KodeKloud

Course Objectives

Syntax, variables, data types, numbers and strings

Conditional Statements (else, if, and elif)

Loops, logic and bit operations, lists, tuples and dictionaries

Solid understanding of Python through hands-on exercises and projects

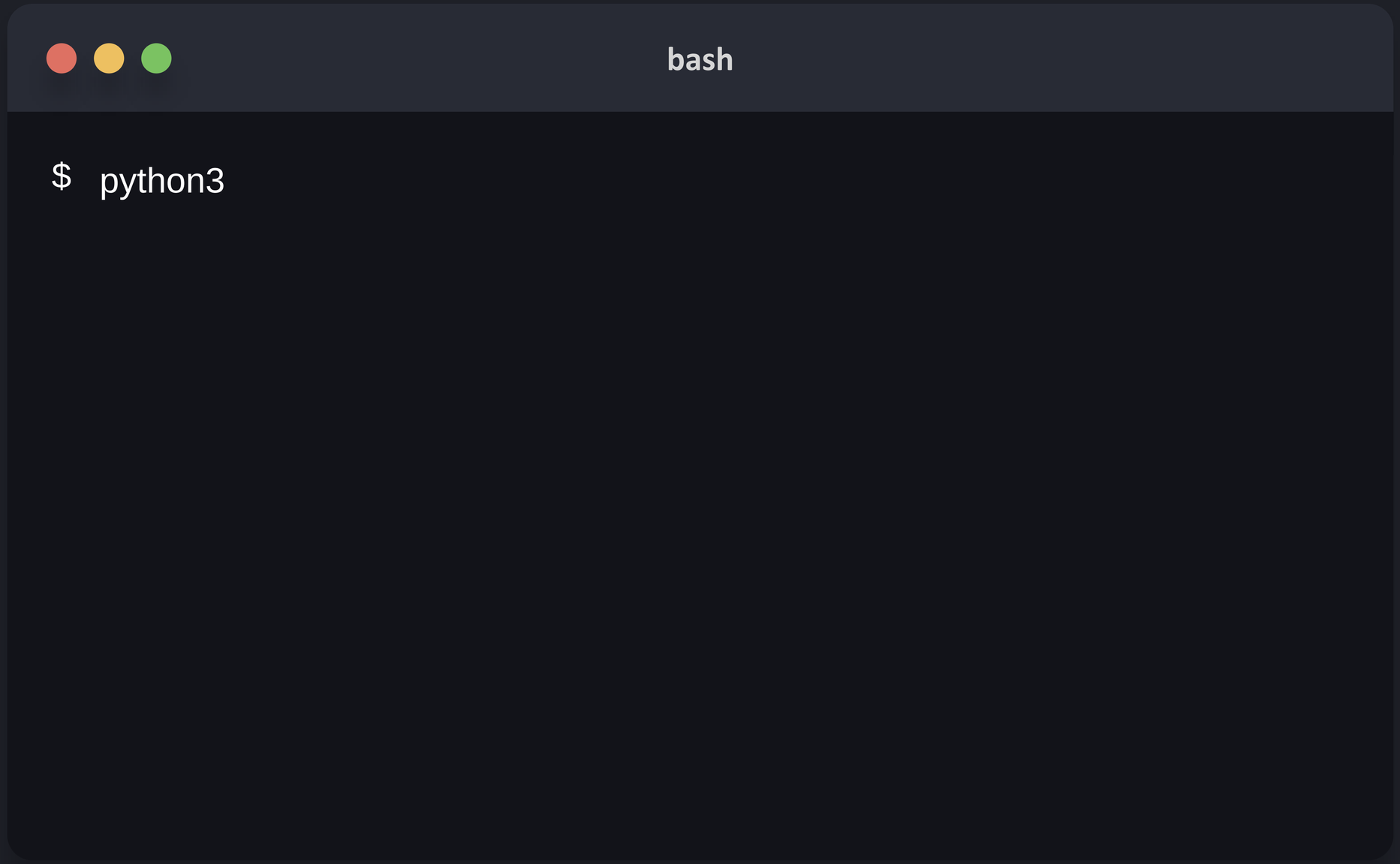
KodeKloud

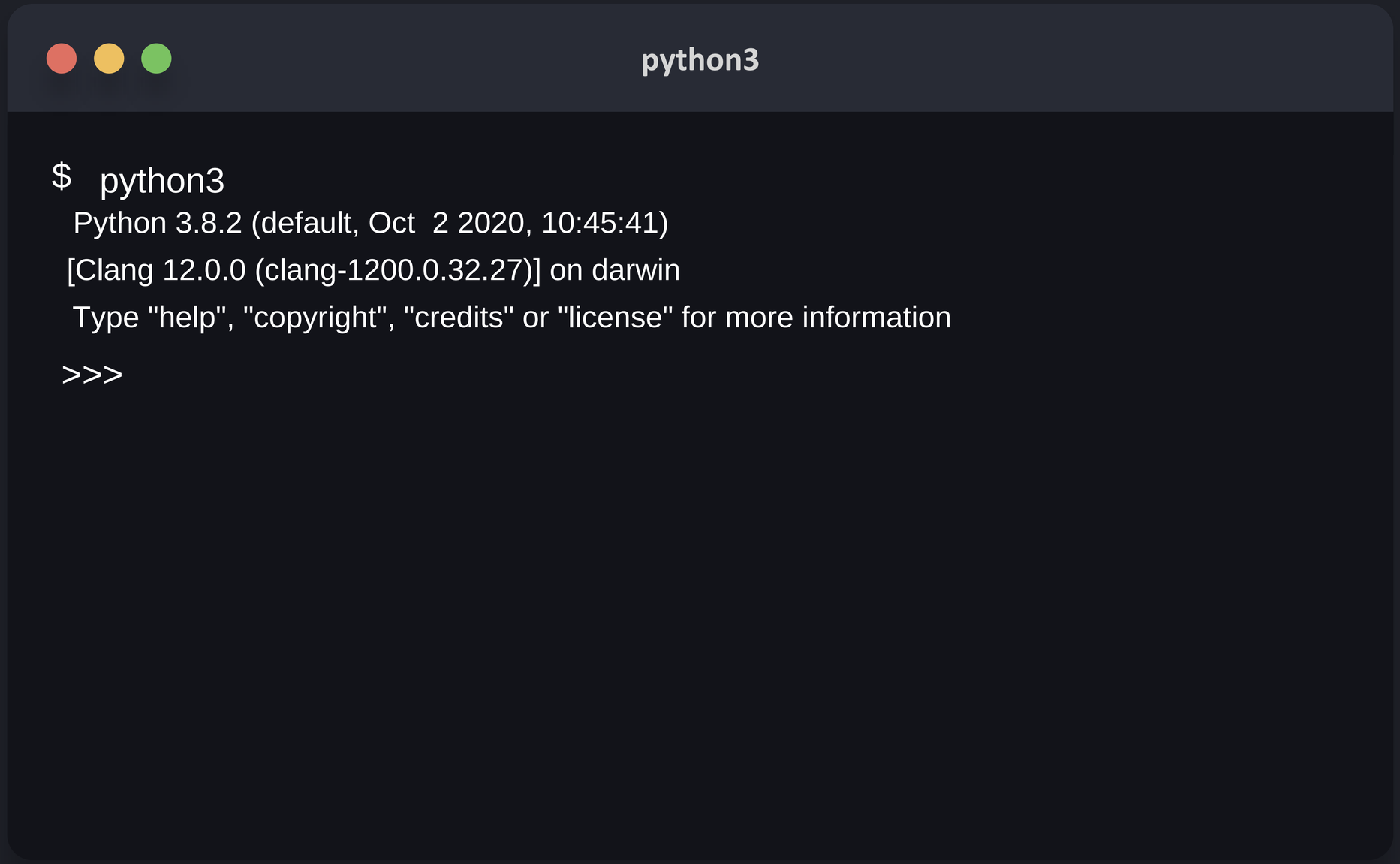
Introduction

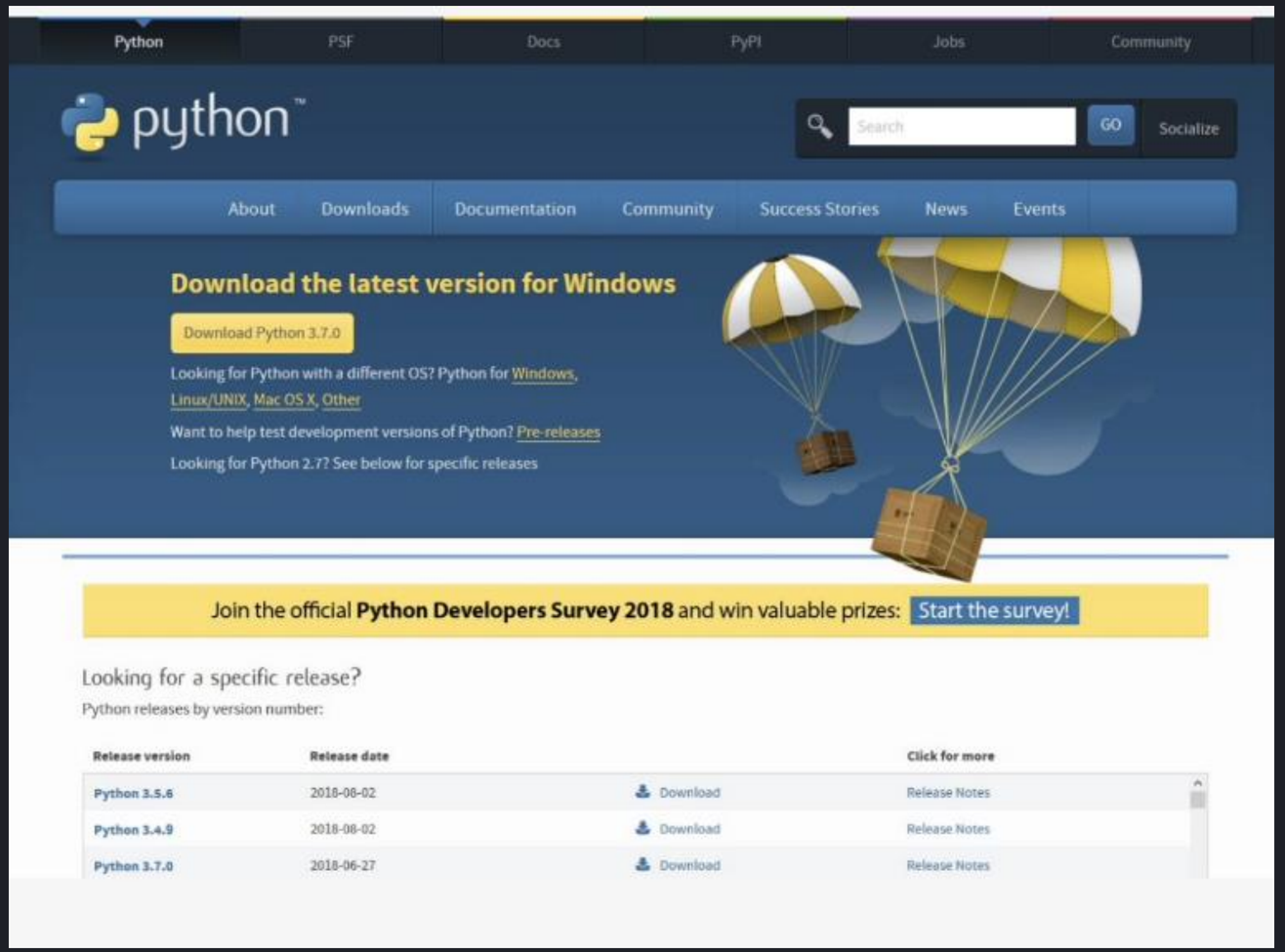
Easy and intuitive programming language

Free and Open Source

Can be widely used for a variety of tasks


bash
$ python3


python3
$ python3
Python 3.8.2 (default, Oct 2 2020, 10:45:41)
[Clang 12.0.0 (clang-1200.0.32.27)] on darwin
Type "help", "copyright", "credits" or "license" for more information
>>>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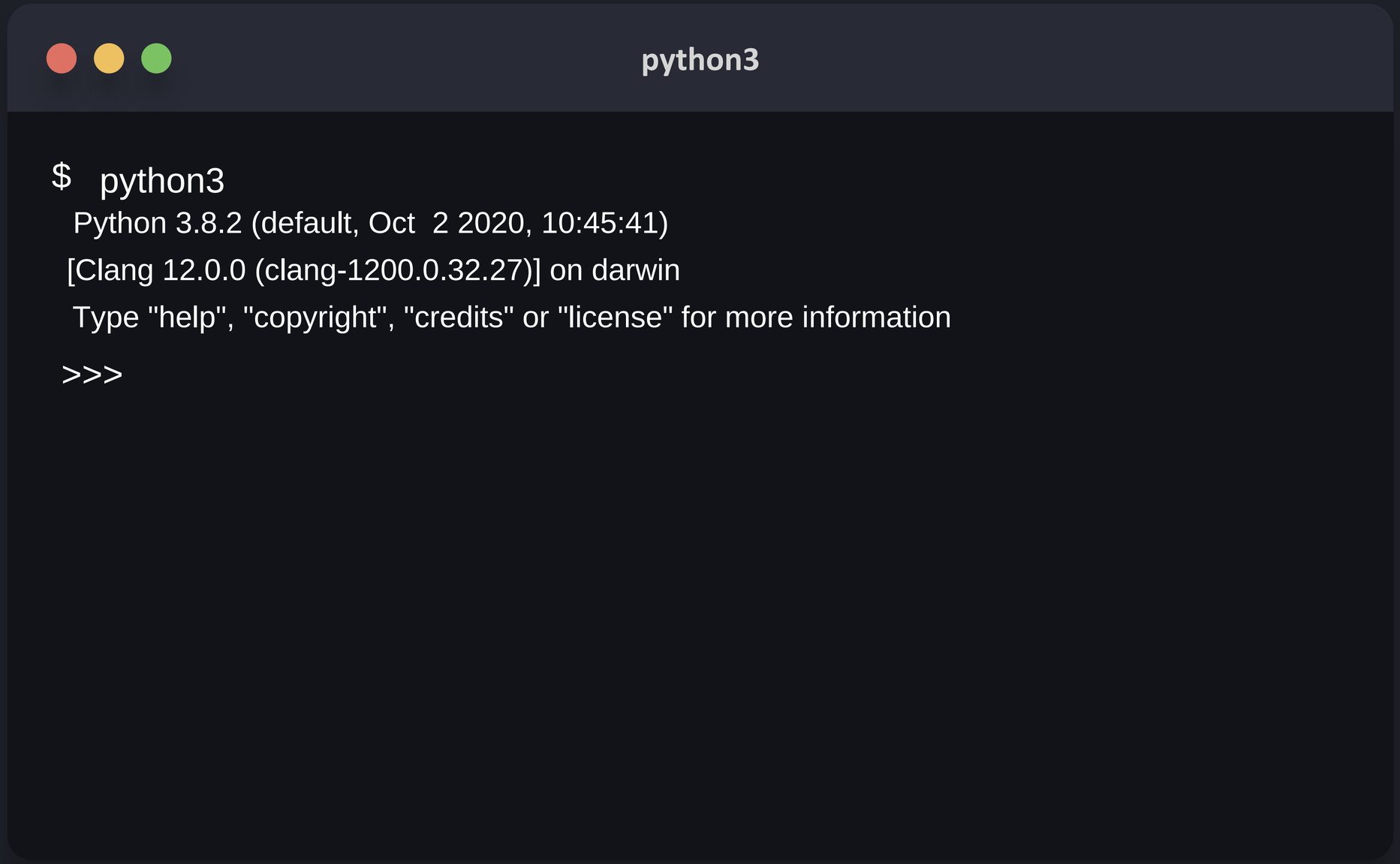
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python3
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[Clang 12.0.0 (clang-1200.0.32.27)] on darwin
Type "help", "copyright", "credits" or "license" for more information
>>> print ("Hello future Python programmer!")
Hello future Python programmer!

myfile.py

```
1    print    ( "Hello future Python programmer!"              )
```

bash

```
$
```

myfile.py

```
1   print   ( "Hello future Python programmer!"              )
```

bash

```
$ python myfile.py
```

myfile.py

```
1   print   ( "Hello future Python programmer!"          )
```

bash

```
$  python myfile.py
  Hello future Python programmer!
$
```

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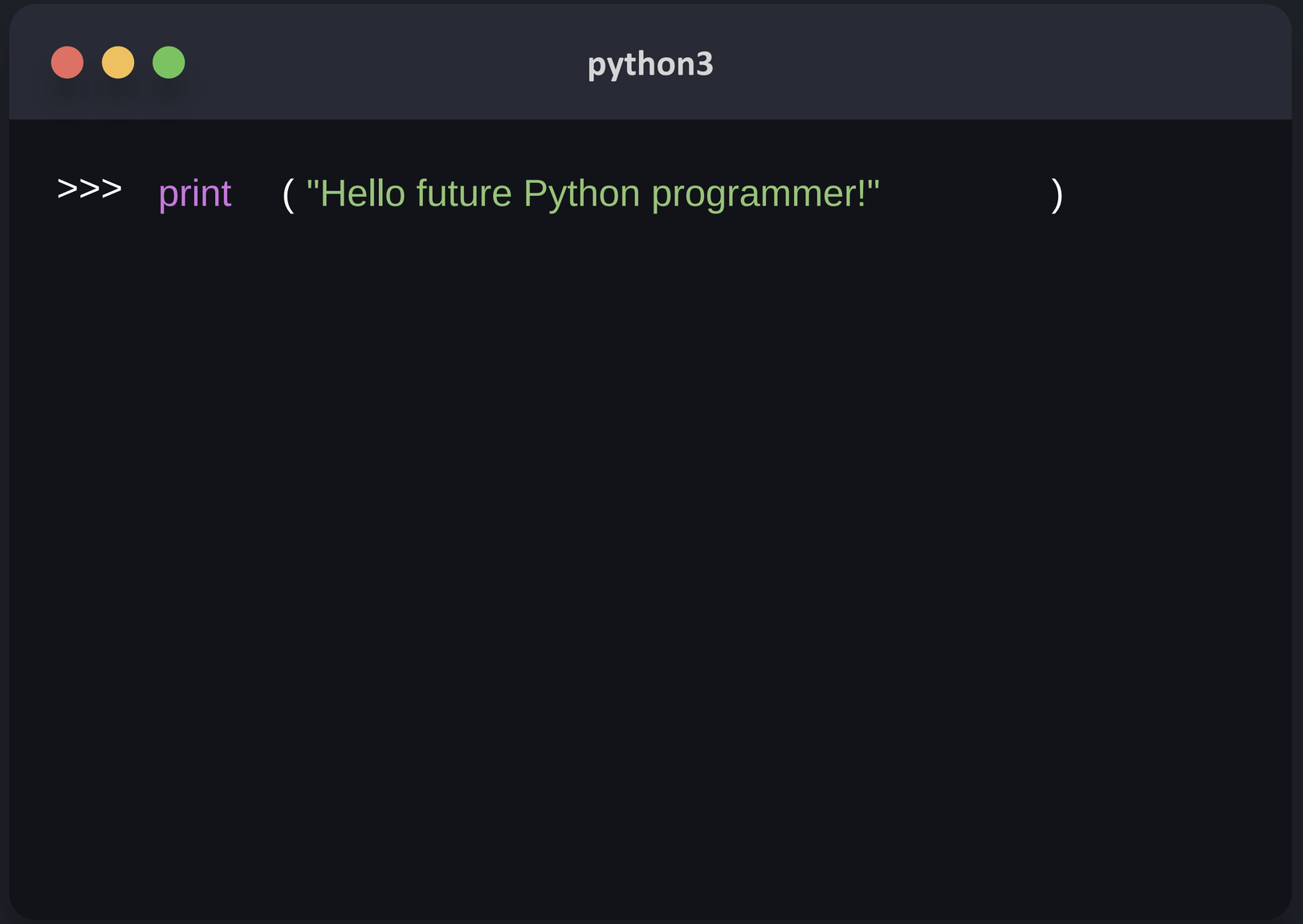
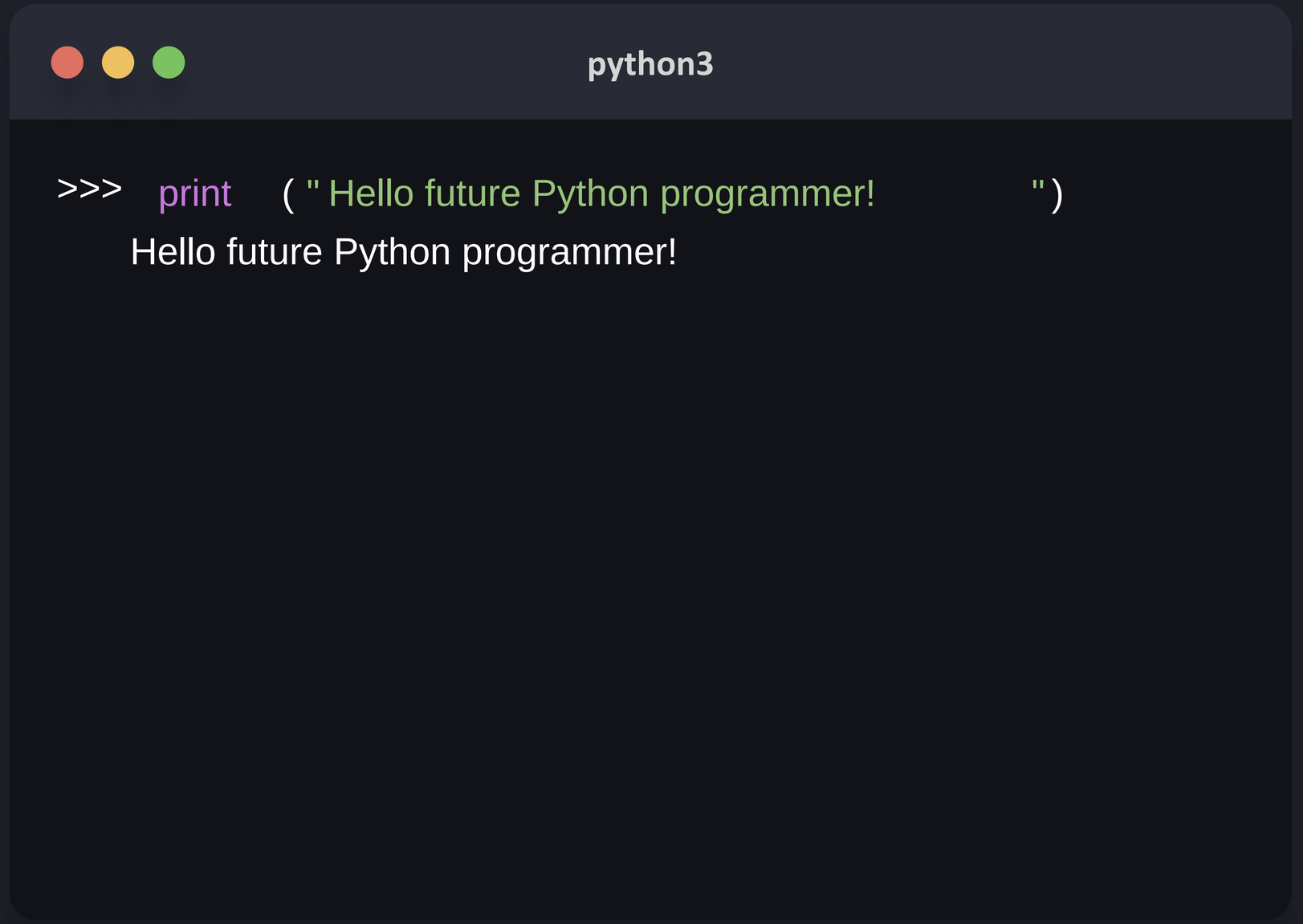
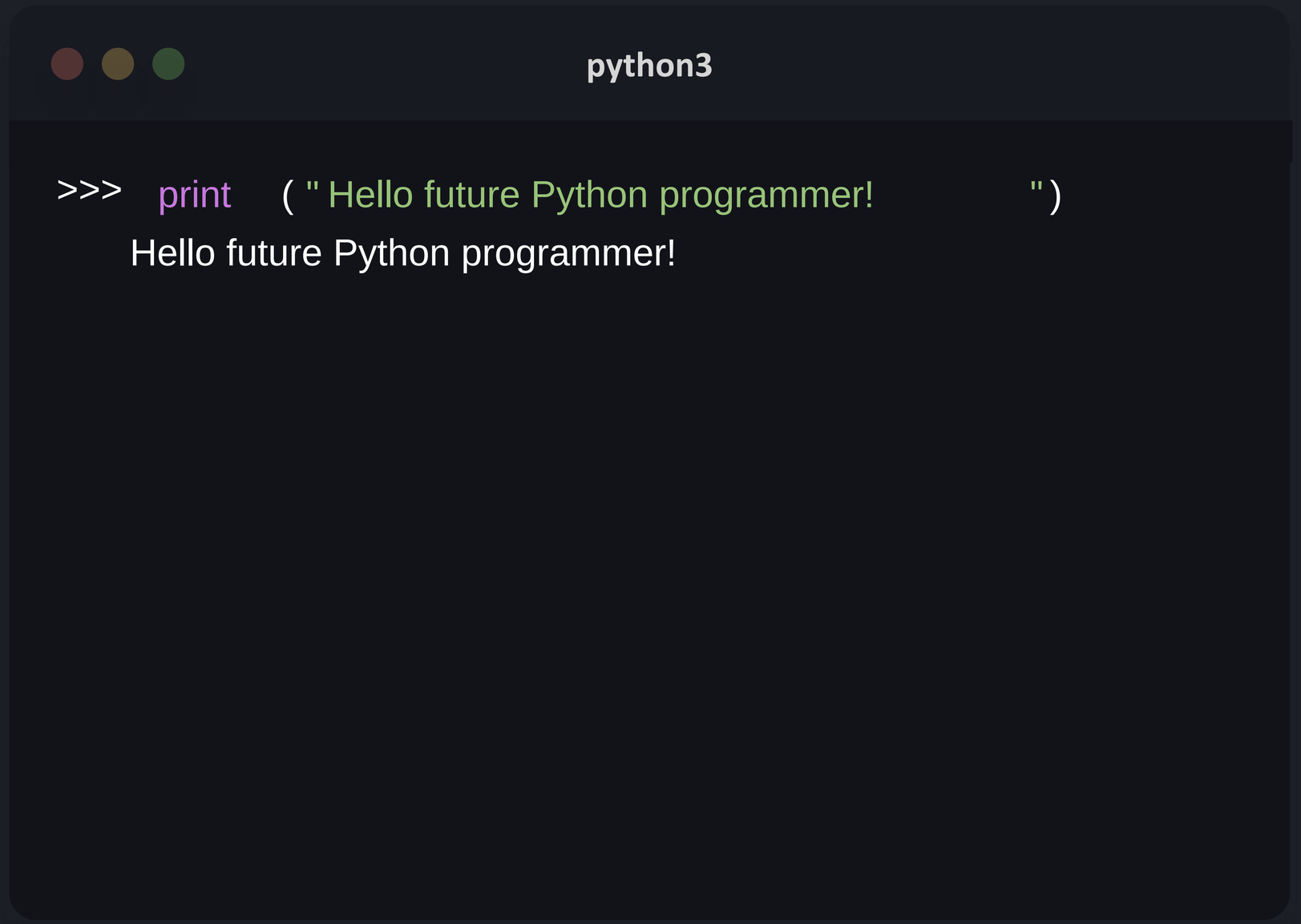
Functions - Print()


python3
>>> print ("Hello future Python programmer!")


python3
>>> print (" Hello future Python programmer! ")
Hello future Python programmer!

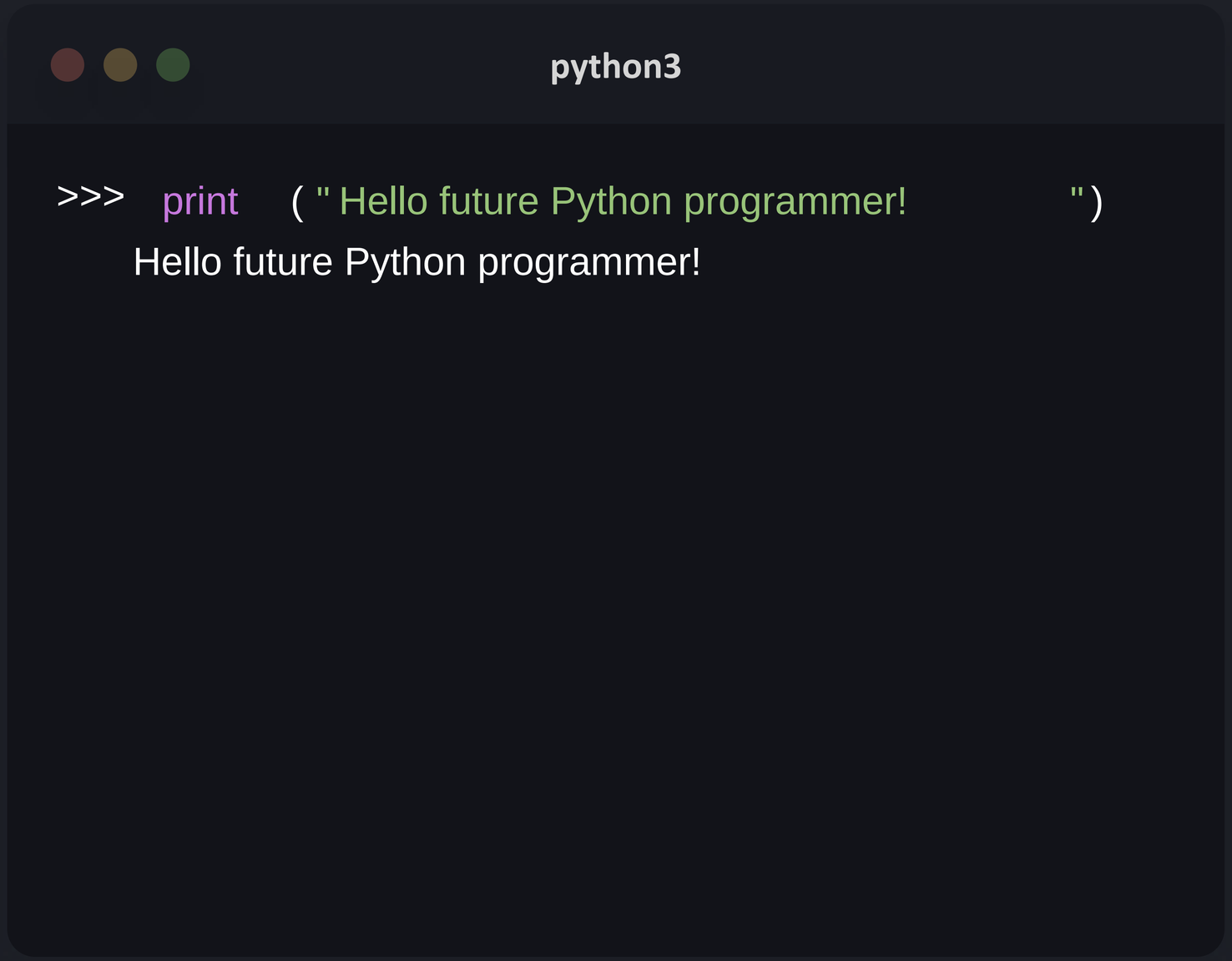

python3
>>>
Hello future Python programmer!
print
(
"
Hello future Python programmer!
"
)


python3
>>>
Hello future Python programmer!
print
(
"
Hello future Python programmer!
"
)


python3
>>> print (" Hello future Python programmer! ")
Hello future Python programmer!

Functions

A part of your code that’s used to cause an effect or evaluate a value.

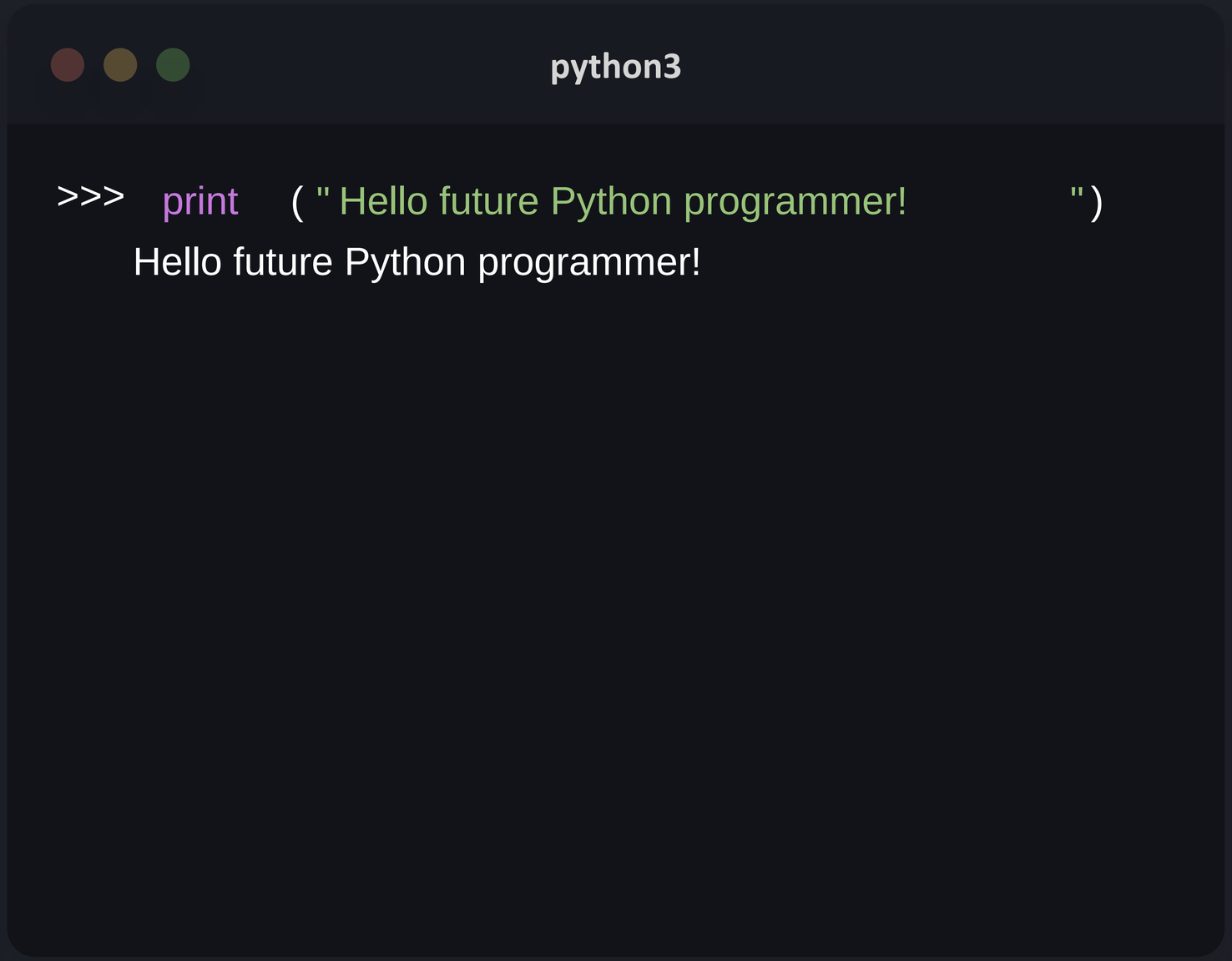


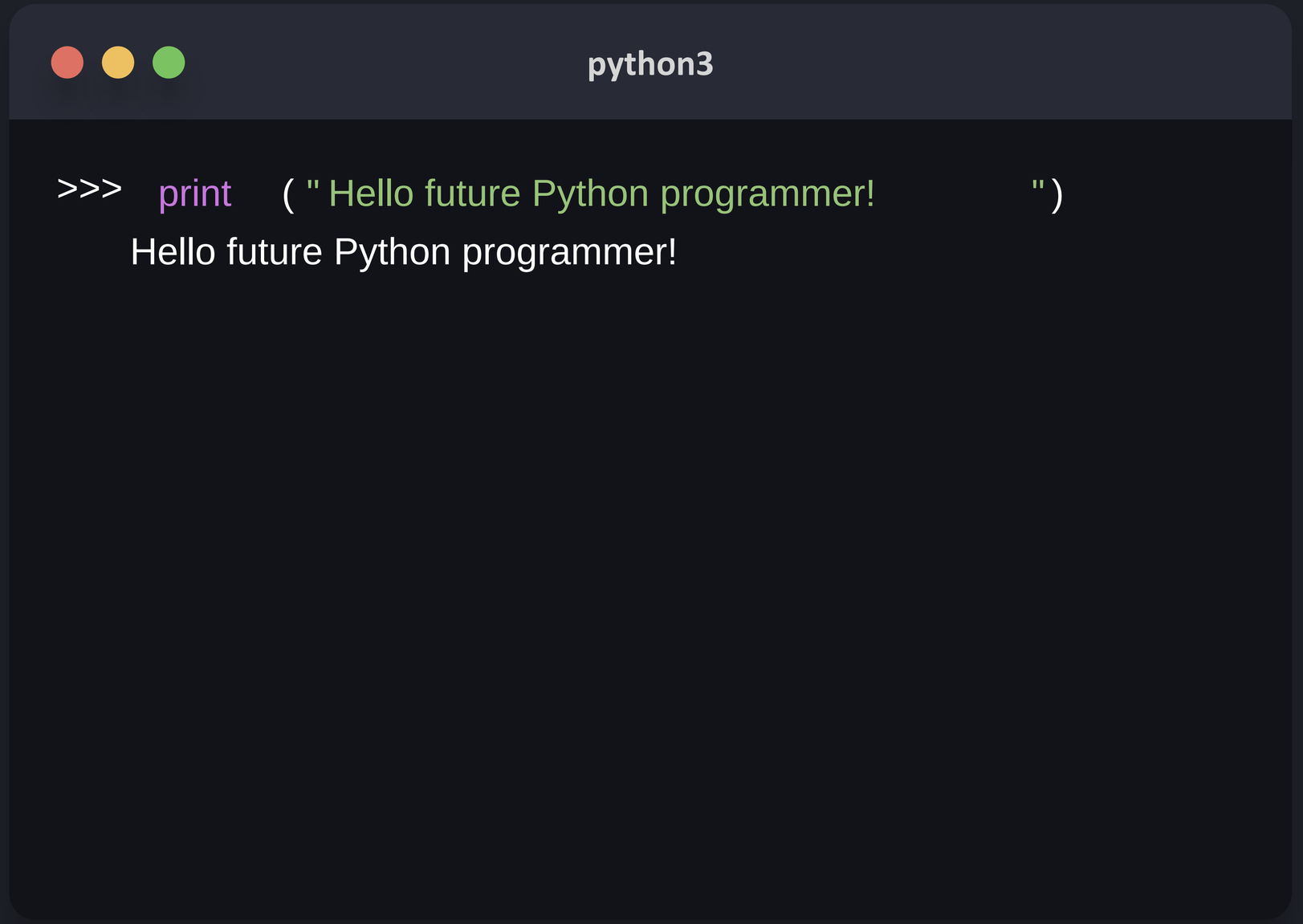
Functions

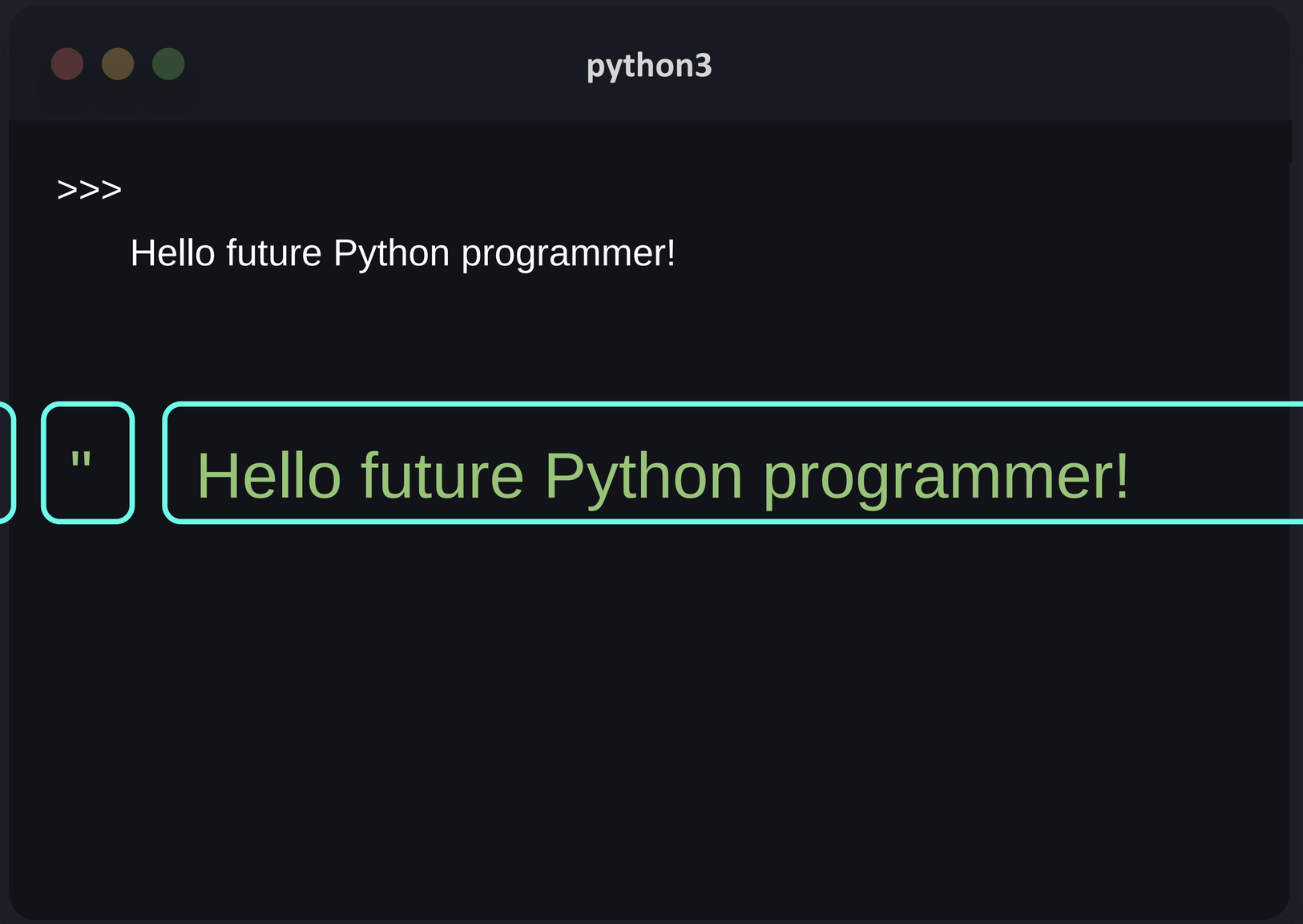
A part of your code that’s used to cause an effect or evaluate a value.

Can come from:

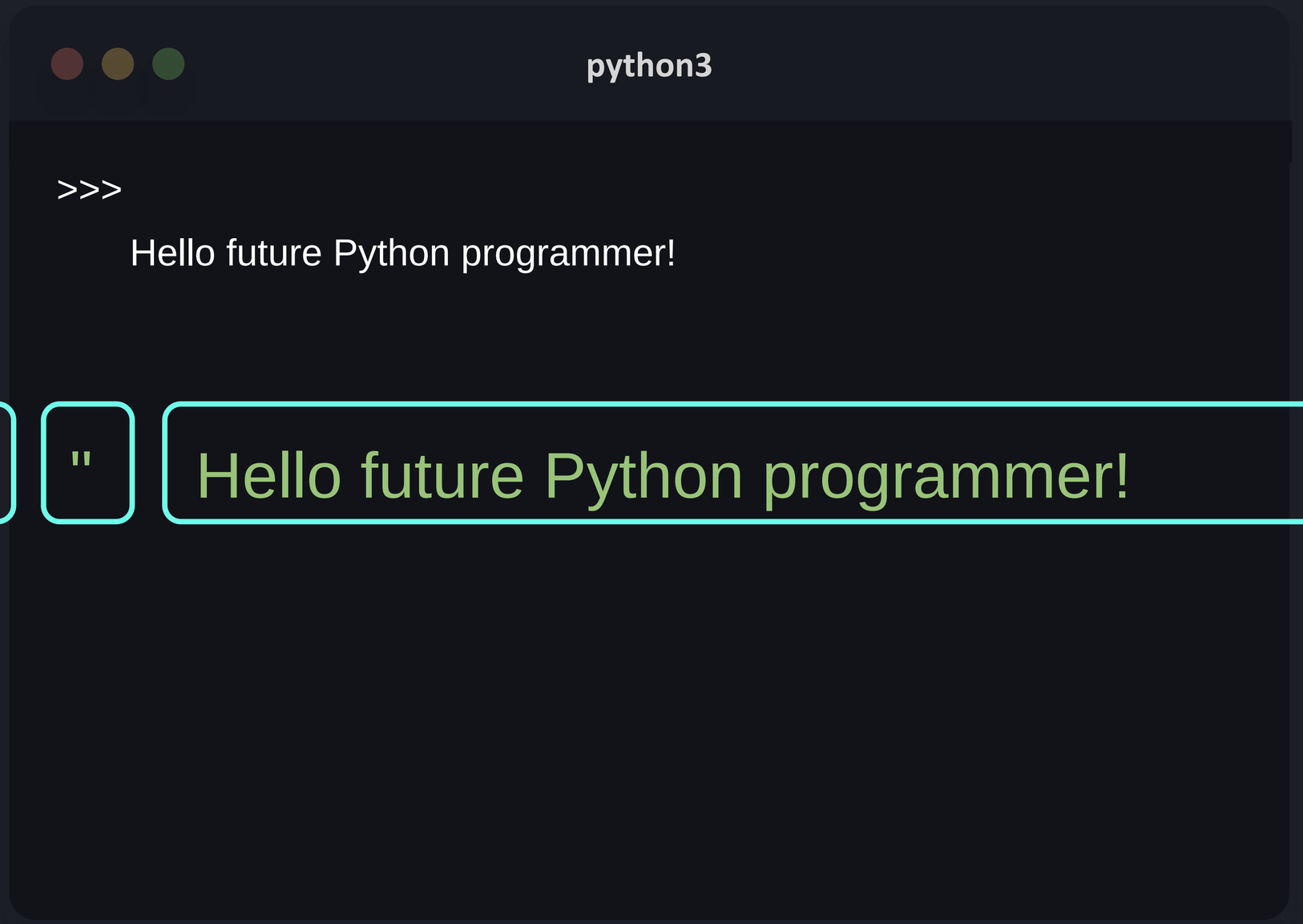
- Python (built-in functions)
- Modules
- Your own code




python3
>>> print (" Hello future Python programmer! ")
Hello future Python programmer!



