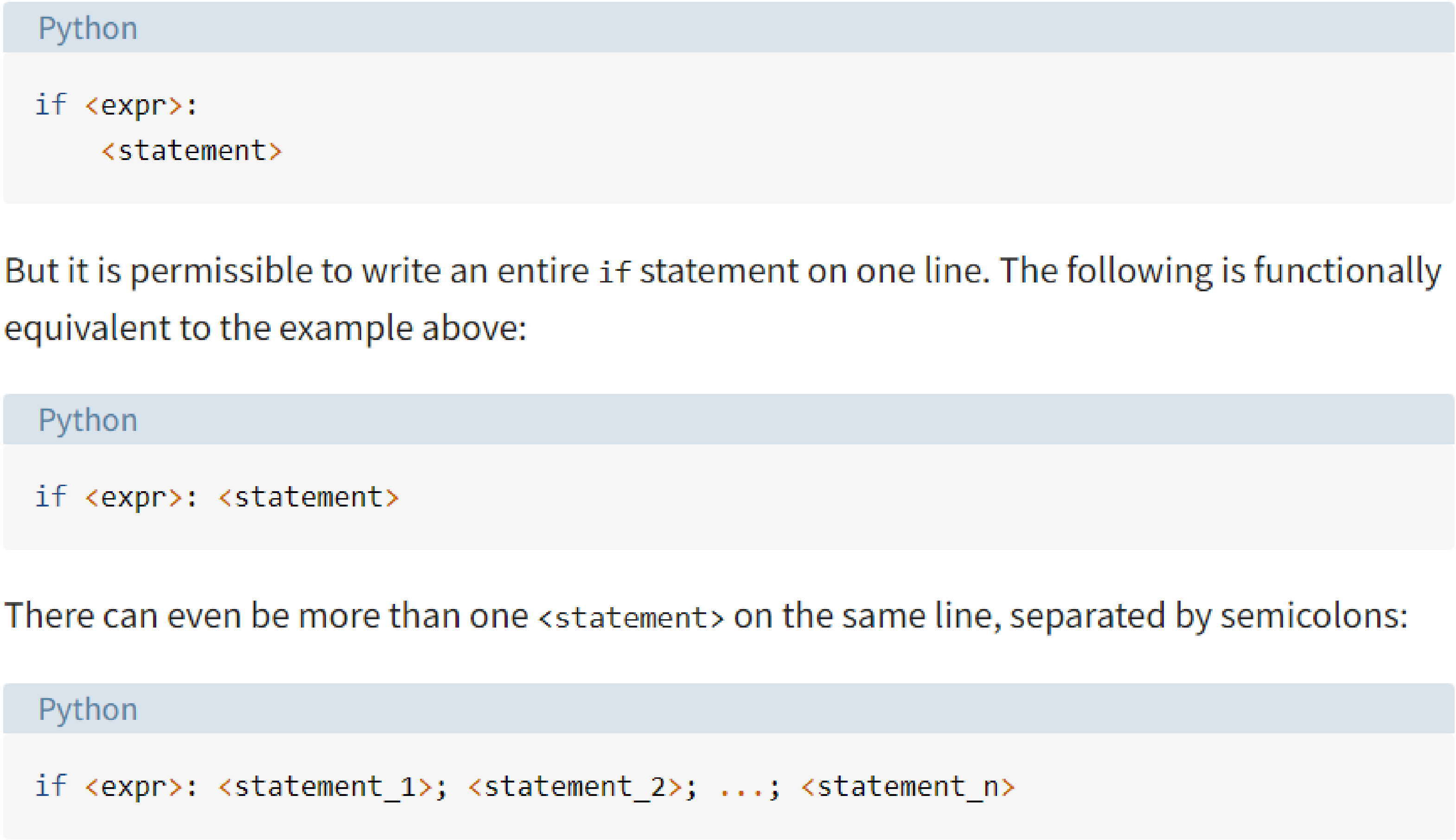
```
price=100
quantity=10
amount = price*quantity
if amount > 200:
    if amount >1000:
        print("The amount is greater than 1000")
    else:
        if amount  800:
            print("The amount is between 800 and 1000")
        elif amount  600:
            print("The amount is between 600 and 1000")
        else:
            print("The amount is between 400 and 1000")
elif amount == 200:
    print("Amount is 200")
else:
    print("Amount is less than 200")
The output : “The amount is between 400 and 1000.”
```

Short Hand if statement

Short Hand if statement is used when only one statement needs to be executed inside the if block. This statement can be mentioned in the same line which holds the If statement.