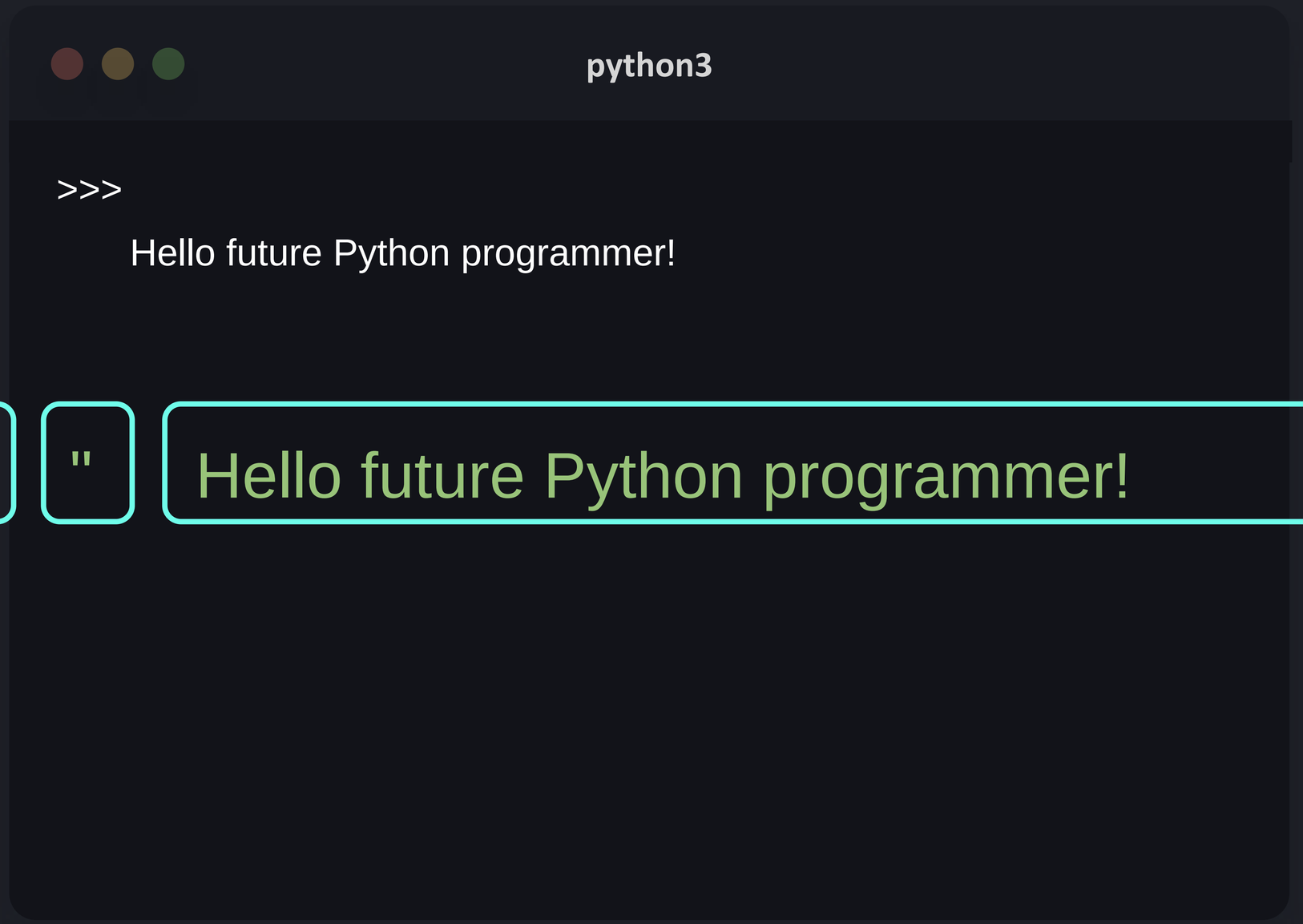
print (" Hello future Python programmer! ")



print (" Hello future Python programmer! ")

print (" Hello future Python programmer! ")

print (" Hello future Python programmer! ")



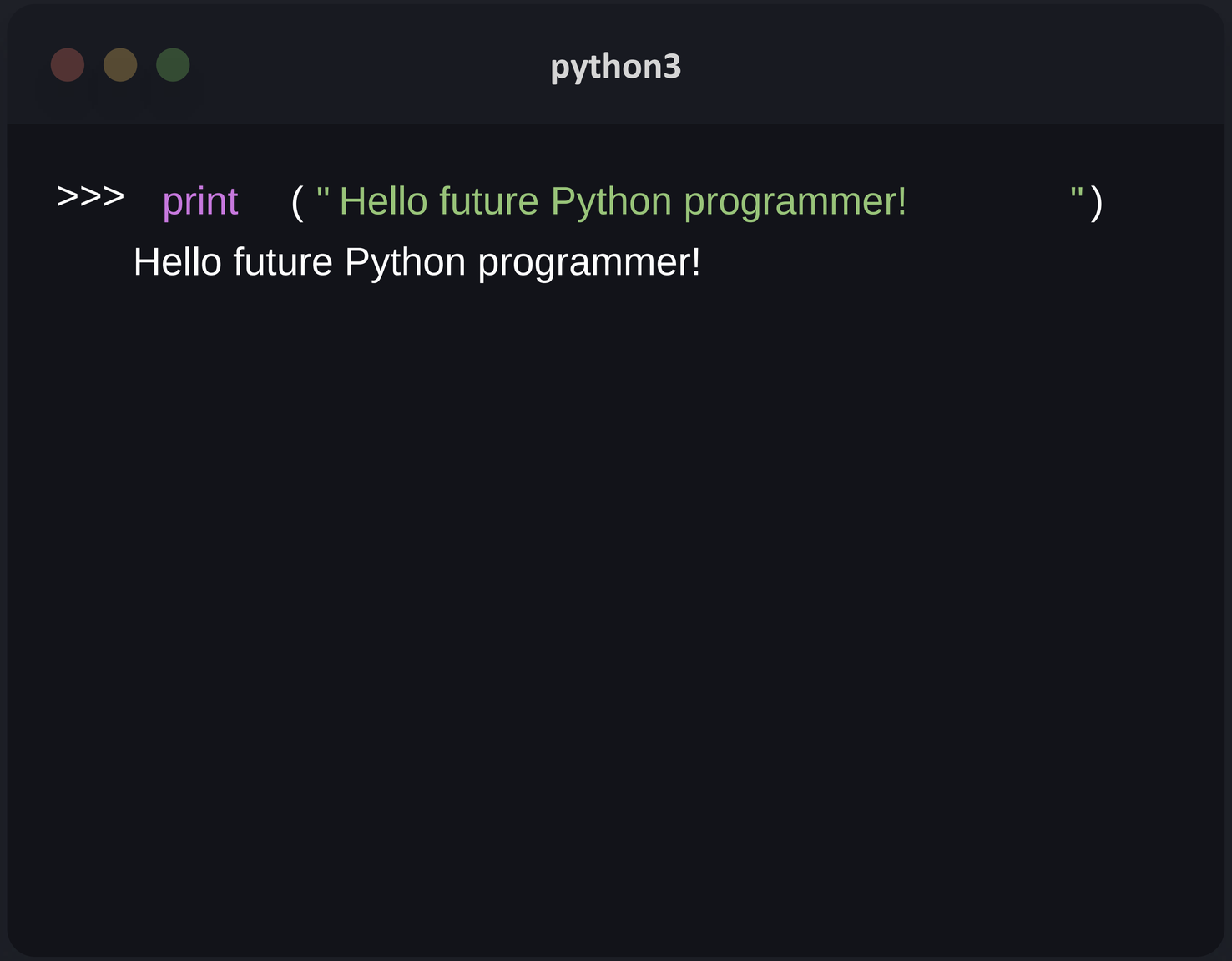
print (" Hello future Python programmer! ")

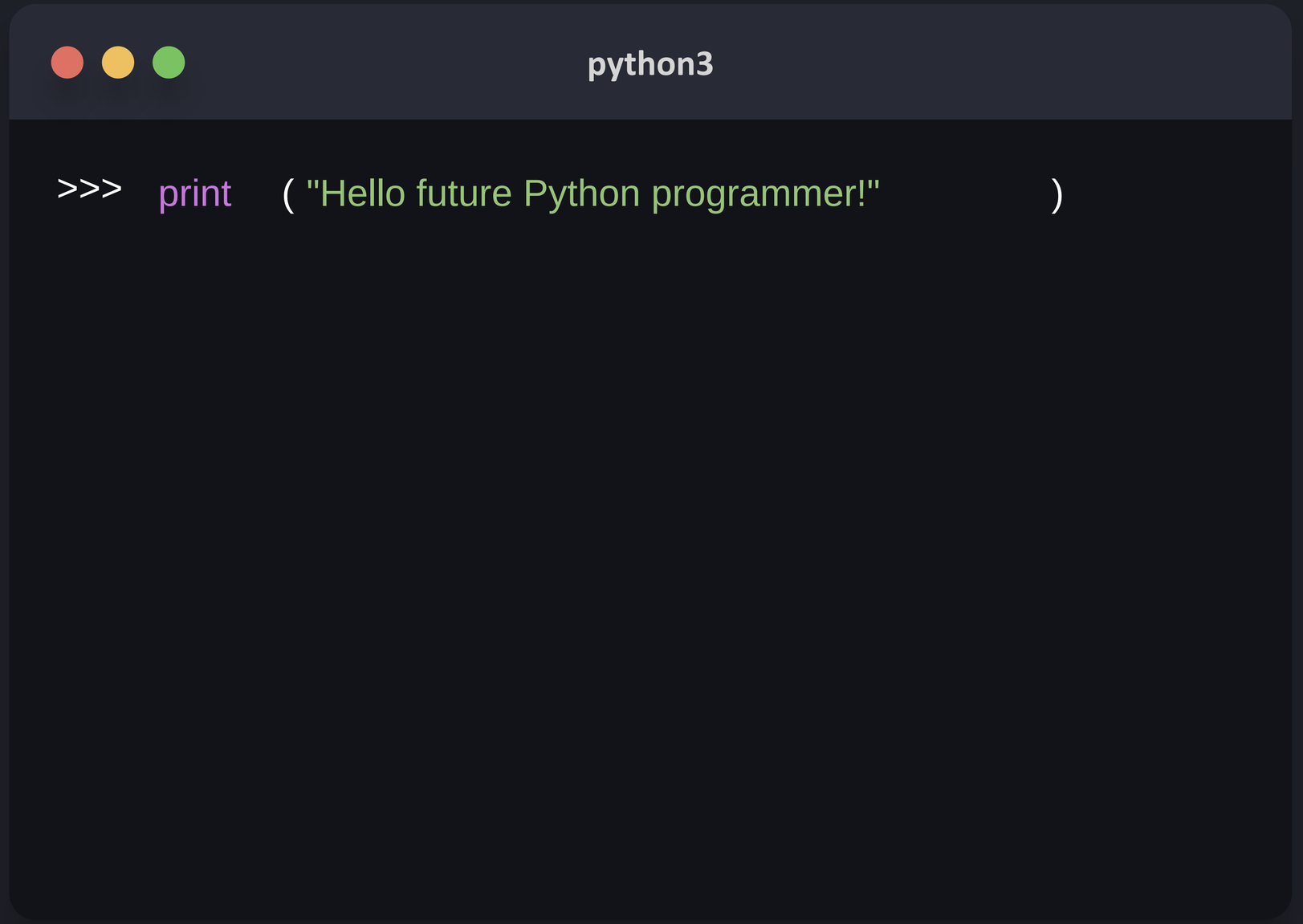

python3
>>> print (" Hello future Python programmer! ")
Hello future Python programmer!
>>> print("Python is a great language")
Python is a great language
>>> print("Strings don't get executed as code")
Strings don't get executed as code

Function Execution

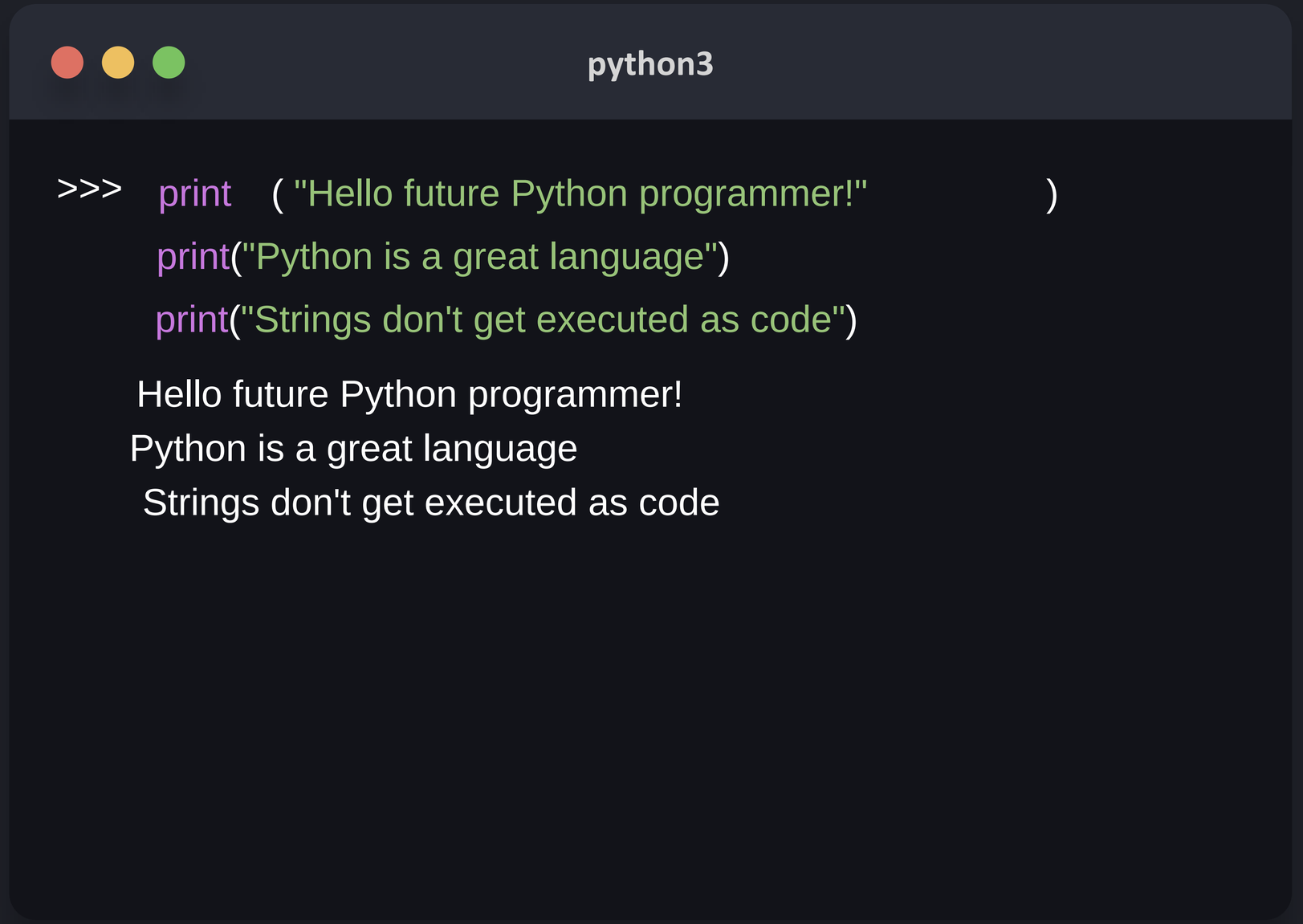
Python:

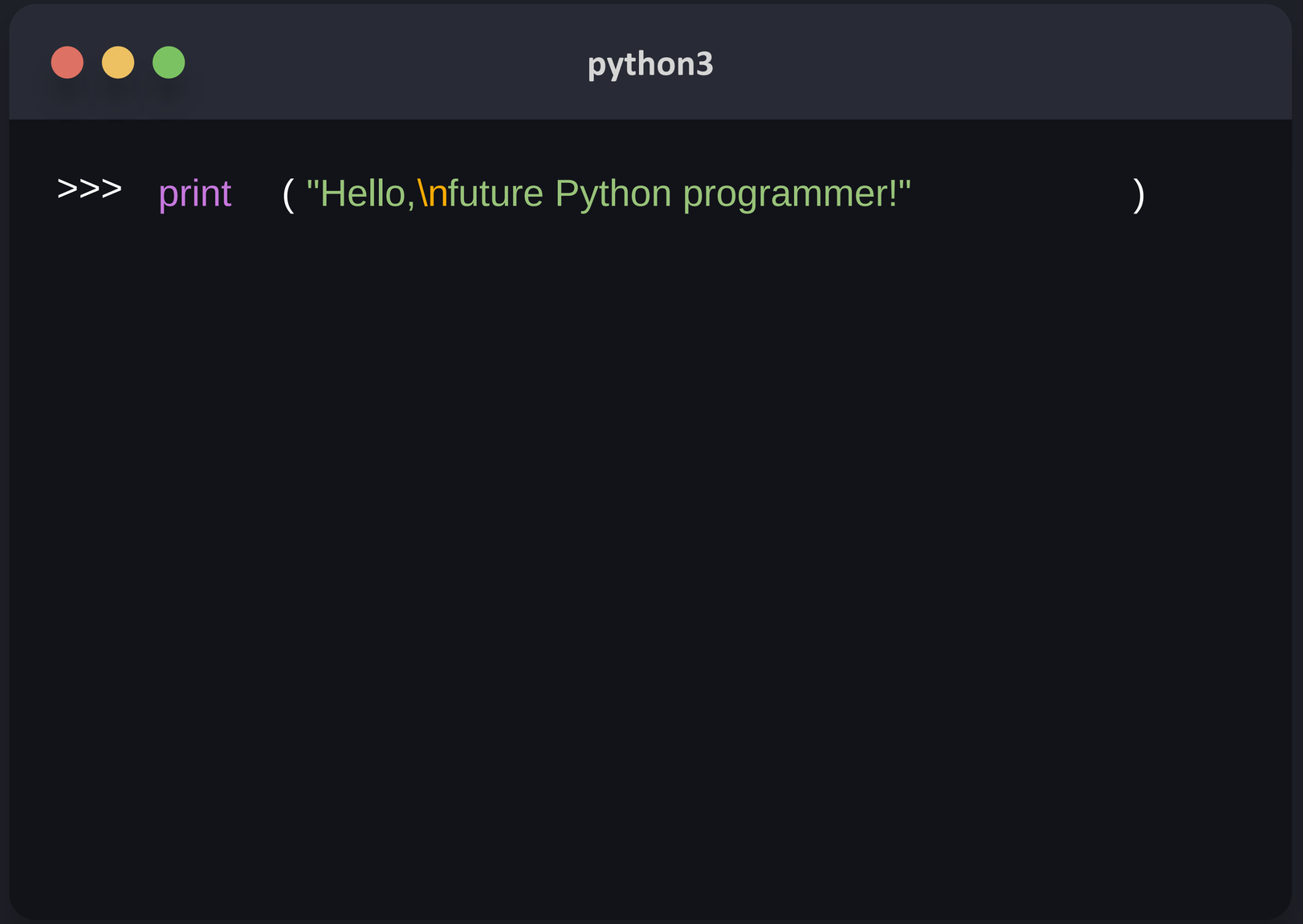
1. Checks function name
2. Checks arguments passed
3. Jumps into the function
4. Executes the function
5. Returns to your code
6. Resumes execution

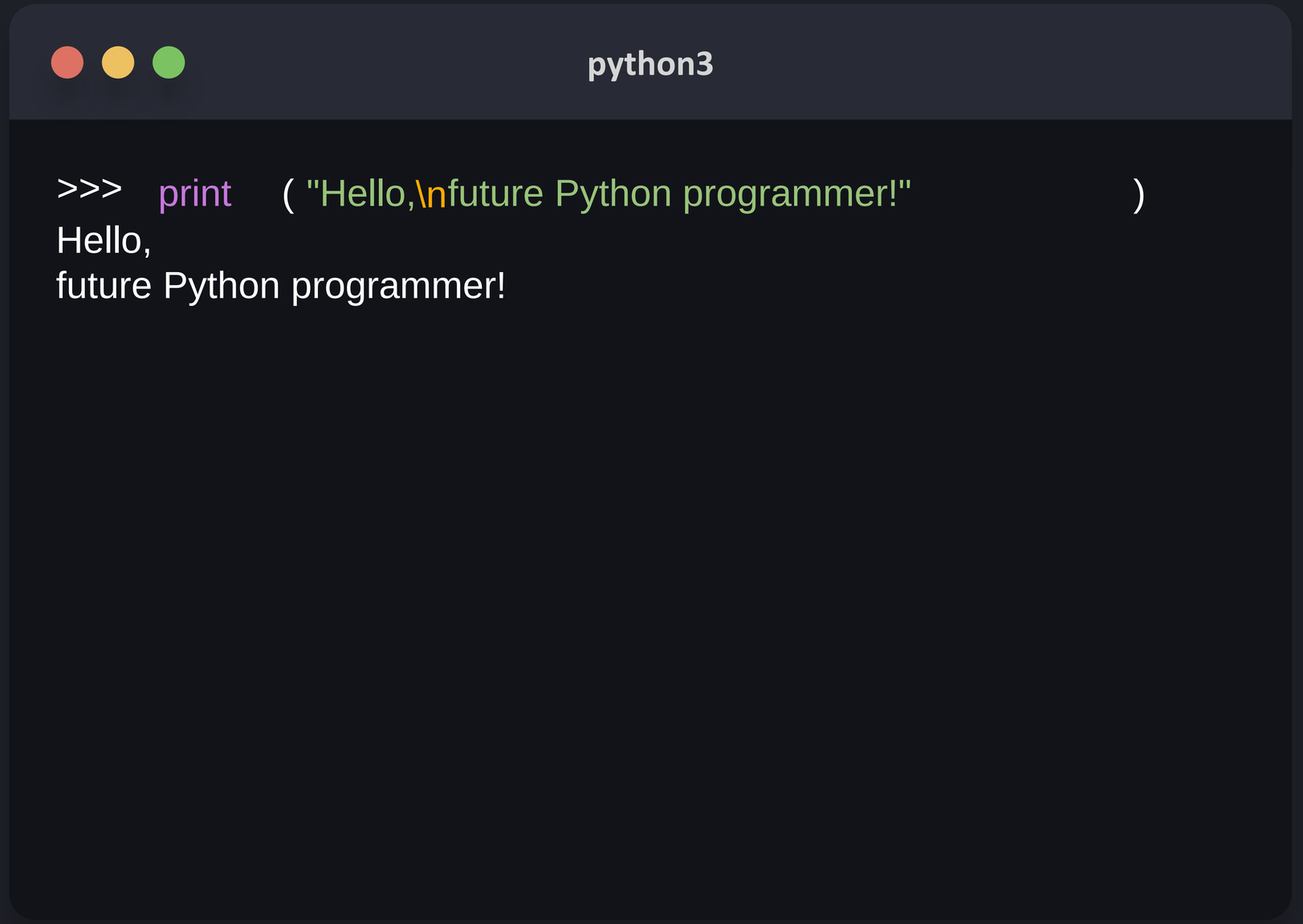


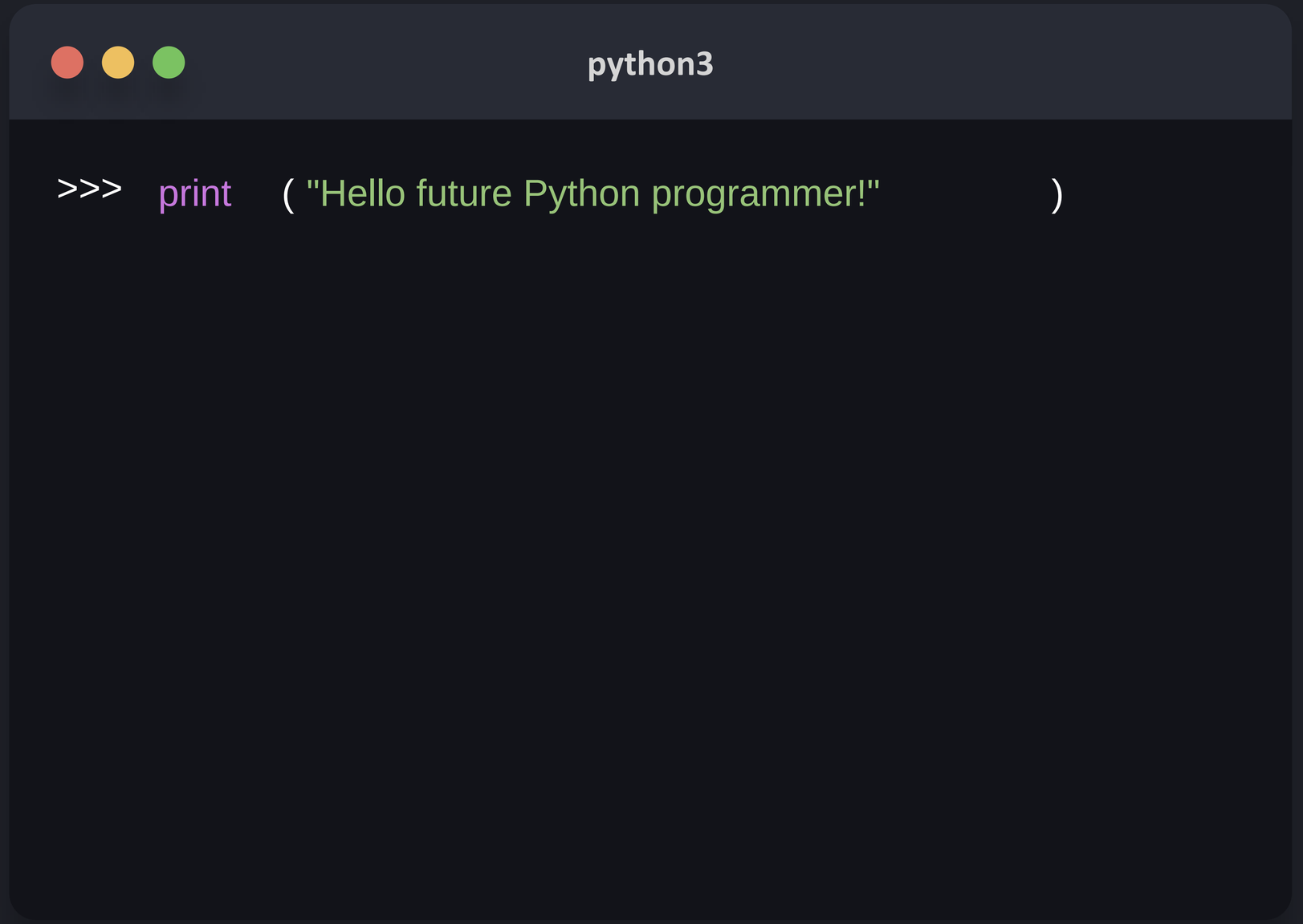

python3
>>> print ("Hello future Python programmer!")

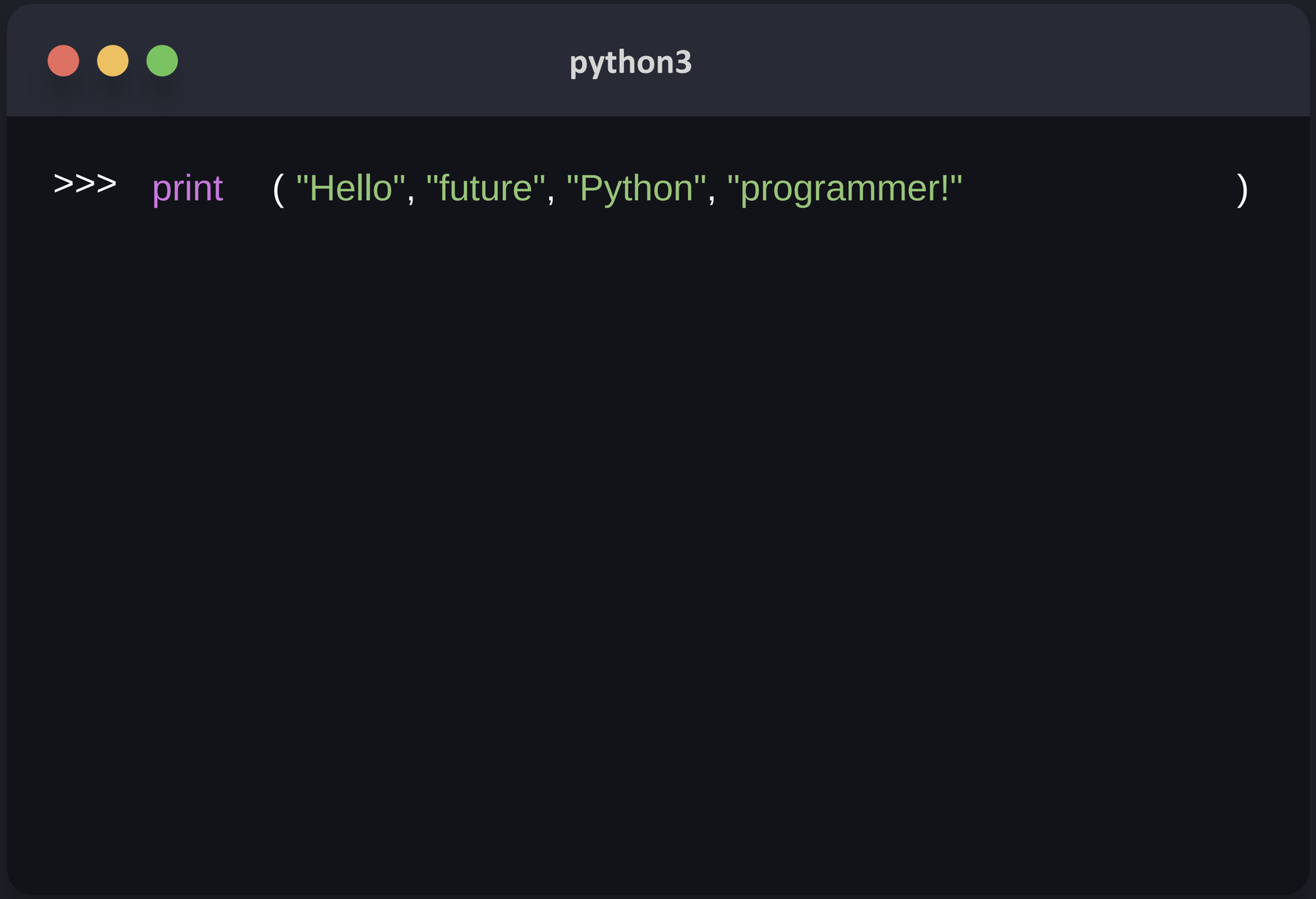

python3
>>> print ("Hello future Python programmer!")
print("Python is a great language")
print("Strings don't get executed as code")


python3
>>> print ("Hello future Python programmer!")
print("Python is a great language")
print("Strings don't get executed as code")
Hello future Python programmer!
Python is a great language
Strings don't get executed as code

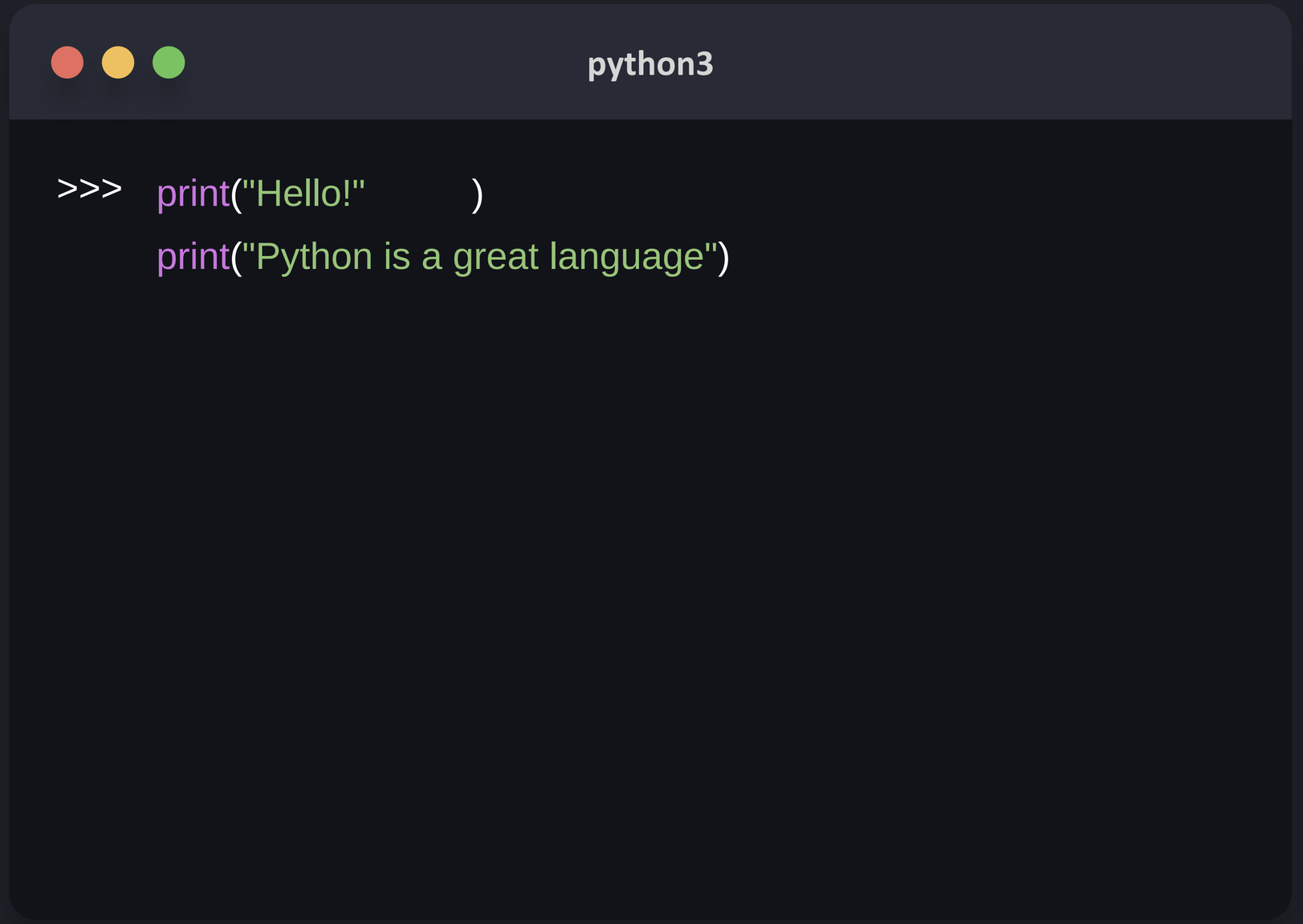

python3
>>> print ("Hello,\nfuture Python programmer!")

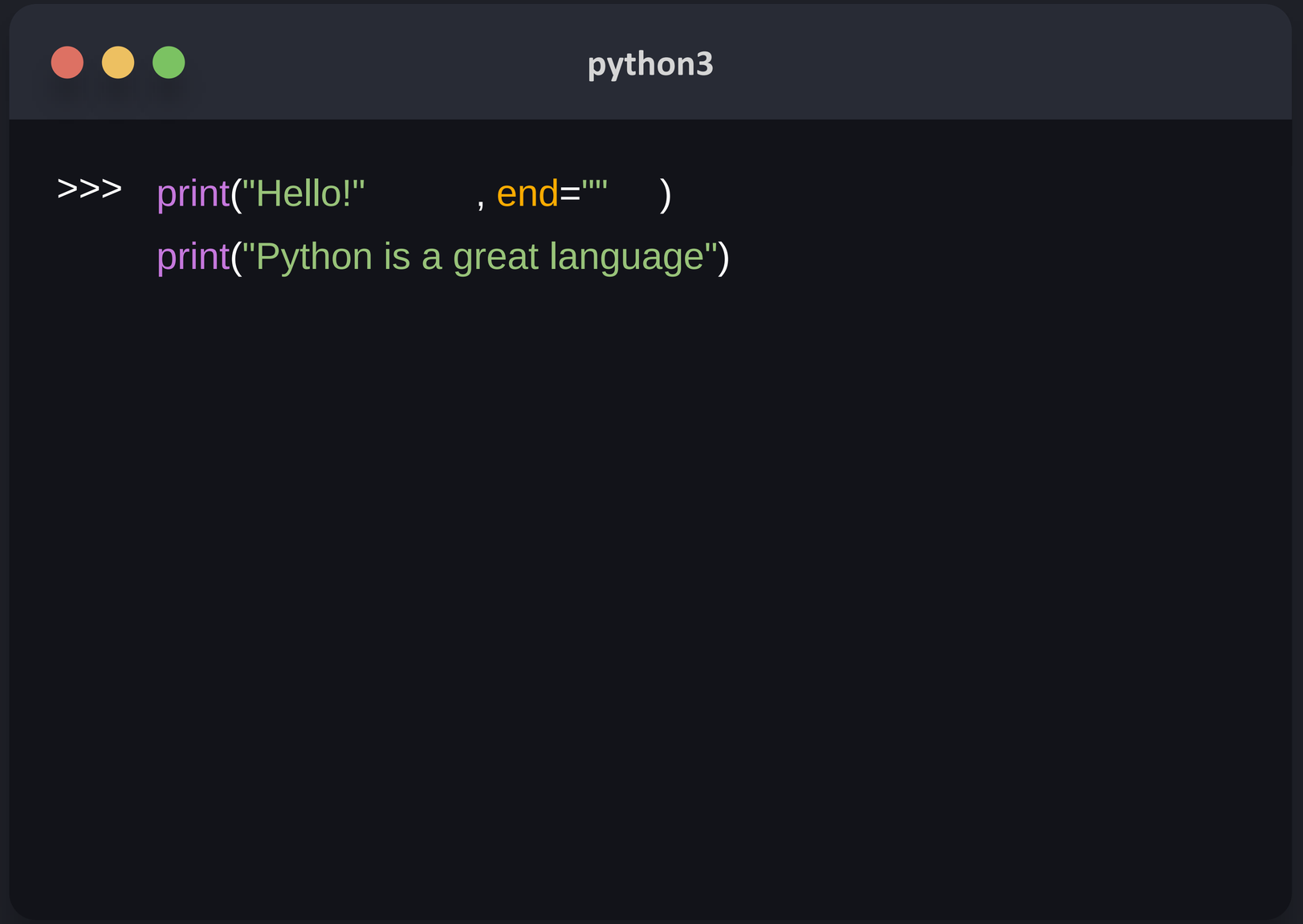

python3
>>> print ("Hello,\nfuture Python programmer!")
Hello,
future Python programmer!

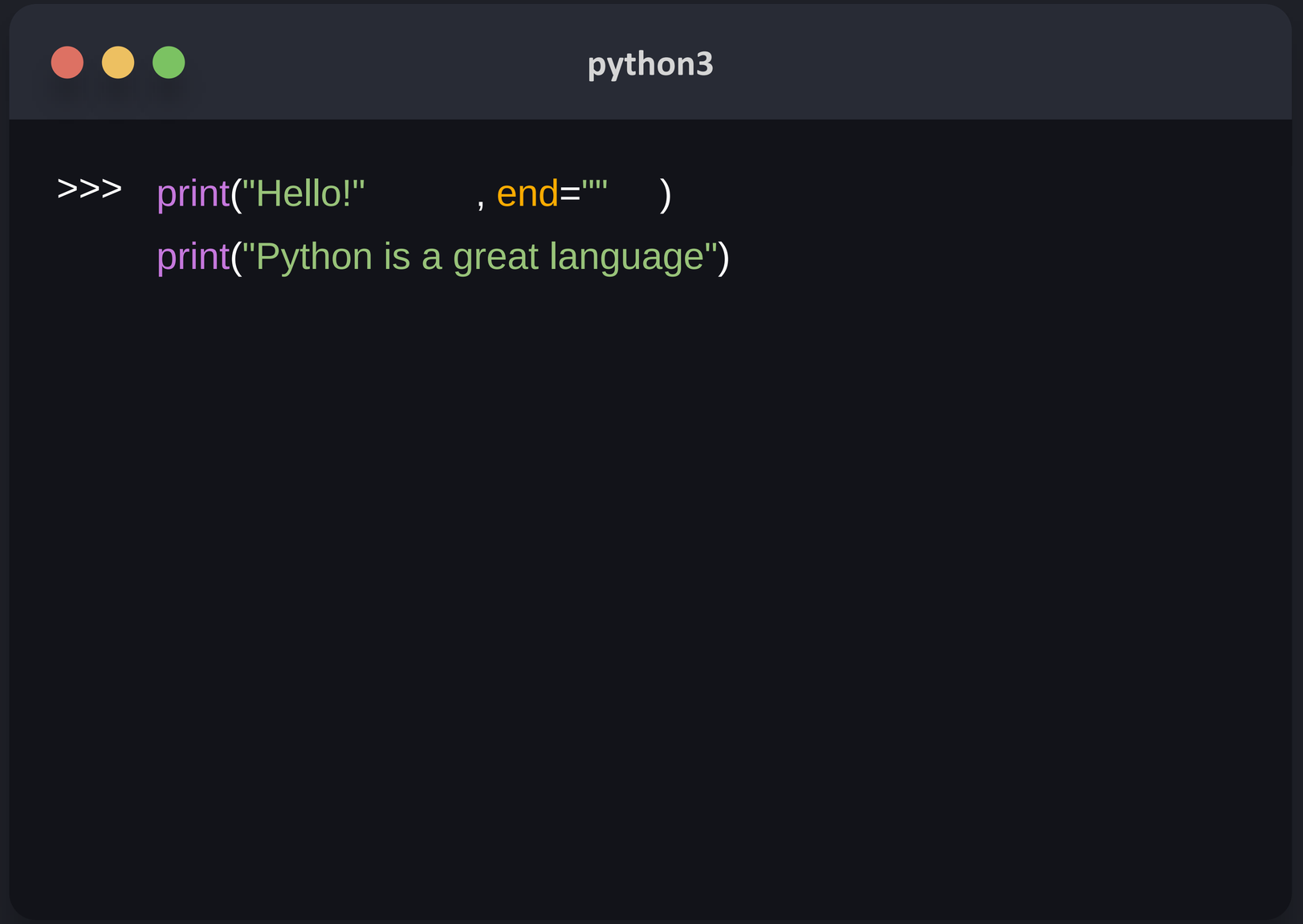

python3
>>> print ("Hello future Python programmer!")

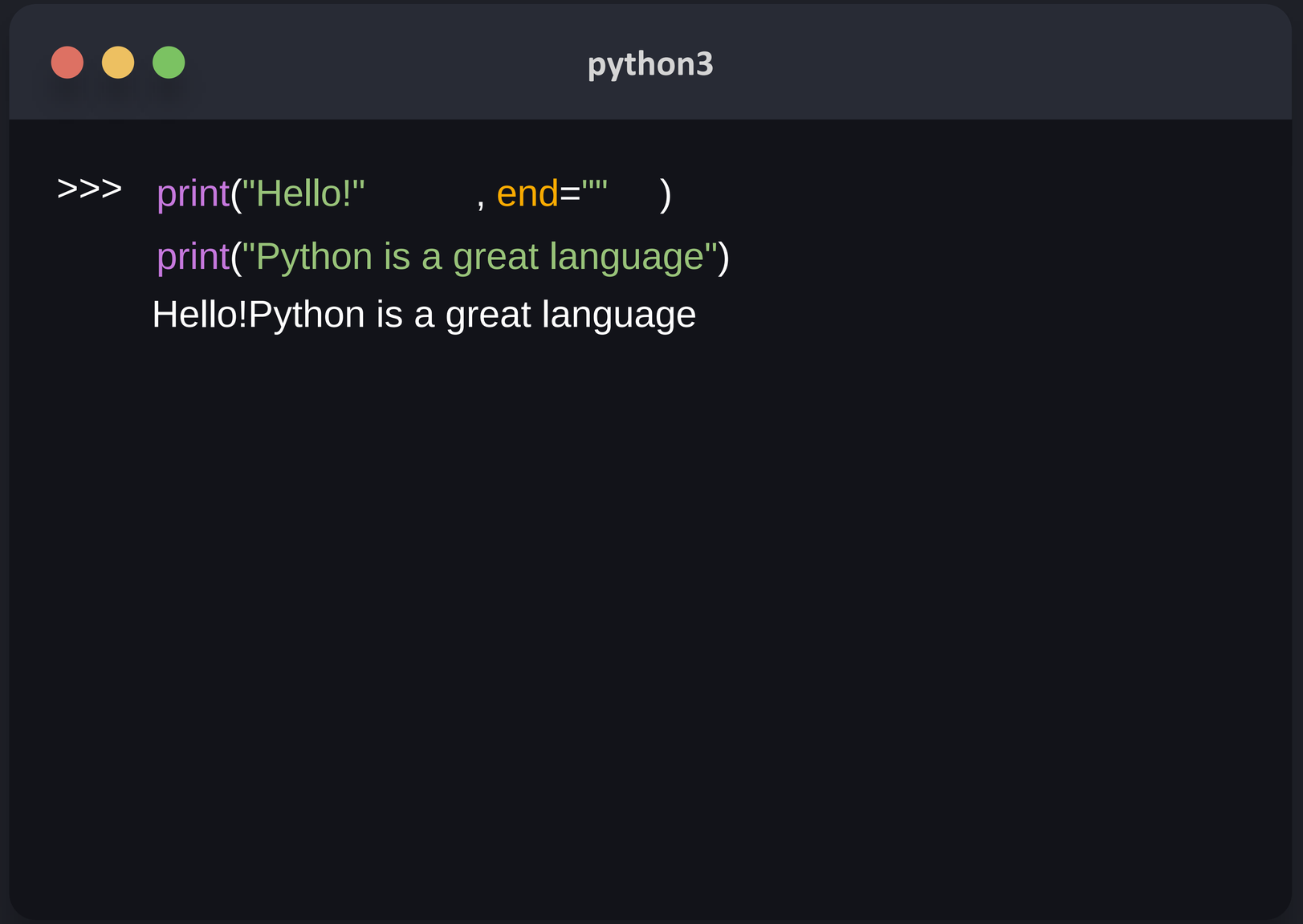

python3
>>> print ("Hello", "future", "Python", "programmer!")


python3
>>> print ("Hello", "future", "Python", "programmer!")
Hello future Python programmer!


python3
>>> print("Hello!")
print("Python is a great language")


python3
>>> print("Hello!" , end="")
print("Python is a great language")


python3
>>> print("Hello!" , end="")
print("Python is a great language")

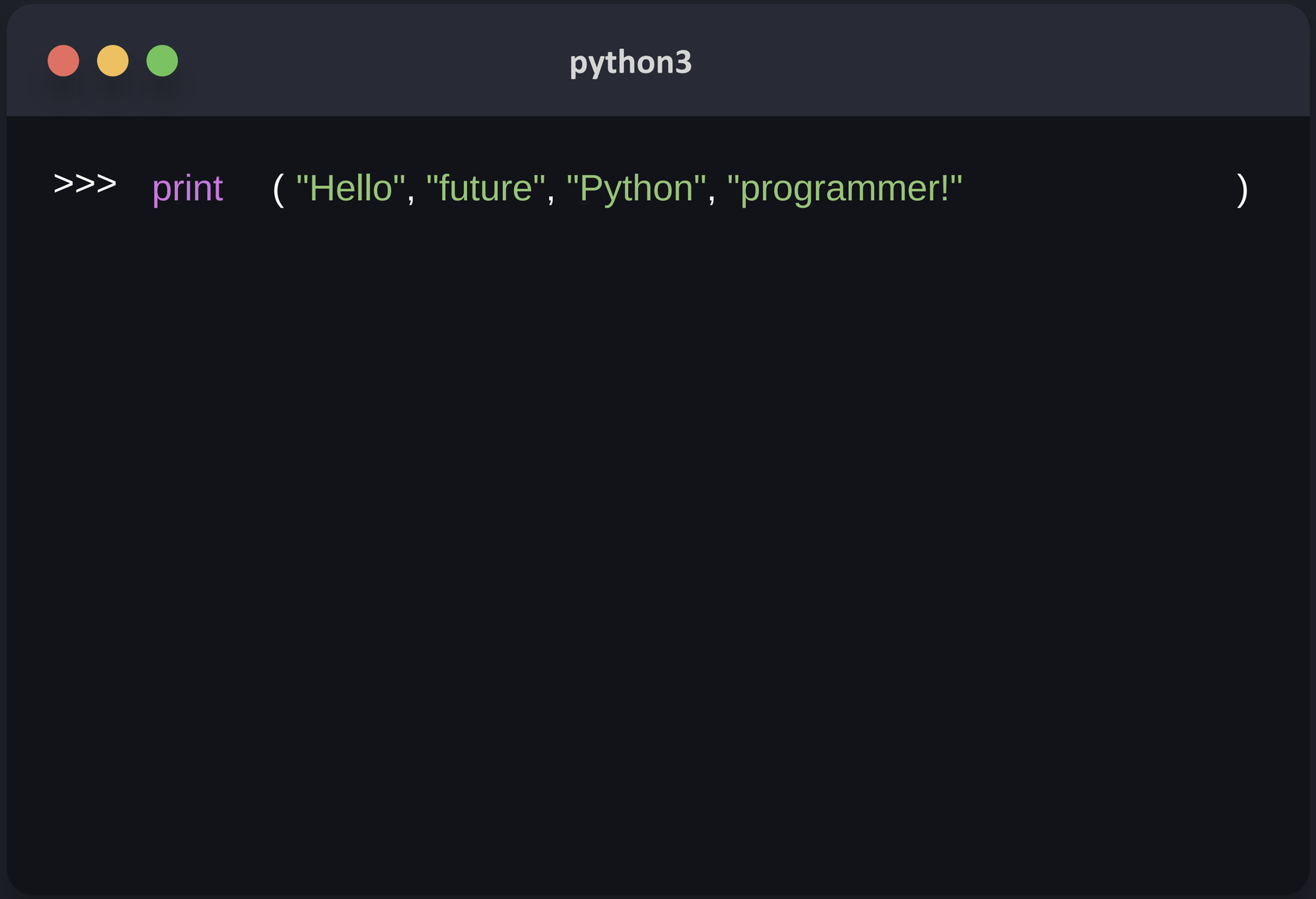

python3
>>> print("Hello!" , end="")
print("Python is a great language")
Hello!Python is a great language

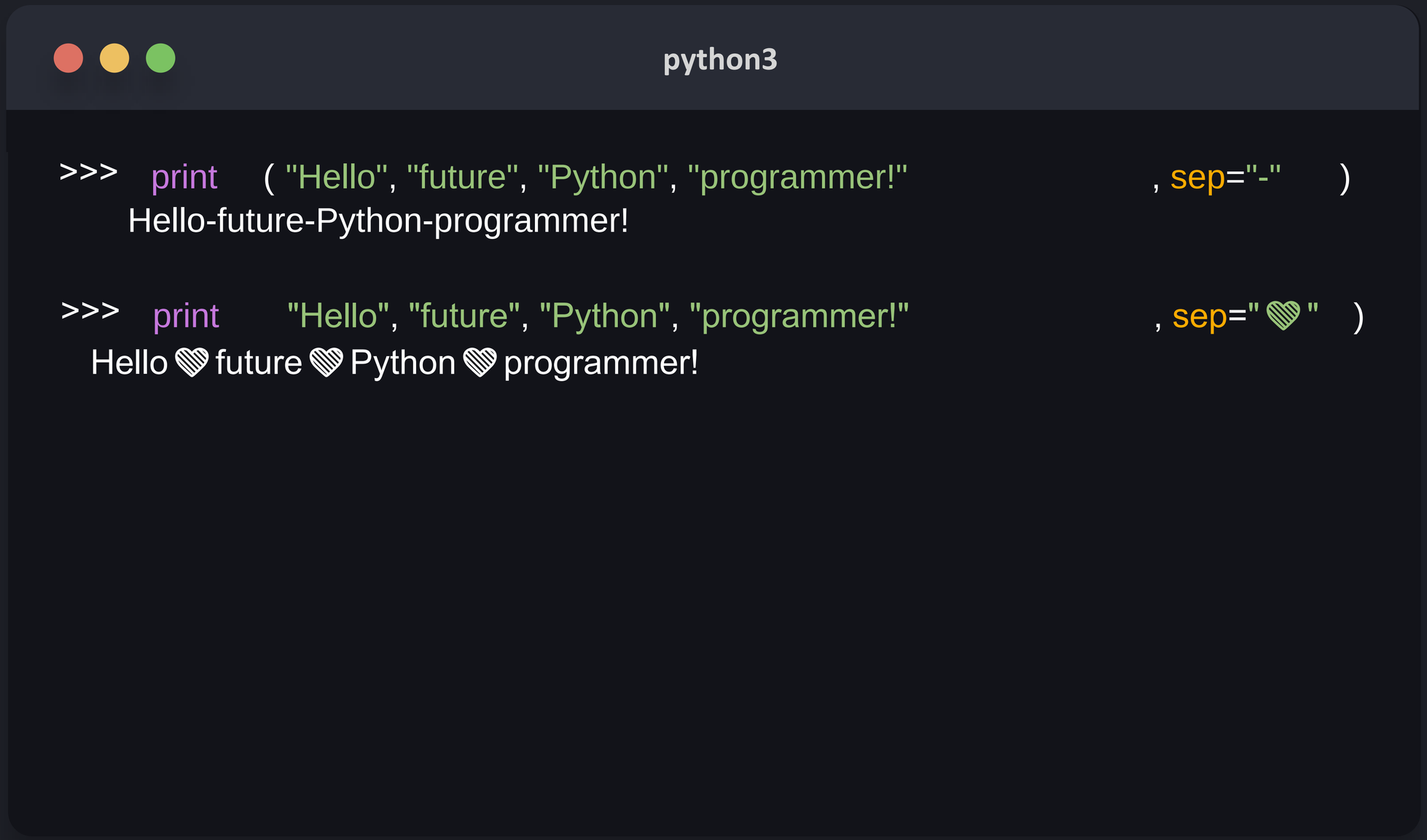
python3

```
>>>  print("Hello!"          , end=""     )
     print("Python is a great language")
     Hello!Python is a great language

>>>  print("Hello!"          , end="!"      )
     print("Python is a great language")
     Hello!!Python is a great language

>>>  print("Hello!"          , end="💚"    )
     print("Python is a great language")
     Hello!💚Python is a great language
```


python3
>>> print ("Hello", "future", "Python", "programmer!")


python3
>>> print ("Hello", "future", "Python", "programmer!" , sep="-")
Hello-future-Python-programmer!
>>> print "Hello", "future", "Python", "programmer!" , sep=" 💙 ")
Hello 💙 future 💙 Python 💙 programmer!


python3
>>> print ("Hi", "Hello" , sep="! " , end="💗\n")
print ("So", "enjoying python?" , sep= ", " , end="😄")
Hi! Hello💗
So, enjoying Python?😄

print()

- Built-in function: can be used without importing it.
- Allows us to print values to the console
- We can invoke it with parentheses.
- We can pass the value we want to print as arguments between the parentheses.
- The backslash \ tells python that the next character has a special meaning (eg. \n)
- Keyword arguments such as sep and end can be used to format the output.

KodeKloud

Literals

200

"Hello!"

"Python"

-89

200

"Hello!"

"Python"

-89

name

c

age

print

Literals

Literal types:

1. Integers
    - Octal numbers
    - Hexadecimal numbers
2. Floating point numbers
3. Strings
4. Booleans

Literals

Literal types:

1. Integers
   - Octal numbers
   - Hexadecimal numbers
2. Floating point numbers
3. Strings
4. Booleans

```
200
```

```
1298901
```

```
-90
```

```
1_000_000
```

Literals

Literal types:

1. Integers
   - Octal numbers
   - Hexadecimal numbers
2. Floating point numbers
3. Strings
4. Booleans

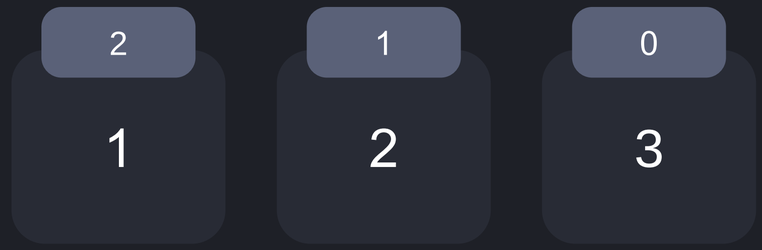
```
0o123
```

Literals

Literal types:

1. Integers
   - Octal numbers
   - Hexadecimal numbers
2. Floating point numbers
3. Strings
4. Booleans

```
0o123
```



Literals

Literal types:

1. Integers
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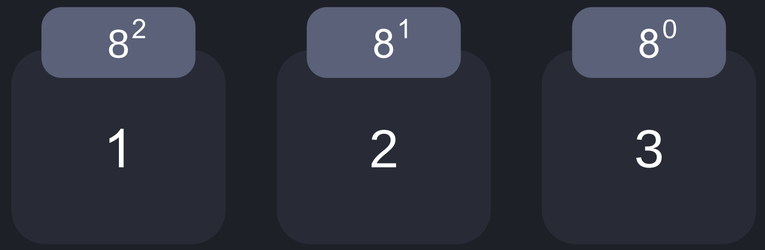
```
0o123
```



Literals

Literal types:

1. Integers
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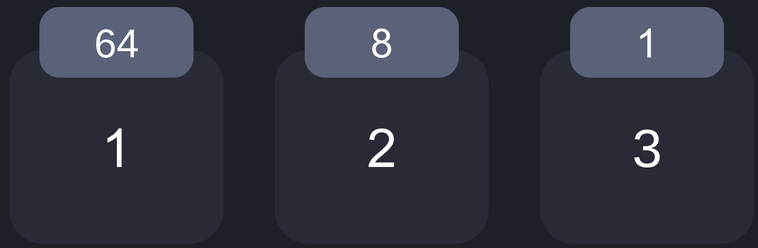
```
0o123
```



Literals

```
0o123
```

Literal types:

1. Integers
   - Octal numbers
   - Hexadecimal numbers
2. Floating point numbers
3. Strings
4. Booleans

```
64
```

```
16
```

```
3
```

Literals

Literal types:

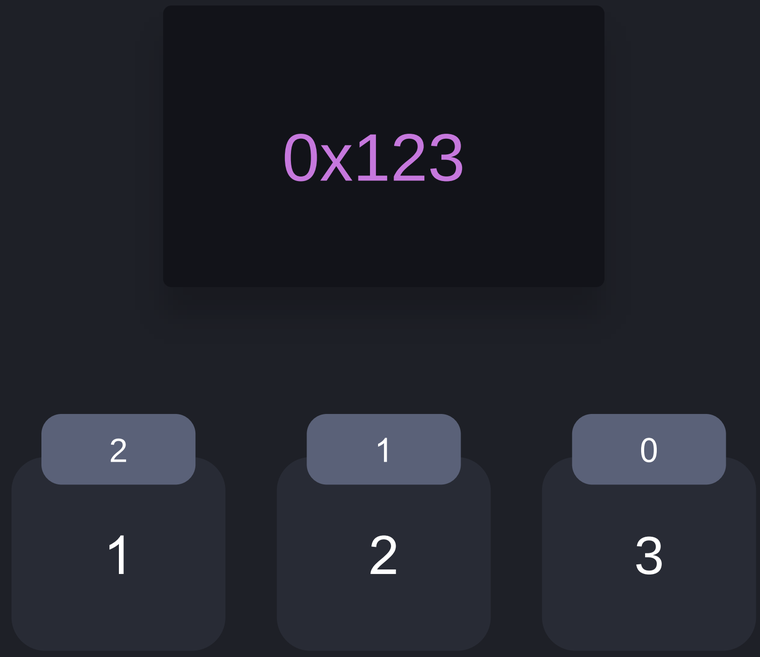
1. Integers
   - Octal numbers
   - Hexadecimal numbers
2. Floating point numbers
3. Strings
4. Booleans

```
0x123
```

Literals

Literal types:

1. Integers
   - Octal numbers
   - Hexadecimal numbers
2. Floating point numbers
3. Strings
4. Booleans



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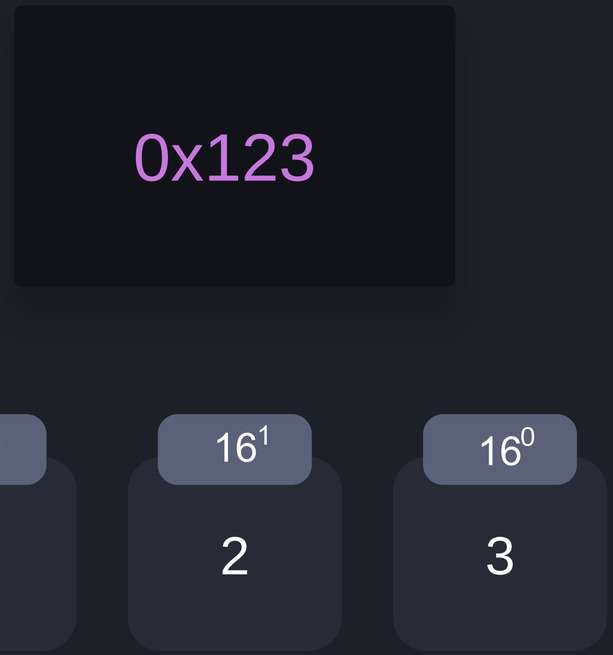

Literals

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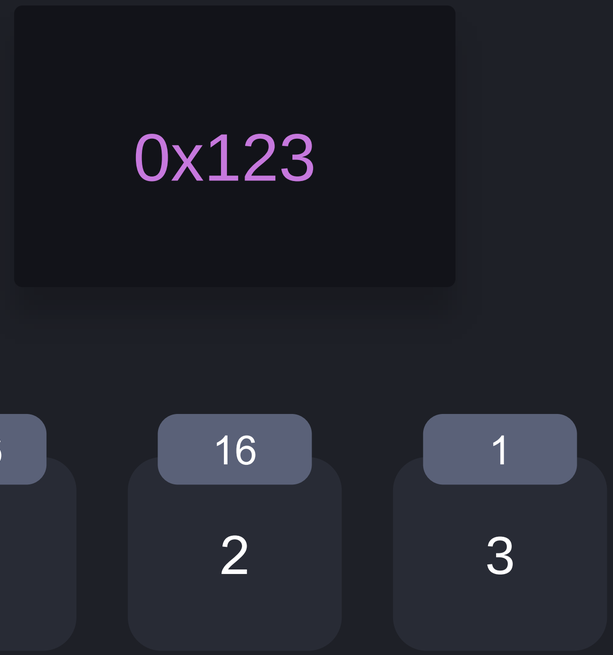

Literals

Literal types:

1. Integers
   - Octal numbers
   - Hexadecimal numbers
2. Floating point numbers
3. Strings
4. Booleans

```
0x123
```

```
256
```

```
32
```

```
3
```

Literals

Literal types:

1. Integers
   - Octal numbers
   - Hexadecimal numbers
2. Floating point numbers
3. Strings
4. Booleans

```
0x123
```

```
291
```

Literals

Literal types:

1. Integers
   - Octal numbers
   - Hexadecimal numbers
2. Floating point numbers
3. Strings
4. Booleans

45.50

12.1

-90.0

89.394

Literals

Literal types:

1. Integers
   - Octal numbers
   - Hexadecimal numbers
2. Floating point numbers
3. Strings
4. Booleans

```
0.000000000000000000000001
```

Literals

Literal types:

1. Integers
   - Octal numbers
   - Hexadecimal numbers
2. Floating point numbers
3. Strings
4. Booleans

```
1e-22
```

Literals

Literal types:

1. Integers
    - Octal numbers
    - Hexadecimal numbers
2. Floating point numbers
3. Strings
4. Booleans

```
"Hello!"
```

```
'Hello!'
```

Literals

Literal types:

1. Integers
   - Octal numbers
   - Hexadecimal numbers
2. Floating point numbers
3. Strings
4. Booleans

```
'Hello! "Python" is cool'
```

```
"Hello! 'Python' is cool"
```

Literals

Literal types:

1. Integers
   - Octal numbers
   - Hexadecimal numbers
2. Floating point numbers
3. Strings
4. Booleans

```
"Hello! \"Python\" is cool"
```

Literals

Literal types:

1. Integers
    - Octal numbers
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2. Floating point numbers
3. Strings
4. Booleans

True

False

Literals

Literal types:

1. Integers
   - Octal numbers
   - Hexadecimal numbers
2. Floating point numbers
3. Strings
4. Booleans

Literals

Numbers

- Integers `123`
- Octal `0o123`
- Hexadecimal `0x123`
- Floating point `123.45`

Strings

- Double quotes `"Hello!"`
- Single quotes `'Hello!'`
- Use quotes within strings `'Hi "hi"'`
- Escape quotes `'Hi \'hi\'`

Boolean

- False `False`
- True `True`
- Numeric false `0`
- Numeric true `1`

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Operators

Arithmetic Operators

+	-	*	/	//	%	**
Add	Subtract	Multiply	Divide	Floor Divide	Modulo	Exponential

Arithmetic Operators

**

Exponential

Arithmetic Operators

```
**
```

Exponential

```
2 ** 3
```

Arithmetic Operators

**

Exponential

python3

```
>>>  print(2 ** 3)
8

>>>  print(2. ** 3.)
8.0

>>>  print(2 ** 3.)
8.0

>>>  print(2. ** 3)
8.0
```

Arithmetic Operators

*

Multiplication

python3

```
>>>  print(2 * 3)
6
>>>  print(2. * 3.)
6.0
>>>  print(2 * 3.)
6.0
>>>  print(2. * 3)
6.0
```

Arithmetic Operators

/

Division

python3

```
>>>  print(10 / 2)
5.0

>>>  print(10. / 2.)
5.0

>>>  print(10 / 2.)
5.0

>>>  print(10. / 2)
5.0
```

Arithmetic Operators

`//`

Floor Division

python3

```
>>>  print(10 // 2)
5
>>>  print(10. // 2.)
5.0
>>>  print(10 // 2.)
5.0
>>>  print(10. // 2)
5.0
```

Arithmetic Operators

//

Floor Division

python3

```
>>> print(6. / 4)
1.5
>>> print(6. // 4)
1.0
>>> print(6. / -4)
-1.5
>>> print(6. // -4)
-2.0
```

Arithmetic Operators

%

Modulo

python3

```
>>>  print(4 % 2)
```

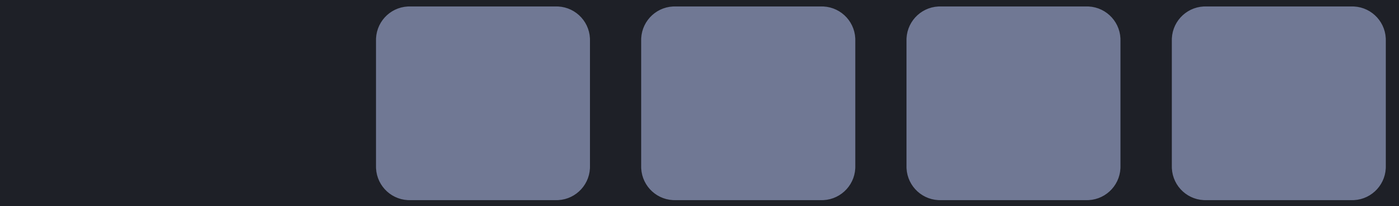
Arithmetic Operators

```
%
```

Modulo

```
python3

>>>  print(4 % 2)
```



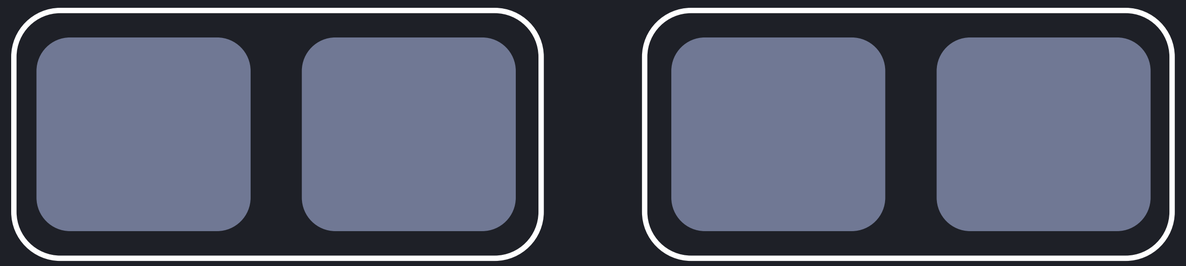
Arithmetic Operators

%

Modulo

python3

```
>>>  print(4 % 2)
```



Arithmetic Operators

%

Modulo

python3

```
>>>  print(4 % 2)
0
```

Arithmetic Operators

```
%
```

Modulo

```
python3

>>>  print(5 % 2)
```

Arithmetic Operators

```
python3

>>> print(5 % 2)
```

%

Modulo

Arithmetic Operators

```
python3

>>>  print(5 % 2)
```

%

Modulo

Arithmetic Operators

```
python3

>>>  print(5 % 2)
1
```

%

Modulo

Arithmetic Operators

```
python3

>>>  print(5 % 2)
1
```

%

Modulo

Arithmetic Operators

+

Addition

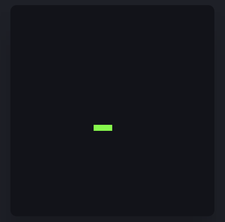
python3

```
>>>  print(6 + 4)
10

>>>  print(6. + 4)
10.0

>>>  print(6. + 4.)
10.0
```

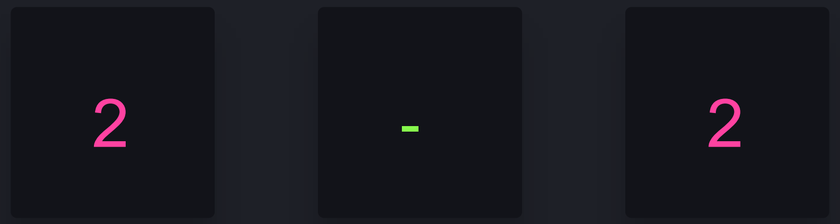
Arithmetic Operators



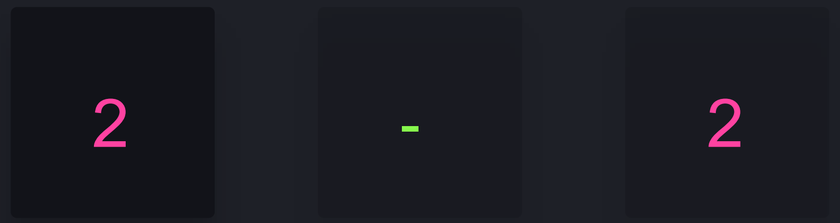
Subtraction

python3

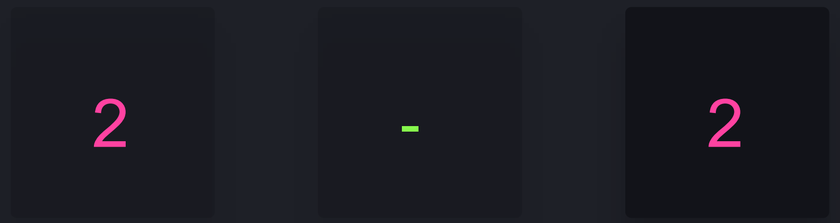
```
>>>  print(6 - 4)
2
>>>  print(6. - 4)
2.0
>>>  print(6. - 4.)
2.0
```



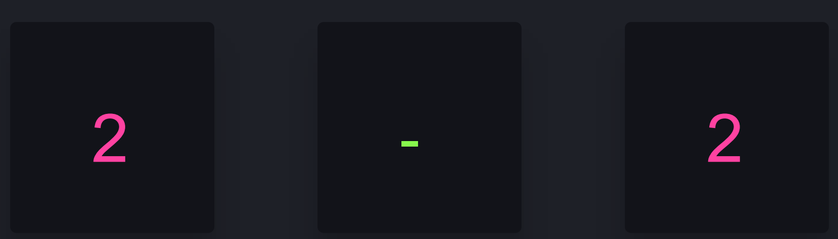
Binary Operator



Binary Operator



Binary Operator



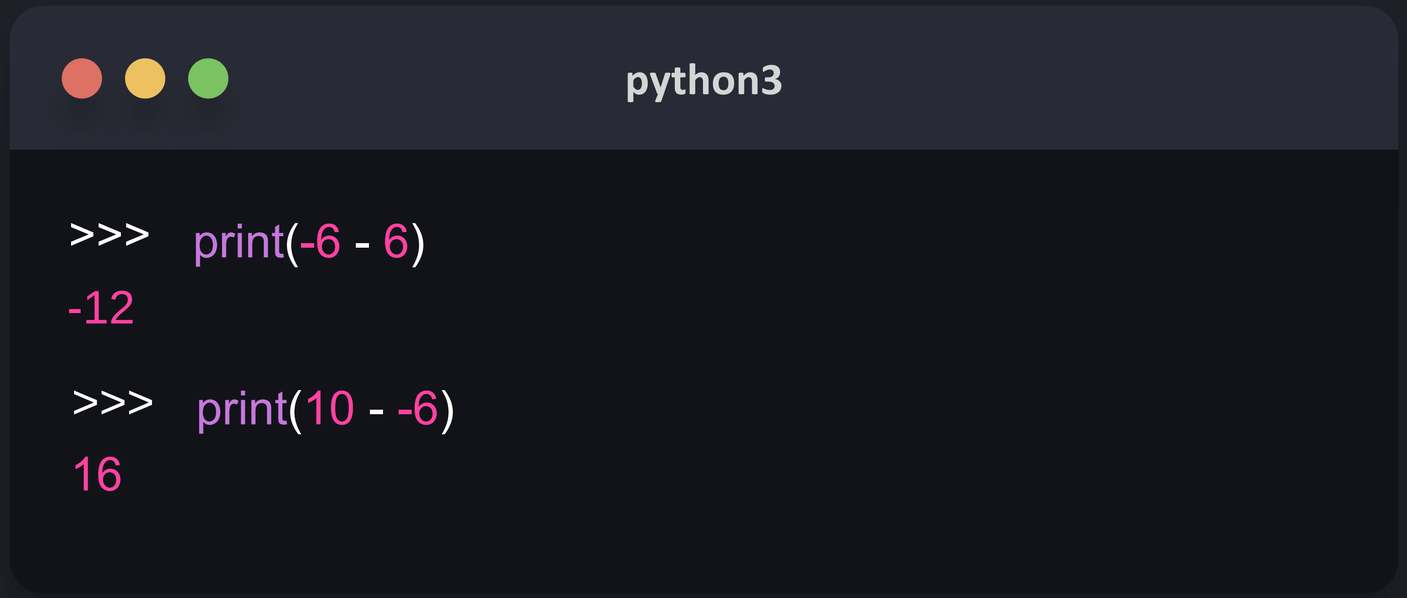
Binary Operator

Unary Operator


python3
>>> print(-6 - 6)


python3
>>> print(-6 - 6)
-12


python3
>>> print(-6 - 6)
-12
>>> print(10 - -6)


python3
>>> print(-6 - 6)
-12
>>> print(10 - -6)
16


python3
>>> print(10 - 6 ** 7 / 9 * 23 + 1)


Highest Priority
+
-
(unary)
**
*
/
//
%
+
-
(binary)
Lowest Priority


python3
>>> print(10 - 6 ** 2 / 9 * 10 + 1)

```
print(    10 -   6 ** 2     /   9  *  10 + 1)
```

```
print(    10  -   6 ** 2     /   9   *  10 + 1)
```

```
print(    10  -      36      /   9  *  10 + 1)
```

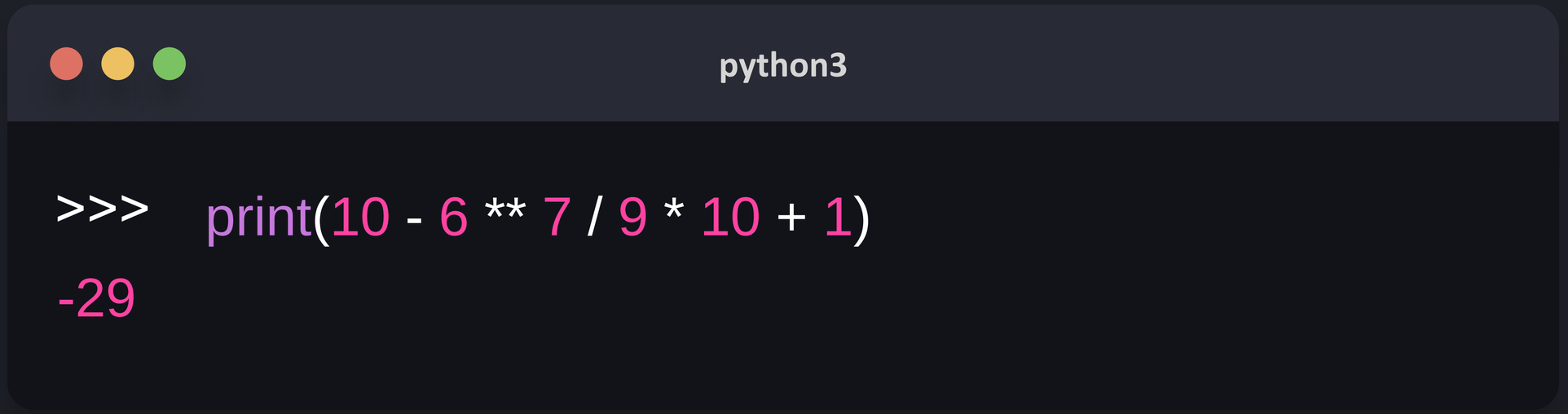
```
print(     10  -        4       *  10  + 1)
```

```
print(    10 - 40 + 1)
```

```
print(    10 - 40 + 1)
```

```
print(      -30   + 1)
```

```
print(      -29  )
```


python3
>>> print(10 - 6 ** 7 / 9 * 10 + 1)
-29


python3
>>> print(2 * (2 + 3))


python3
>>> print(2 * 5)


python3
>>> print(2 * 5)
10

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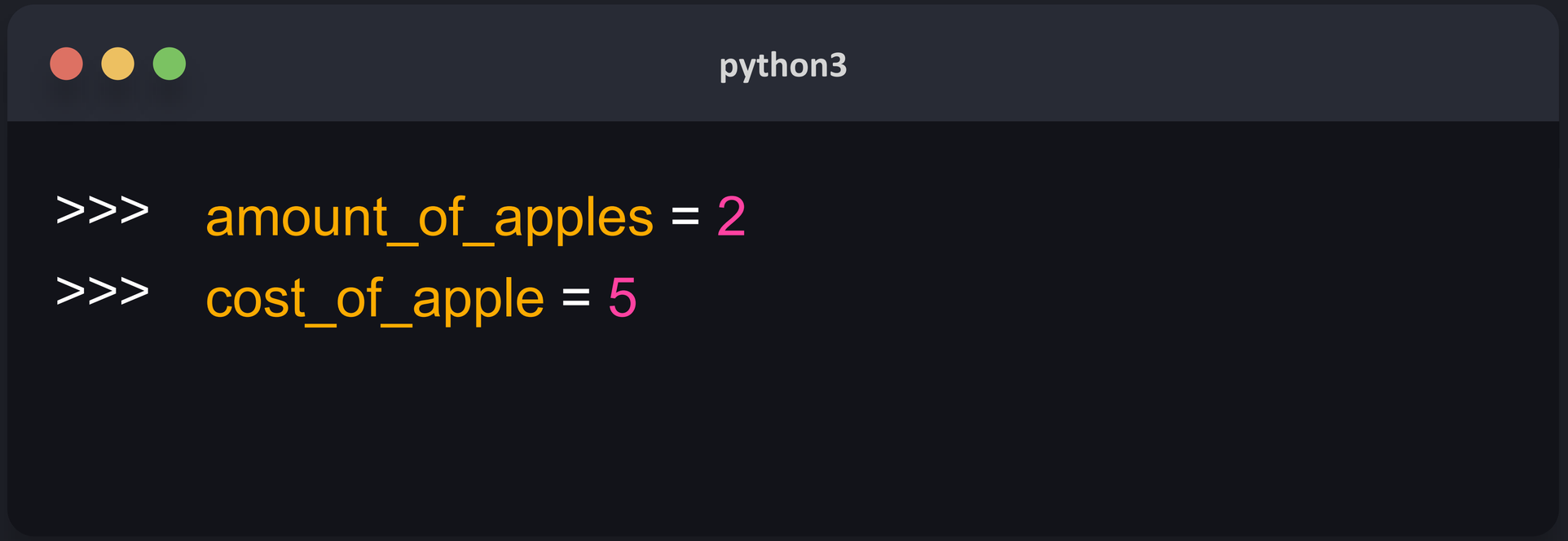
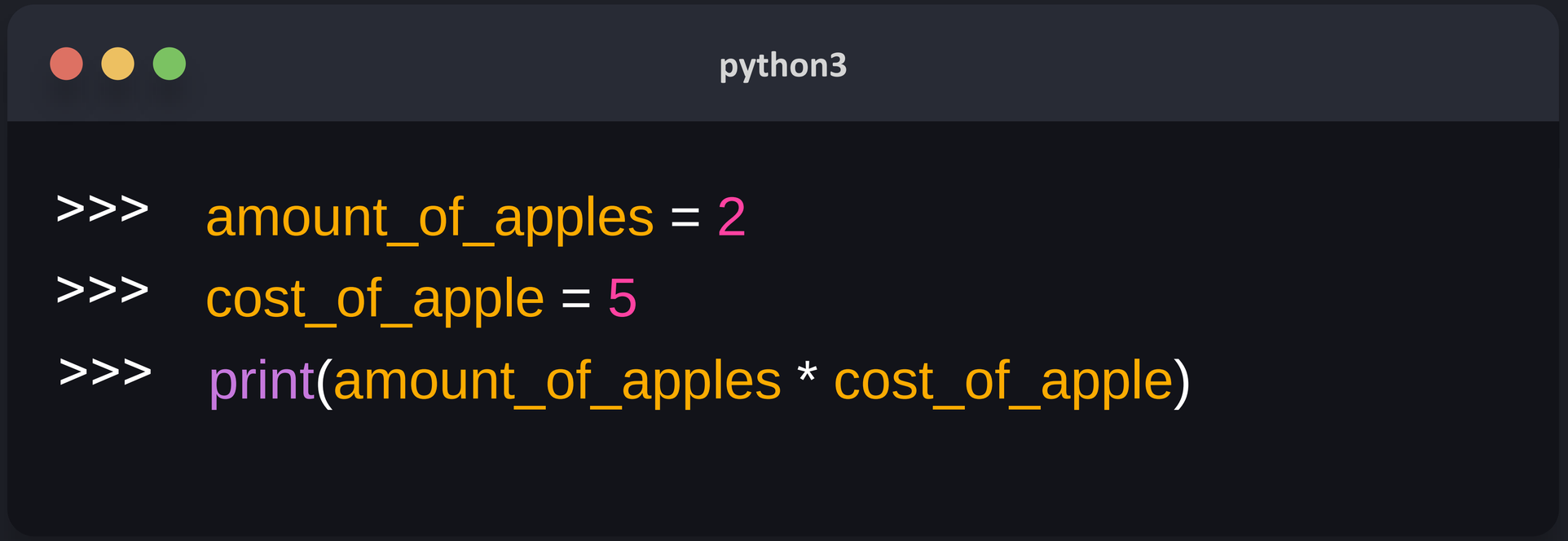
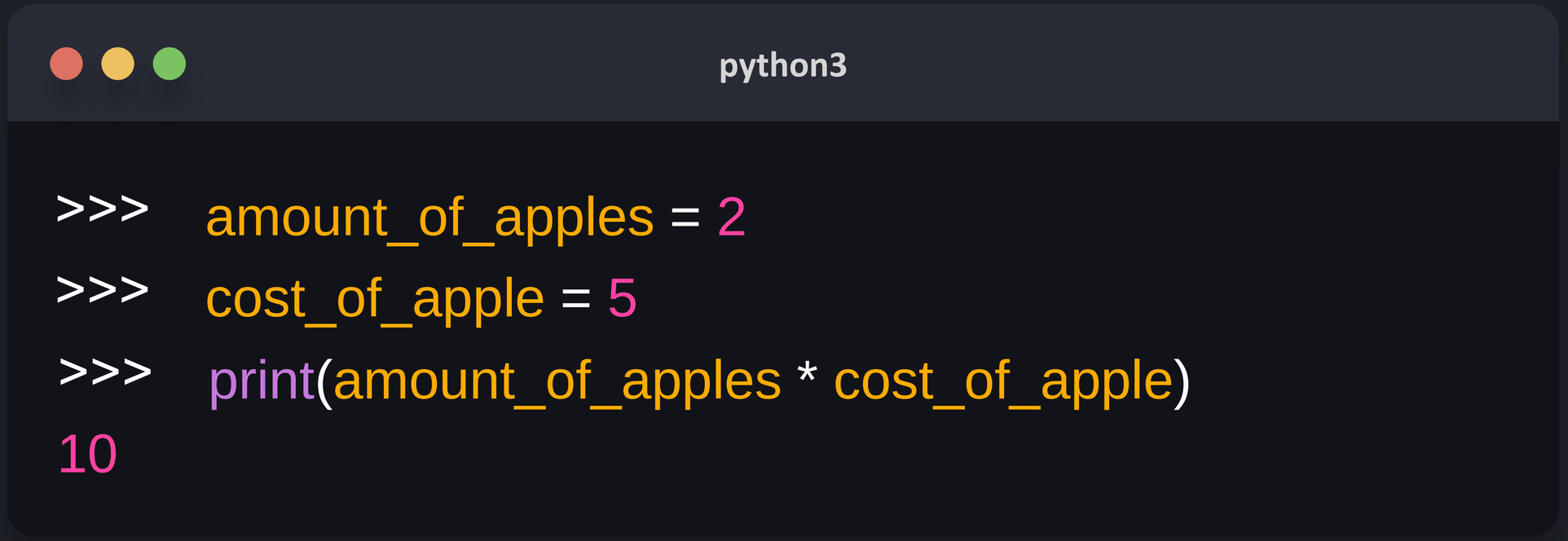
Variables


python3
>>> print(2 * 5)
10


python3
>>> amount_of_apples = 2
>>> cost_of_apple = 5


python3
>>> amount_of_apples = 2
>>> cost_of_apple = 5
>>> print(amount_of_apples * cost_of_apple)


python3
>>> amount_of_apples = 2
>>> cost_of_apple = 5
>>> print(amount_of_apples * cost_of_apple)
10

amount_of_apples

2

cost_of_apple

5

Valid Variable Names

amount_of_apples
cost_of_apple
_total_cost

Invalid Variable Names

am*unt_o%_app|es
c*st_o%_app|e
5apples_cost

Valid Variable Names

amount_of_apples
cost_of_apple
_total_cost
COST_OF_APPLE

Invalid Variable Names

am*unt_o%_app|es
c*st_o%_app|e
5apples_cost

Valid Variable Names

amount_of_apples
cost_of_apple
_total_cost
COST_OF_APPLE

Invalid Variable Names

am*unt_o%_app|es
c*st_o%_app|e
5apples_cost
del
elif
return

Valid Variable Names

amount_of_apples
cost_of_apple
_total_cost
COST_OF_APPLE

Invalid Variable Names

am*unt_o%_app|es
c*st_o%_app|e
5apples_cost
del
elif
return

Reserved Keywords

False	elif	lambda
None	else	nonlocal
True	except	not
and	finally	or
as	for	pass
assert	from	raise
break	global	return
class	if	try
continue	import	while
def	in	with
del	is	yield

Valid Variable Names

Import
Del
Elif
Return

Invalid Variable Names

import
del
elif
return

amount_of_apples

2

cost_of_apple

5

python3

```
>>>  cost_of_apple = cost_of_apple + 2
```

amount_of_apples

2

cost_of_apple

7

python3

```
>>>  cost_of_apple = cost_of_apple + 2
```

amount_of_apples

2

cost_of_apple

7

python3

```
>>>  cost_of_apple = cost_of_apple + 2
>>>  print(amount_of_apples * cost_of_apple)
```

amount_of_apples

2

cost_of_apple

7

python3

```
>>>         cost_of_apple =  cost_of_apple + 2
>>>   print(amount_of_apples * cost_of_apple)
18
```

amount_of_apples

2

cost_of_apple

5

python3

```
cost_of_apple = cost_of_apple + 2
>>>
>>> print(amount_of_apples * cost_of_apple)
14
```

amount_of_apples

2

cost_of_apple

5

python3

```
cost_of_apple += 2
>>>
>>>    print(amount_of_apples * cost_of_apple)
14
```

amount_of_apples

2

cost_of_apple

5

python3

```
>>> cost_of_apple += 2
```

amount_of_apples

2

cost_of_apple

7

python3

```
>>>  cost_of_apple      += 2
>>>  print(amount_of_apples * cost_of_apple)
```

amount_of_apples

2

cost_of_apple

7

python3

```
>>>  cost_of_apple      += 2
>>>  print(amount_of_apples * cost_of_apple)
18
```

Without Shortcut Operator

```
cost_of_apple = cost_of_apple + 2
cost_of_apple = cost_of_apple - 2
cost_of_apple = cost_of_apple * 2
cost_of_apple = cost_of_apple ** 2
cost_of_apple = cost_of_apple / 2
cost_of_apple = cost_of_apple // 2
cost_of_apple = cost_of_apple % 2
```

With Shortcut Operator

```
cost_of_apple  += 2
cost_of_apple  -= 2
cost_of_apple  *= 2
cost_of_apple  **= 2
cost_of_apple  /= 2
cost_of_apple  //= 2
cost_of_apple  %= 2
```

Variables

- Variables allow you to store values
- A variable has a valid name (letters, digits, underscore, not a reserved keyword)
- Python is dynamically typed: variables can be redeclared
- We can use shortcut operators in order to cleanly redeclare a variable
- We can combine text and variables using the + operator in the print function

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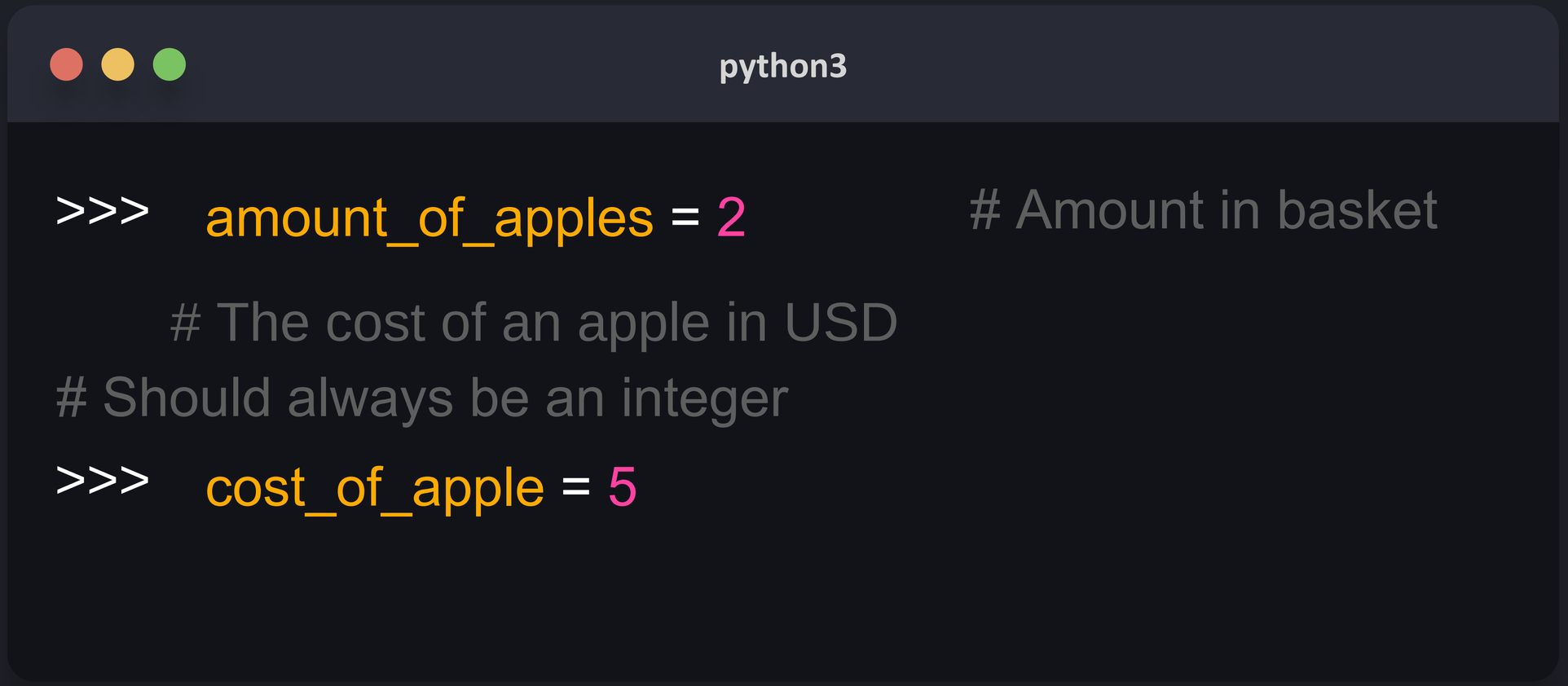
Comments

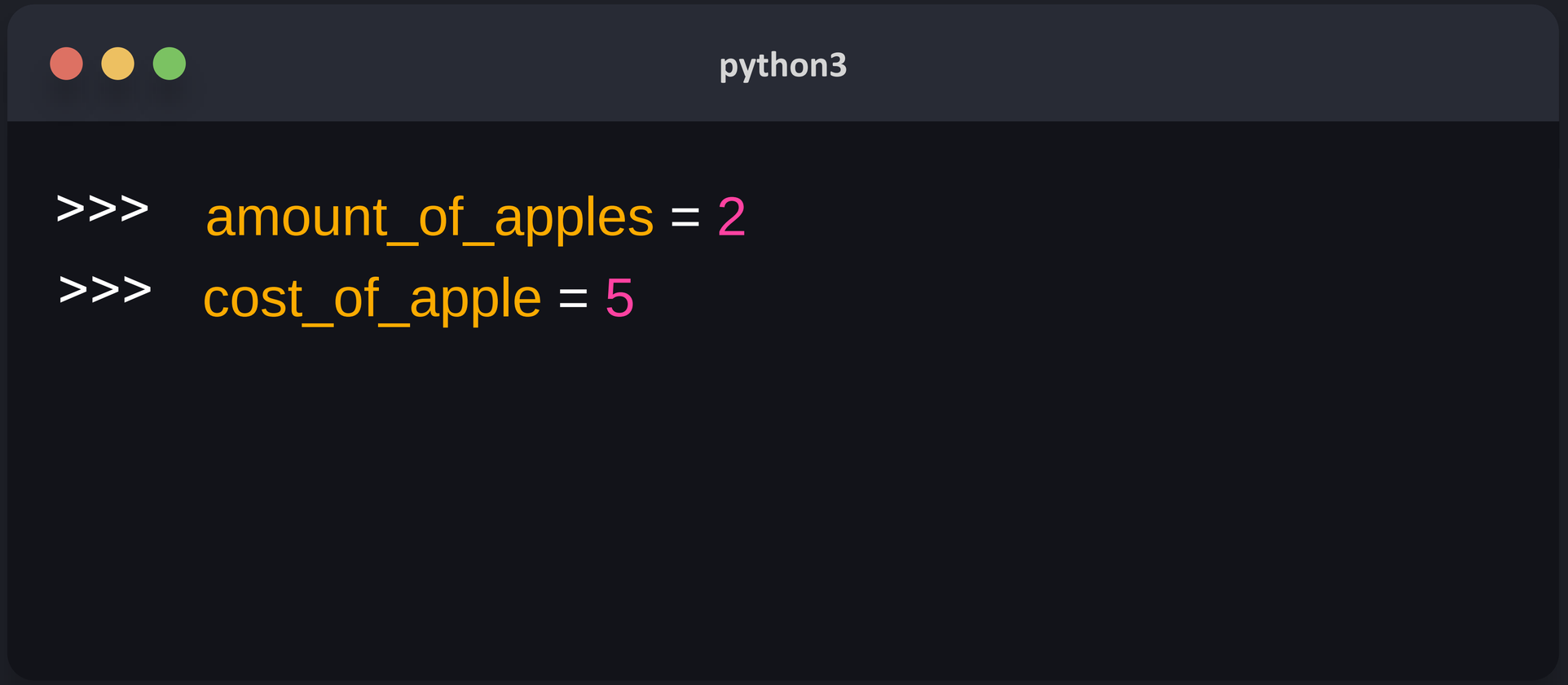
python3

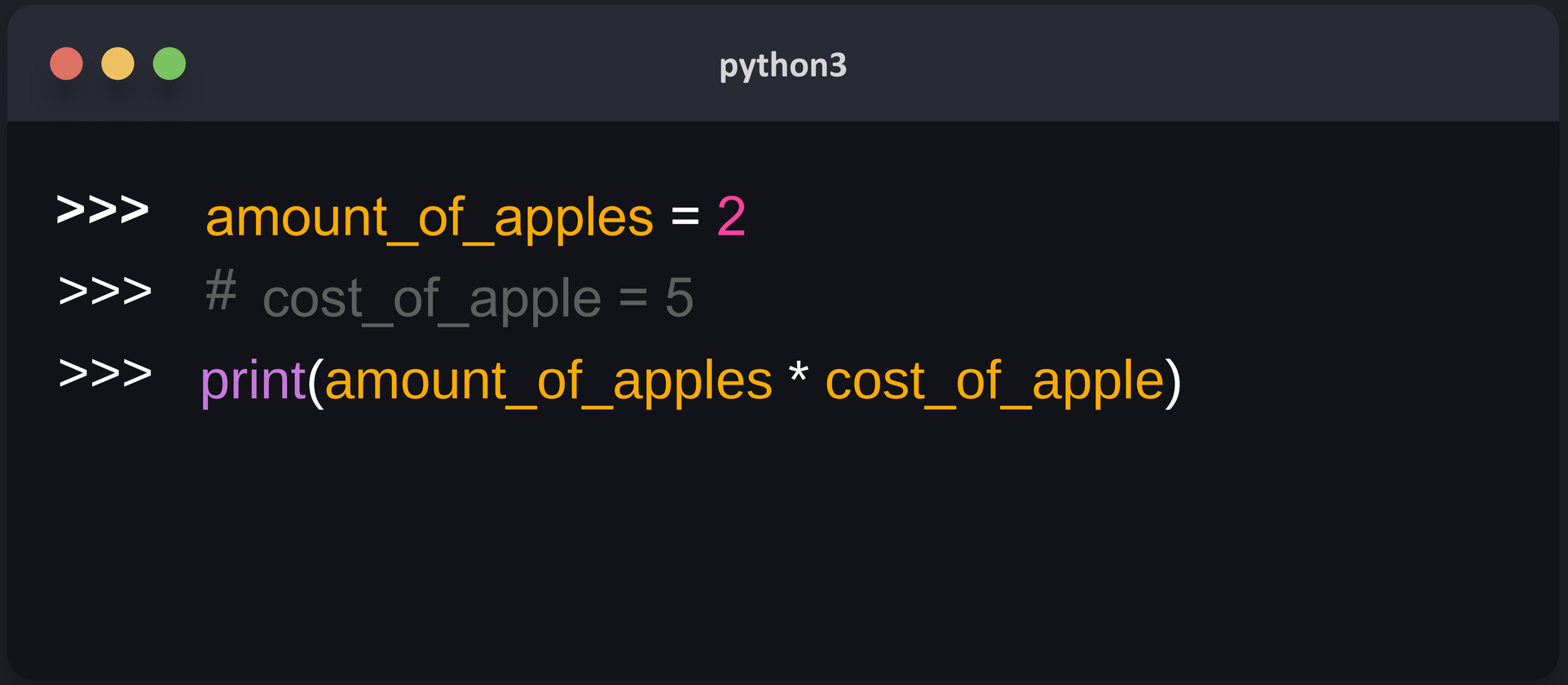
```
>>>    amount_of_apples = 2          # Amount in basket

       # The cost of an apple in USD
>>>    cost_of_apple = 5
```

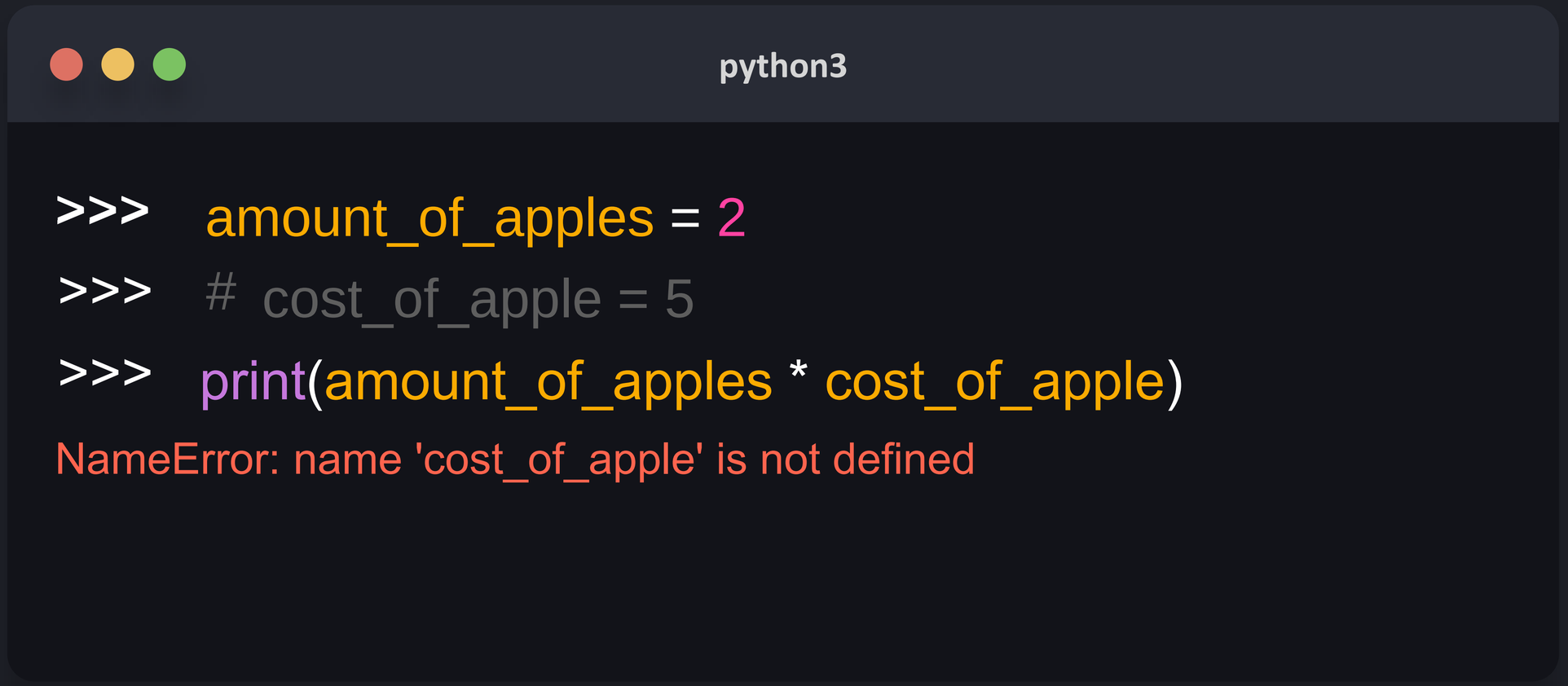

python3
>>> amount_of_apples = 2 # Amount in basket
# The cost of an apple in USD
# Should always be an integer
>>> cost_of_apple = 5

python3

```
>>>    amount_of_apples = 2          # Amount in basket

       # The cost of an apple in USD
# Should always be an integer
>>>    cost_of_apple = 5
```


python3
>>> amount_of_apples = 2
>>> cost_of_apple = 5


python3
>>> amount_of_apples = 2
>>> # cost_of_apple = 5
>>> print(amount_of_apples * cost_of_apple)

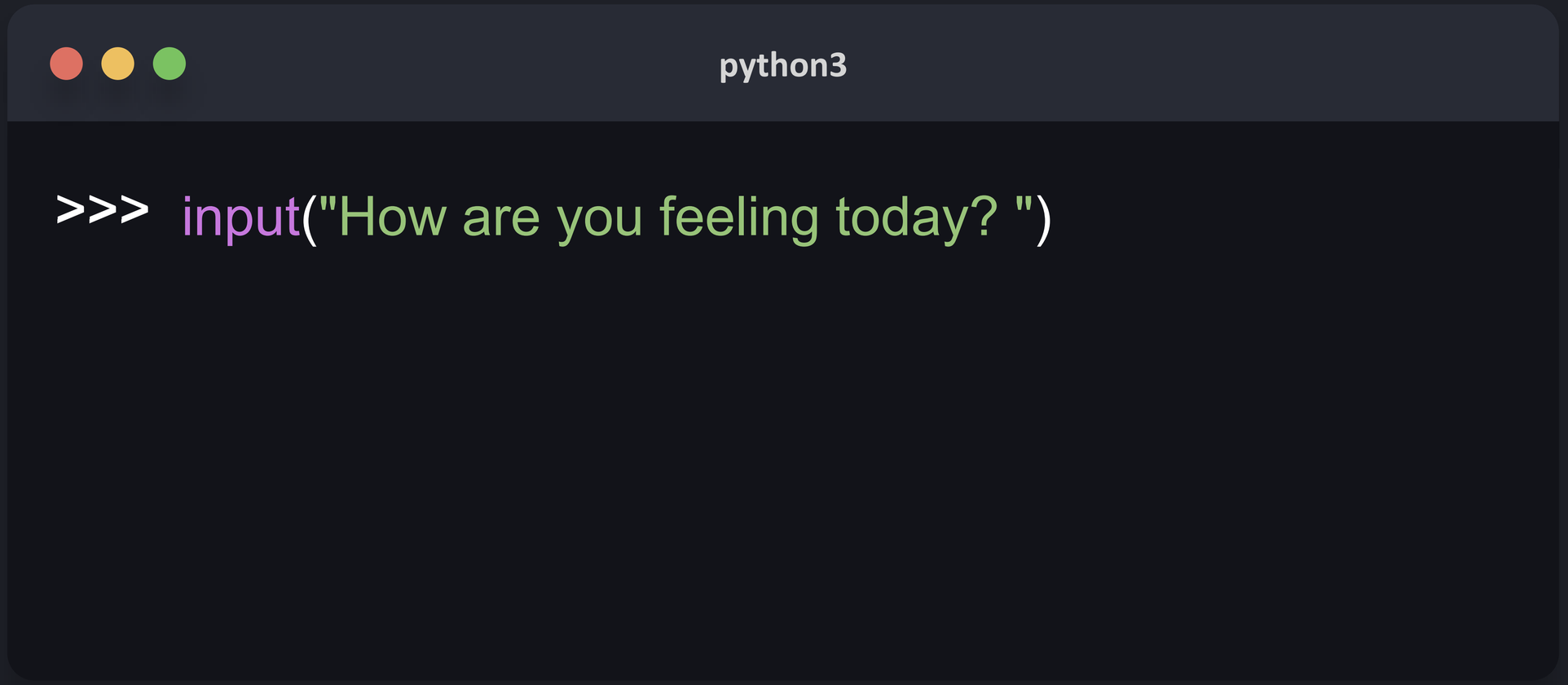

python3
>>> amount_of_apples = 2
>>> # cost_of_apple = 5
>>> print(amount_of_apples * cost_of_apple)
NameError: name 'cost_of_apple' is not defined