The Short Hand if statement in Python has the following syntax:

```
if condition: statement
```



Python

```
if <expr>:
    <statement>
```

But it is permissible to write an entire `if` statement on one line. The following is functionally equivalent to the example above:

Python

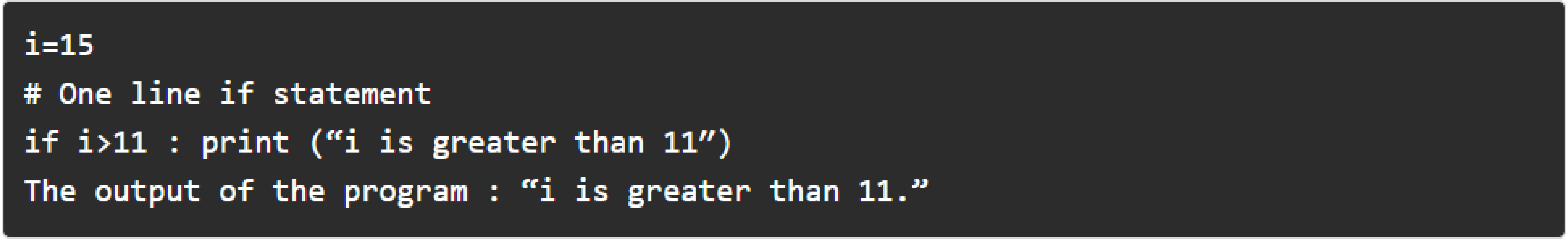
```
if <expr>: <statement>
```

There can even be more than one `<statement>` on the same line, separated by semicolons:

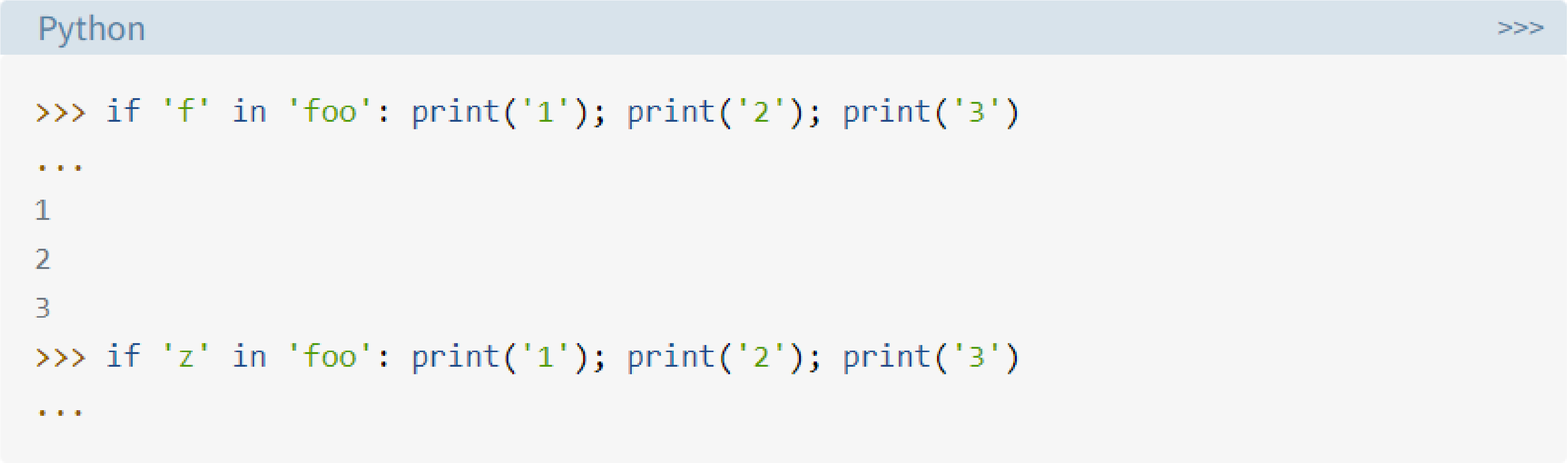
Python

```
if <expr>: <statement_1>; <statement_2>; ...; <statement_n>
```