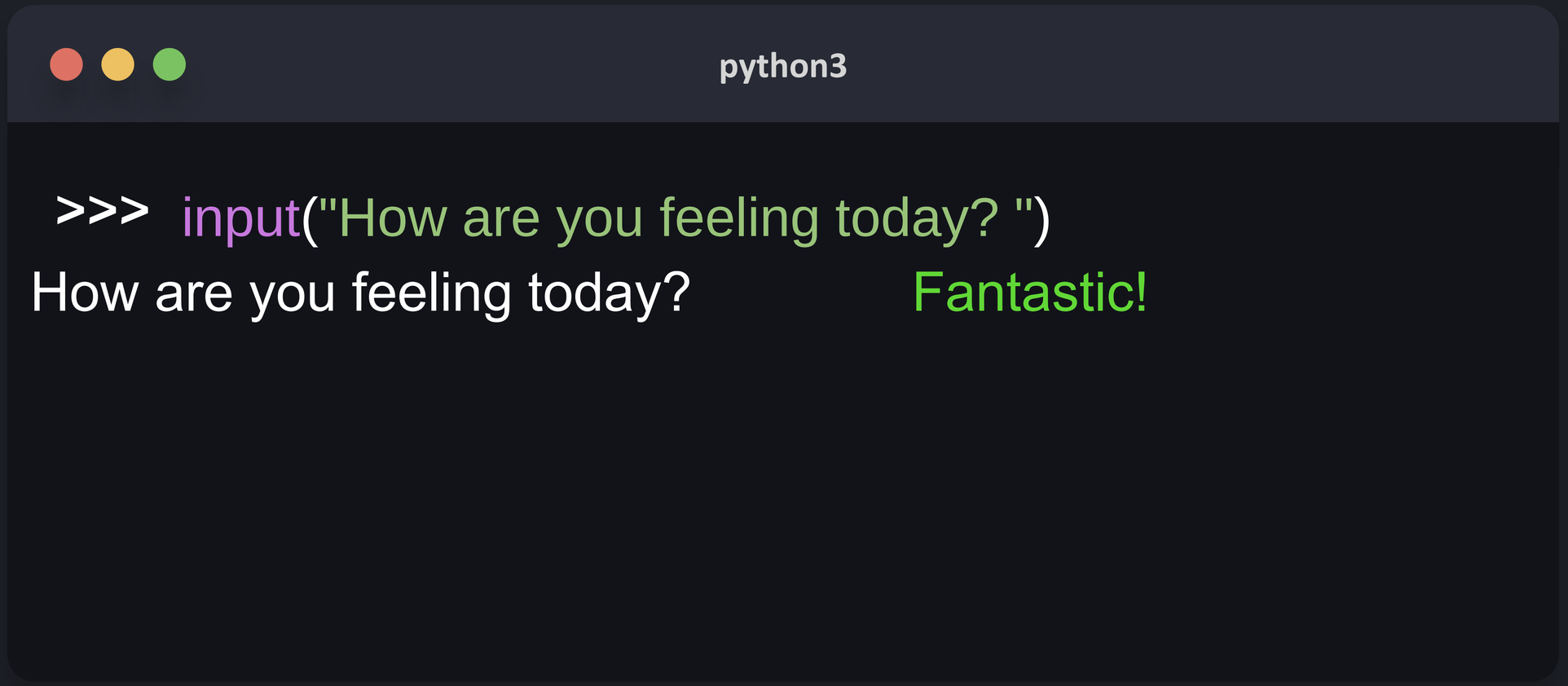
KodeKloud

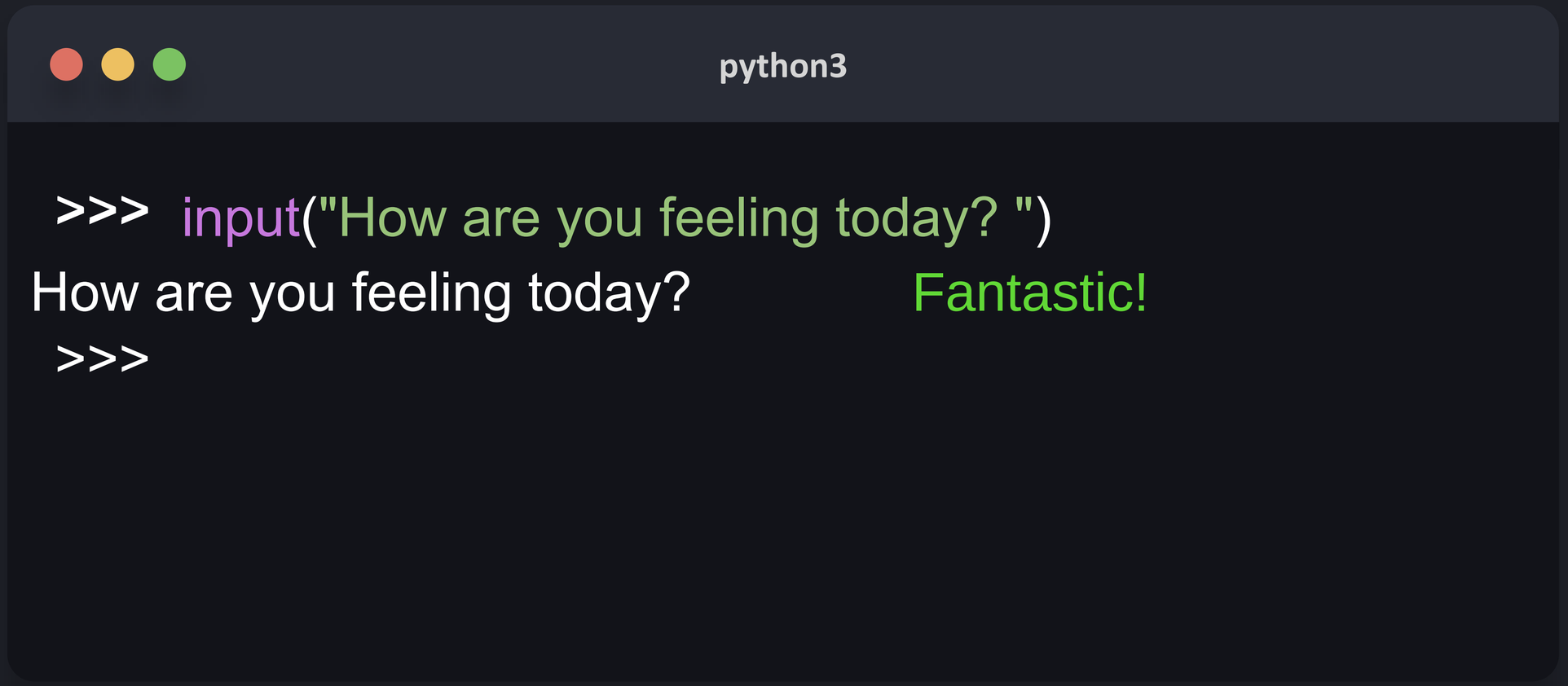
Input


python3
>>> print("Hello!")
Hello!

```
input()
```

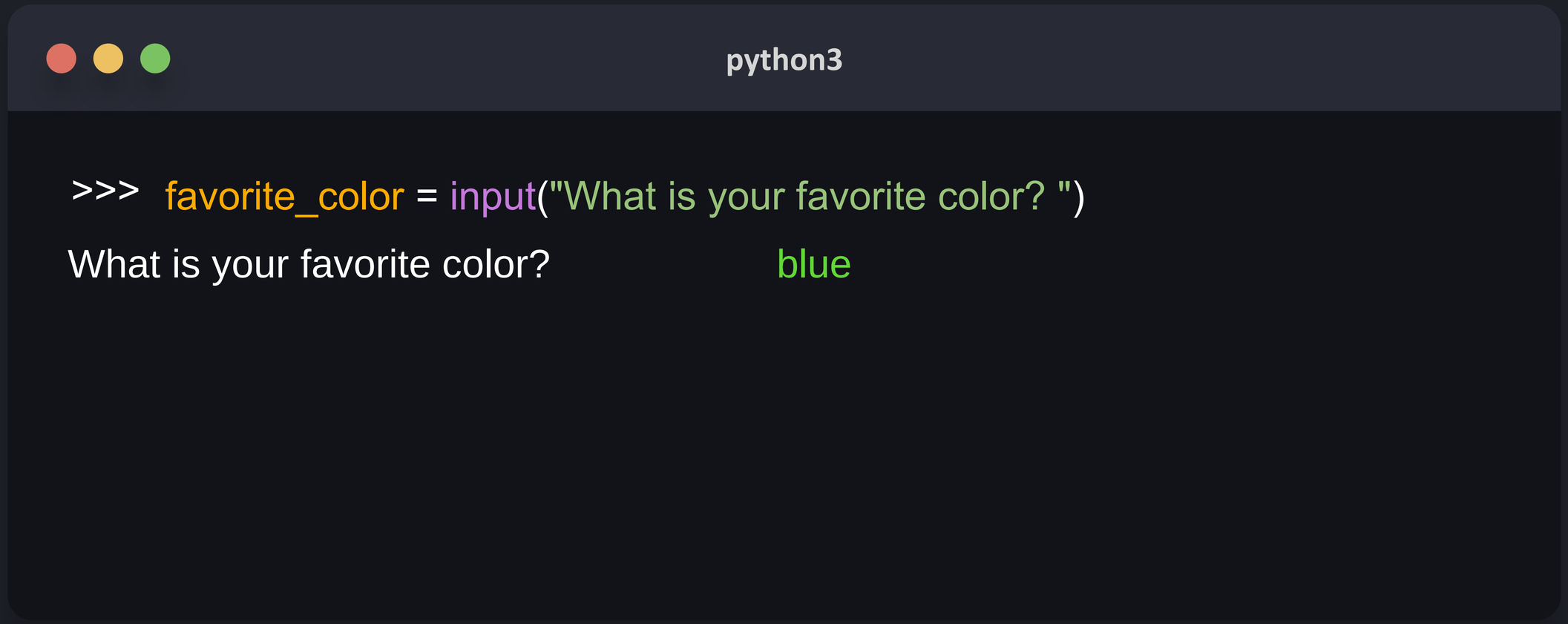

python3
>>> input("How are you feeling today? ")

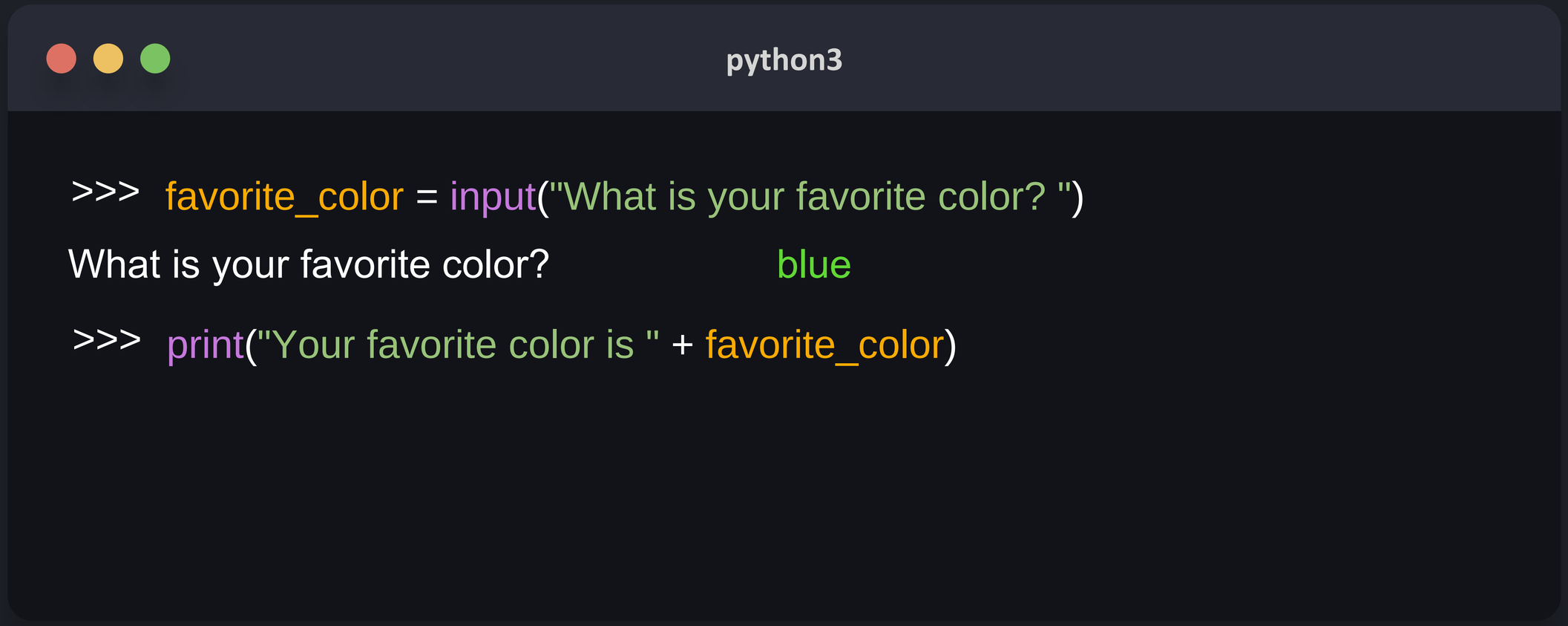

python3
>>> input("How are you feeling today? ")
How are you feeling today? Fantastic!

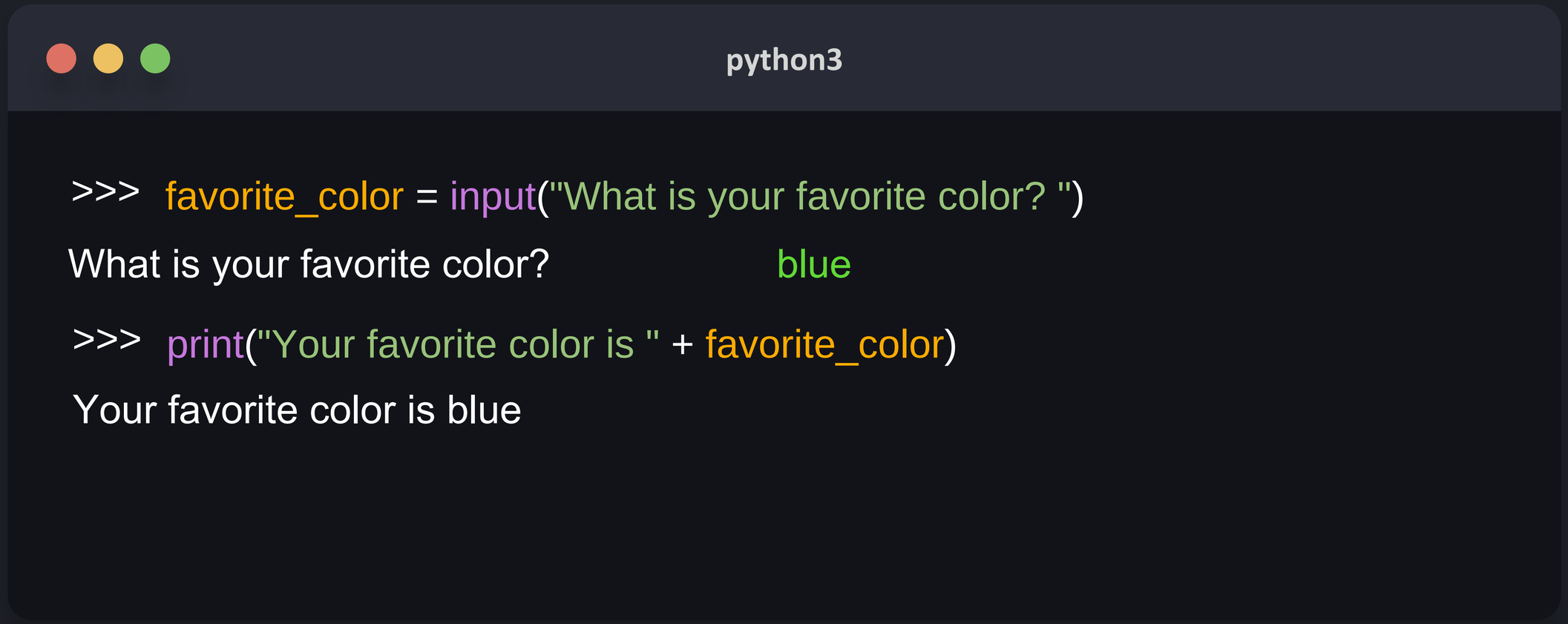

python3
>>> input("How are you feeling today? ")
How are you feeling today? Fantastic!
>>>

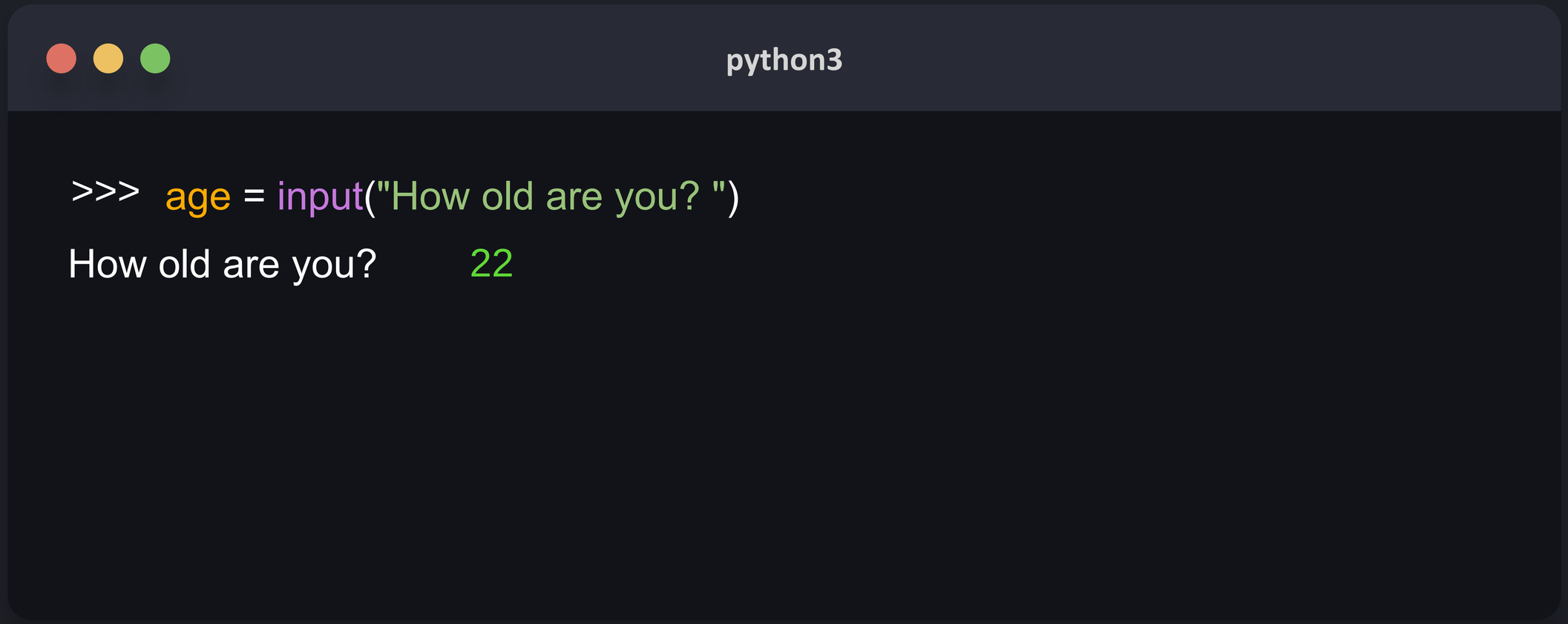
python3

```
>>> favorite_color = input("What is your favorite color? ")
```


python3
>>> favorite_color = input("What is your favorite color? ")
What is your favorite color? blue

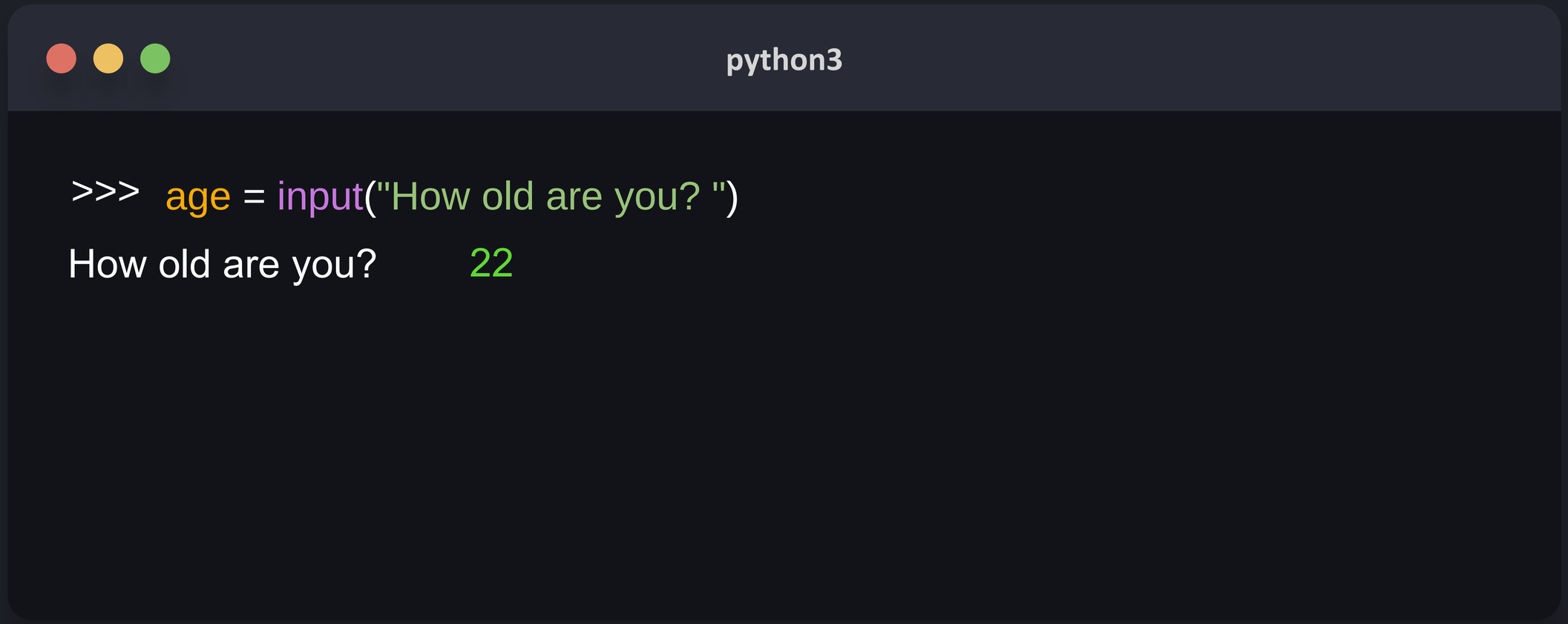

python3
>>> favorite_color = input("What is your favorite color? ")
What is your favorite color? blue
>>> print("Your favorite color is " + favorite_color)


python3
>>> favorite_color = input("What is your favorite color? ")
What is your favorite color? blue
>>> print("Your favorite color is " + favorite_color)
Your favorite color is blue


python3
>>> age = input("How old are you? ")
How old are you? 22

python3

```
>>> age = input("How old are you? ")
How old are you?        22
>>> print(age - 10)
TypeError: unsupported operand type(s) for -: 'str' and 'int'
```


python3
>>> age = input("How old are you? ")
How old are you? 22

Type Casting

- Integers `int()`
- Floating point `float()`

python3

```
>>> age = input("How old are you? ")
How old are you? 22
>>> print(int(age) - 10)
```

Type Casting

- Integers `int()`
- Floating point `float()`

python3

```
>>>  age = input("How old are you? ")
How old are you?        22
>>>  print(int(age) - 10)
12
```

Type Casting

- Integers `int()`
- Floating point `float()`

python3

```
>>> age = int(input("How old are you? "))
How old are you? 22
>>> print(age - 10)
12
```

input()

- Prompts the user to input some data from the console
- It accepts an optional parameter that can be used in order to write a message before the user input
- Always returns a string
- A program that doesn’t use any input function, is called a **deaf program**

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String Methods

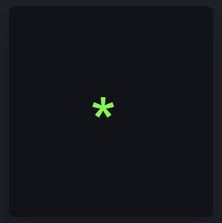
python3

```
>>> print(10 + 2)
12

>>> print(10 * 2)
22
```

+

python3

```
>>> print(10 + 2)
12

>>> print("Hello" + " " + "there!")
"Hello there!"
```



python3

```
>>> print(10 * 2)
22
```

*

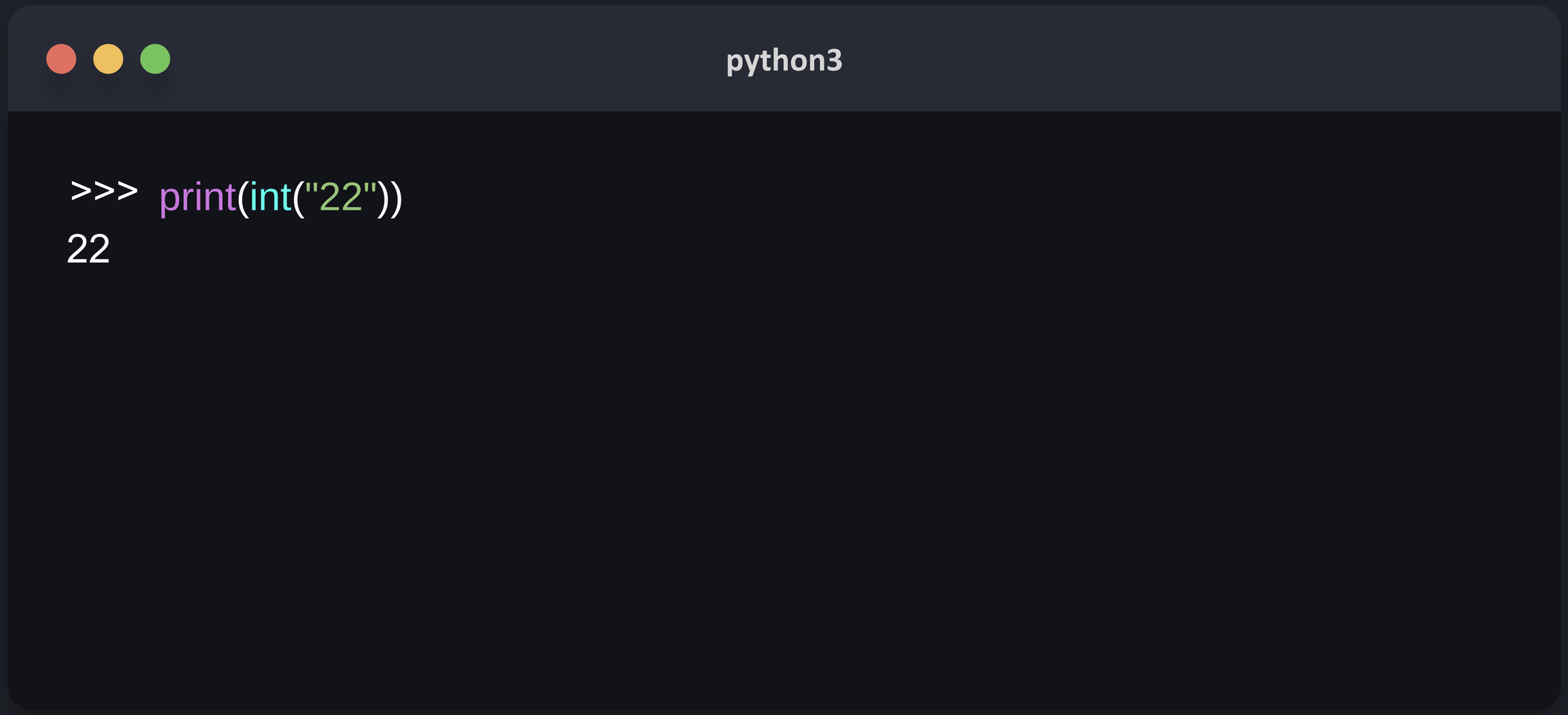
python3

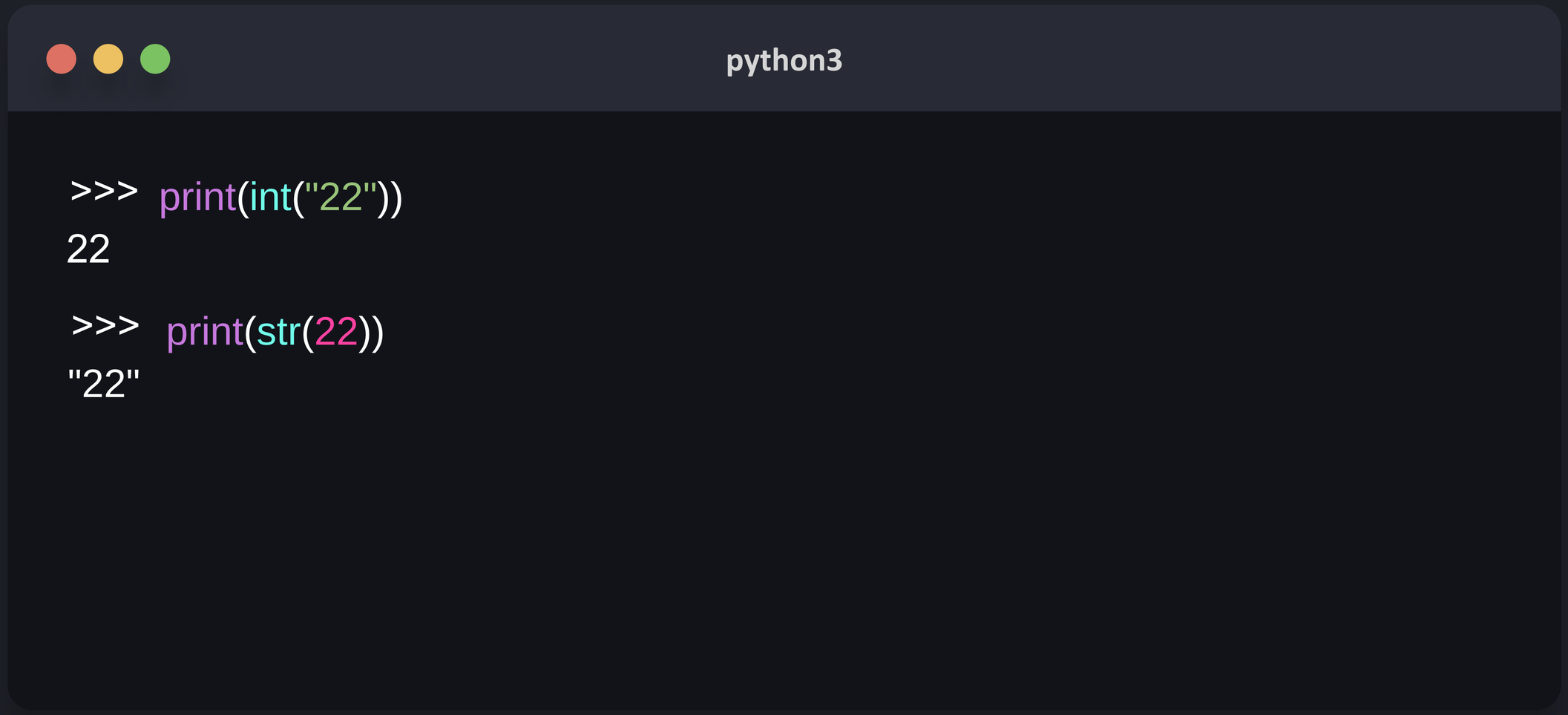
```
>>> print(10 * 2)
22
>>> print("ha" * 10)
"hahahahahahahahaha"
```

*

python3

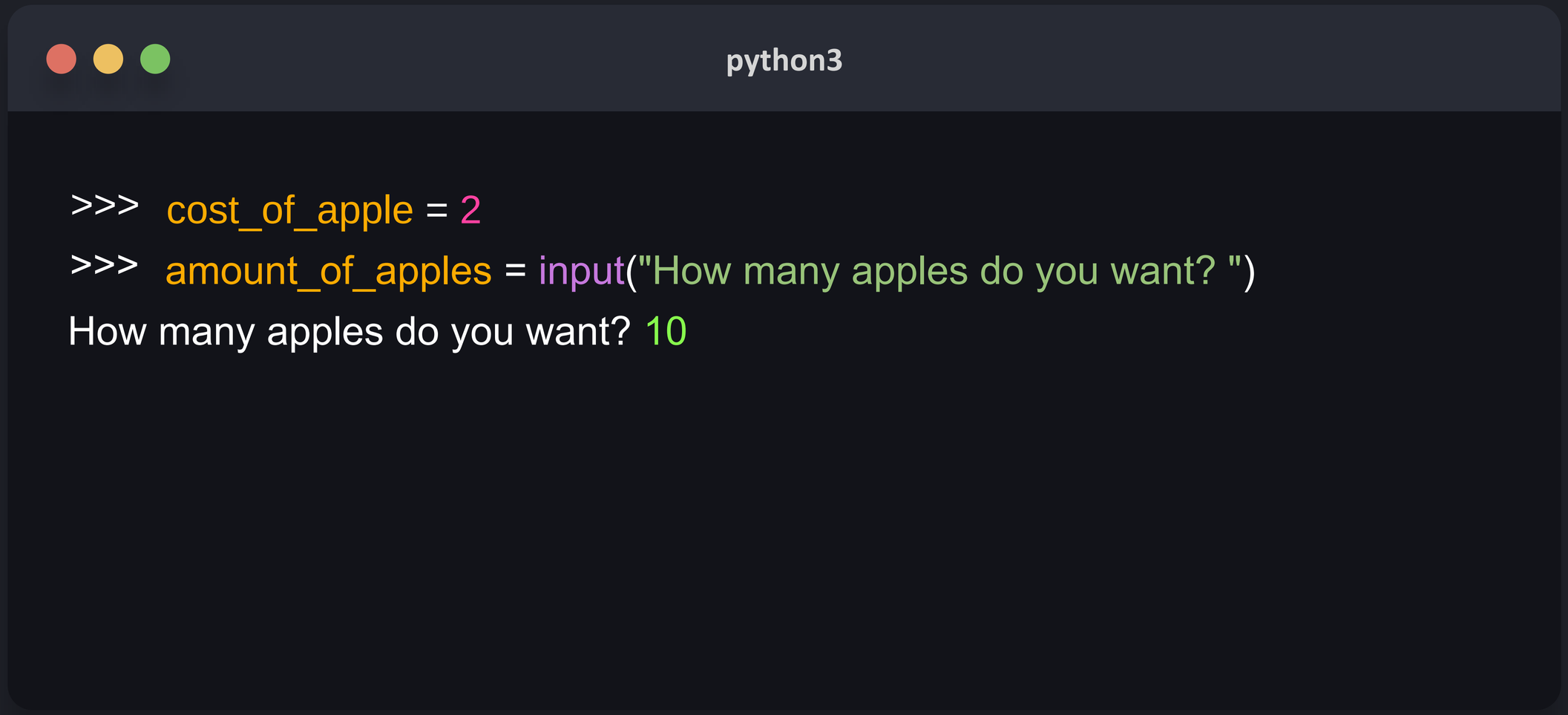
```
>>> print("ha" * 10)
"hahahahahahahahahaha"

>>> print("ha" * 2)
"haha"

>>> print("ha" * 0)
""

>>> print("ha" * -1)
""
```


python3
>>> print(int("22"))
22


python3
>>> print(int("22"))
22
>>> print(str(22))
"22"

python3

```
>>> cost_of_apple = 2
>>> amount_of_apples = input("How many apples do you want? ")
How many apples do you want? 10
```


python3
>>> cost_of_apple = 2
>>> amount_of_apples = input("How many apples do you want? ")
How many apples do you want? 10

python3

```
>>> cost_of_apple = 2
>>> amount_of_apples = input("How many apples do you want? ")
How many apples do you want? 10
>>> total_sum = cost_of_apple * int(amount_of_apples)
```

python3

```
>>> cost_of_apple = 2
>>> amount_of_apples = input("How many apples do you want? ")
How many apples do you want? 10
>>> total_sum = cost_of_apple * int(amount_of_apples)
>>> print("You have to pay: " + str(total_sum))
```

python3

```
>>> cost_of_apple = 2
>>> amount_of_apples = input("How many apples do you want? ")
How many apples do you want? 10
>>> total_sum = cost_of_apple * int(amount_of_apples)
>>> print("You have to pay: " + str(total_sum))
 You have to pay: 20
```

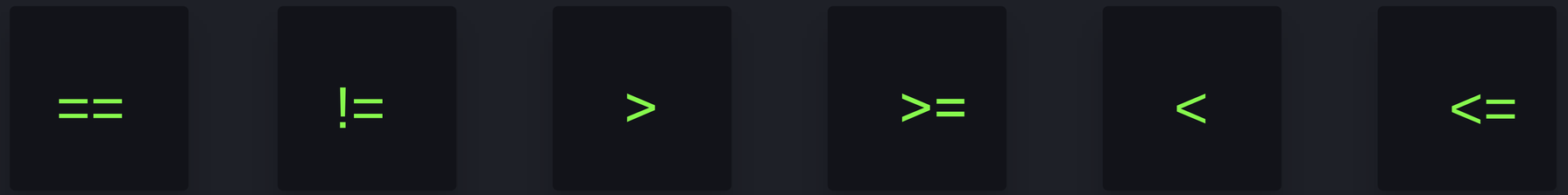
String Operations

- You can use + in order to concatenate two strings
- You can use * in order to repeat a string a several amount of times.
- With the str function, you can type-cast a number into a string

KodeKloud

Comparison Operators

Comparison Operators



Comparison Operators

==

Equal

python3

```
>>>  print(2 == 2)
True
>>>  print(2 == 4)
False
>>>  print("Hello!" == "Hello!")
True
>>>  print("Hello!" == “Goodbye!")
False
>>>  print(4 == (2 * 2))
True
```

Comparison Operators

`!=`

Not Equal

python3

```
>>>  print(2 != 2)
False
>>>  print(2 != 4)
True
>>>  print("Hello!" != "Hello!")
False
>>>  print("Hello!" != “Goodbye!")
True
>>>  print(4 != (2 * 2))
False
```

Comparison Operators

Greater than

python3

```
>>>  print(4 > 2)
True
>>>  print(2 > 4)
False
>>>  print(2 > 2)
False
>>>  cost_of_apple = 2
>>>  cost_of_banana = 3
>>>  print(cost_of_apple > cost_of_banana)
False
```

Comparison Operators

`>=`

Greater than or equal to

python3

```
>>>  print(4 >= 2)
True
>>>  print(2 >= 4)
False
>>>  print(2 >= 2)
True
```

Comparison Operators

Smaller than

python3

```
>>>  print(4 < 2)
False
>>>  print(2 < 4)
True
>>>  print(2 < 2)
False
>>>  cost_of_apple = 2
>>>  cost_of_banana = 3
>>>  print(cost_of_apple < cost_of_banana)
True
```

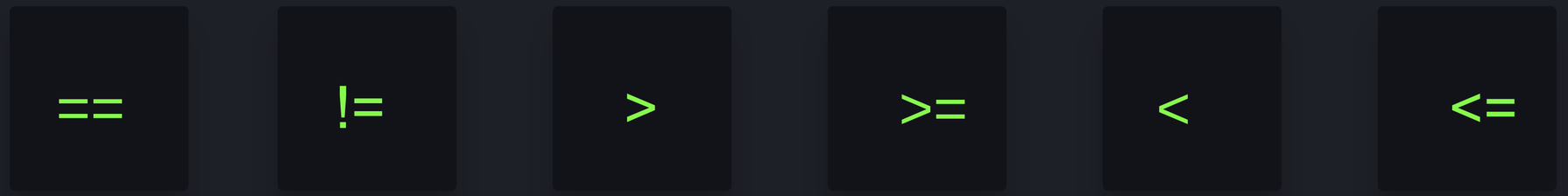
Comparison Operators

Smaller than or equal to

python3

```
>>>  print(4 <= 2)
False
>>>  print(2 <= 4)
True
>>>  print(2 <= 2)
True
```

Comparison Operators



KodeKloud

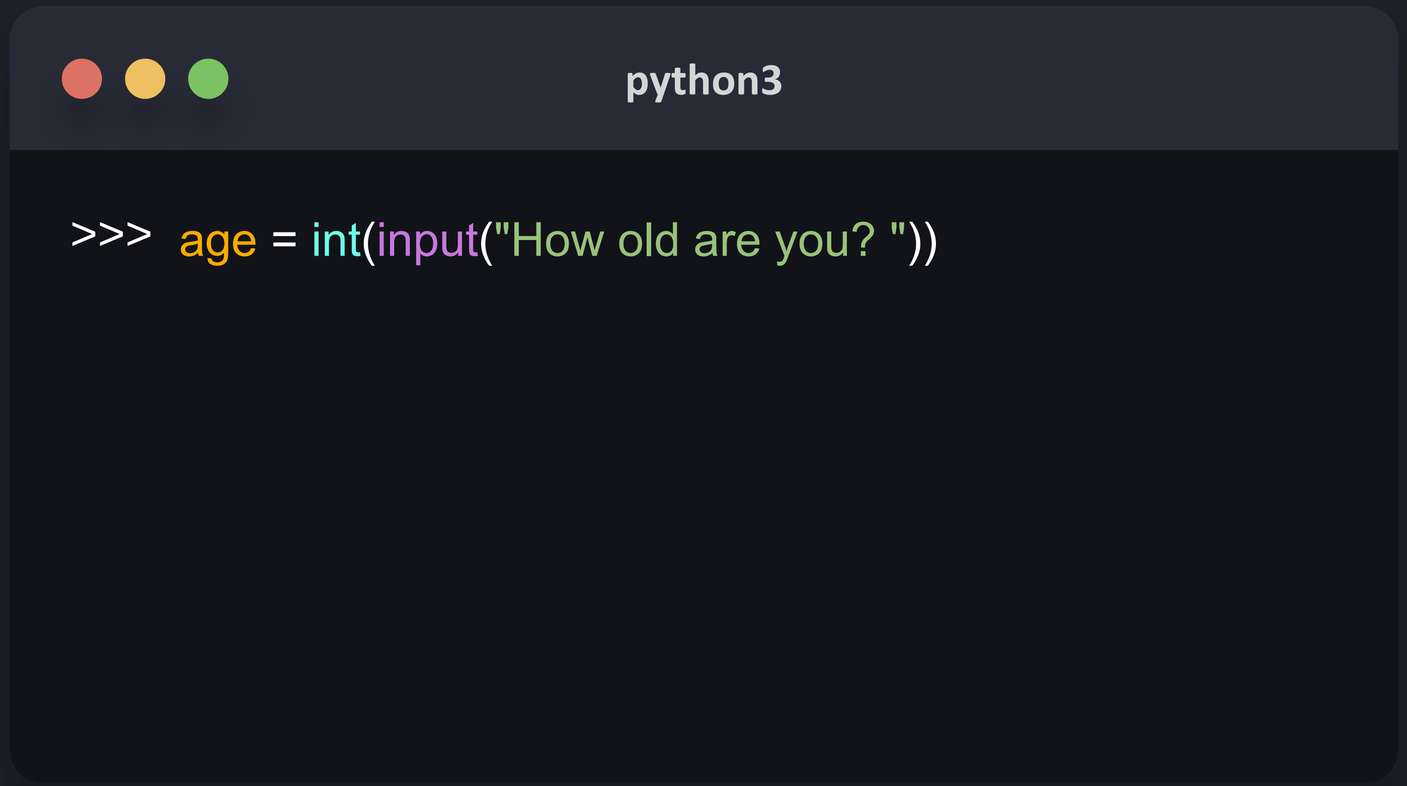
Conditional Statements

```
if condition:
```

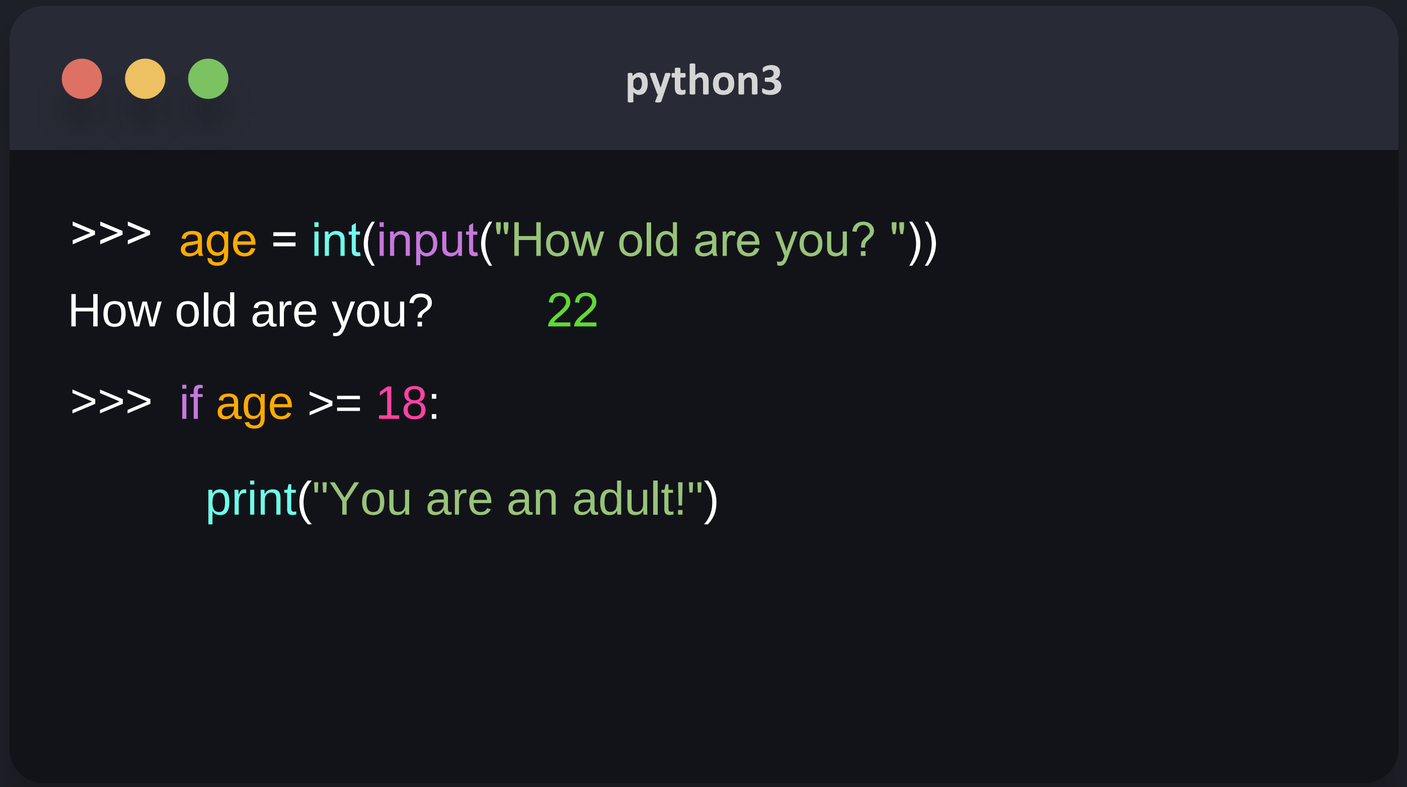
```
if condition :
    print("The condition is true!")
```

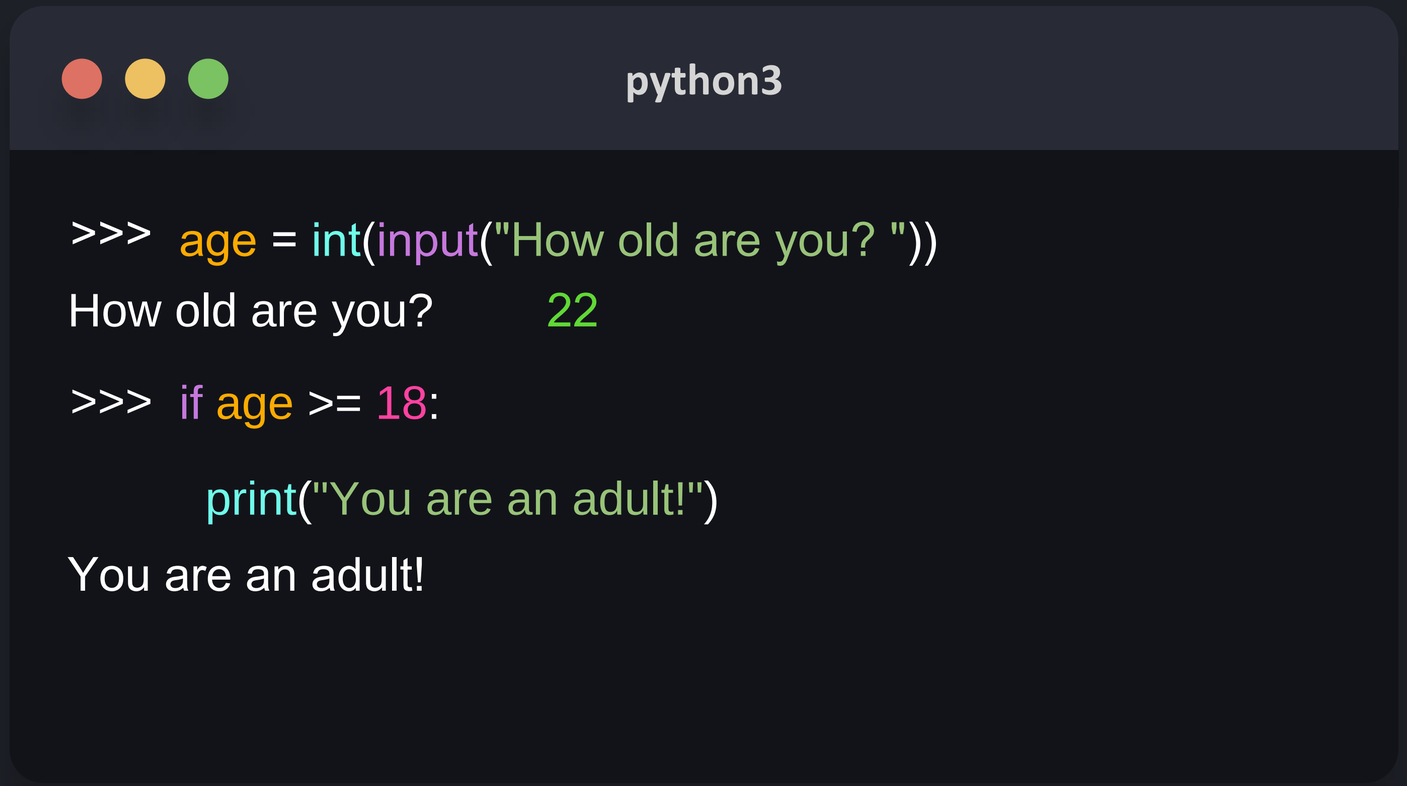
```
If True :
    print("The condition is true!")
```

```
if False :
    print("The condition is true!")
```


python3
>>> age = int(input("How old are you? "))


python3
>>> age = int(input("How old are you? "))
How old are you? 22


python3
>>> age = int(input("How old are you? "))
How old are you? 22
>>> if age >= 18:
print("You are an adult!")


python3
>>> age = int(input("How old are you? "))
How old are you? 22
>>> if age >= 18:
print("You are an adult!")
You are an adult!

```
if condition :
    print("The condition is true!")
```

```
if condition:
    print("The condition is true!")
```

```
if    condition :
    print("The condition is true!")
else:
    print("The condition is false!”)
```

```
if True:
    print("The condition is true!")
else:
    print("The condition is false!")
```

```
if False:
    print("The condition is true!")
else:
    print("The condition is false!")
```

```
if    condition:
    print("The condition is true!")
elif      second_condition       :
    print("Only the second condition is true!")
else:
    print("Both conditions are false!”)
```

```
if False:
    print("The condition is true!")
elif True:
    print("Only the second condition is true!")
else:
    print("Both conditions are false!”)
```

```
if True:
    print("The condition is true!")
elif True:
    print("Only the second condition is true!")
else:
    print("Both conditions are false!”)
```

```
if    age >= 18:
    if    age == 18:
        print("You are exactly 18 years old!")
    else:
        print("You older than 18 years old!")
```

```
if    age >= 18:
    if    age == 18:
        print("You are exactly 18 years old!")
    else:
        print("You older than 18 years old!")
```

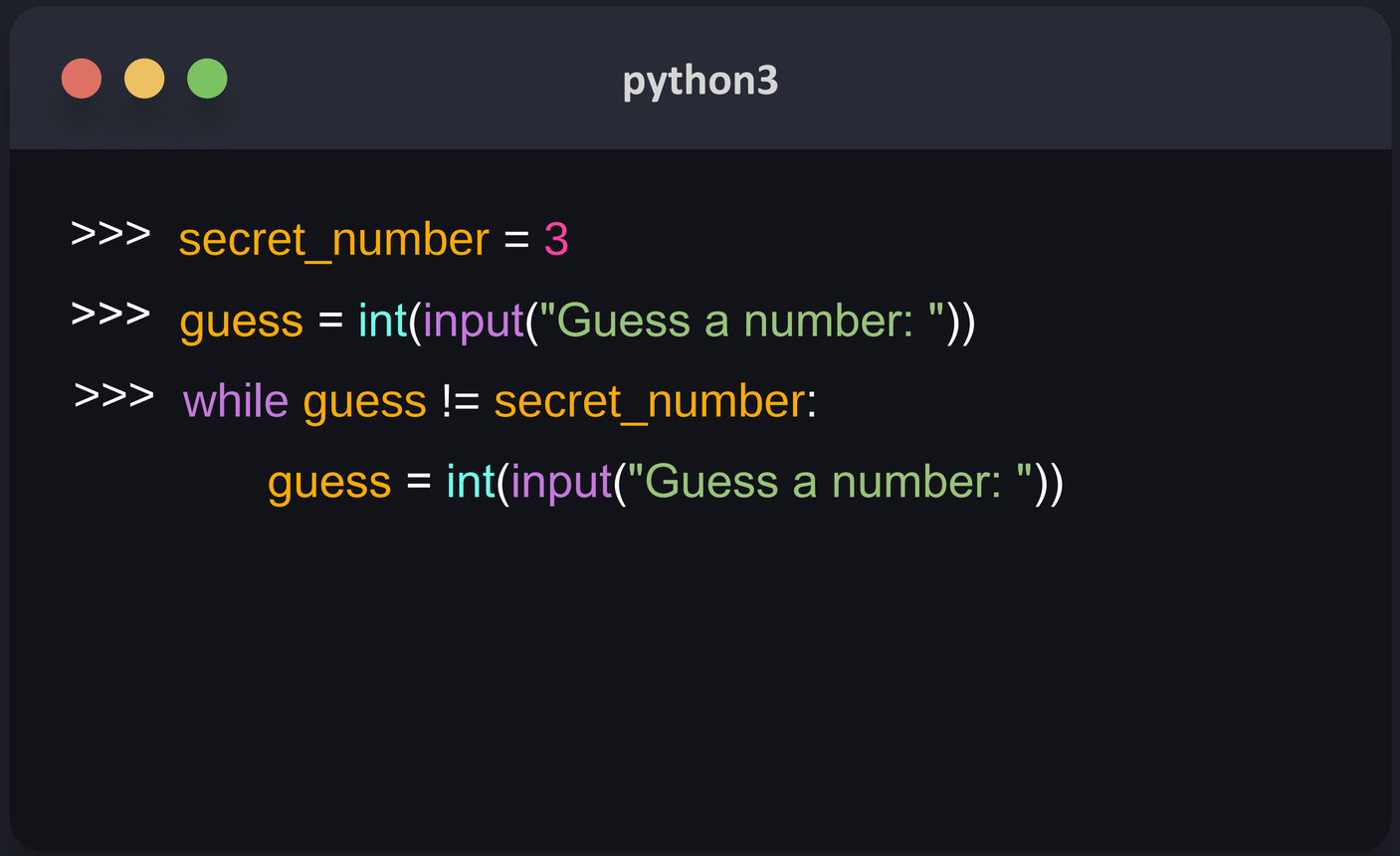
```
if    age >= 18:
    if    age == 18:
        print("You are exactly 18 years old!")
    else:
        print("You older than 18 years old!")
```

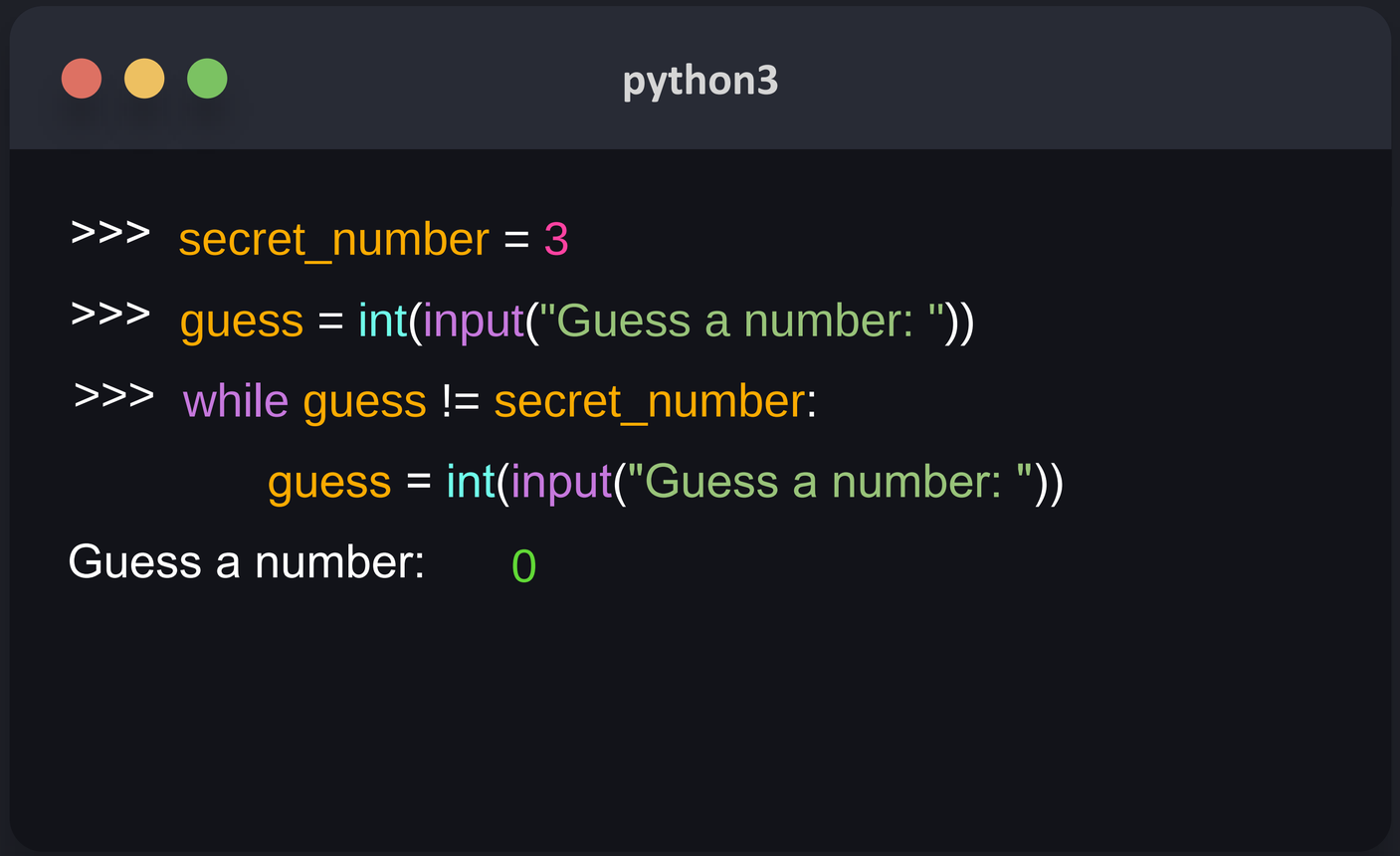
KodeKloud

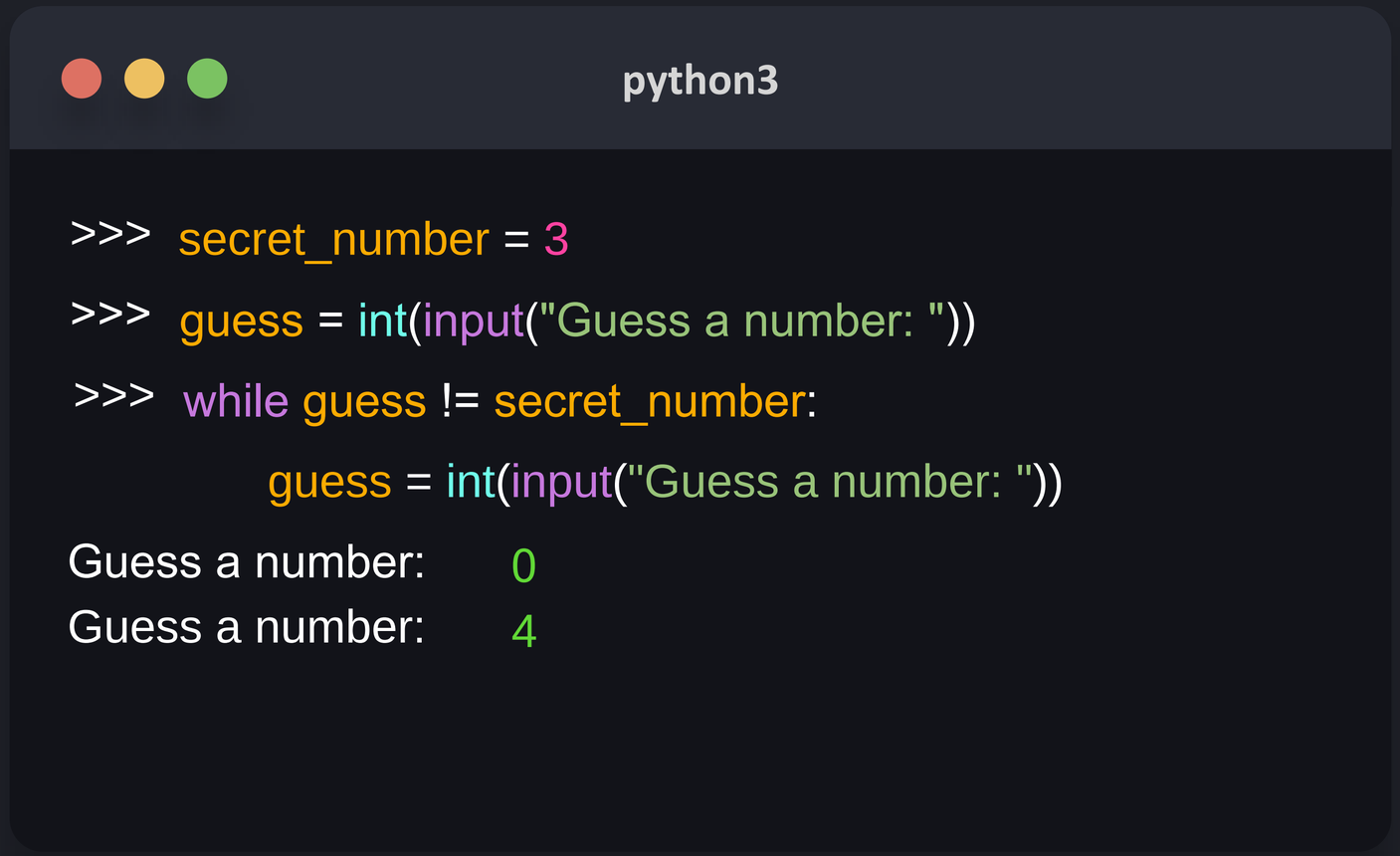
Loops - While

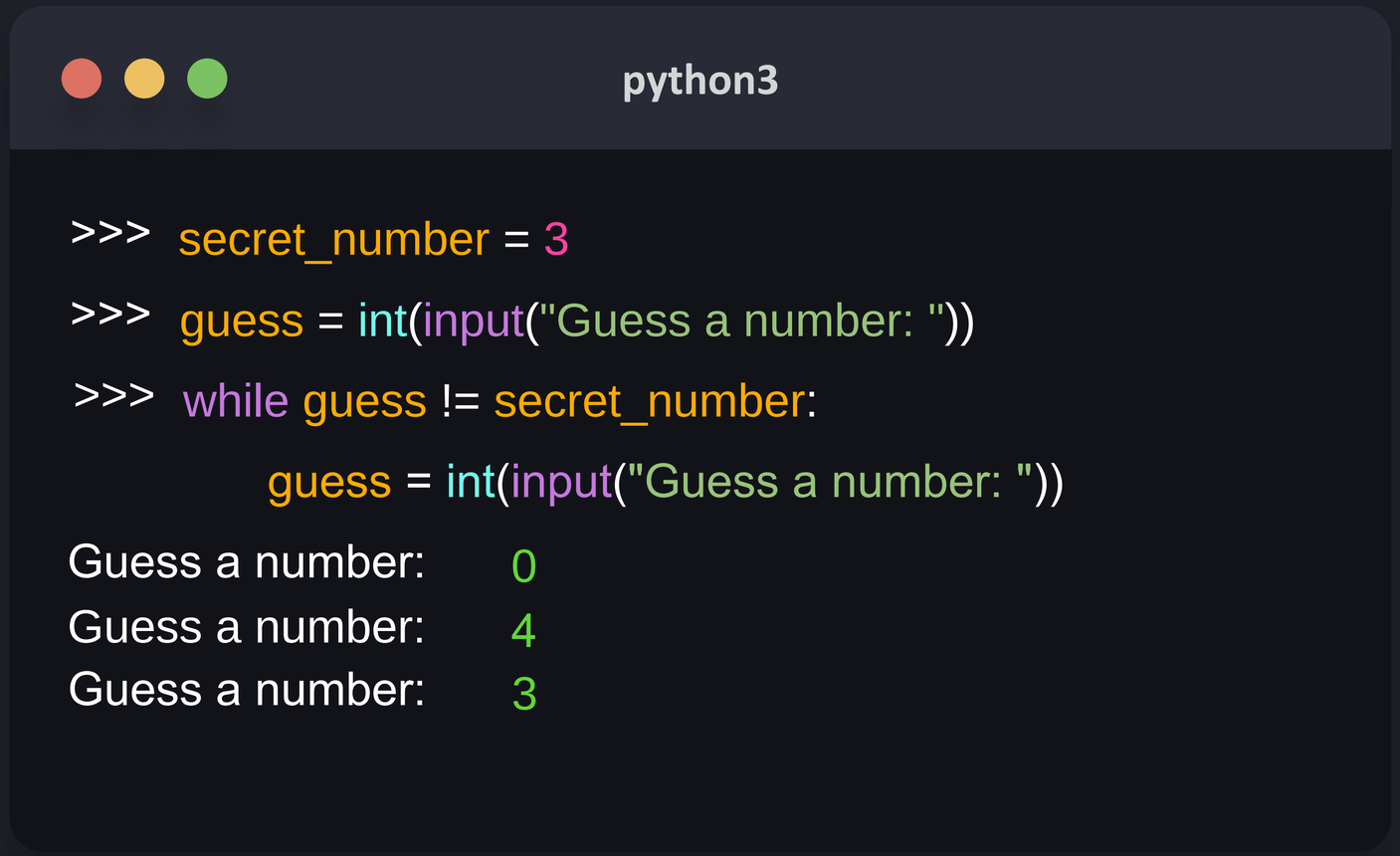
```
while condition:
```

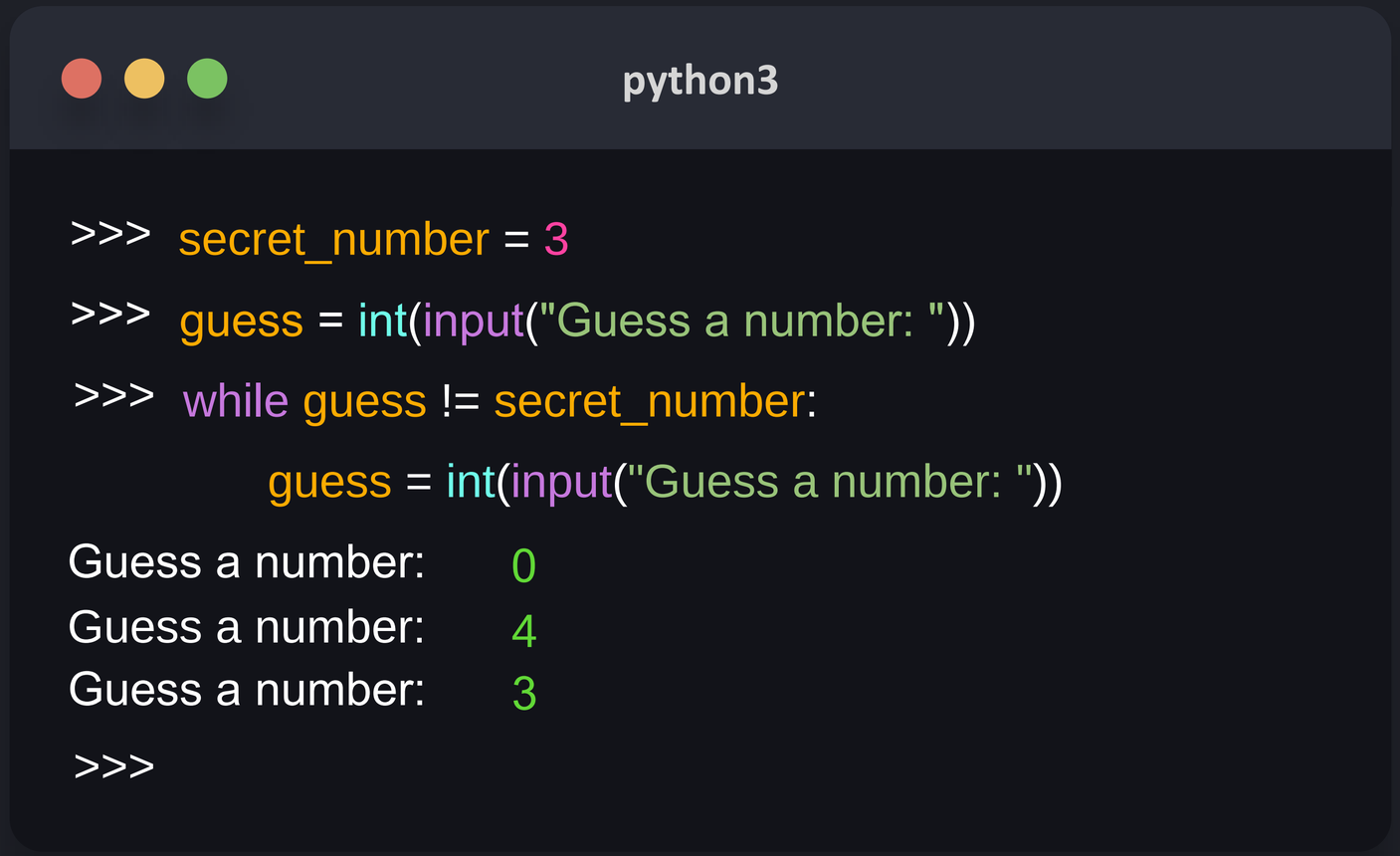
```
while condition:
```


python3
>>> secret_number = 3
>>> guess = int(input("Guess a number: "))
>>> while guess != secret_number:
guess = int(input("Guess a number: "))


python3
>>> secret_number = 3
>>> guess = int(input("Guess a number: "))
>>> while guess != secret_number:
guess = int(input("Guess a number: "))
Guess a number: 0


python3
>>> secret_number = 3
>>> guess = int(input("Guess a number: "))
>>> while guess != secret_number:
guess = int(input("Guess a number: "))
Guess a number: 0
Guess a number: 4


python3
>>> secret_number = 3
>>> guess = int(input("Guess a number: "))
>>> while guess != secret_number:
guess = int(input("Guess a number: "))
Guess a number: 0
Guess a number: 4
Guess a number: 3


python3
>>> secret_number = 3
>>> guess = int(input("Guess a number: "))
>>> while guess != secret_number:
guess = int(input("Guess a number: "))
Guess a number: 0
Guess a number: 4
Guess a number: 3
>>>

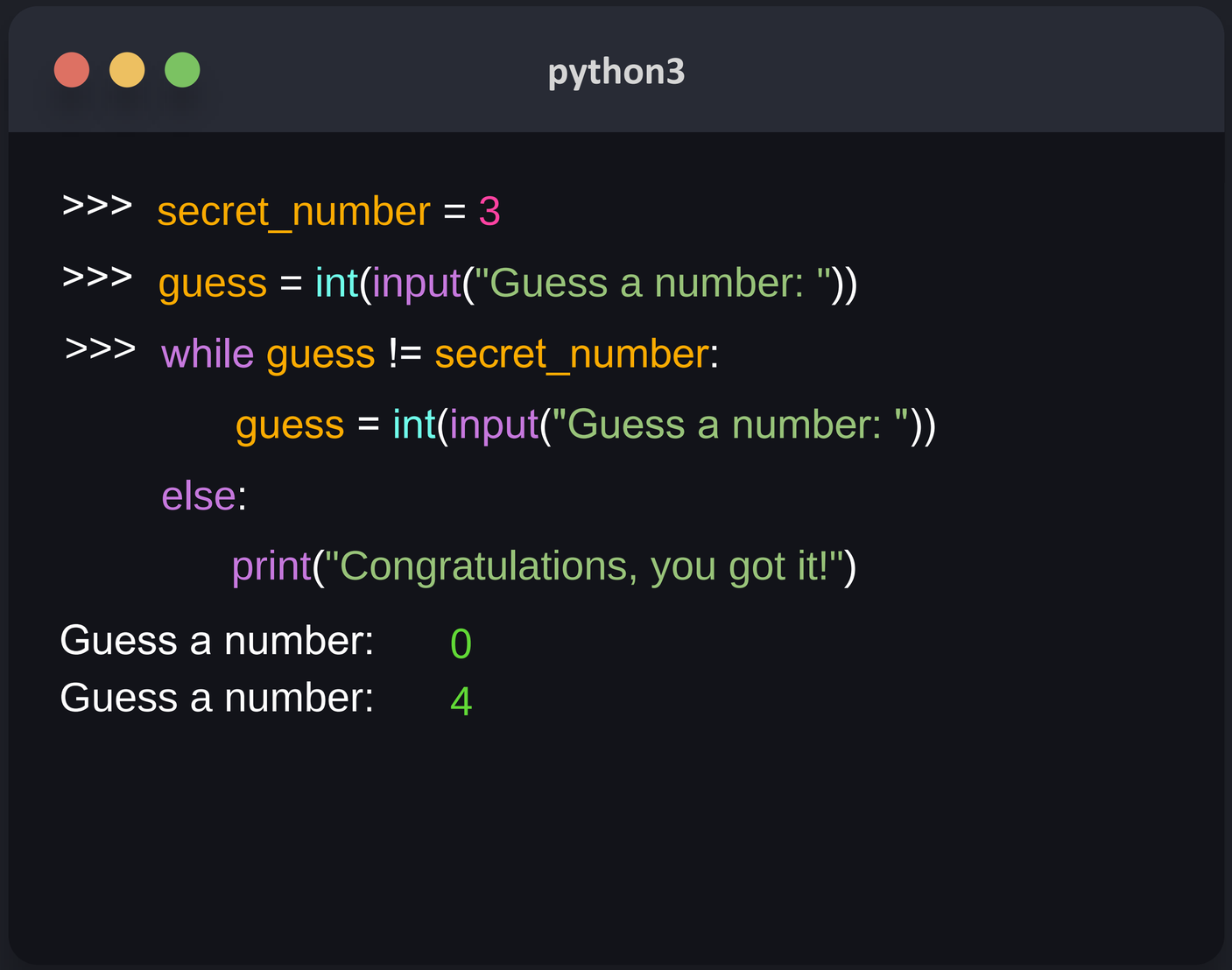

python3
>>> secret_number = 3
>>> guess = int(input("Guess a number: "))
>>> while guess != secret_number:
guess = int(input("Guess a number: "))

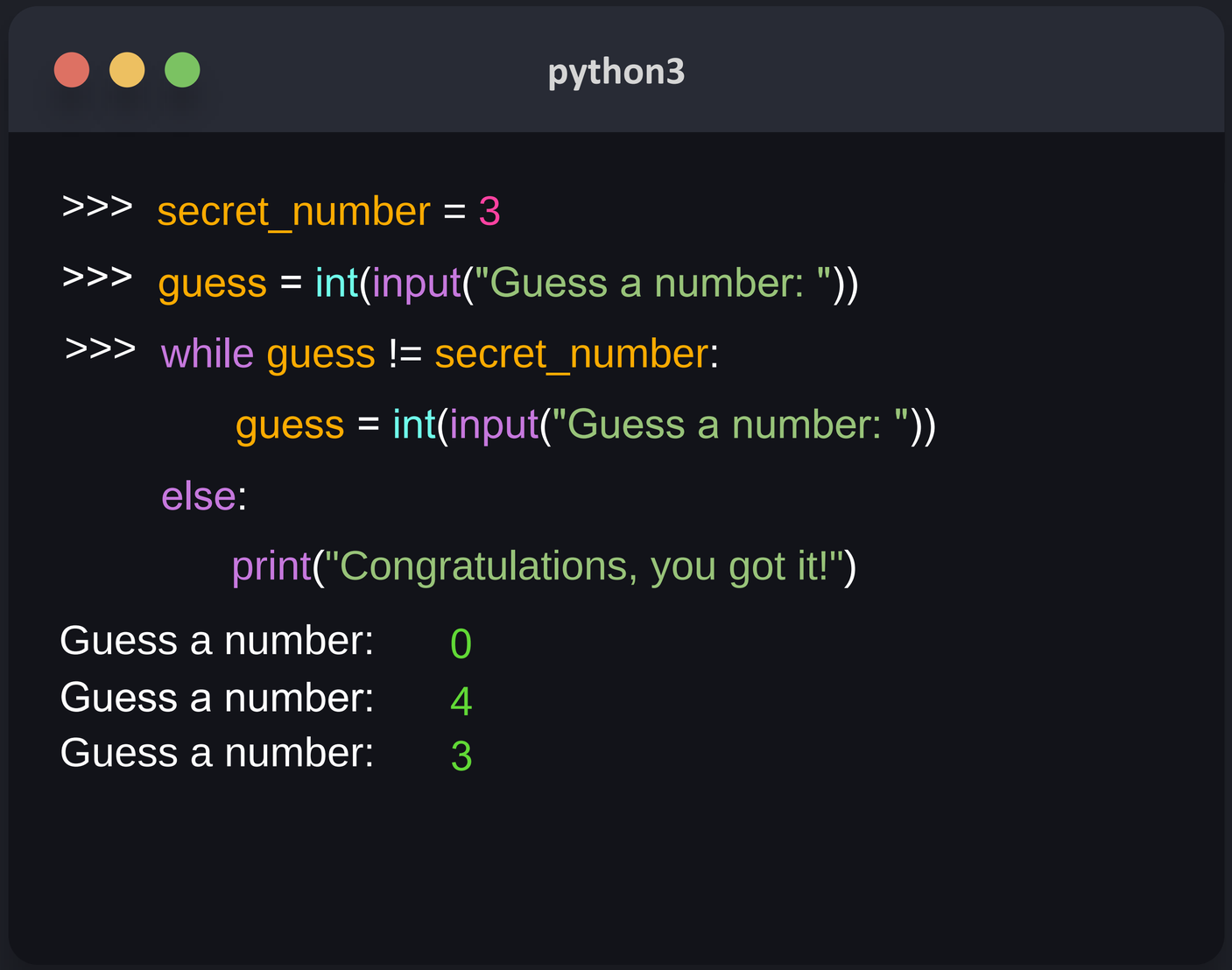
python3

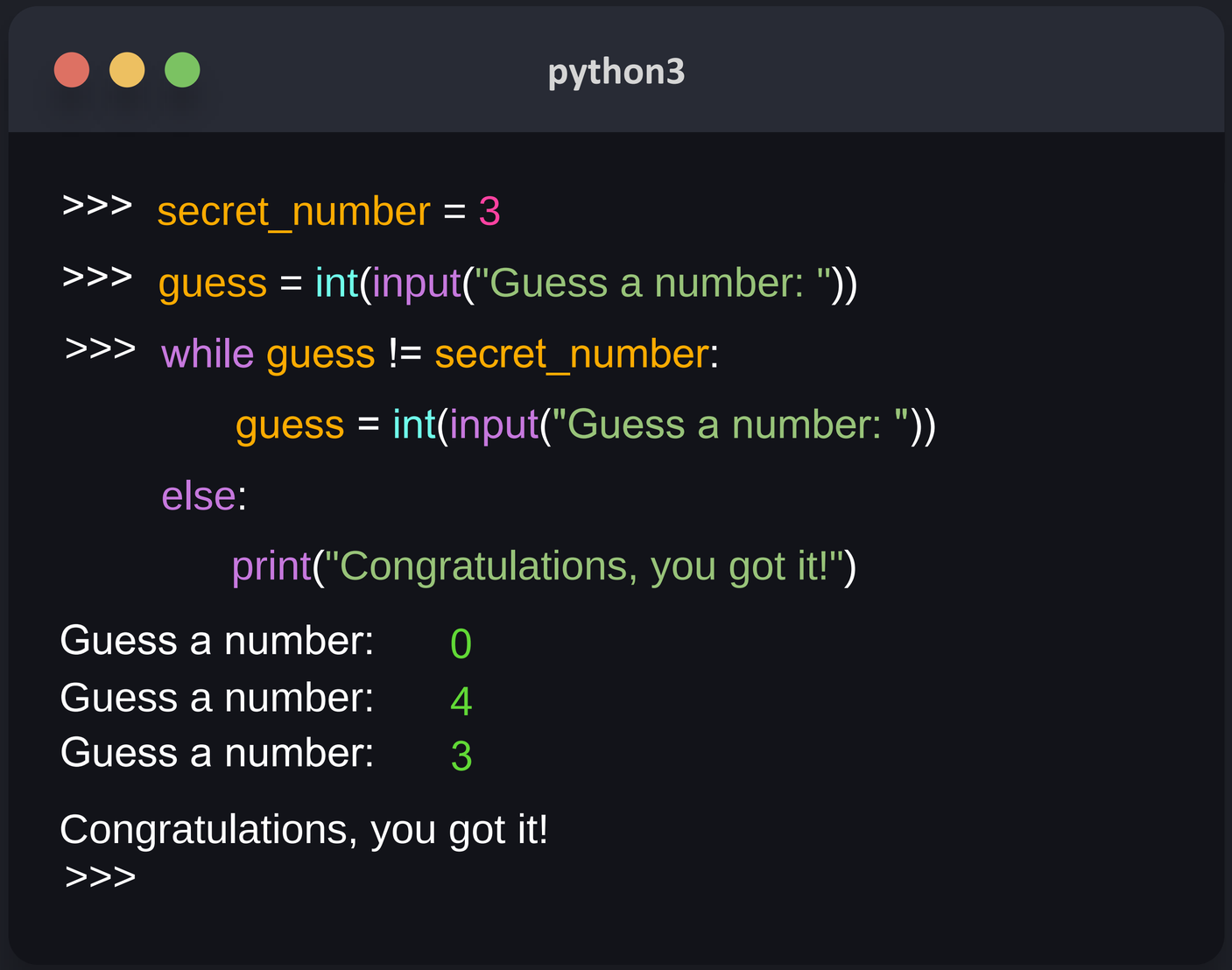
```
>>> secret_number = 3
>>> guess = int(input("Guess a number: "))
>>> while guess != secret_number:
        guess = int(input("Guess a number: "))
    else:
        print("Congratulations, you got it!")
```

python3

```
>>> secret_number = 3
>>> guess = int(input("Guess a number: "))
>>> while guess != secret_number:
        guess = int(input("Guess a number: "))
    else:
        print("Congratulations, you got it!")
Guess a number:      0
```


python3
>>> secret_number = 3
>>> guess = int(input("Guess a number: "))
>>> while guess != secret_number:
guess = int(input("Guess a number: "))
else:
print("Congratulations, you got it!")
Guess a number: 0
Guess a number: 4


python3
>>> secret_number = 3
>>> guess = int(input("Guess a number: "))
>>> while guess != secret_number:
guess = int(input("Guess a number: "))
else:
print("Congratulations, you got it!")
Guess a number: 0
Guess a number: 4
Guess a number: 3


python3
>>> secret_number = 3
>>> guess = int(input("Guess a number: "))
>>> while guess != secret_number:
guess = int(input("Guess a number: "))
else:
print("Congratulations, you got it!")
Guess a number: 0
Guess a number: 4
Guess a number: 3
Congratulations, you got it!
>>>

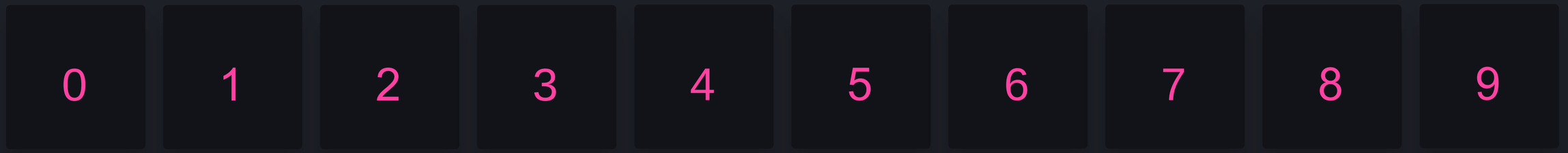
KodeKloud

Loops - For

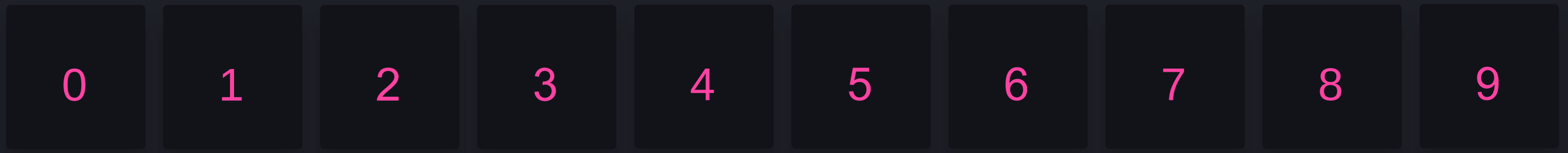
```
for … in …:
```

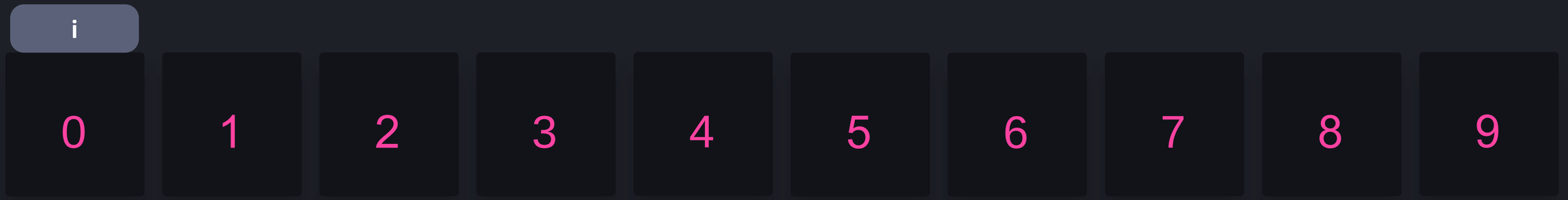
```
for i in range(9):
```

```
for i in range(9):
```



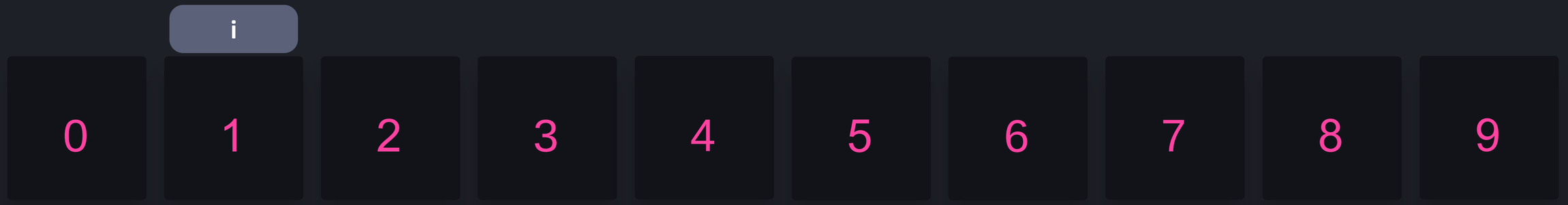
```
for i in range(9):
```





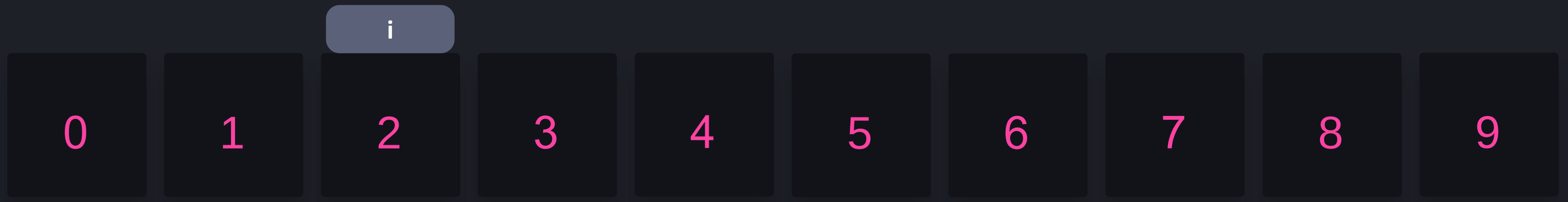
python3

```
>>> for i in range(9):
        print("i is: ", i)
i is: 0
```



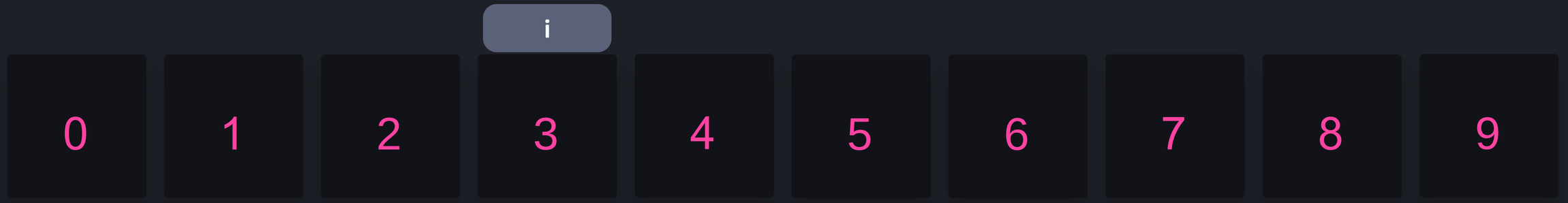
python3

```
>>> for i in range(9):
        print("i is: ", i)

i is: 0
i is: 1
```



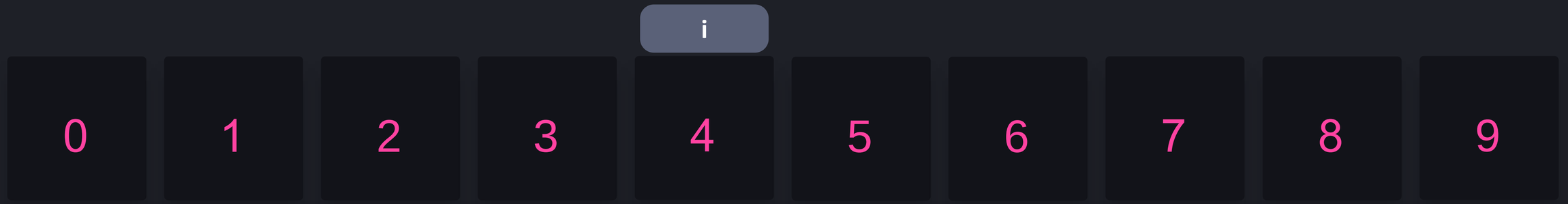
python3

```
>>> for i in range(9):
        print("i is: ", i)

i is: 0
i is: 1
i is: 2
```



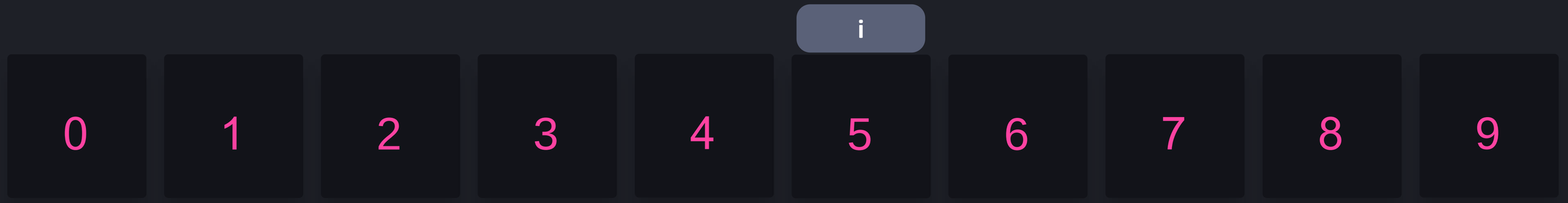
python3

```
>>> for i in range(9):
        print("i is: ", i)
i is: 0
i is: 1
i is: 2
i is: 3
```



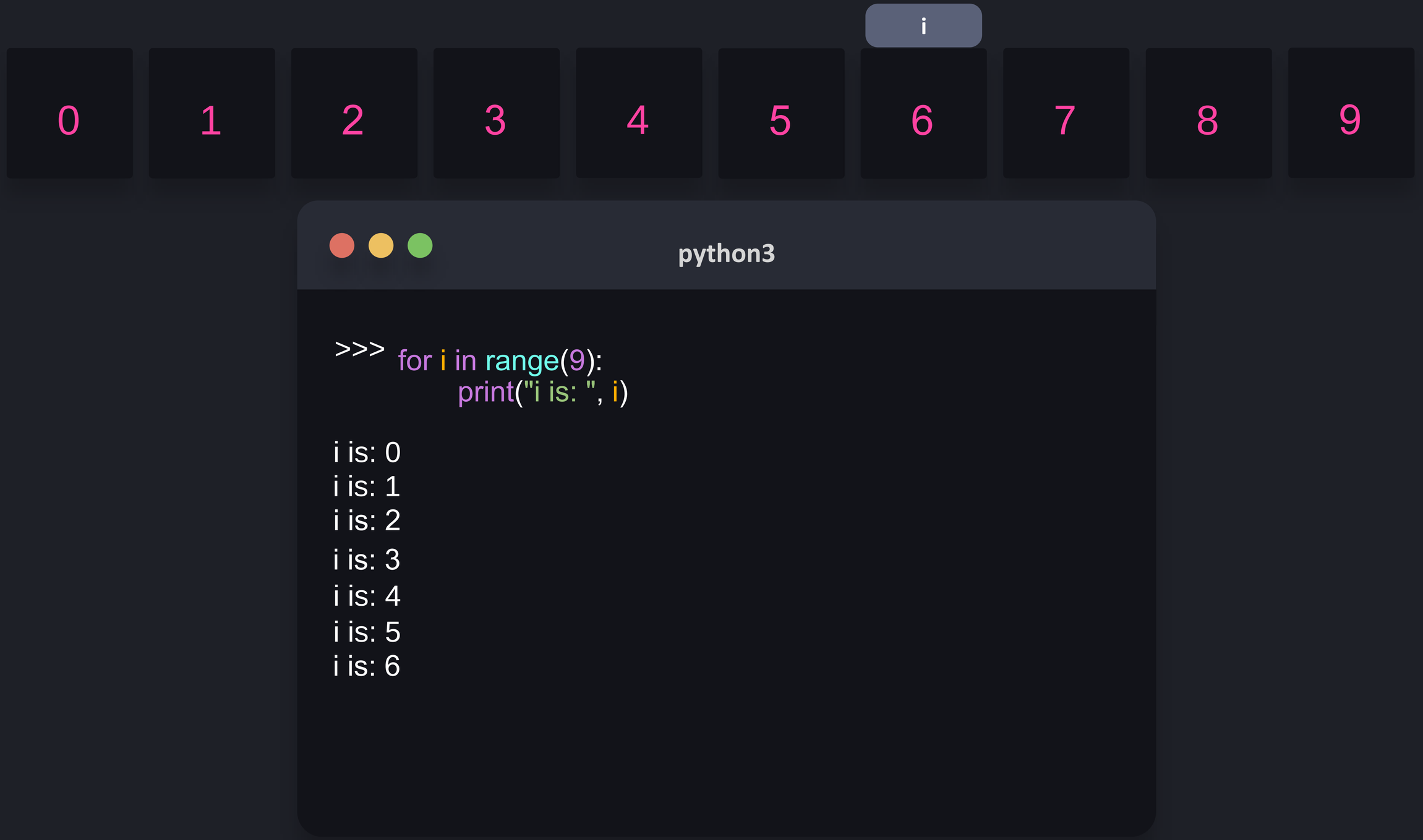
python3

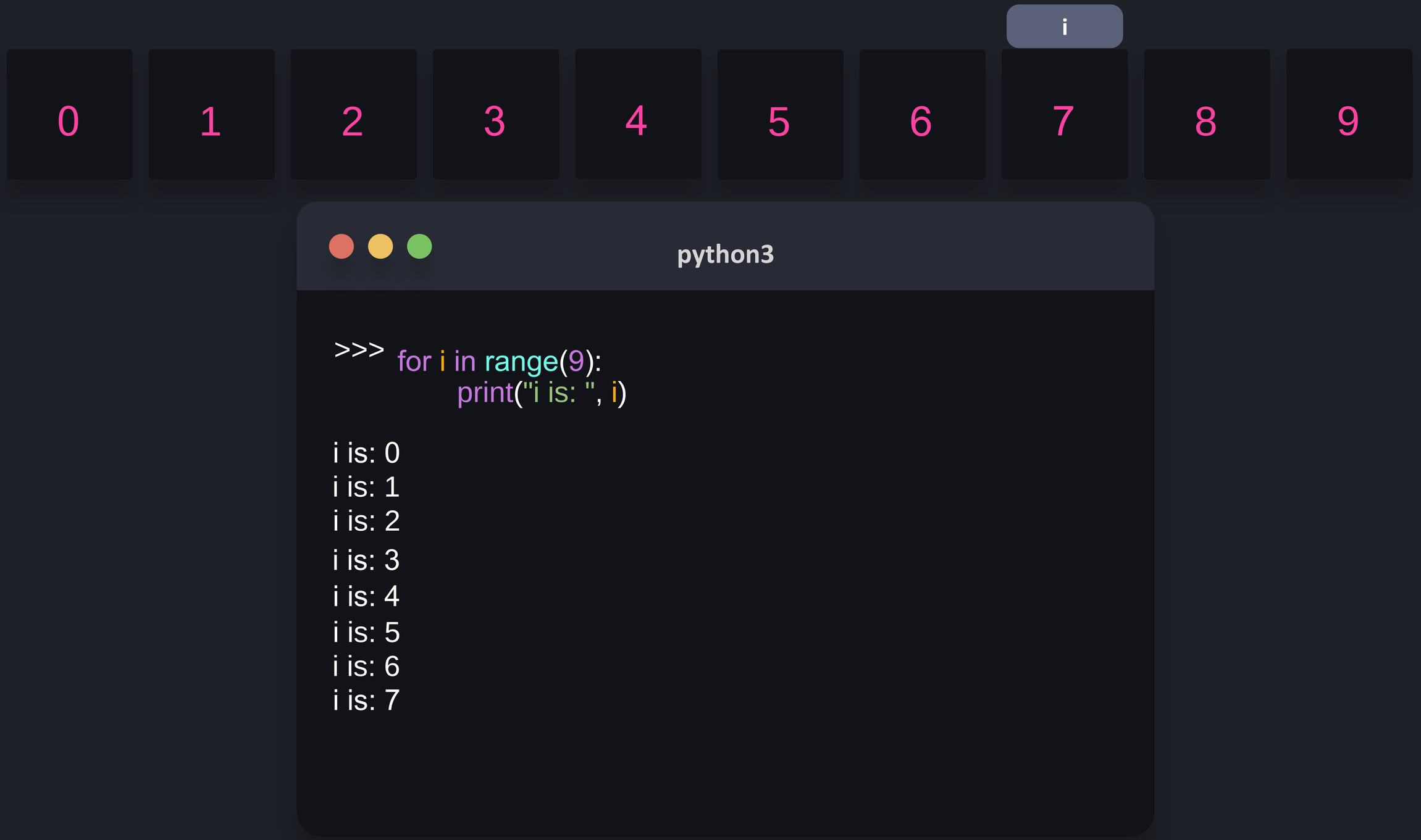
```
>>> for i in range(9):
        print("i is: ", i)
i is: 0
i is: 1
i is: 2
i is: 3
i is: 4
```

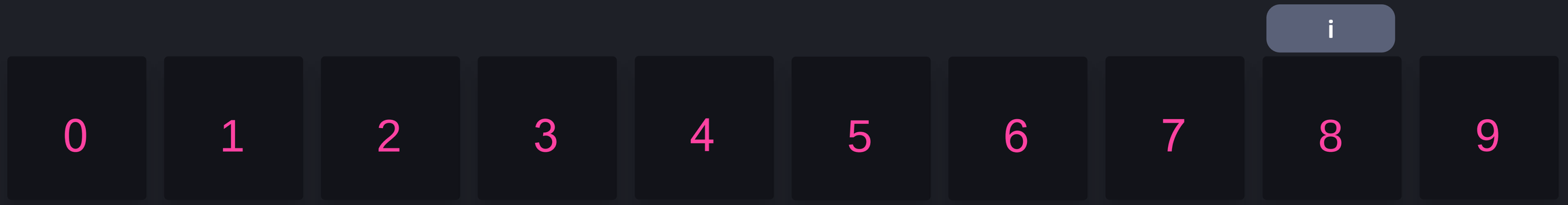


python3

```
>>> for i in range(9):
        print("i is: ", i)

i is: 0
i is: 1
i is: 2
i is: 3
i is: 4
i is: 5
```

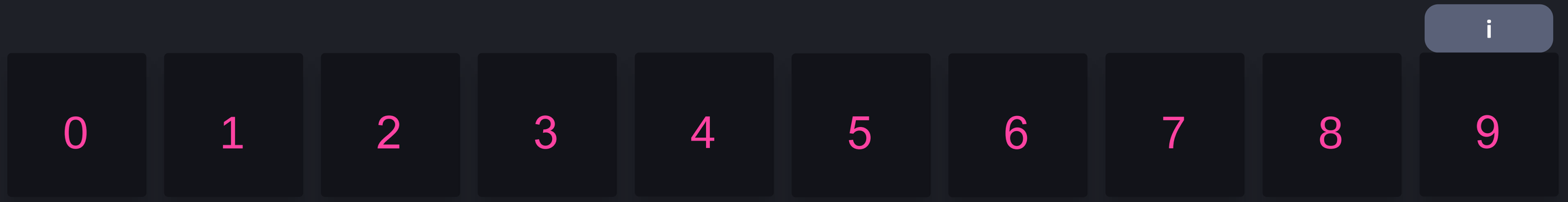

i
0
1
2
3
4
5
6
7
8
9
python3
>>> for i in range(9):
print("i is: ", i)
i is: 0
i is: 1
i is: 2
i is: 3
i is: 4
i is: 5
i is: 6


i
0
1
2
3
4
5
6
7
8
9
python3
>>> for i in range(9):
print("i is: ", i)
i is: 0
i is: 1
i is: 2
i is: 3
i is: 4
i is: 5
i is: 6
i is: 7



python3

```
>>> for i in range(9):
        print("i is: ", i)

i is: 0
i is: 1
i is: 2
i is: 3
i is: 4
i is: 5
i is: 6
i is: 7
i is: 8
```

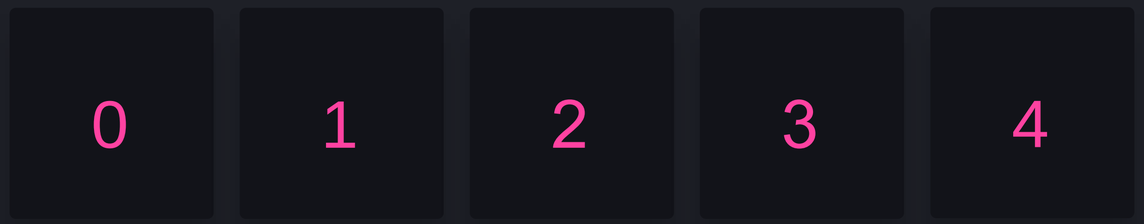


python3

```
>>> for i in range(9):
        print("i is: ", i)

i is: 0
i is: 1
i is: 2
i is: 3
i is: 4
i is: 5
i is: 6
i is: 7
i is: 8
i is: 9
```

```
for i in range(2, 5):
```