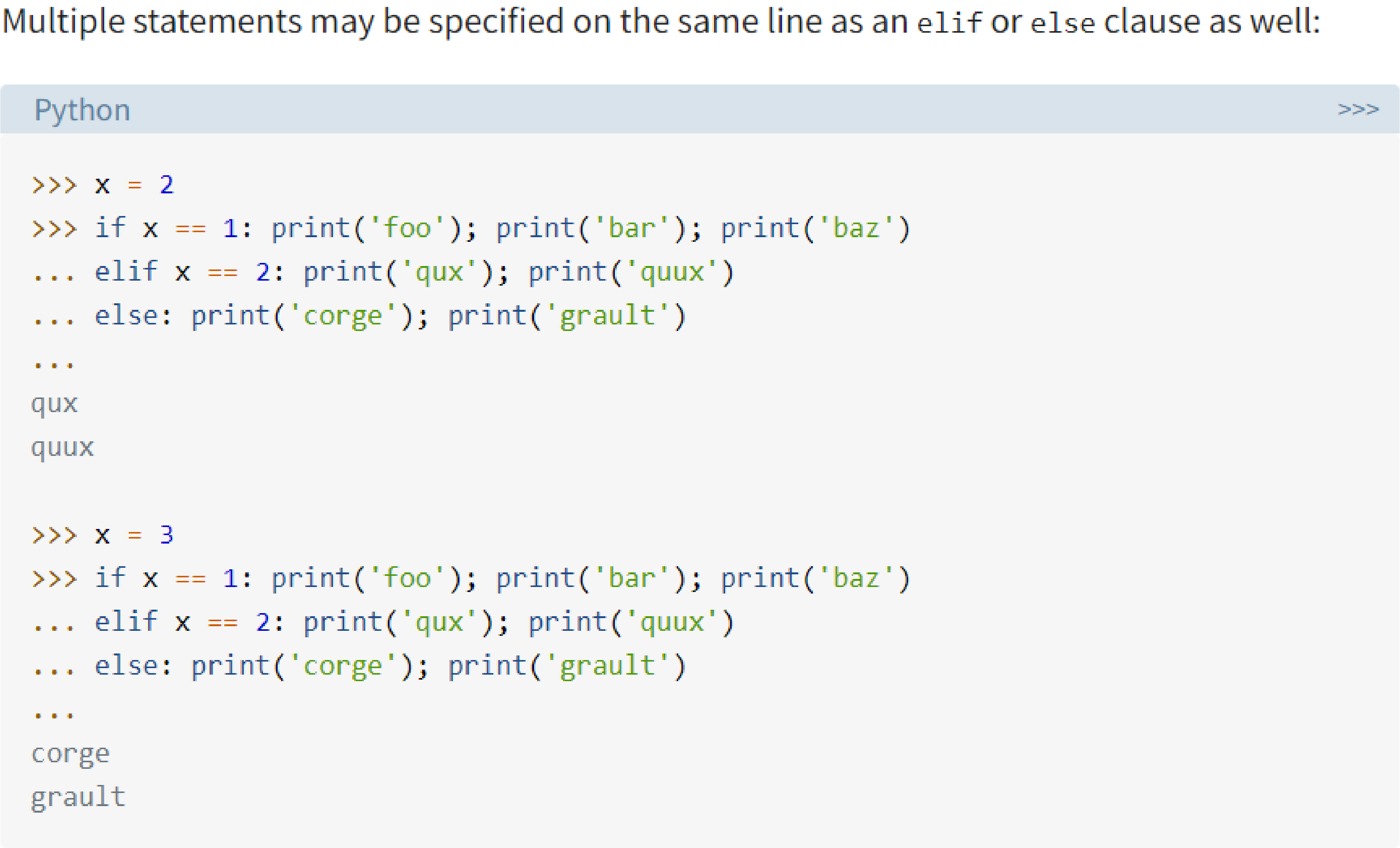
Example



```
i=15
# One line if statement
if i>11 : print (“i is greater than 11”)
The output of the program : “i is greater than 11.”
```



```
>>> if 'f' in 'foo': print('1'); print('2'); print('3')
...
1
2
3
>>> if 'z' in 'foo': print('1'); print('2'); print('3')
...
```



Multiple statements may be specified on the same line as an `elif` or `else` clause as well:

```python
>>> x = 2
>>> if x == 1: print('foo'); print('bar'); print('baz')
... elif x == 2: print('qux'); print('quux')
... else: print('corge'); print('grault')
...
qux
quux

>>> x = 3
>>> if x == 1: print('foo'); print('bar'); print('baz')
... elif x == 2: print('qux'); print('quux')
... else: print('corge'); print('grault')
...
corge
grault
```