2	3	4

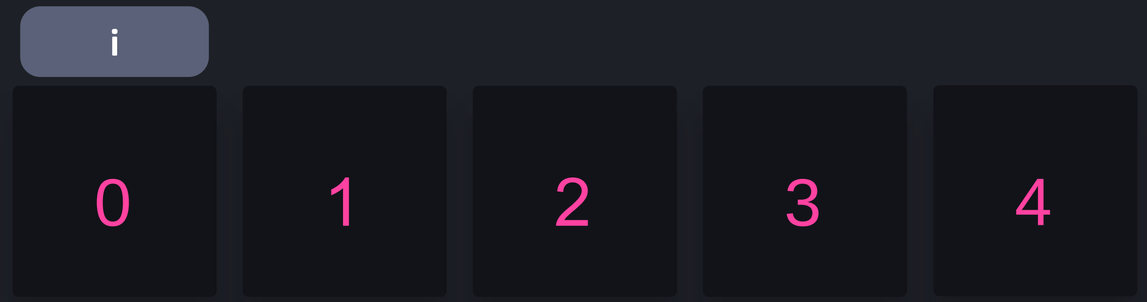


python3

```
>>> for i in range(5):
        print("i is: ", i)

0
1
2
3
4
```

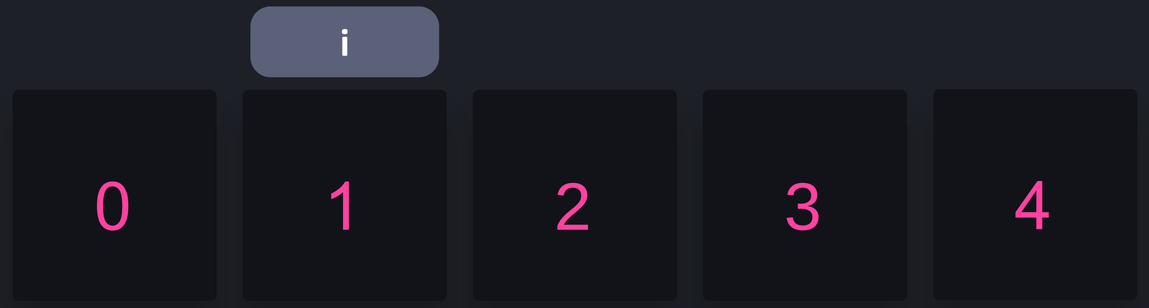
python3

```
>>> for i in range(5):
        if(i == 2):
            break
        print("i is: ", i)
```



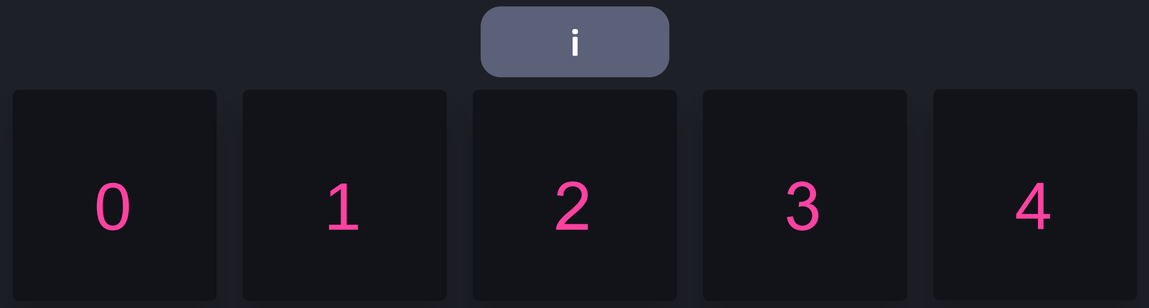
python3

```
>>> for i in range(5):
        if(i == 2):
            break
        print("i is: ", i)
0
```



python3

```
>>> for i in range(5):
        if(i == 2):
            break
        print("i is: ", i)
0
1
```

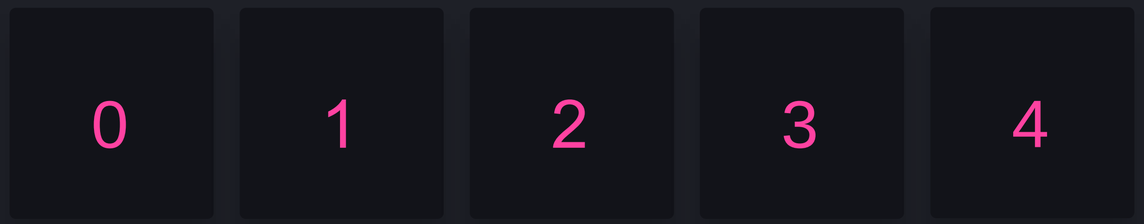


python3

```
>>> for i in range(5):
        if(i == 2):
            break
        print("i is: ", i)
0
1
>>>
```

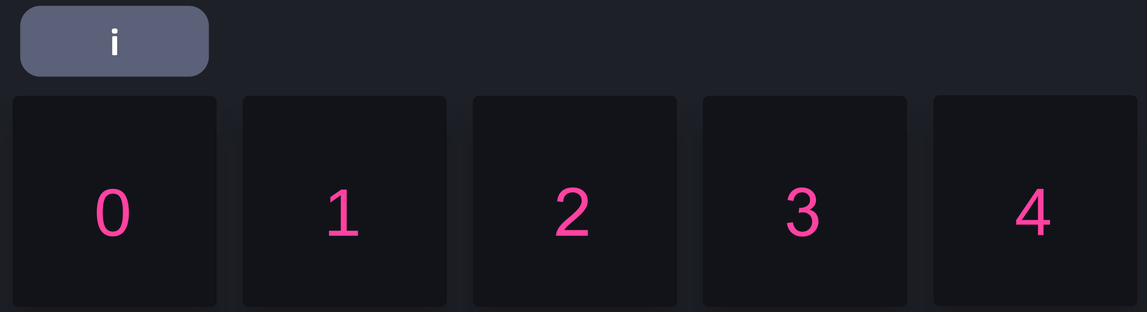
python3

```
>>> for i in range(5):
        print("i is: ", i)
```



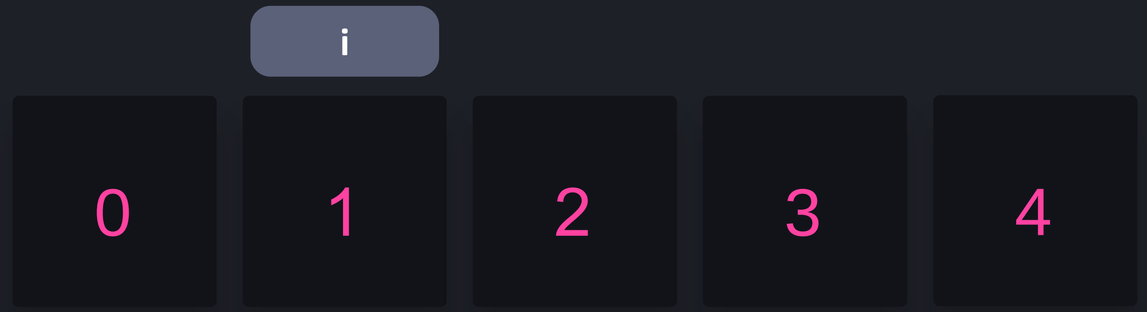
python3

```
>>> for i in range(5):
        if(i == 2):
            continue
        print("i is: ", i)
```



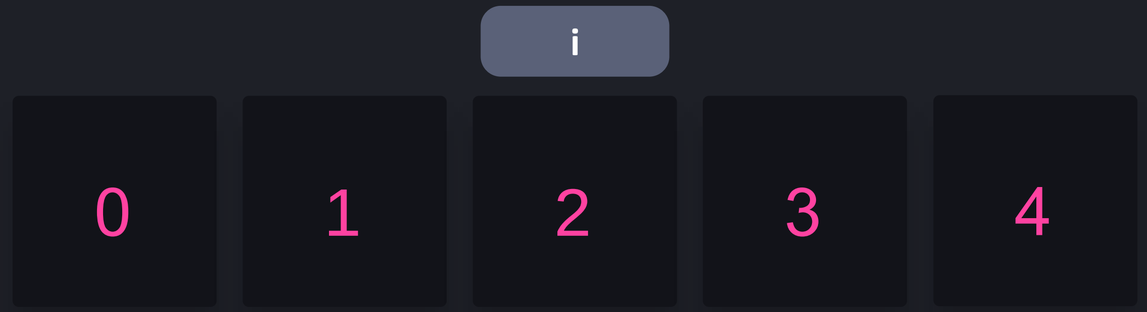
python3

```
>>> for i in range(5):
        if(i == 2):
            continue
        print("i is: ", i)
0
```



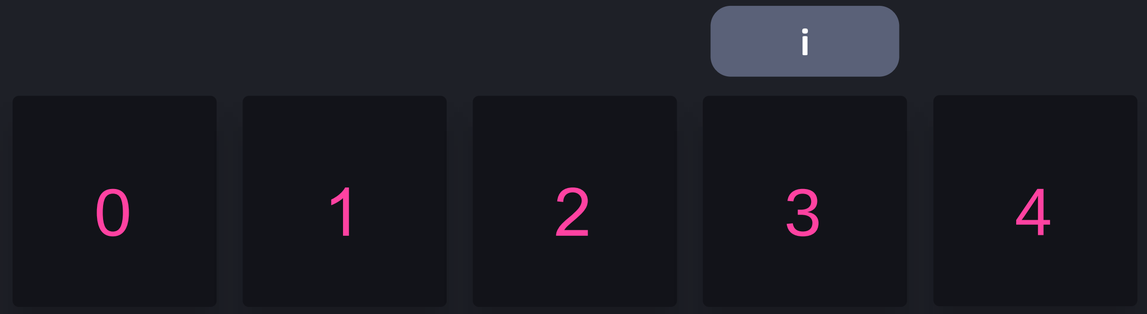
python3

```
>>> for i in range(5):
        if(i == 2):
            continue
        print("i is: ", i)
0
1
```



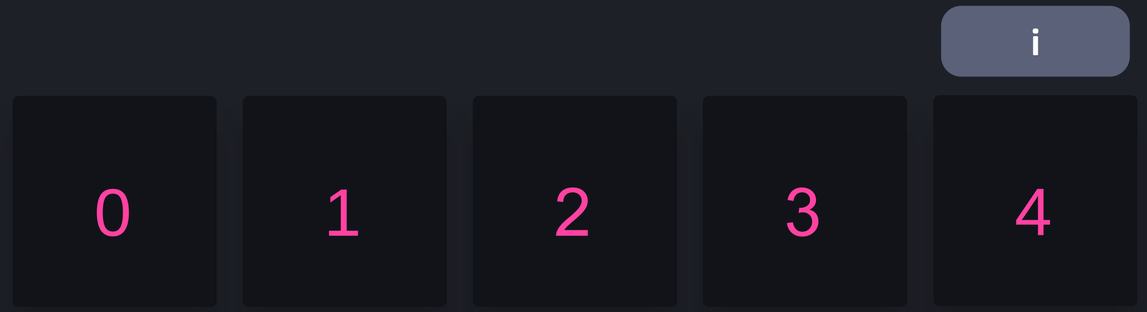
python3

```
>>> for i in range(5):
        if(i == 2):
            continue
        print("i is: ", i)
0
1
```



python3

```
>>> for i in range(5):
        if(i == 2):
            continue
        print("i is: ", i)
0
1
3
```



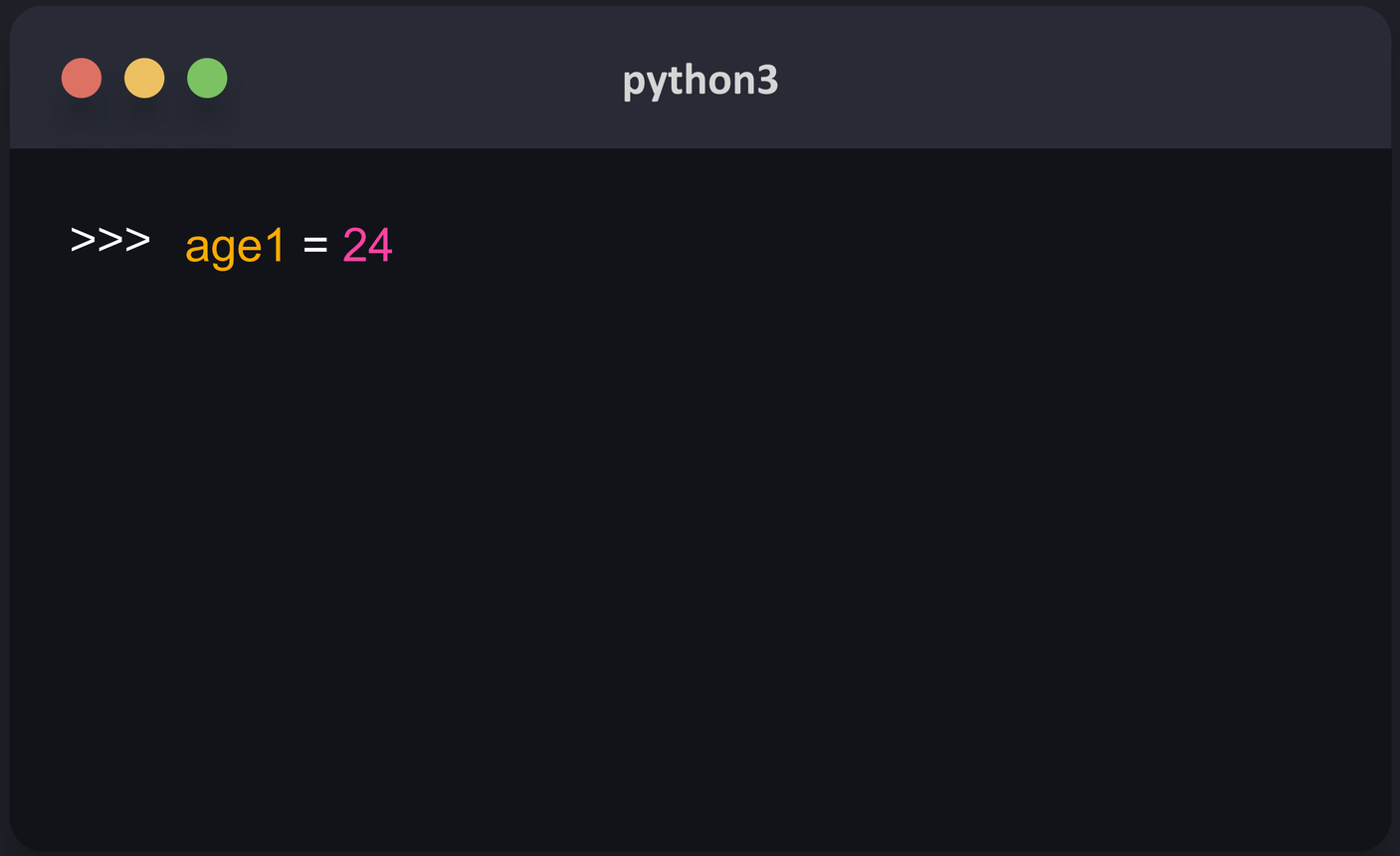
python3

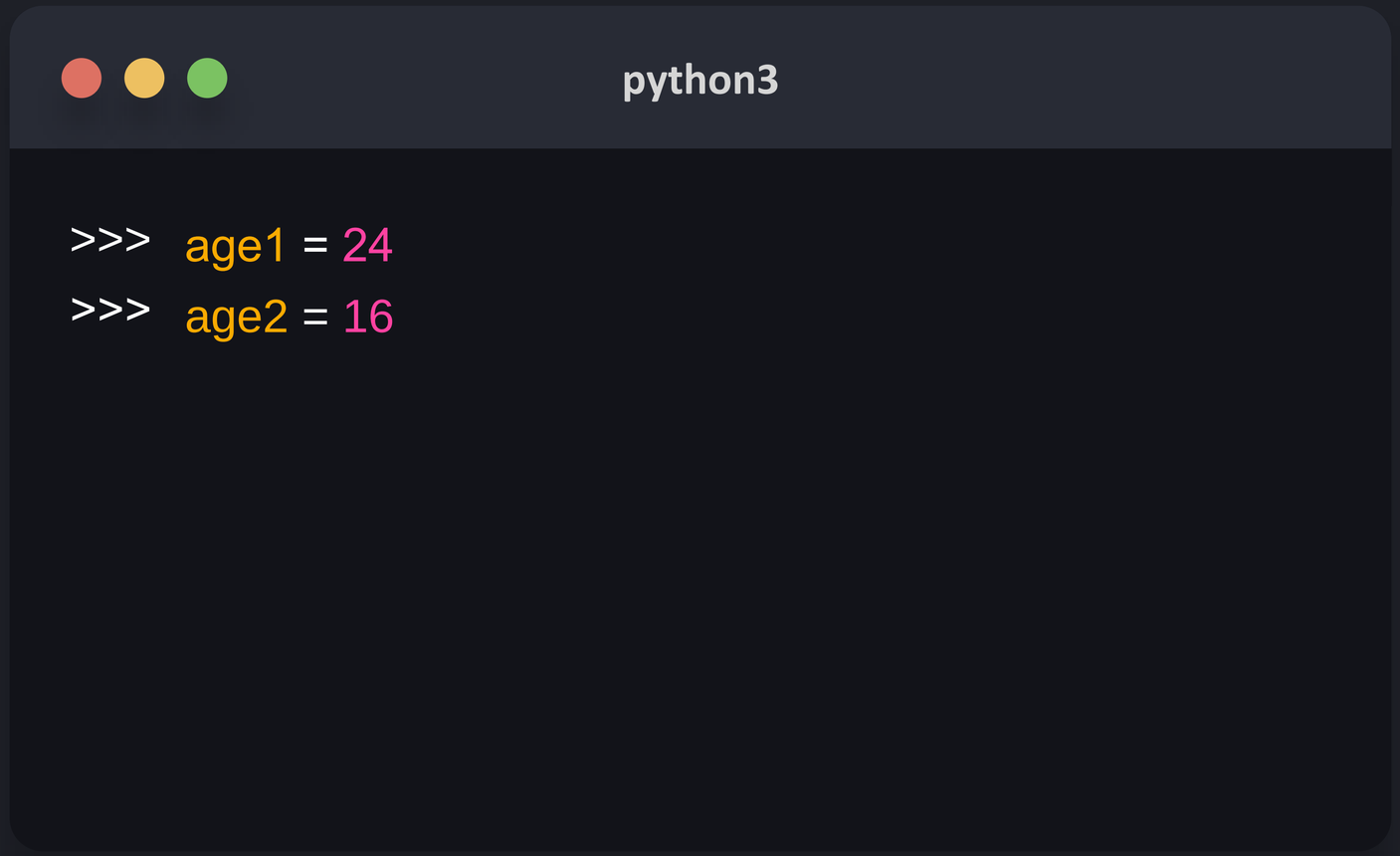
```
>>> for i in range(5):
        if(i == 2):
            continue
        print("i is: ", i)
0
1
3
4
```

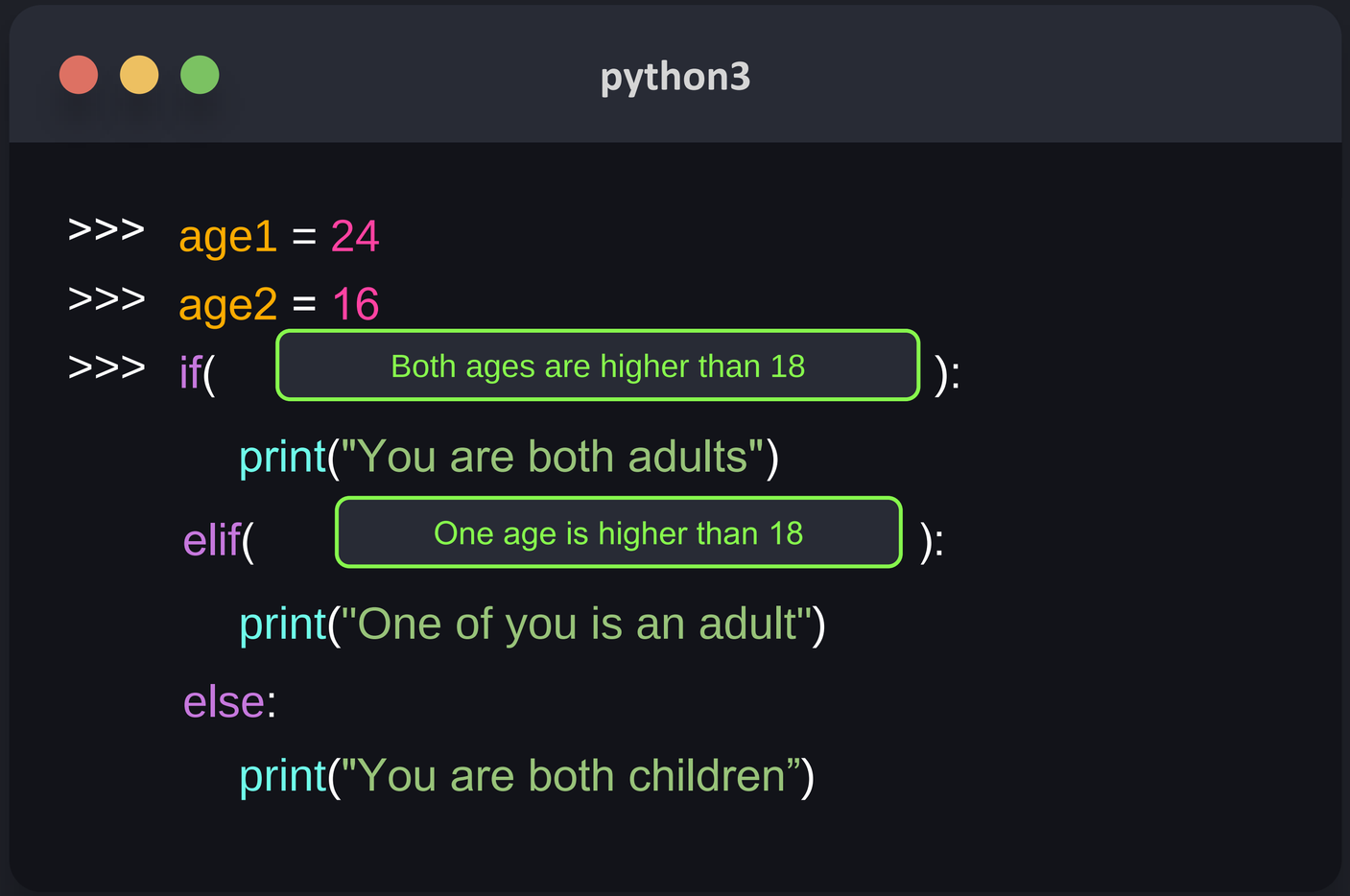
- `if/else` statements allow us to conditionally run code
- A `while` loop makes it possible to repetitively execute code based on a certain condition
- We can execute code for each item in a sequence with a `for` … `in` loop

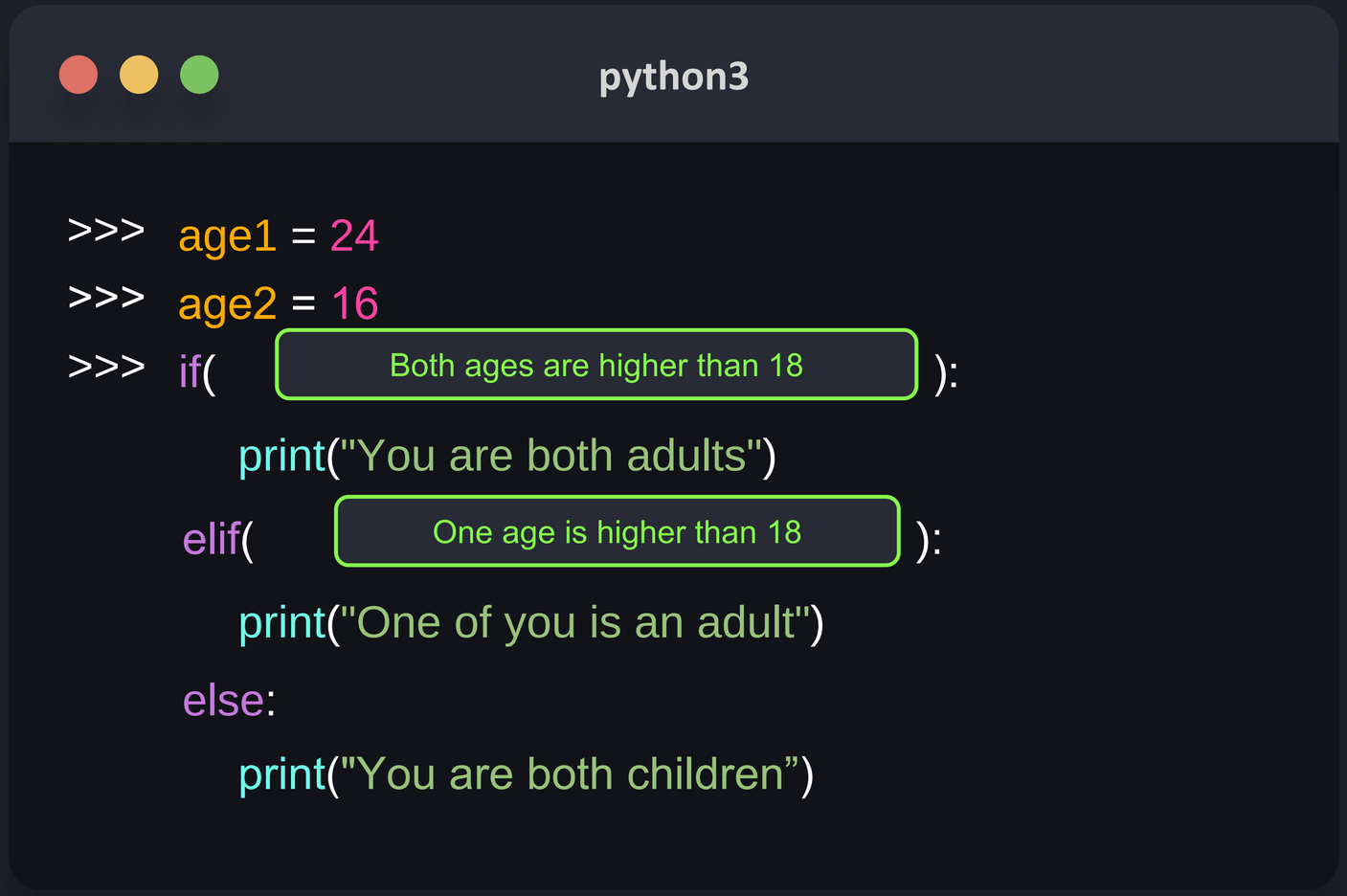
KodeKloud

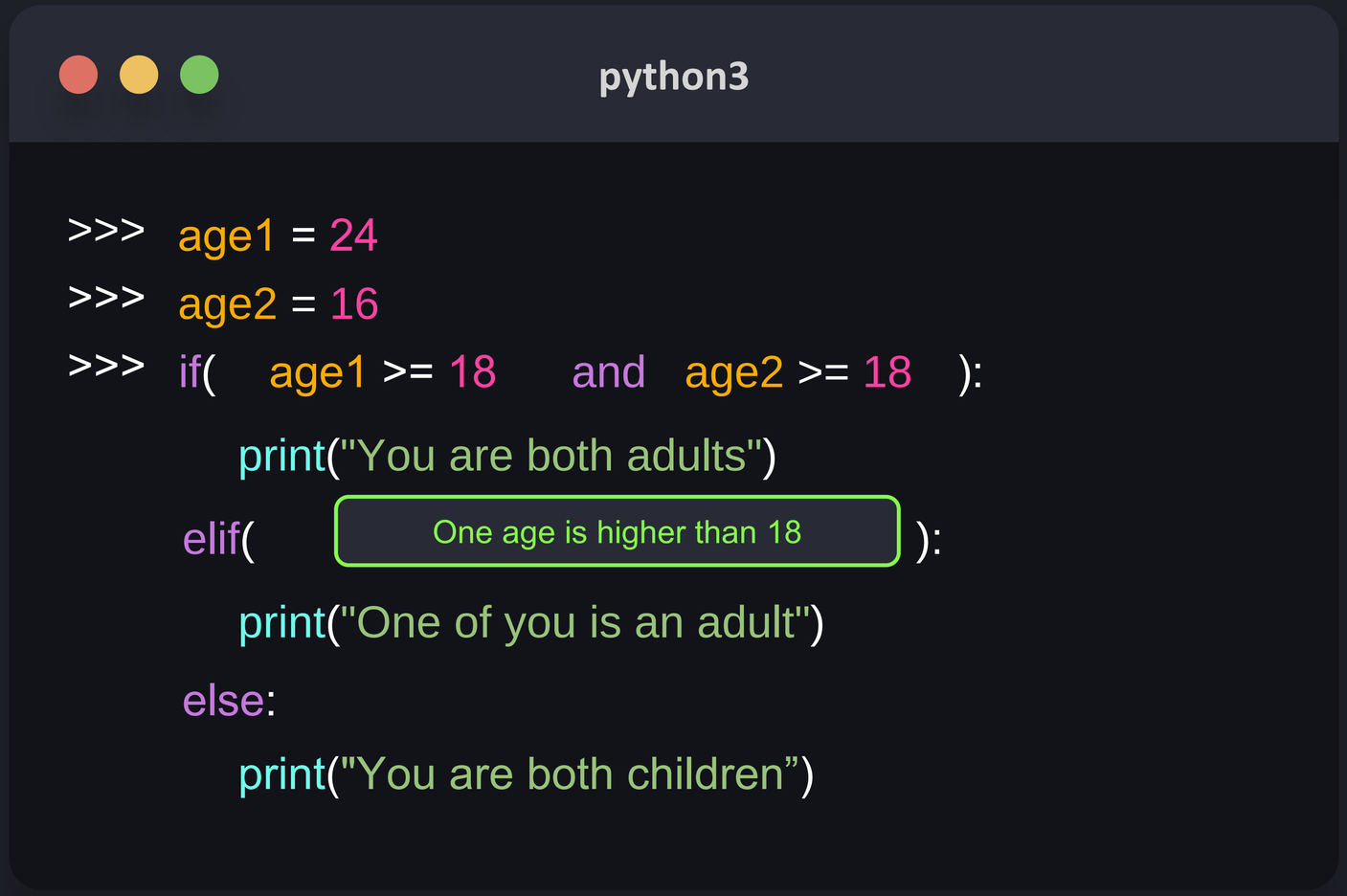
Operators

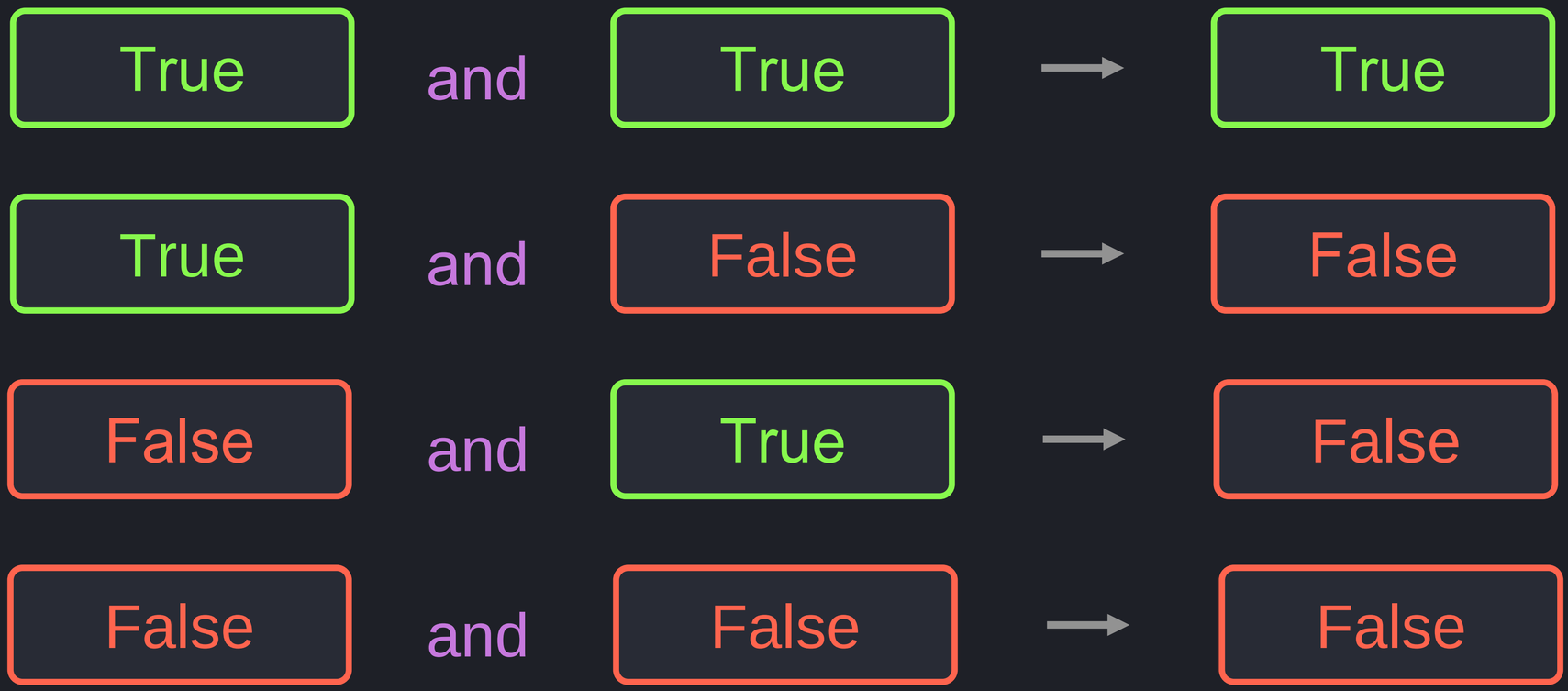

python3
>>> age1 = 24

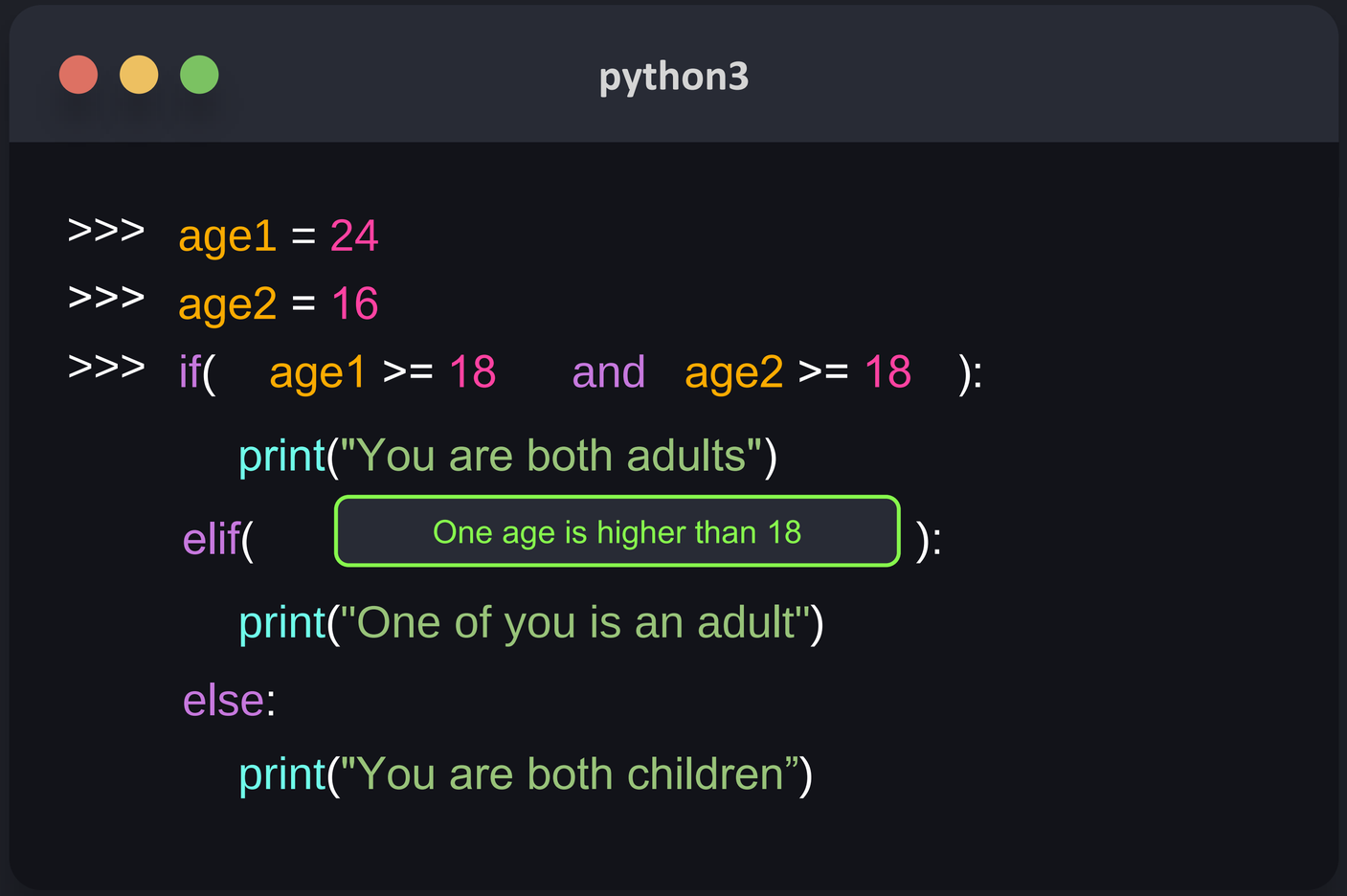

python3
>>> age1 = 24
>>> age2 = 16


python3
>>> age1 = 24
>>> age2 = 16
>>> if(Both ages are higher than 18):
print("You are both adults")
elif(One age is higher than 18):
print("One of you is an adult")
else:
print("You are both children”)


python3
>>> age1 = 24
>>> age2 = 16
>>> if(Both ages are higher than 18):
print("You are both adults")
elif(One age is higher than 18):
print("One of you is an adult")
else:
print("You are both children”)


python3
>>> age1 = 24
>>> age2 = 16
>>> if(age1 >= 18 and age2 >= 18):
print("You are both adults")
elif(One age is higher than 18):
print("One of you is an adult")
else:
print("You are both children”)


True
and
True
True
True
and
False
False
False
and
True
False
False
and
False
False

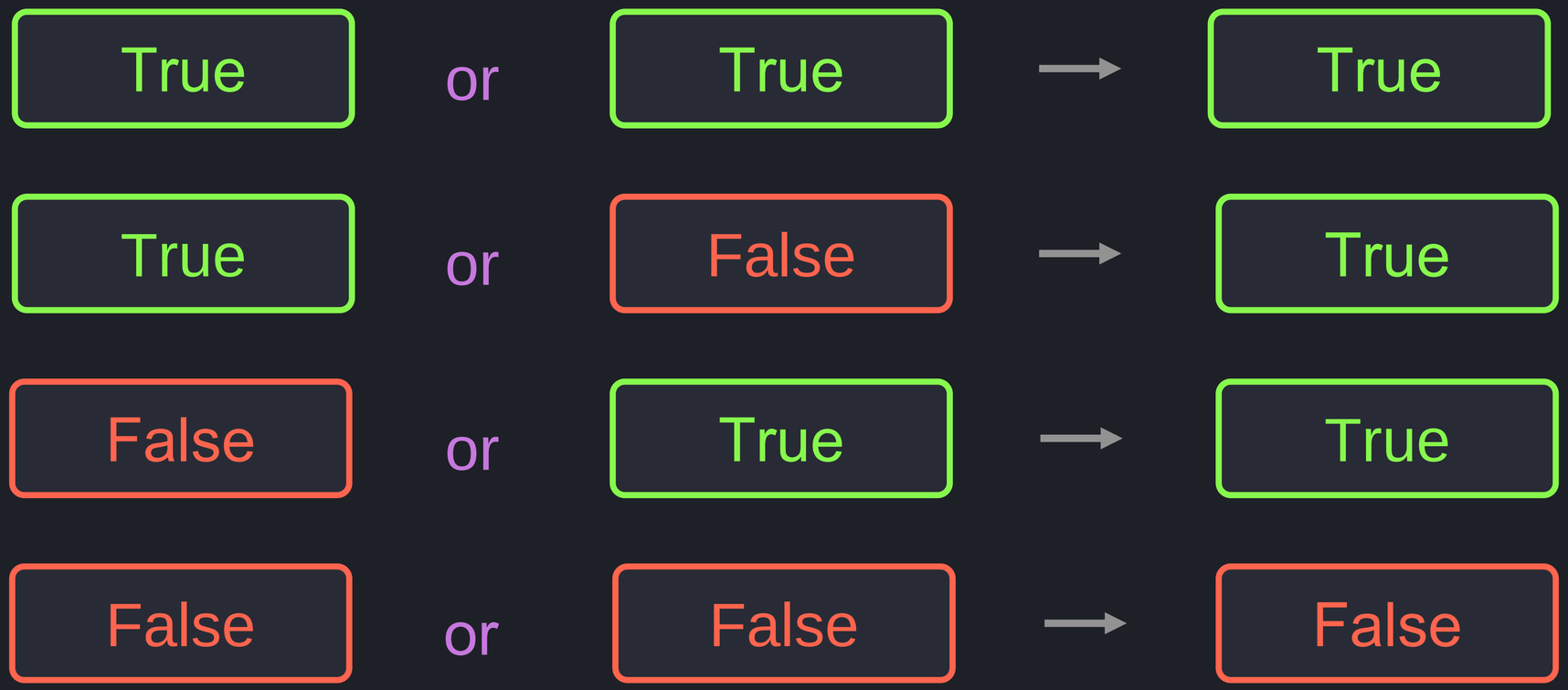

python3
>>> age1 = 24
>>> age2 = 16
>>> if(age1 >= 18 and age2 >= 18):
print("You are both adults")
elif(One age is higher than 18):
print("One of you is an adult")
else:
print("You are both children”)

python3

```
>>> age1 = 24
>>> age2 = 16
>>> if(    age1 >= 18      and    age2 >= 18    ):
        print("You are both adults")
    elif(          One age is higher than 18          ):
        print("One of you is an adult")
    else:
        print("You are both children”)
```

python3

```
>>> age1 = 24
>>> age2 = 16
>>> if( age1 >= 18 and age2 >= 18 ):
        print("You are both adults")
    elif( age1 >= 18 or age2 >= 18 ):
        print("One of you is an adult")
    else:
        print("You are both children”)
```

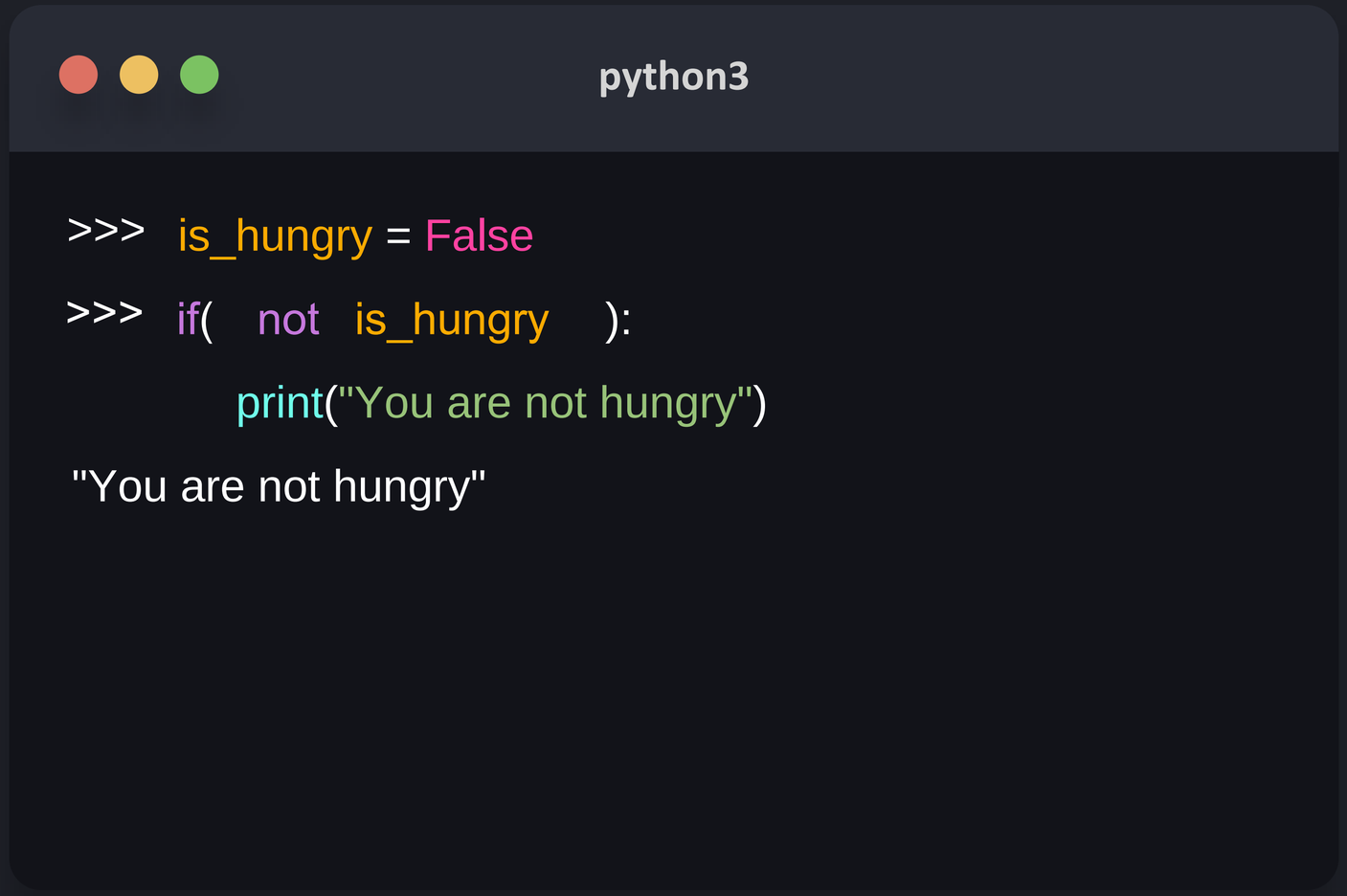

True
or
True
True
True
or
False
True
False
or
True
True
False
or
False
False

python3

```
>>>  age1 = 24
>>>  age2 = 16
>>>  if(    age1 >= 18      and   age2 >= 18    ):
          print("You are both adults")
        elif(      age1 >= 18      or    age2 >= 18     ):
          print("One of you is an adult")
        else:
          print("You are both children”)
```


not
True
False
not
False
True


python3
>>> is_hungry = False
>>> if(not is_hungry):
print("You are not hungry")


python3
>>> is_hungry = False
>>> if(not is_hungry):
print("You are not hungry")
"You are not hungry"

KodeKloud

Bitwise Operators

Logical Operators

or

and

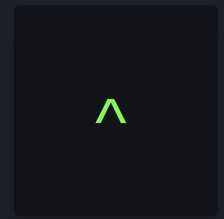
not

Bitwise Operators

Conjunction

Disjunction

Negation



Exclusive

Bitwise Operators

&

Two 1

1 & 1

|

At least one 1

1 | 1

0 | 1

1 | 0

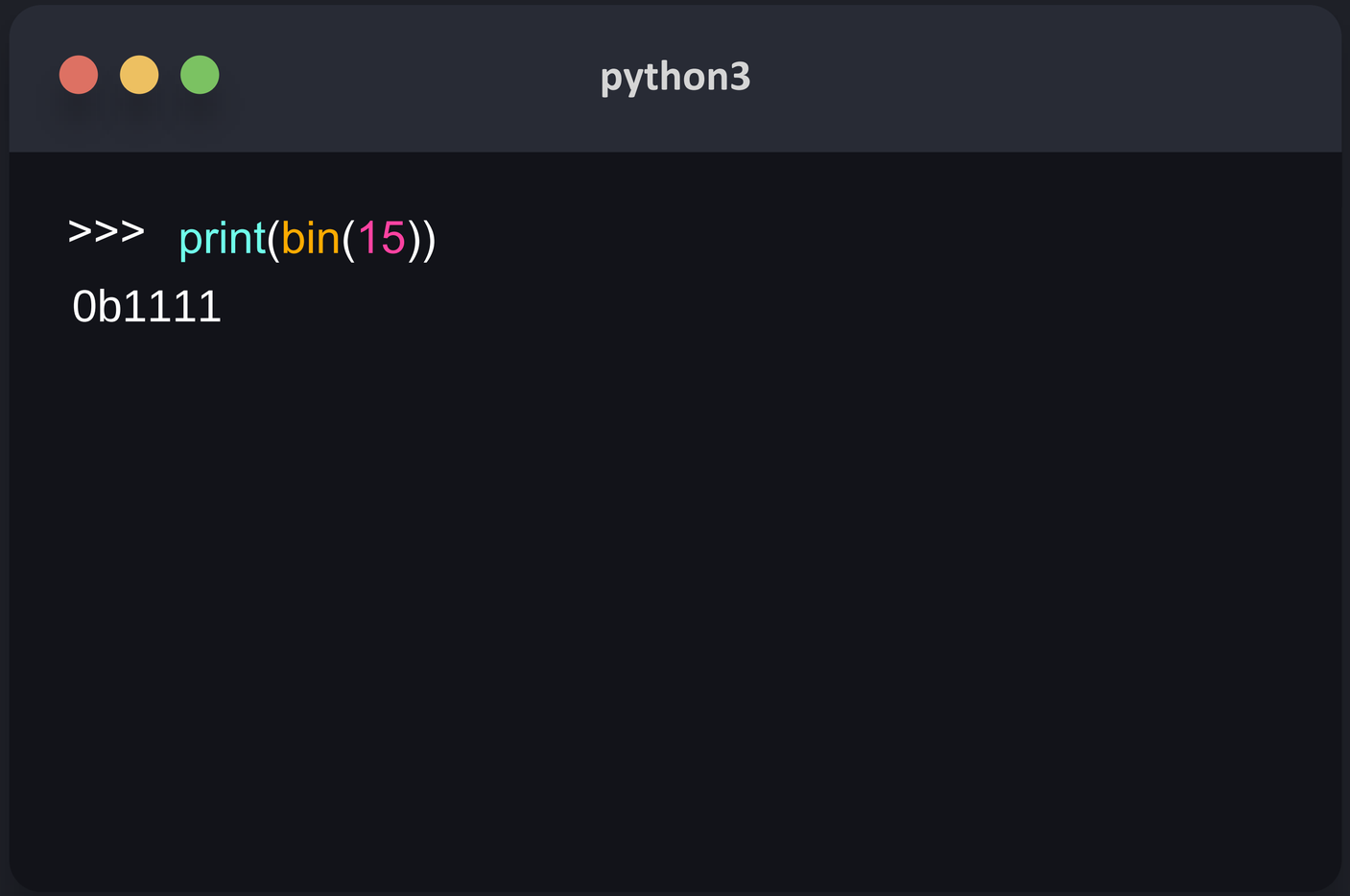
^

Exactly 1

0 ^ 1

1 ^ 0

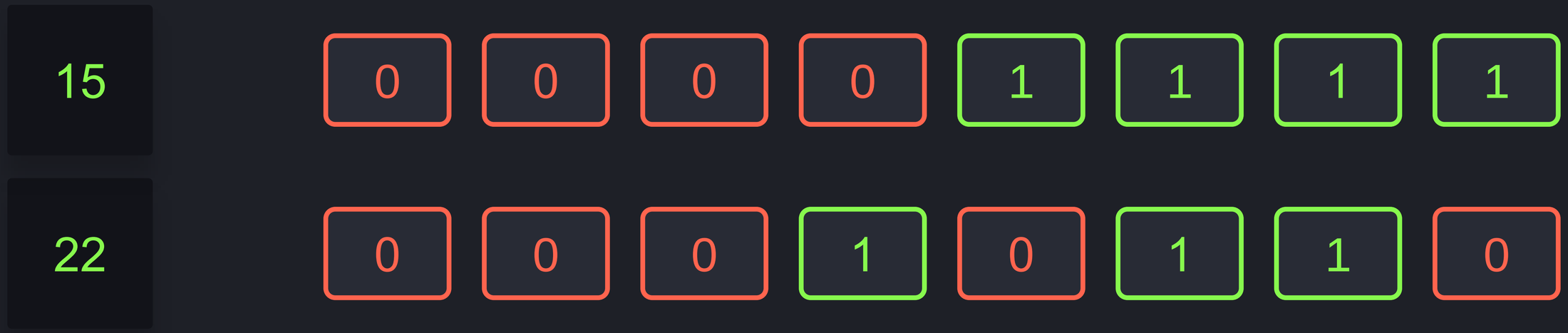

python3
>>> 15 & 22

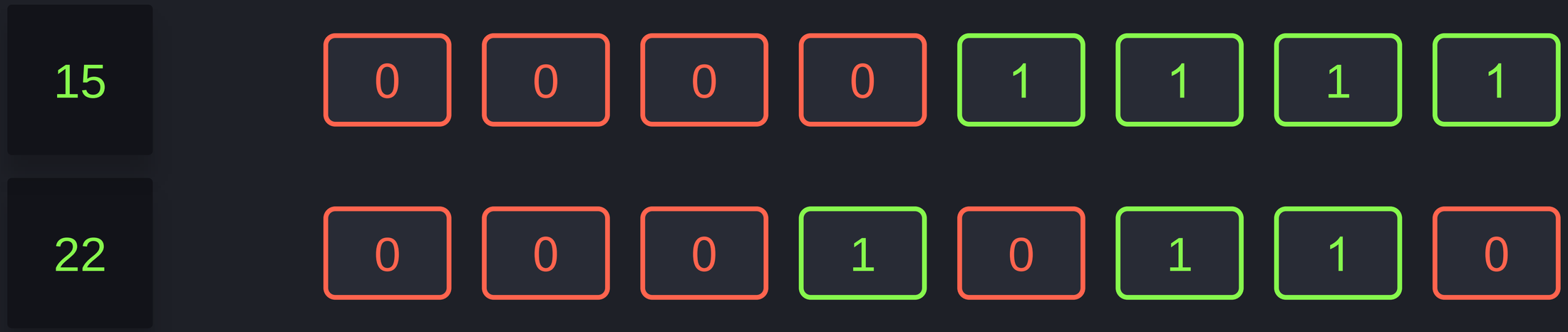

python3
>>> print(bin(15))
0b1111


python3
>>> print(bin(15))
0b1111
>>> print(bin(22))
0b10110

python3

```
>>>  print(bin(15))
0b1111
>>>  print(bin(22))
0b10110
```

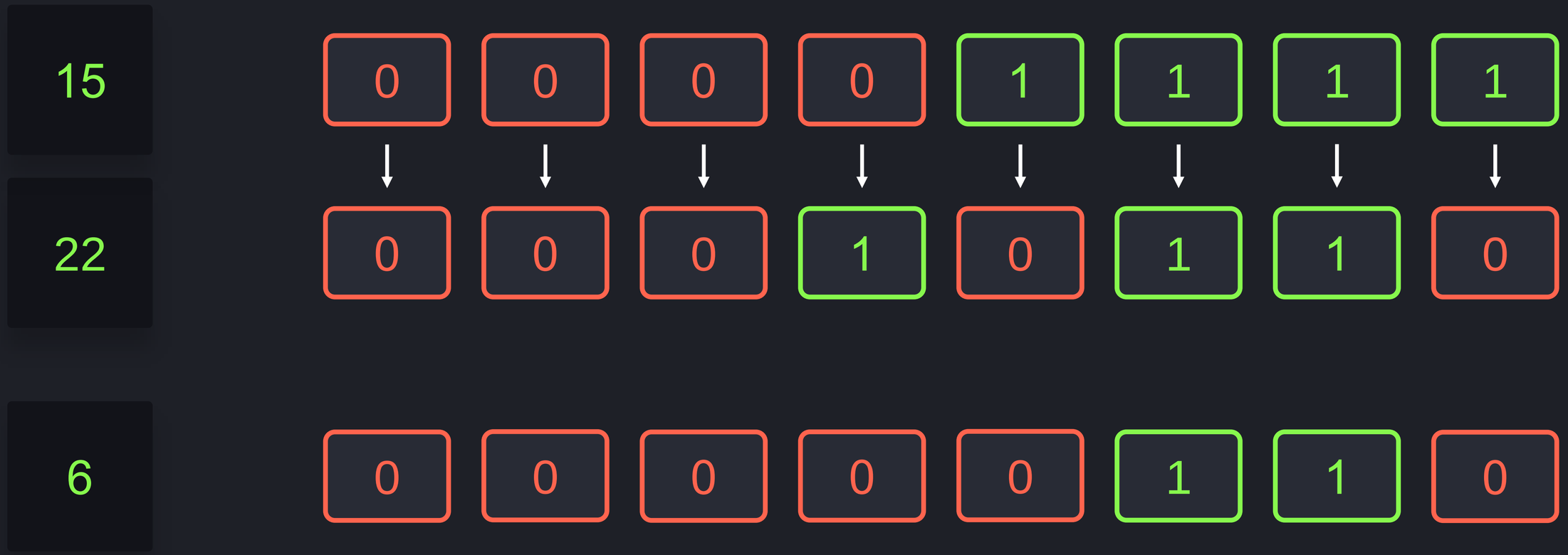



15
0 0 0 0 1 1 1 1
22
0 0 0 1 0 1 1 0


15
0 0 0 0 1 1 1 1
&
22
0 0 0 1 0 1 1 0
Two 1
1 & 1


15
0 0 0 0 1 1 1 1
22
0 0 0 1 0 1 1 0
0 0 0 0 0 1 1 0

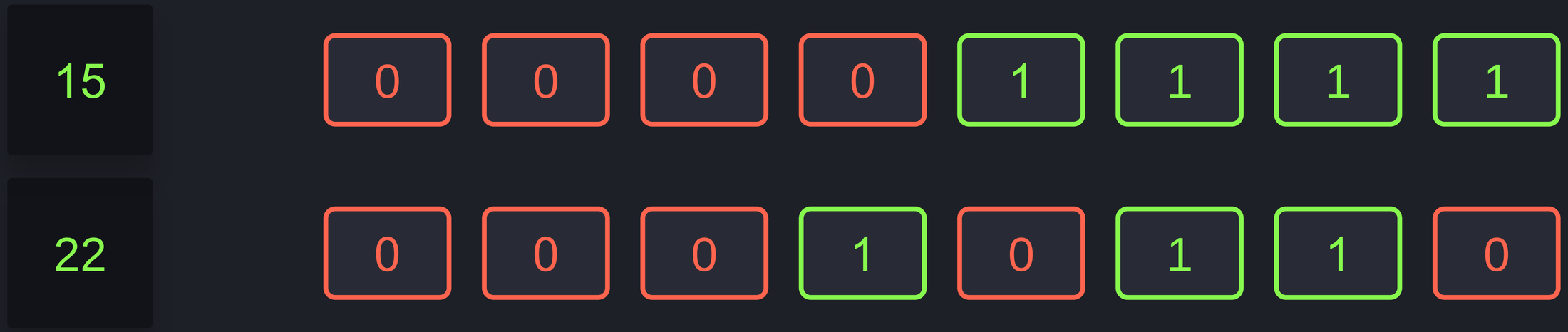

15
0 0 0 0 1 1 1 1
22
0 0 0 1 0 1 1 0
0 0 0 0 0 1 1 0

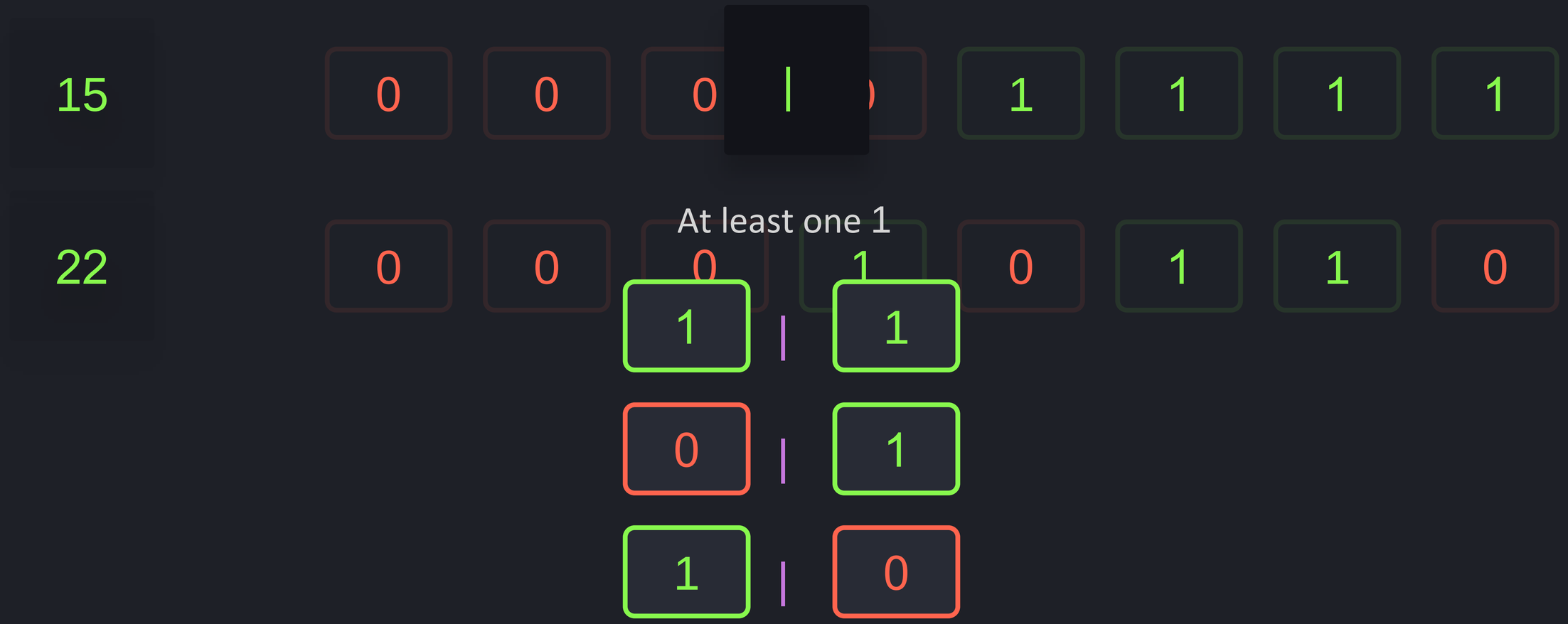

15
0 0 0 0 1 1 1 1
22
0 0 0 1 0 1 1 0
6
0 0 0 0 0 1 1 0


python3
>>> print(15 & 22)

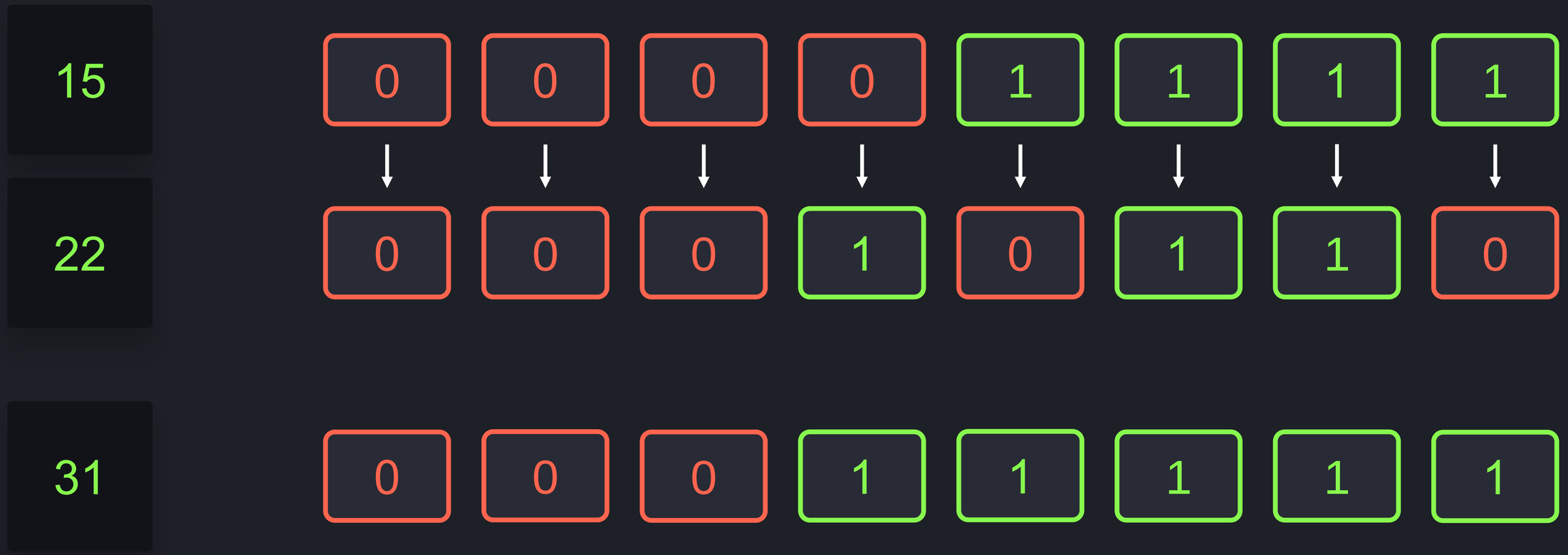

python3
>>> print(15 & 22)
6


python3
>>> print(15 | 22)


15
0 0 0 0 1 1 1 1
22
0 0 0 1 0 1 1 0


15
0 0 0 0 1 1 1 1
22
0 0 0 1 0 1 1 0
At least one 1
1 | 1
0 | 1
1 | 0

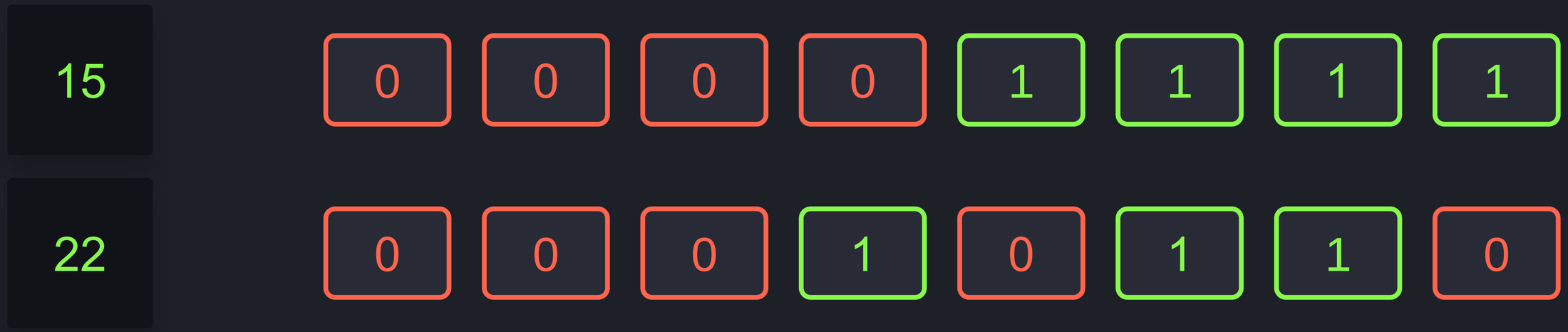

15
0 0 0 0 1 1 1 1
22
0 0 0 1 0 1 1 0
0 0 0 1 1 1 1 1

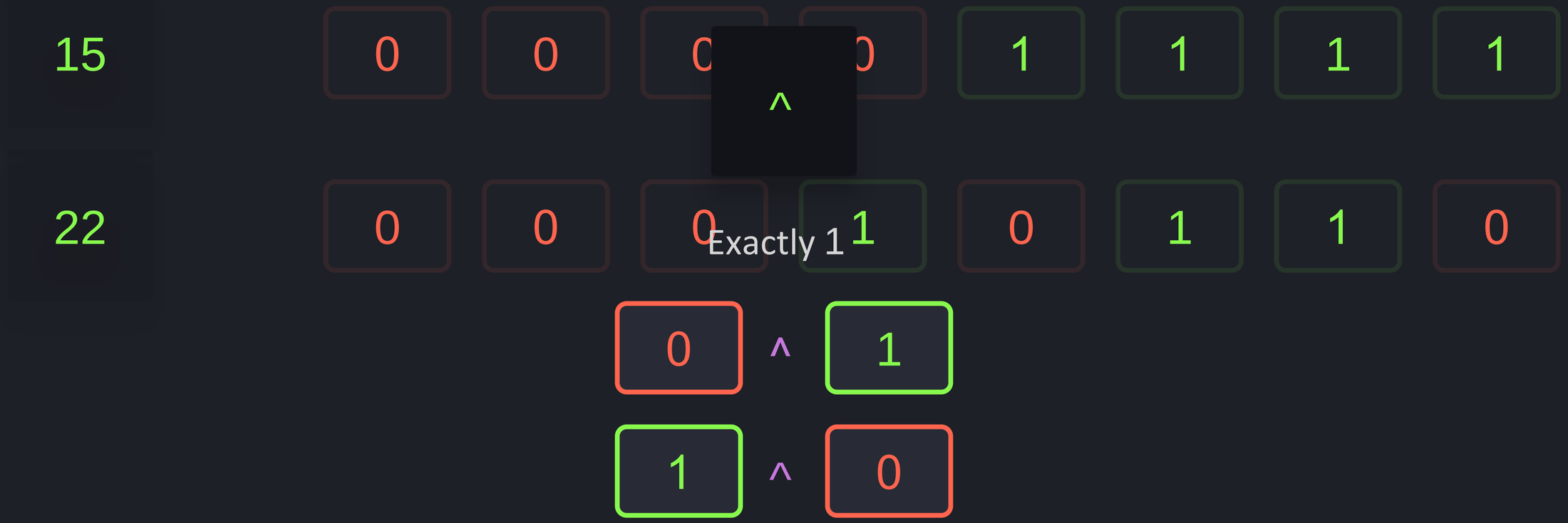

15
0 0 0 0 1 1 1 1
22
0 0 0 1 0 1 1 0
31
0 0 0 1 1 1 1 1


python3
>>> print(15 | 22)

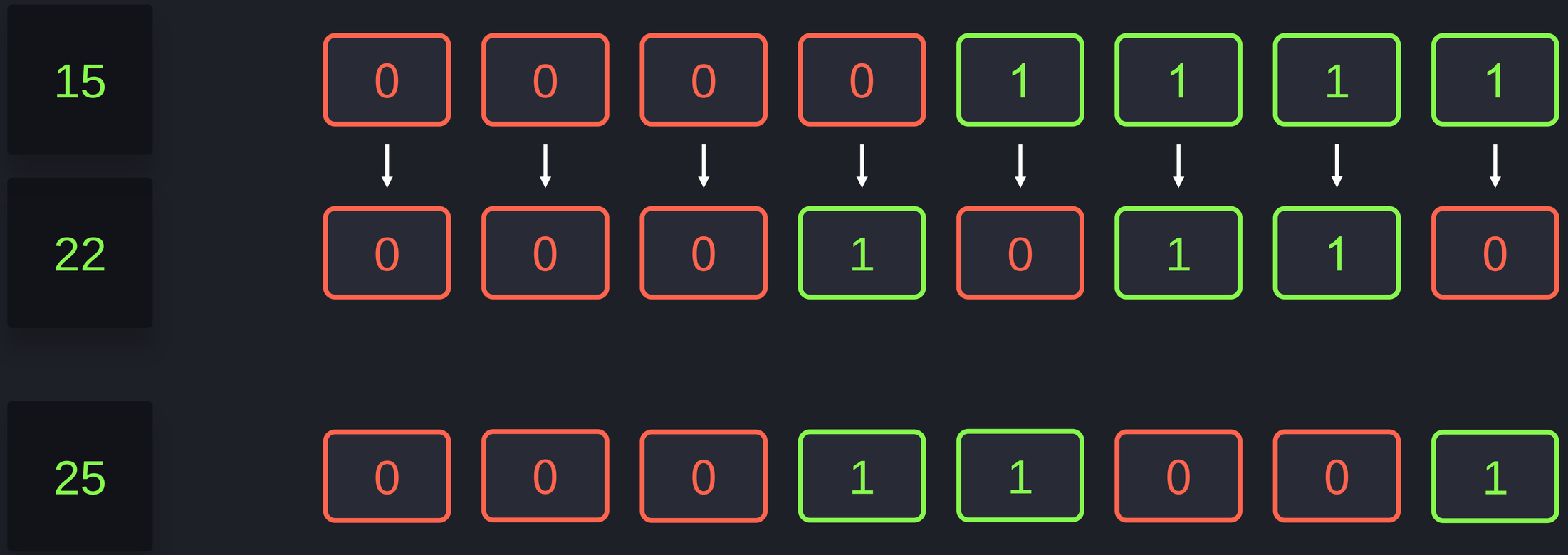

python3
>>> print(15 | 22)
31


python3
>>> print(15 ^ 22)

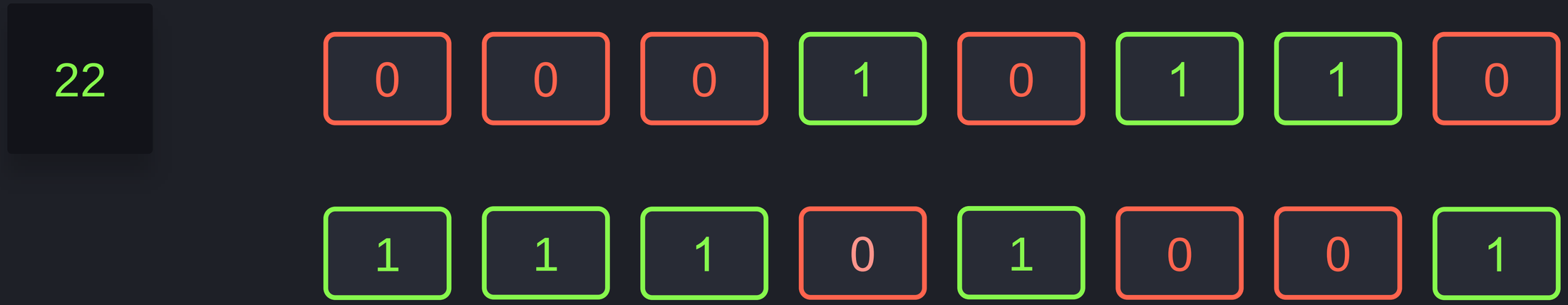

15
0 0 0 0 1 1 1 1
22
0 0 0 1 0 1 1 0

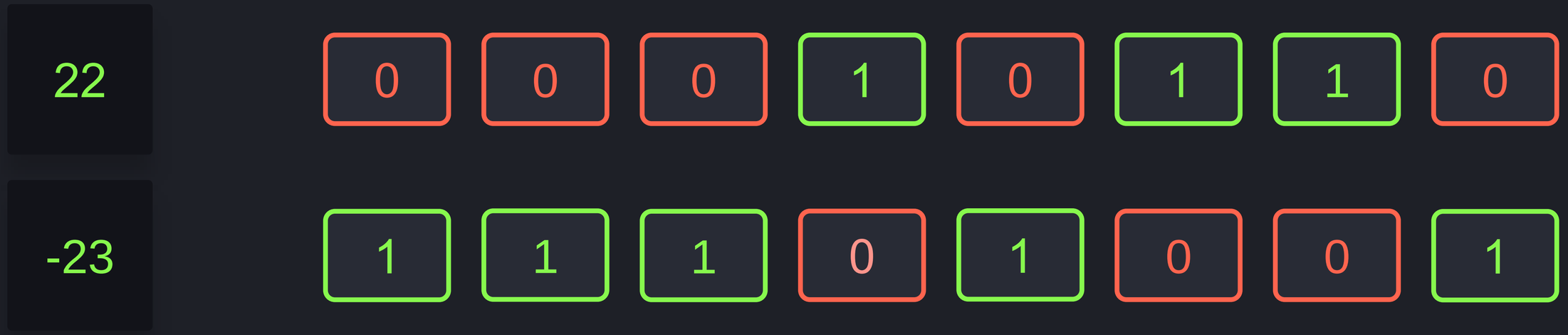

15
0 0 0 0 1 1 1 1
^
22
0 0 0 1 0 1 1 0
Exactly 1
0 ^ 1
1 ^ 0


15
0 0 0 0 1 1 1 1
22
0 0 0 1 0 1 1 0
0 0 0 1 1 1 0 1


15
0 0 0 0 1 1 1 1
22
0 0 0 1 0 1 1 0
25
0 0 0 1 1 0 0 1


python3
>>> print(~22)


22
0 0 0 1 0 1 1 0
1 1 1 0 1 0 0 1


22
0 0 0 1 0 1 1 0
-23
1 1 1 0 1 0 0 1

Without Shortcut Operator

```
bit1 = bit1 & 22
bit1 = bit1 | 22
bit1 = bit1 ^ 22
```

With Shortcut Operator

```
bit1 &= 22
bit1 |= 22
bit1 ^= 22
```

Bit Shifting

Bit Shift Right

Bit Shift Left


python3
>>> print(22 >> 1)

python3

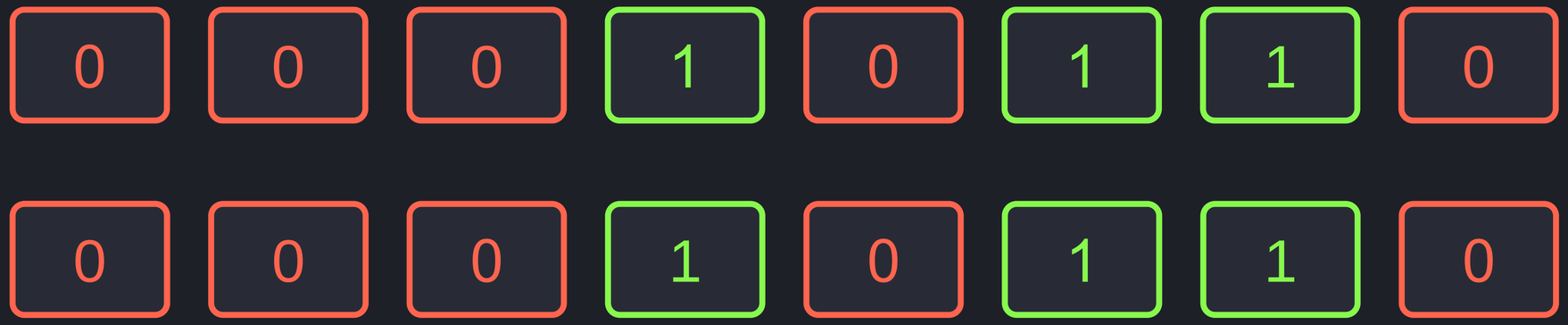
```
>>> print(22 >> 1)
```

22

python3

```
>>>  print(22 >> 1)
```

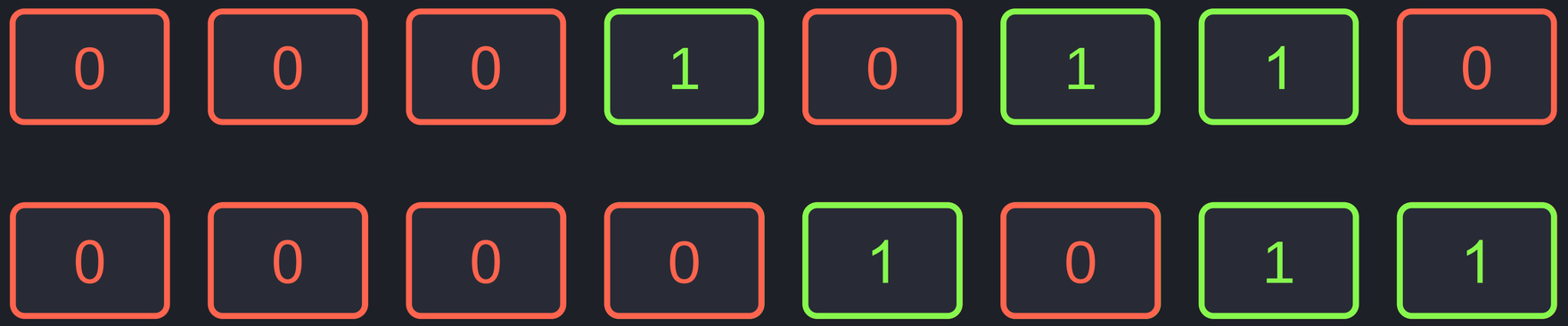
22



python3

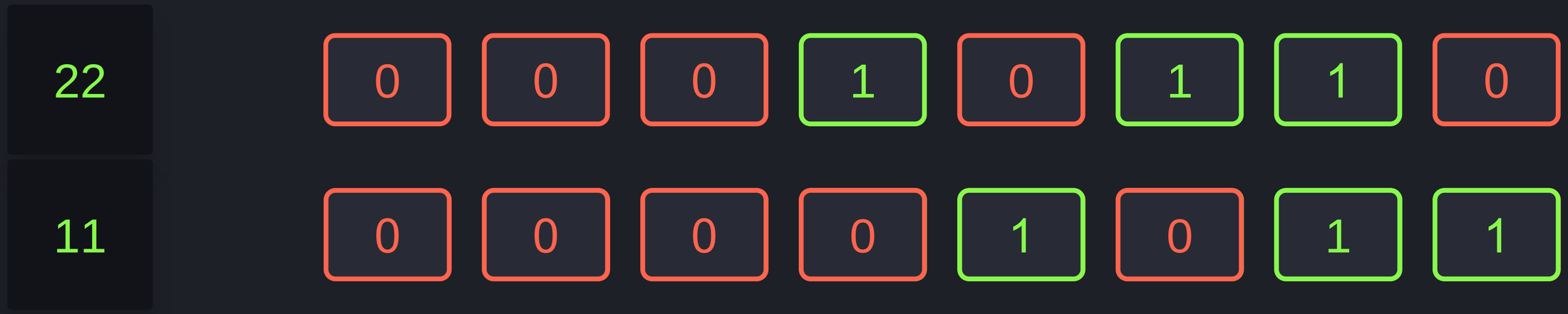
```
>>> print(22 >> 1)
```

22



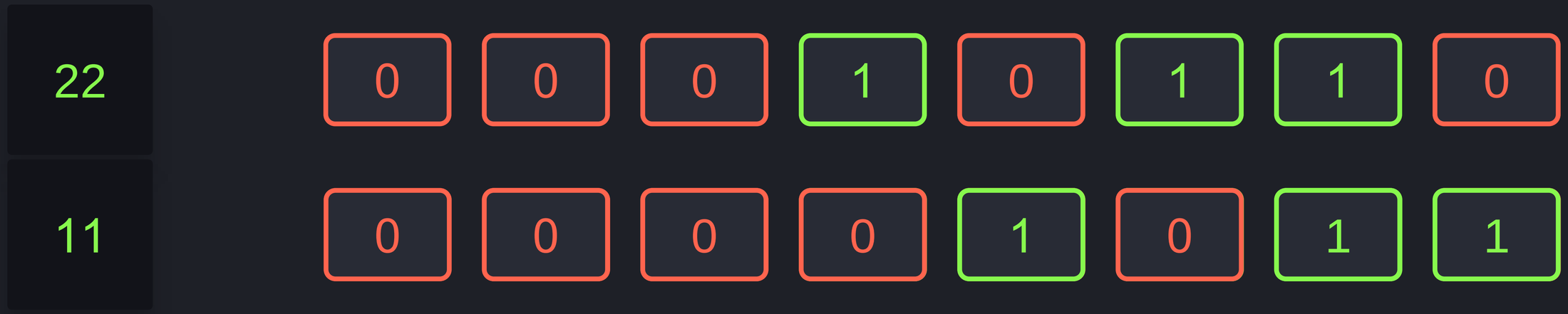
python3

```
>>> print(22 >> 1)
```



python3

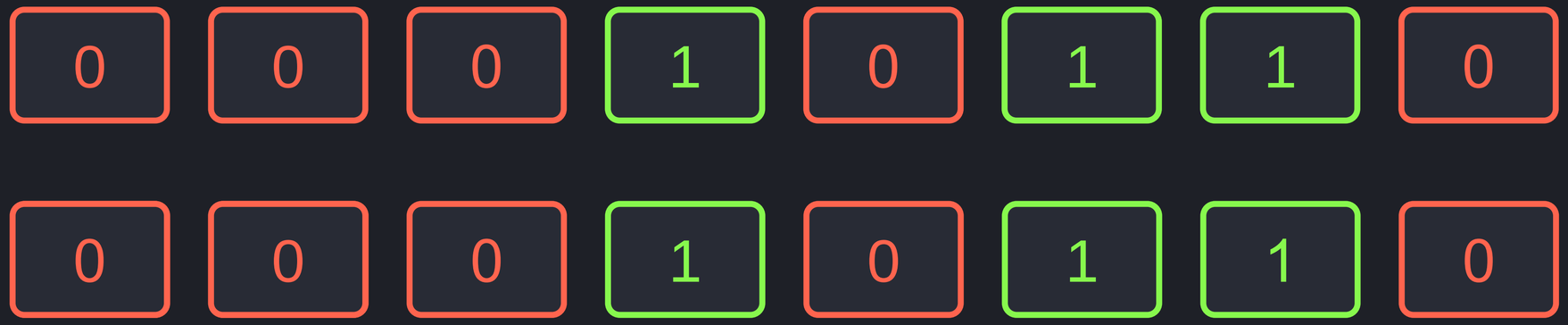
```
>>>  print(22 >> 1)
 11
```



python3

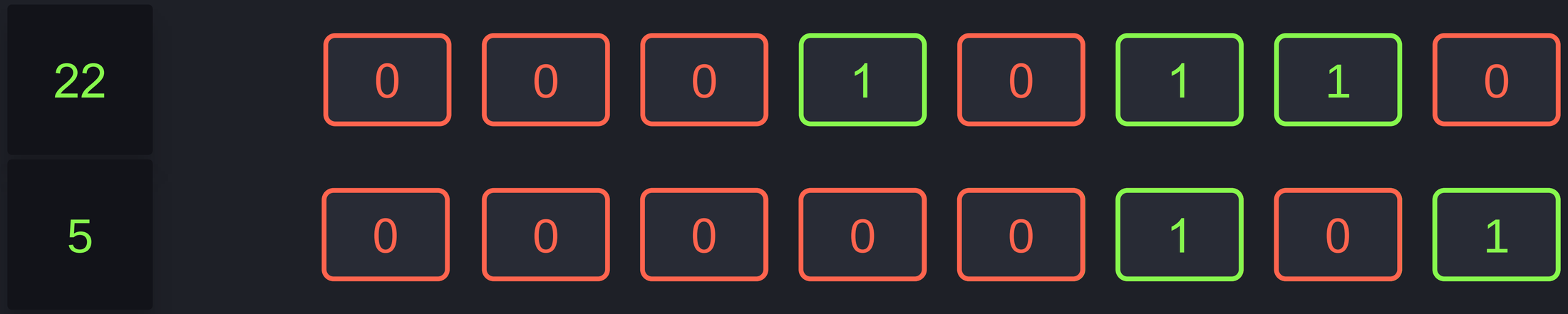
```
>>> print(22 >> 2)
```

22



python3

```
>>>  print(22 >> 2)
 5
```



python3

```
>>> print(22 << 1)
```

python3

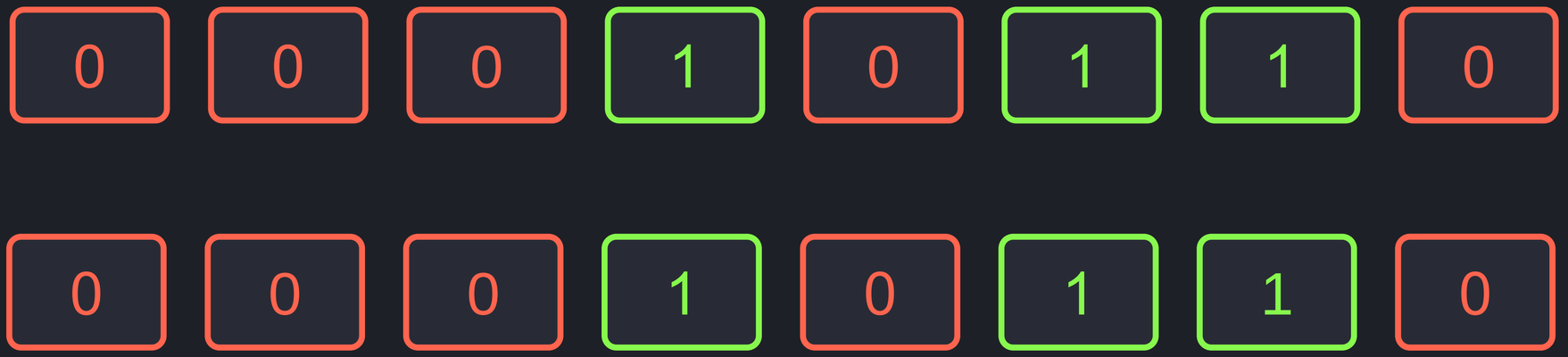
```
>>> print(22 << 1)
```

22

python3

```
>>> print(22 << 1)
```

22



python3

```
>>> print(22 << 1)
```

22

0	0	0	1	0	1	1	0

0	0	1	0	1	1	0	0

python3

```
>>> print(22 << 1)
```

python3

```
>>>  print(22 << 1)
```

```
print(22 // 2)
```

```
print(22 >> 1)
```

```
print(22 // 4)
```

```
print(22 >> 2)
```

```
print(22 * 2)
```

```
print(22 << 1)
```

```
print(22 * 4)
```

```
print(22 << 2)
```

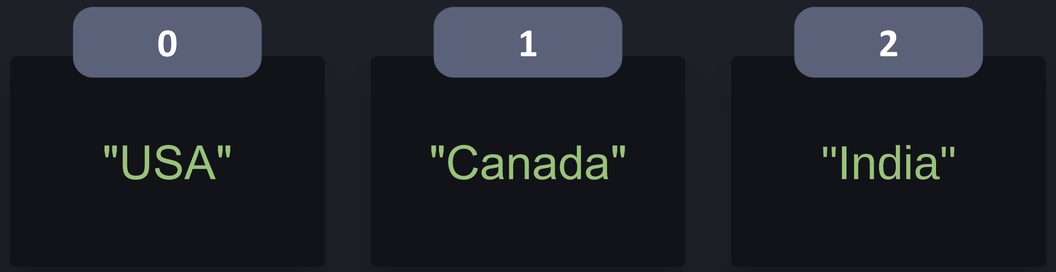
Operators

- Logical operators and not and or return boolean values based on the passed values
- Bitwise operators & | ^ and ~ allow us to manipulate single bits of data, and return 0 or 1 based on the value of the bits that are used
- Bit shifting can be done with the << and >> operators

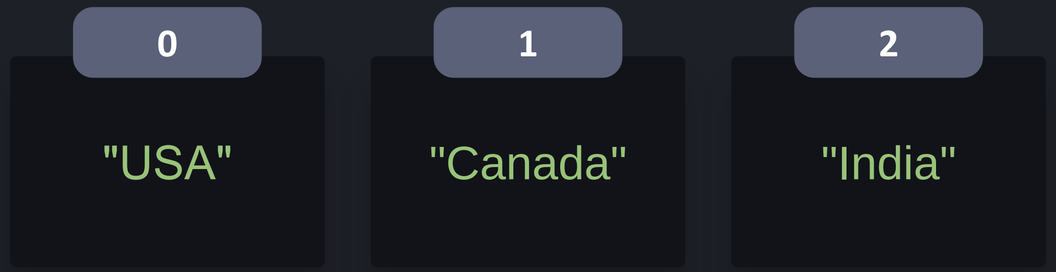
KodeKloud

Lists


python3
>>> countries = ["USA", "Canada", "India"]

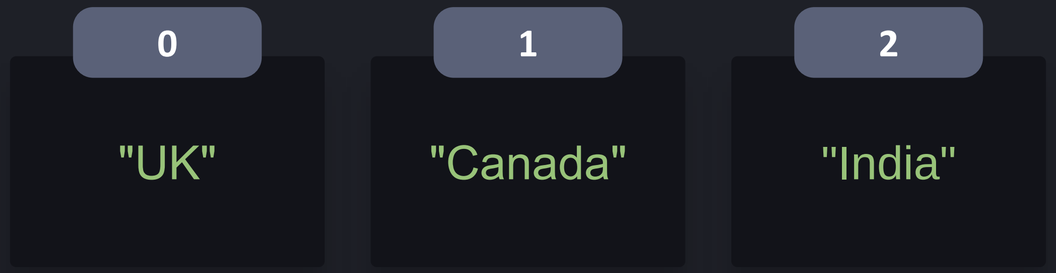

0
1
2
"USA"
"Canada"
"India"


python3
>>> countries = ["USA", "Canada", "India"]
>>> print(countries[0])
USA
>>> print(countries[1])
Canada
>>> print(countries[2])
India



python3

```
>>> countries = ["USA", "Canada", "India"]
>>> countries[0] = "UK"
```



python3

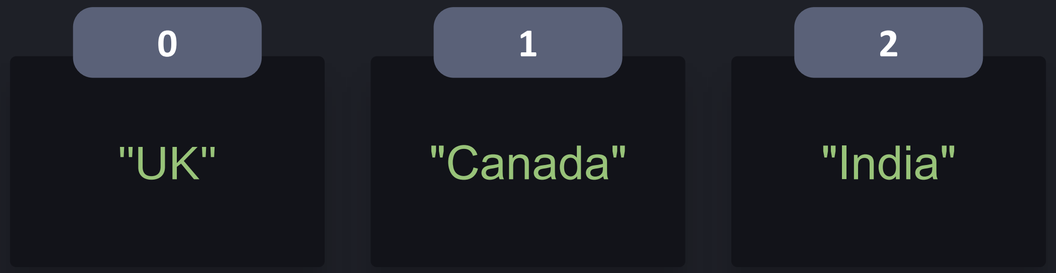
```
>>> countries = ["USA", "Canada", "India"]
>>> countries[0] = "UK"
```

len()

len()

python3

```
>>> countries = ["USA", "Canada", "India"]
>>> len(countries)
 3
```

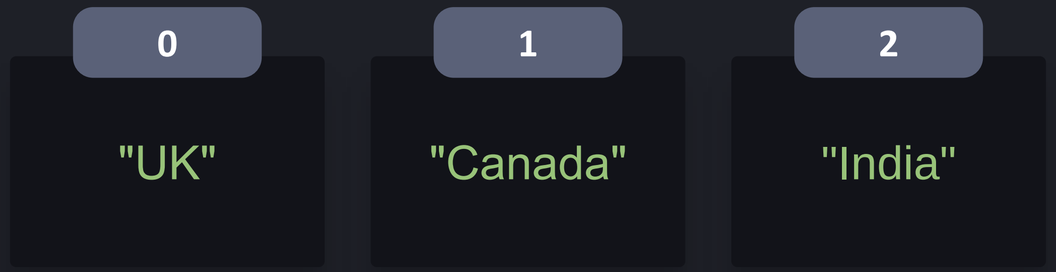


python3

```
>>> countries = ["USA", "Canada", "India"]
>>> del countries[1]
```

python3

```
>>> countries = ["USA", "Canada", "India"]
>>> del countries[1]
```



python3

```
>>> countries = ["USA", "Canada", "India"]
```

python3

```
>>> countries = ["USA", "Canada", "India"]
```

python3

```
>>> countries = ["USA", "Canada", "India"]
>>> print(countries[-1])
```

python3

```
>>> countries = ["USA", "Canada", "India"]
>>> print(countries[-1])
"India"
```

python3

```
>>> countries = ["USA", "Canada", "India"]
>>> print(countries[4])
IndexError: list index out of range
```

KodeKloud

Lists - Methods

list.append()

list.insert()

Functions

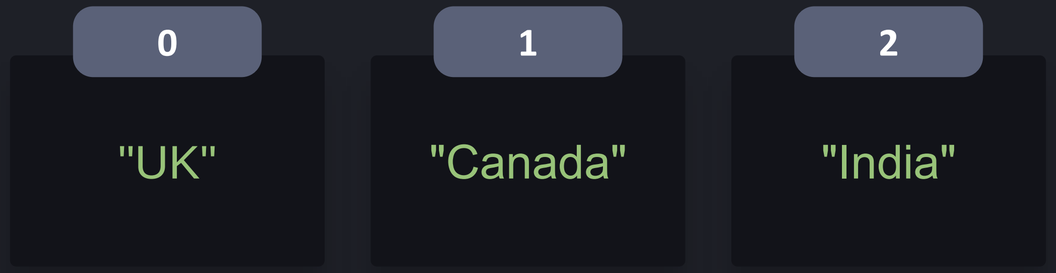
- print()
- len()
- input()

Methods

- *list*.append()
- *list*.insert()

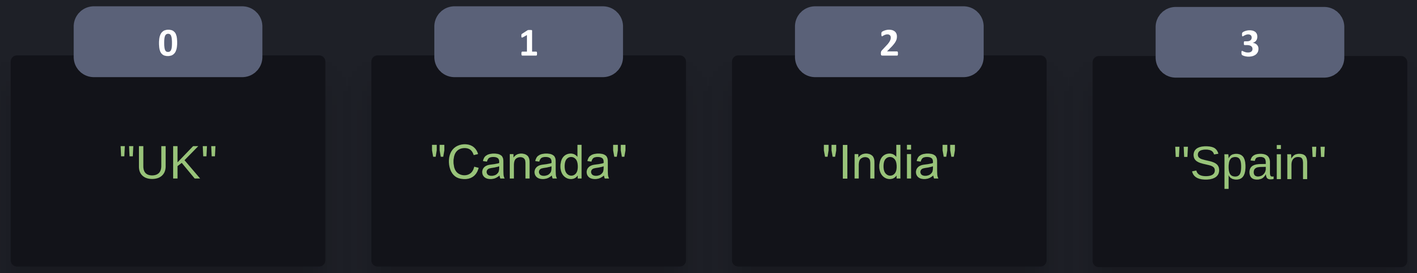
list.append()

list.insert()



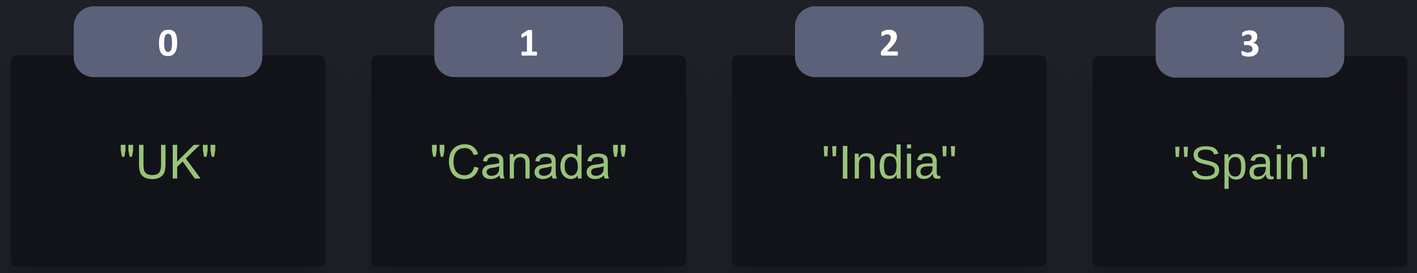
python3

```
>>> countries = ["USA", "Canada", "India"]
>>> countries.append("Spain")
```



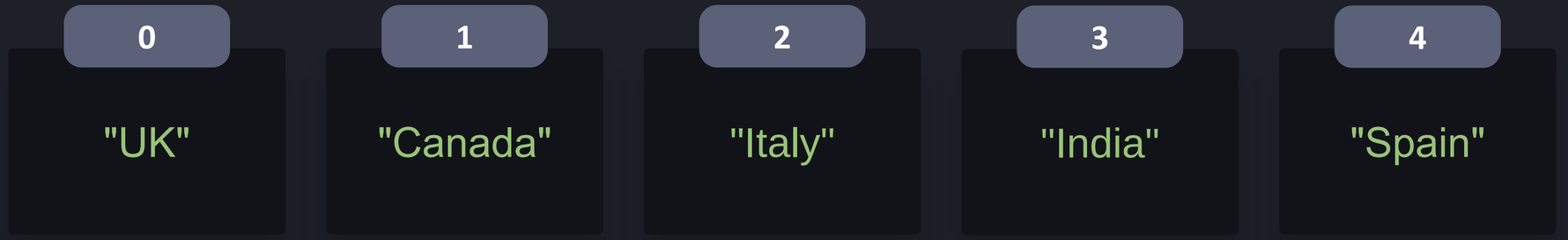
python3

```
>>> countries = ["USA", "Canada", "India"]
>>> countries.append("Spain")
```



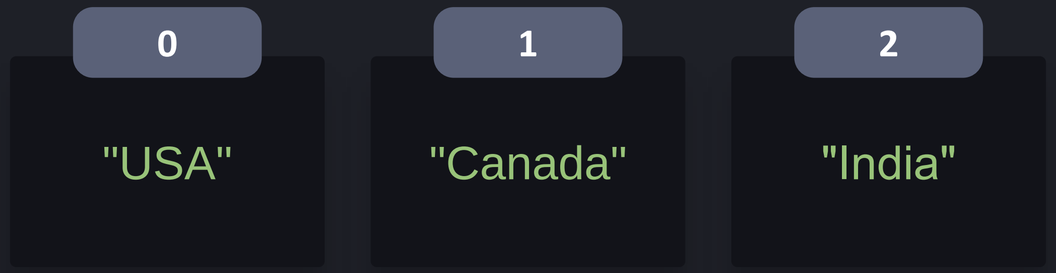
python3

```
>>> countries = ["USA", "Canada", "India"]
>>> countries.append("Spain")
>>> countries.insert(2, "Italy")
```



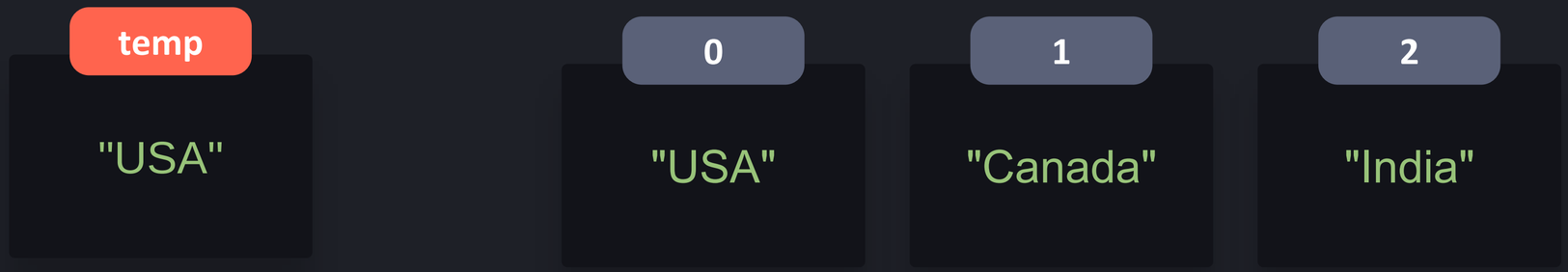
python3

```
>>> countries = ["USA", "Canada", "India"]
>>> countries.append("Spain")
>>> countries.insert(2, "Italy")
```



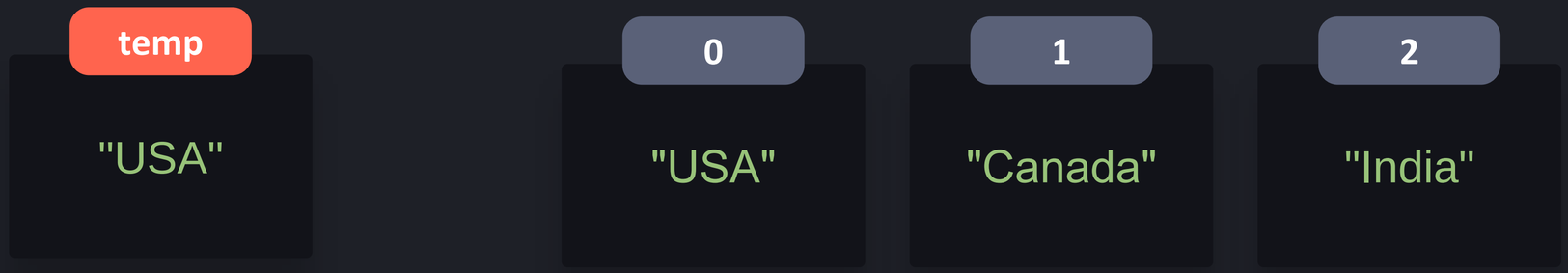
python3

```
>>> countries = ["USA", "Canada", "India"]
```



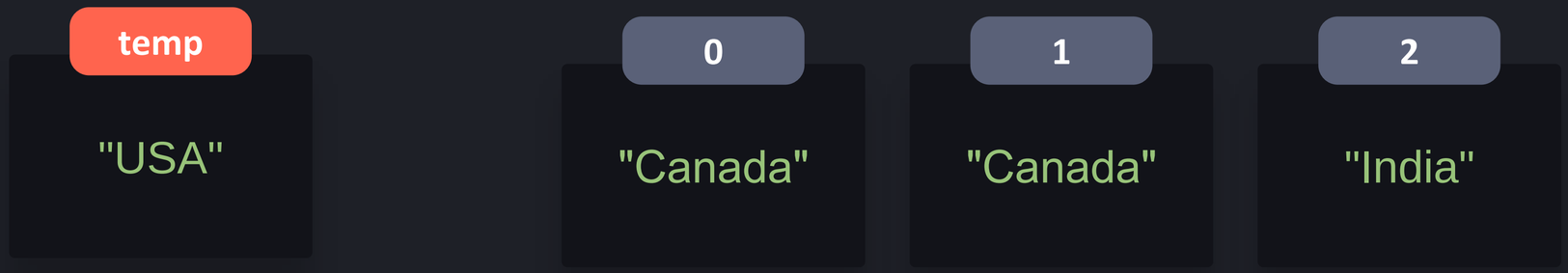
python3

```
>>> countries = ["USA", "Canada", "India"]
>>> temp = countries[0]
```



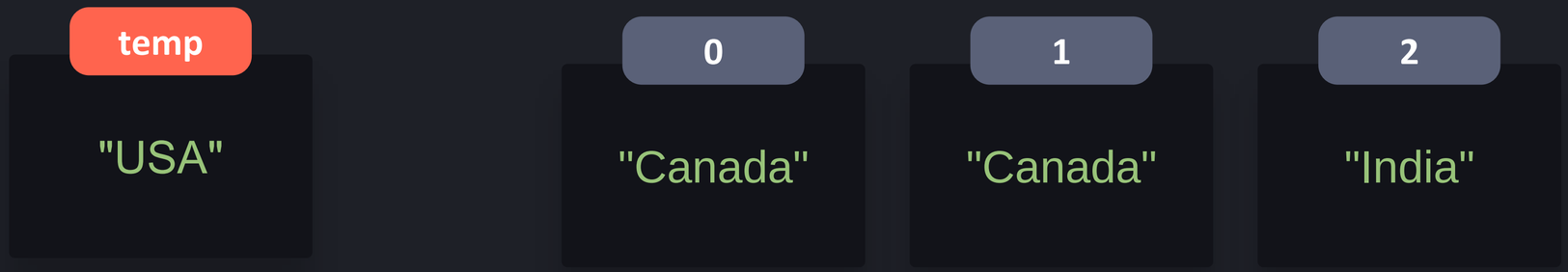
python3

```
>>> countries = ["USA", "Canada", "India"]
>>> temp = countries[0]
>>> countries[0] = countries[1]
```



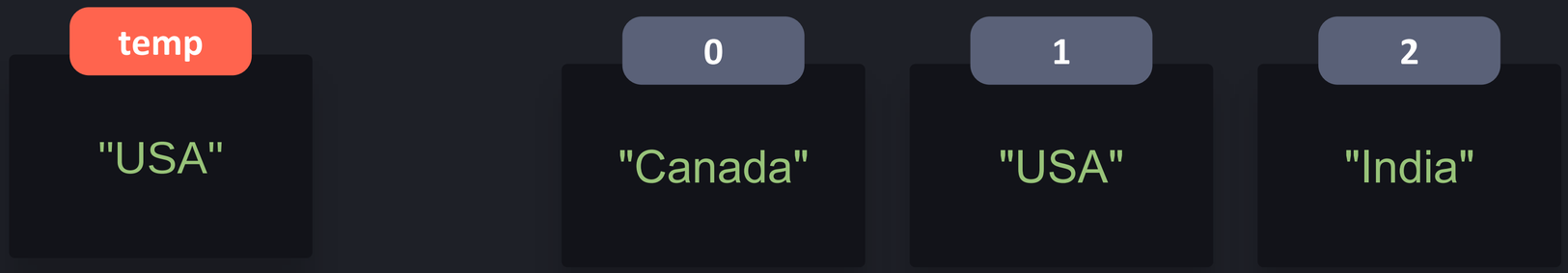
python3

```
>>> countries = ["USA", "Canada", "India"]
>>> temp = countries[0]
>>> countries[0] = countries[1]
```



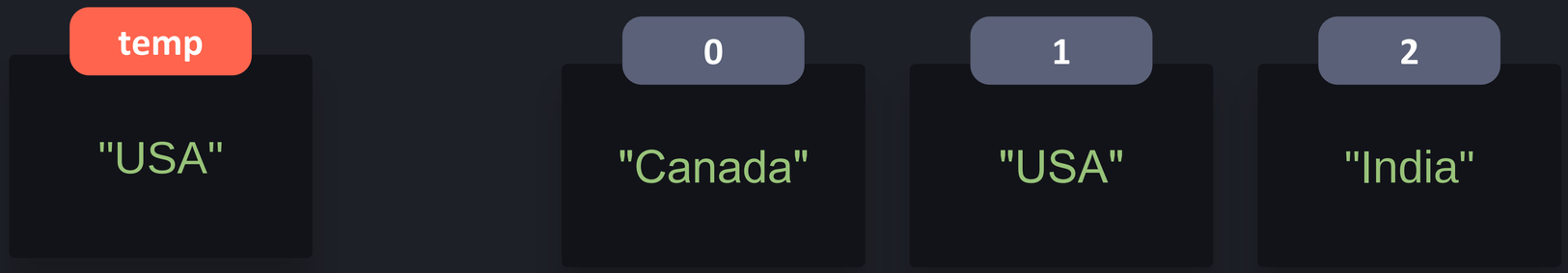
python3

```
>>> countries = ["USA", "Canada", "India"]
>>> temp = countries[0]
>>> countries[0] = countries[1]
>>> countries[1] = temp
```



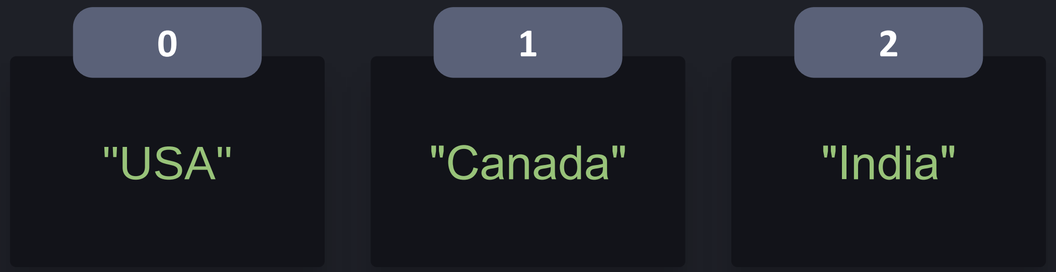
python3

```
>>> countries = ["USA", "Canada", "India"]
>>> temp = countries[0]
>>> countries[0] = countries[1]
>>> countries[1] = temp
```



python3

```
>>> countries = ["USA", "Canada", "India"]
>>> temp = countries[0]
>>> countries[0] = countries[1]
>>> countries[1] = temp
```



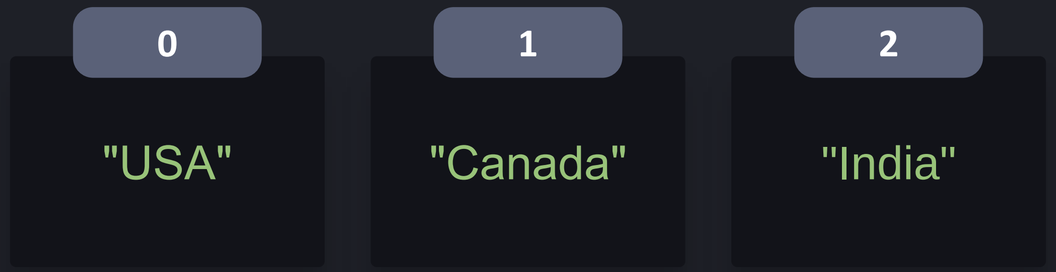
python3

```
>>> countries = ["USA", "Canada", "India"]
>>> countries[0], countries[1] = countries[1], countries[0]
```

python3

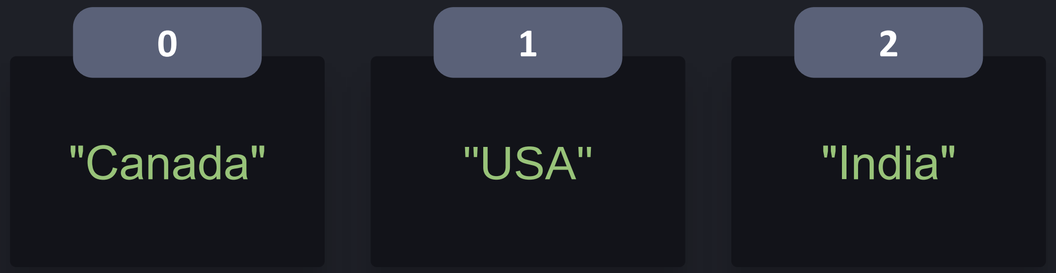
```
countries[0], countries[1] = countries[1], countries[0]
```

```
>>> countries = ["USA", "Canada", "India"]
>>>
```



python3

```
>>> countries = ["USA", "Canada", "India"]
>>> countries[0], countries[1] = countries[1], countries[0]
```



python3

```
>>> countries = ["USA", "Canada", "India"]
>>> countries[0], countries[1] = countries[1], countries[0]
```

```
list.sort()
```

```
list.reverse()
```

python3

```
>>> ages = [56, 72, 24, 46]
>>> ages.sort()
```

python3

```
>>> ages = [56, 72, 24, 46]
>>> ages.sort()
>>> print(ages)
```

python3

```
>>> ages = [56, 72, 24, 46]
>>> ages.sort()
>>> print(ages)
[24, 46, 56, 72]
```

python3

```
>>> ages = [56, 72, 24, 46]
>>> ages.reverse()
```

python3

```
>>> ages = [56, 72, 24, 46]
>>> ages.reverse()
>>> print(ages)
```

python3

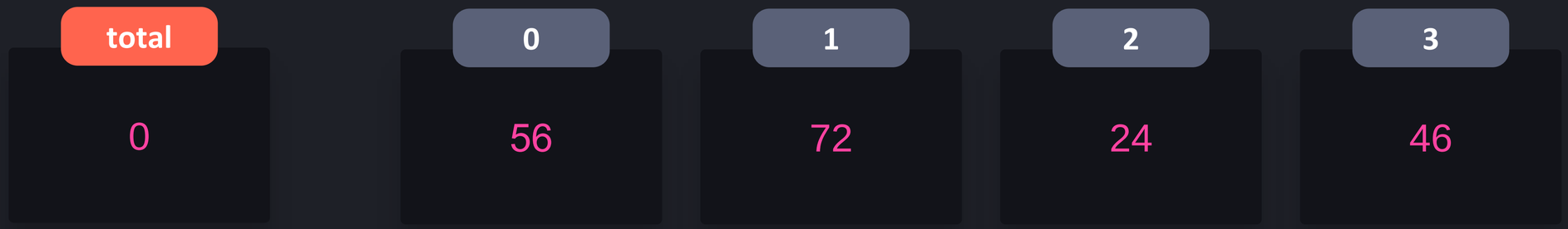
```
>>> ages = [56, 72, 24, 46]
>>> ages.reverse()
>>> print(ages)
[46, 24, 72, 56]
```

KodeKloud

Iterating Lists

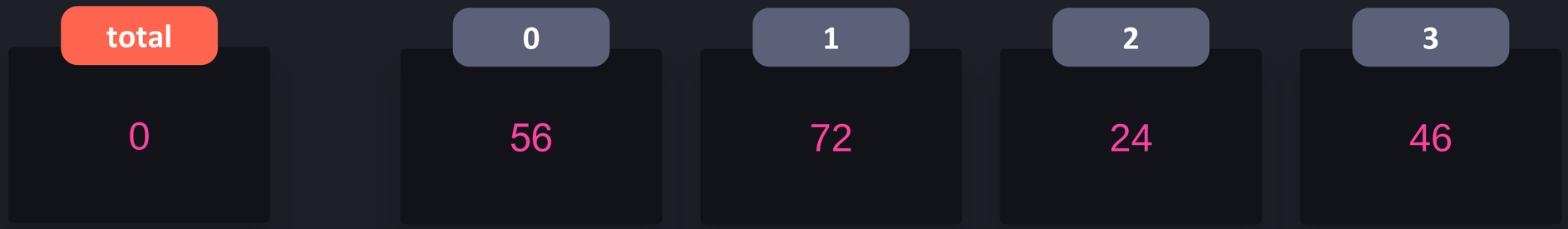
python3

```
>>> ages = [56, 72, 24, 46]
```



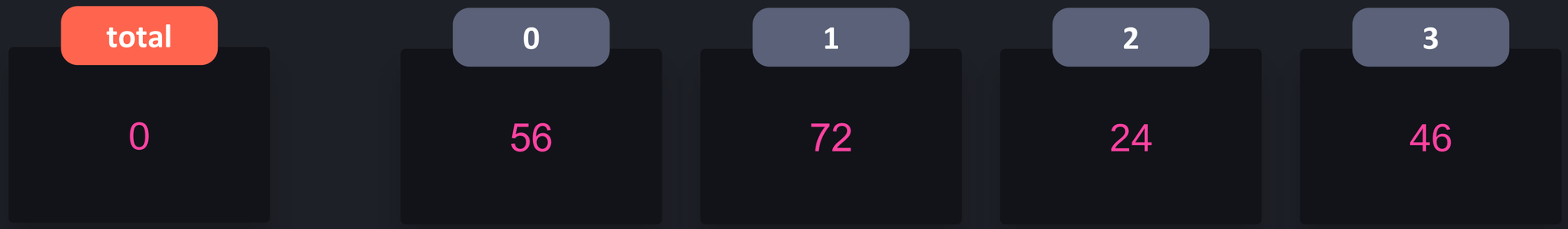
python3

```
>>> ages = [56, 72, 24, 46]
>>> total = 0
```



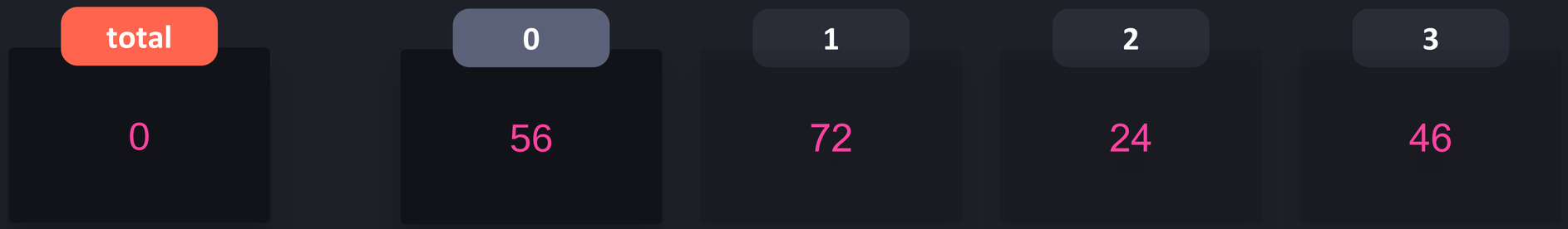
python3

```
>>> ages = [56, 72, 24, 46]
>>> total = 0
>>> for age in ages:
        total += age
```



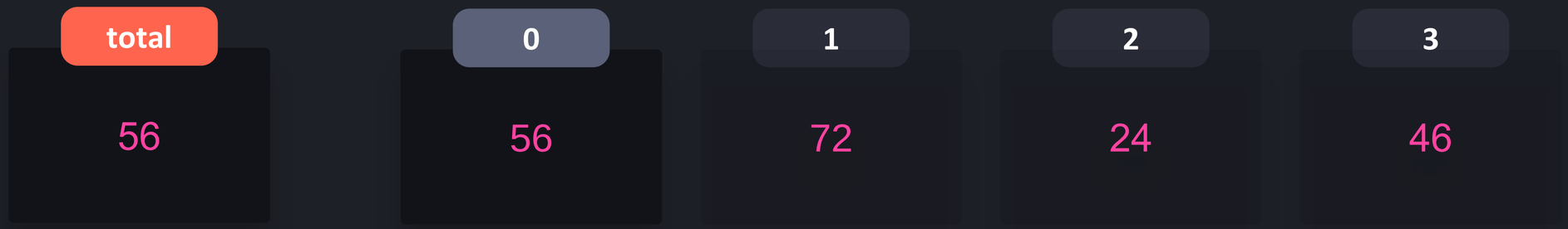
python3

```
>>> ages = [56, 72, 24, 46]
>>> total = 0
>>> for age in ages:
        total += age
```



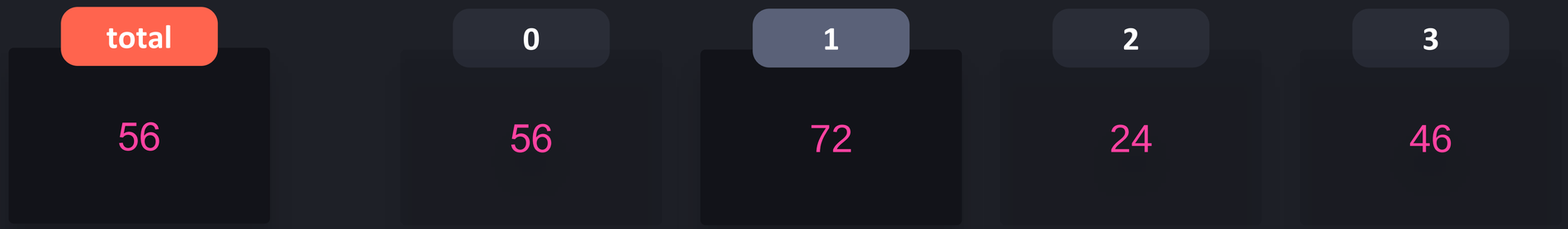
python3

```
>>> ages = [56, 72, 24, 46]
>>> total = 0
>>> for age in ages:
        total += age
```



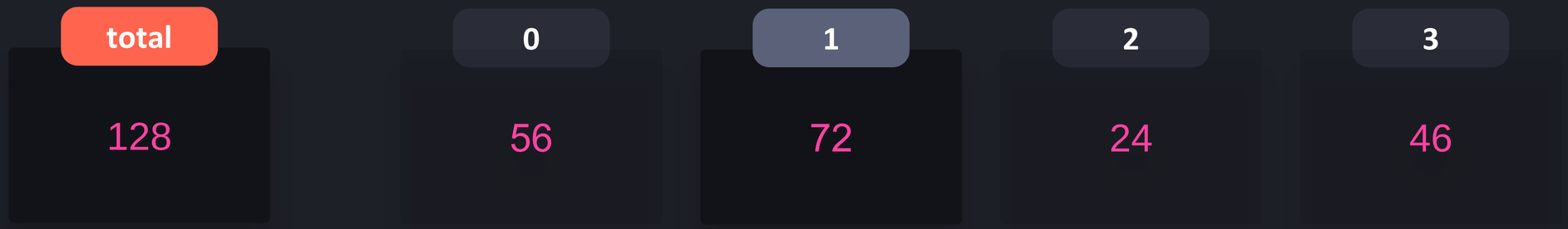
python3

```
>>> ages = [56, 72, 24, 46]
>>> total = 0
>>> for age in ages:
        total += age
```



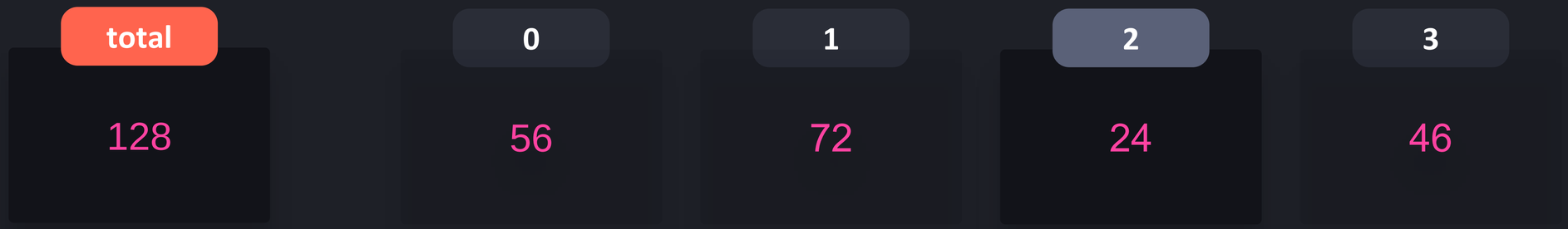
python3

```
>>> ages = [56, 72, 24, 46]
>>> total = 0
>>> for age in ages:
        total += age
```



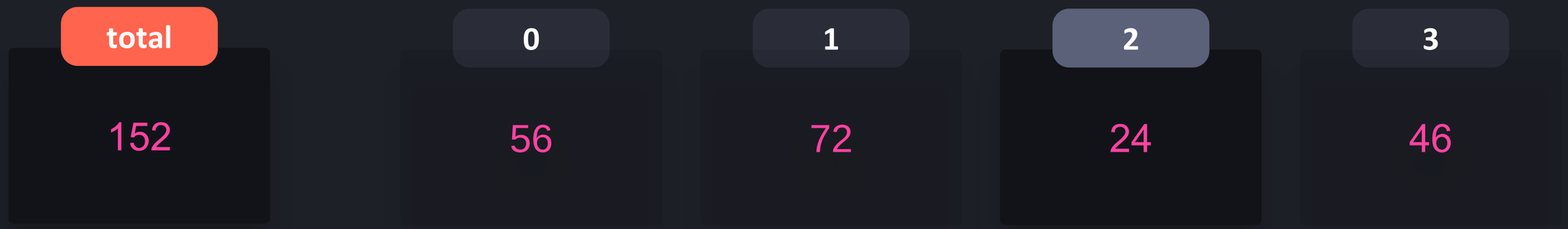
python3

```
>>> ages = [56, 72, 24, 46]
>>> total = 0
>>> for age in ages:
        total += age
```



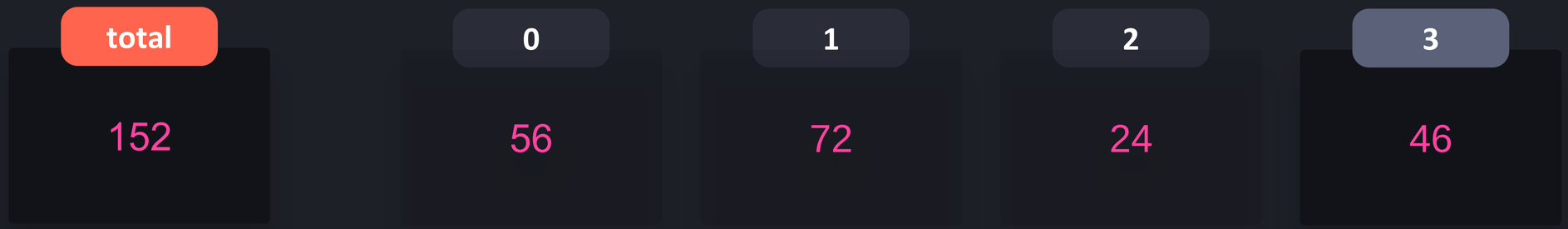
python3

```
>>> ages = [56, 72, 24, 46]
>>> total = 0
>>> for age in ages:
        total += age
```



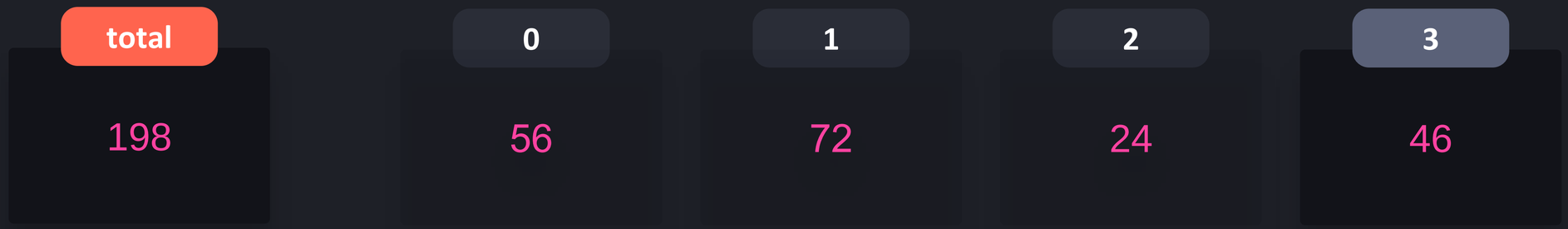
python3

```
>>> ages = [56, 72, 24, 46]
>>> total = 0
>>> for age in ages:
        total += age
```



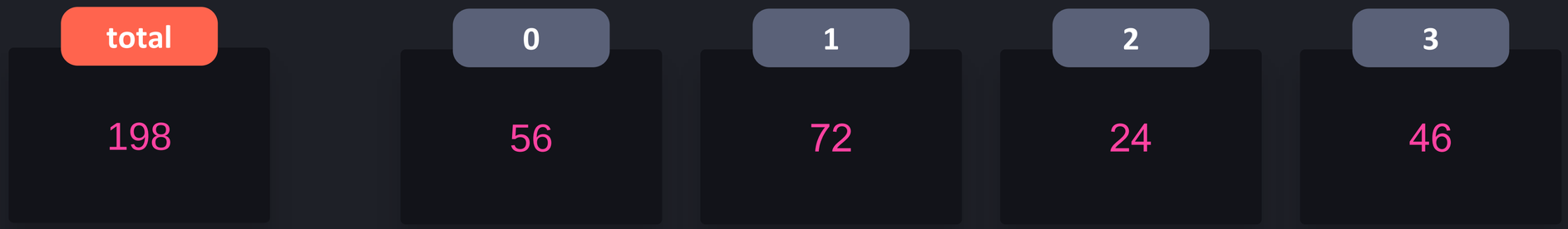
python3

```
>>> ages = [56, 72, 24, 46]
>>> total = 0
>>> for age in ages:
        total += age
```



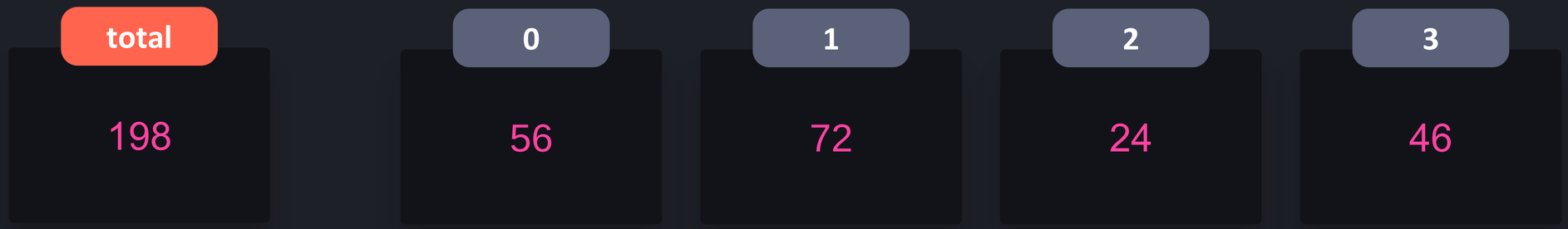
python3

```
>>> ages = [56, 72, 24, 46]
>>> total = 0
>>> for age in ages:
        total += age
```



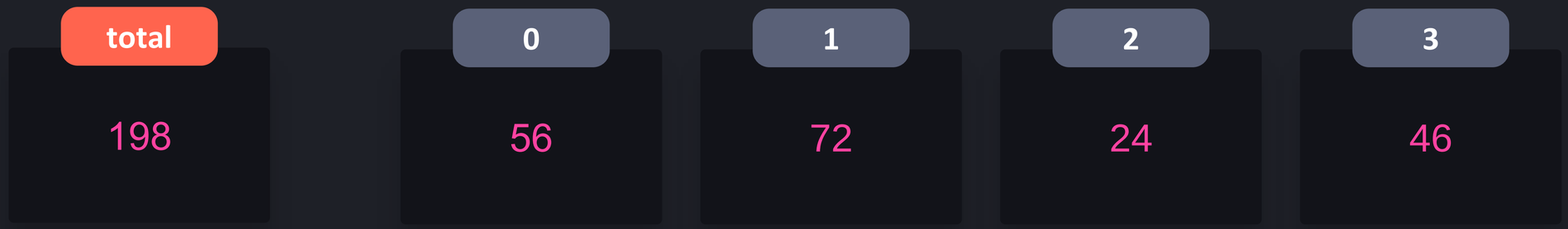
python3

```
>>> ages = [56, 72, 24, 46]
>>> total = 0
>>> for age in ages:
        total += age
```



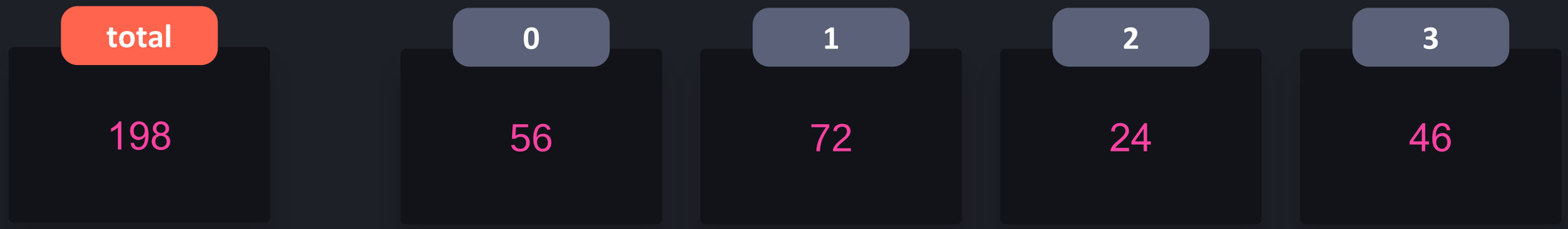
python3

```
>>> ages = [56, 72, 24, 46]
>>> total = 0
>>> for age in ages:
        total += age
```



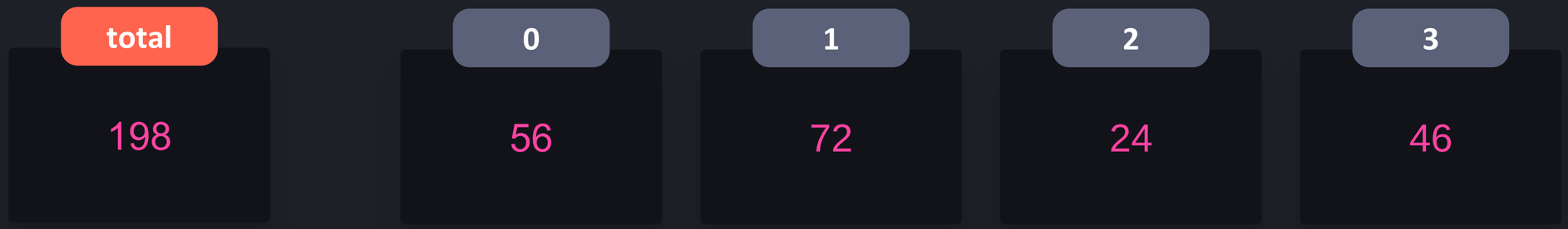
python3

```
>>> ages = [56, 72, 24, 46]
>>> total = 0
>>> for age in ages:
        total += age
>>> average = total / len(ages)
```



python3

```
>>> ages = [56, 72, 24, 46]
>>> total = 0
>>> for age in ages:
        total += age
>>> average = total / len(ages)
>>> print(average)
```

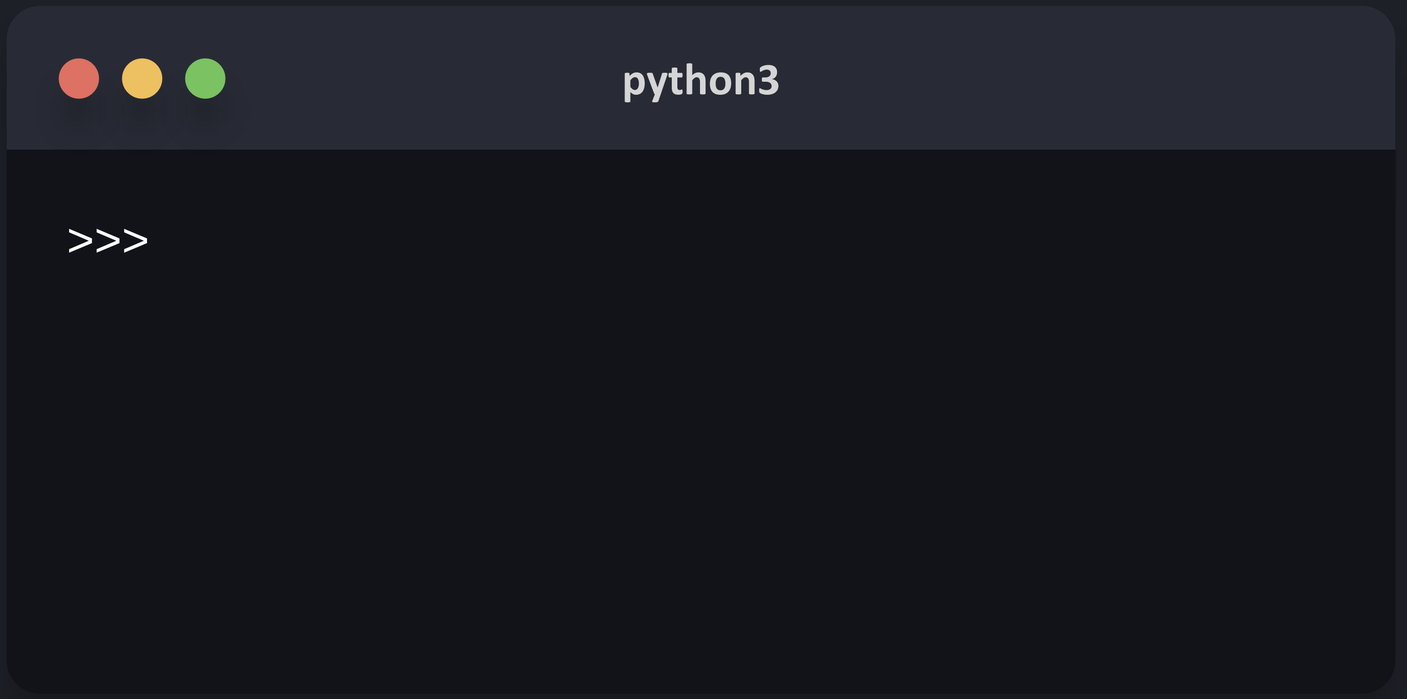


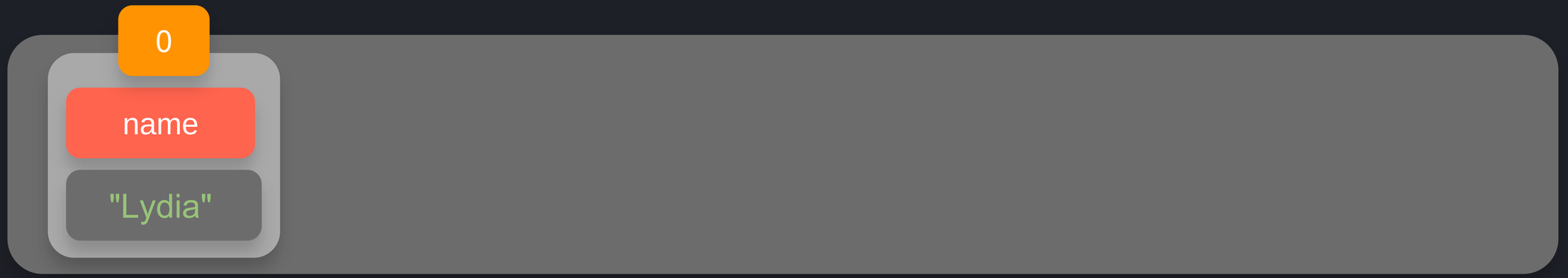
python3

```
>>> ages = [56, 72, 24, 46]
>>> total = 0
>>> for age in ages:
        total += age
>>> average = total / len(ages)
>>> print(average)
 49.5
```

KodeKloud

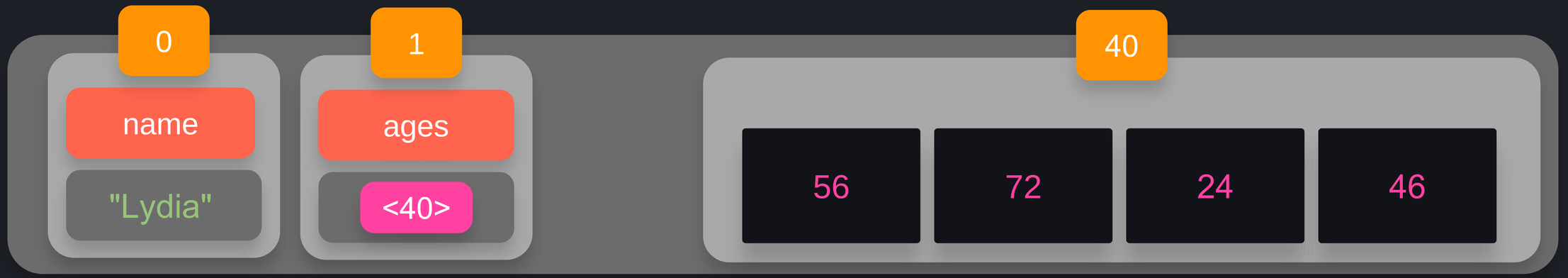
Understanding Lists


python3
>>>



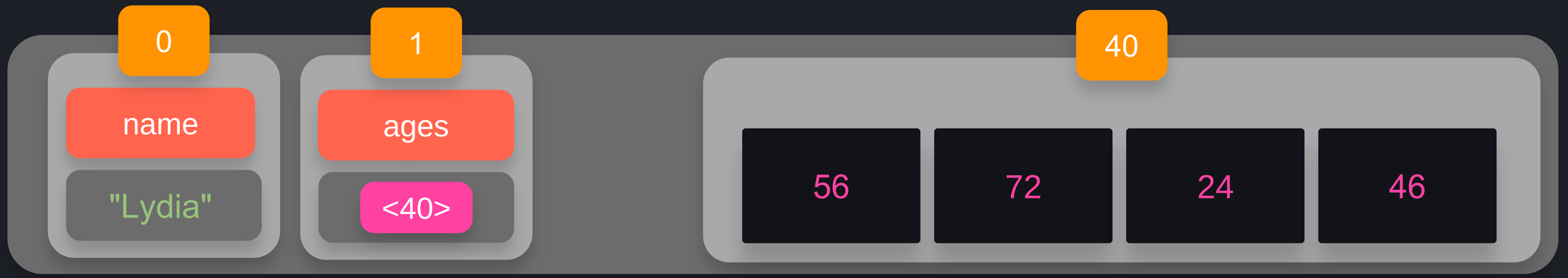
python3

```
>>> name = "Lydia"
```



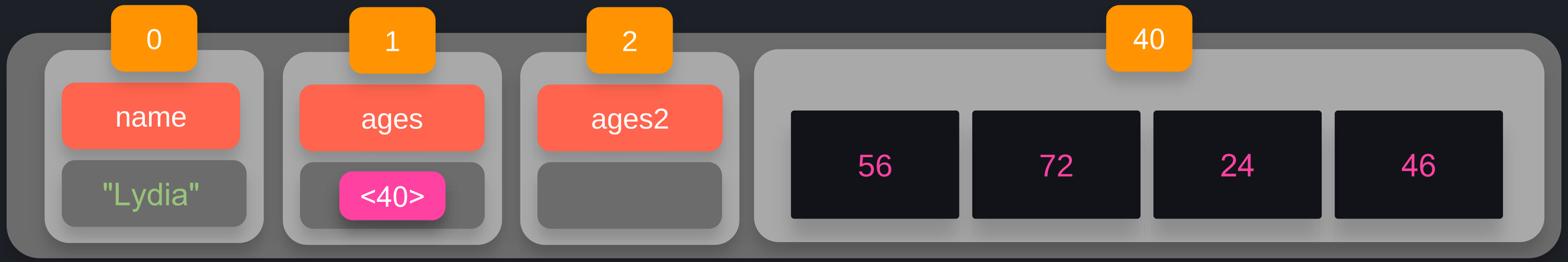
python3

```
>>> name = "Lydia"
>>> ages = [56, 72, 24, 46]
```



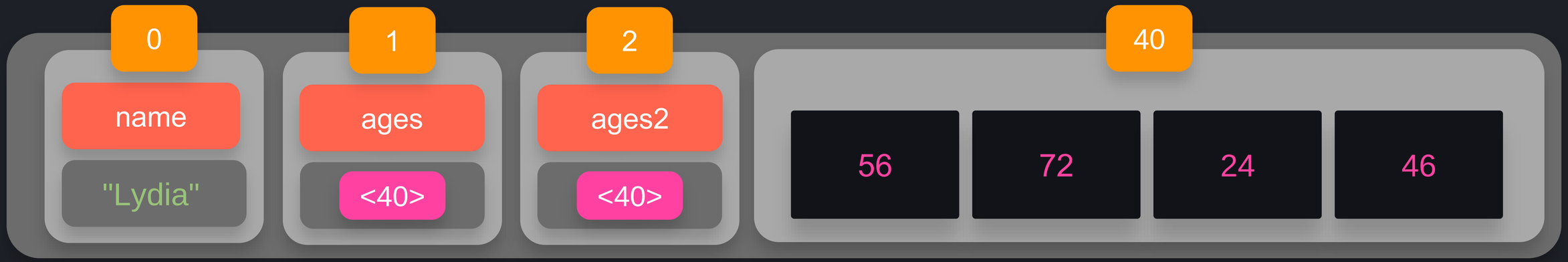
python3

```
>>> name = "Lydia"
>>> ages = [56, 72, 24, 46]
>>> ages2 = ages
```



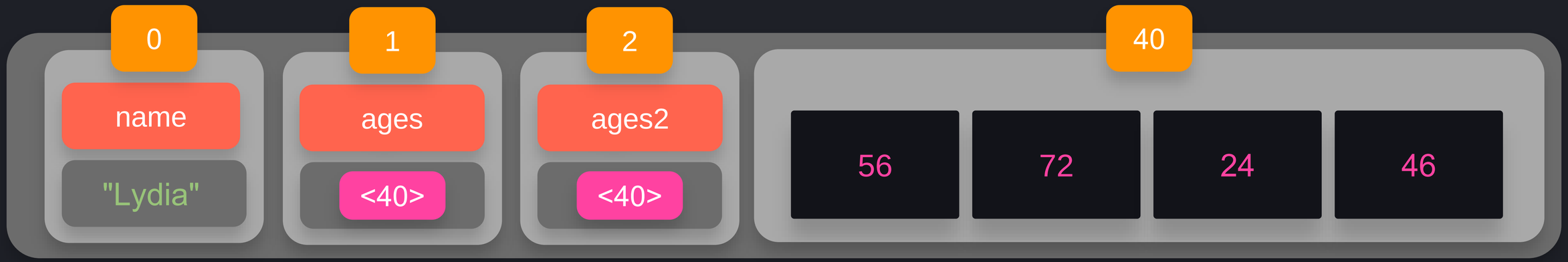
python3

```
>>> name = "Lydia"
>>> ages = [56, 72, 24, 46]
>>> ages2 = ages
```



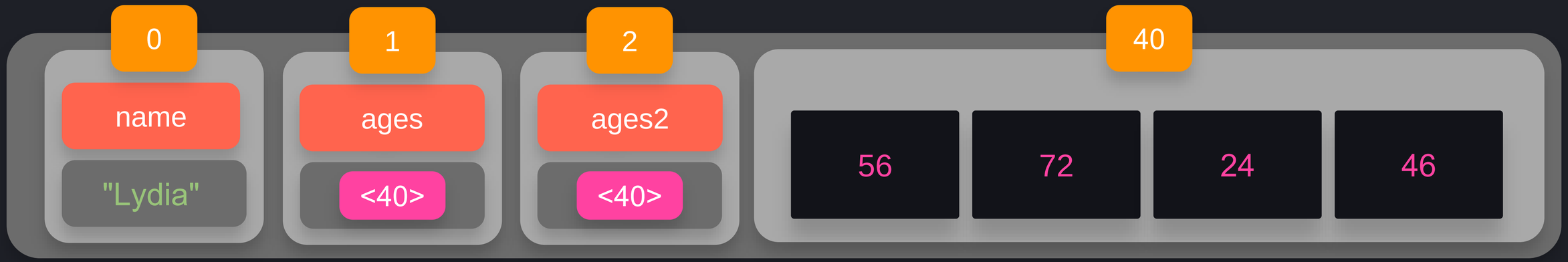
python3

```
>>> name = "Lydia"
>>> ages = [56, 72, 24, 46]
>>> ages2 = ages
```



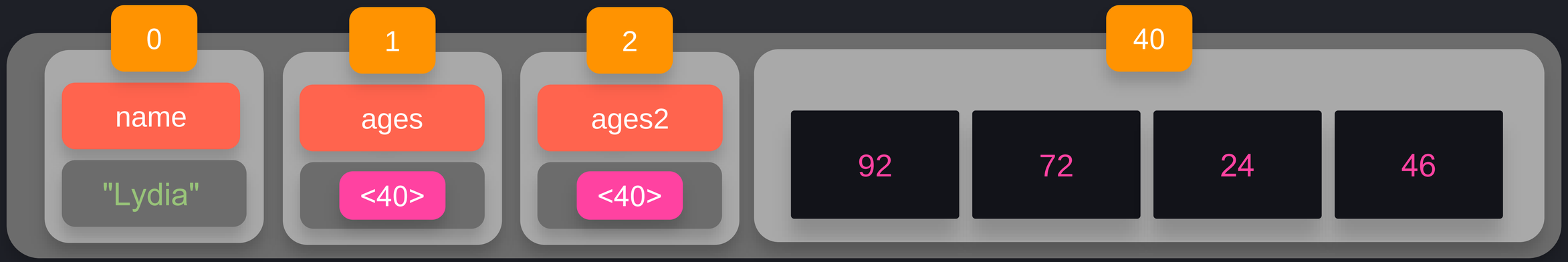
python3

```
>>> name = "Lydia"
>>> ages = [56, 72, 24, 46]
>>> ages2 = ages
```



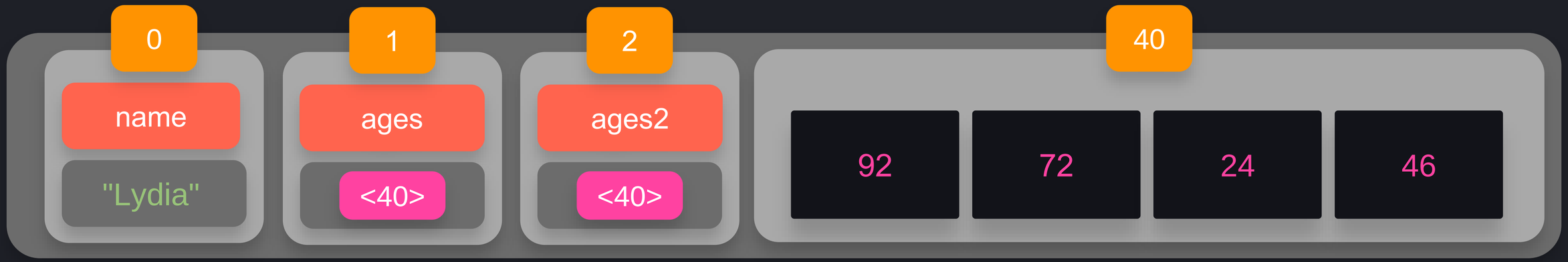
python3

```
>>> name = "Lydia"
>>> ages = [56, 72, 24, 46]
>>> ages2 = ages
>>> ages[0] = 92
```



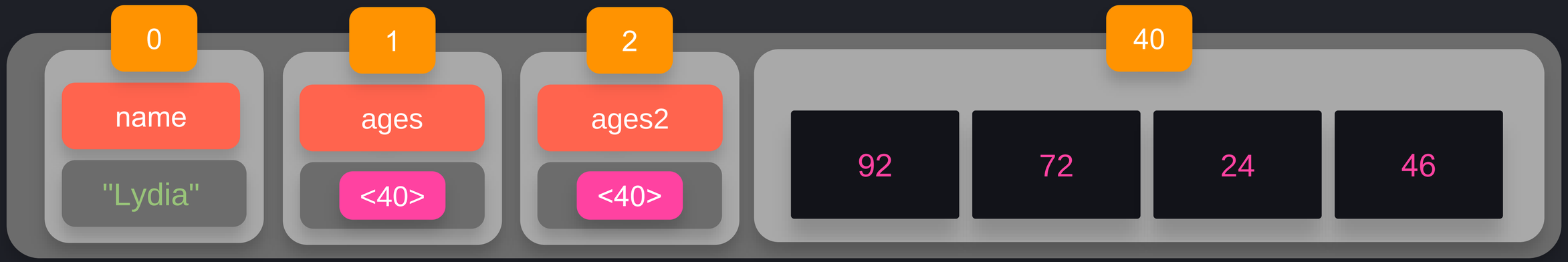
python3

```
>>> name = "Lydia"
>>> ages = [56, 72, 24, 46]
>>> ages2 = ages
>>> ages[0] = 92
```



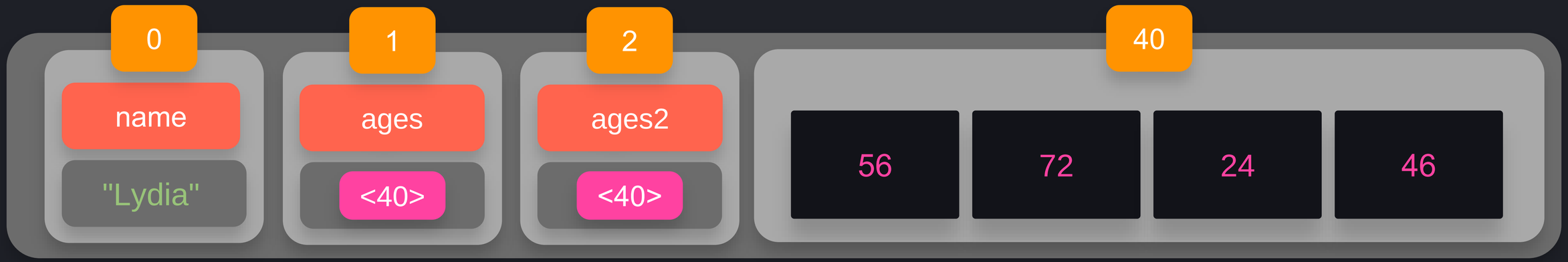
python3

```
>>> name = "Lydia"
>>> ages = [56, 72, 24, 46]
>>> ages2 = ages
>>> ages[0] = 92
>>> print(ages2[0])
```



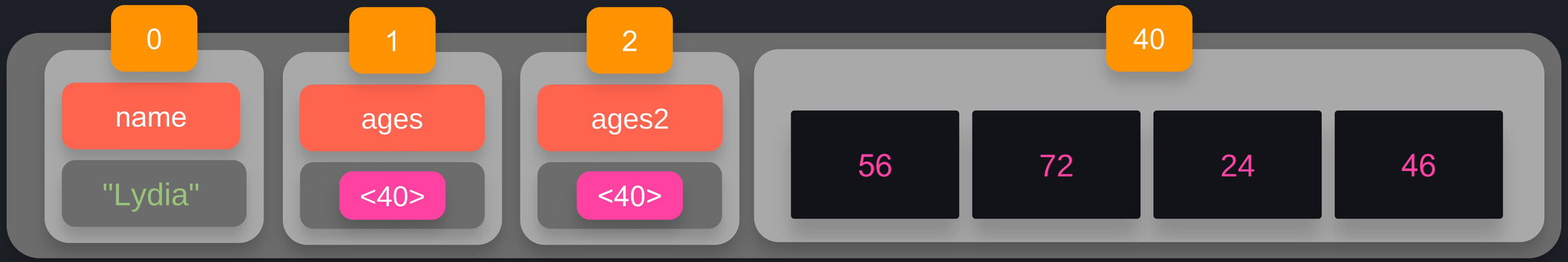
python3

```
>>> name = "Lydia"
>>> ages = [56, 72, 24, 46]
>>> ages2 = ages
>>> ages[0] = 92
>>> print(ages2[0])
92
```



python3

```
>>> name = "Lydia"
>>> ages = [56, 72, 24, 46]
```



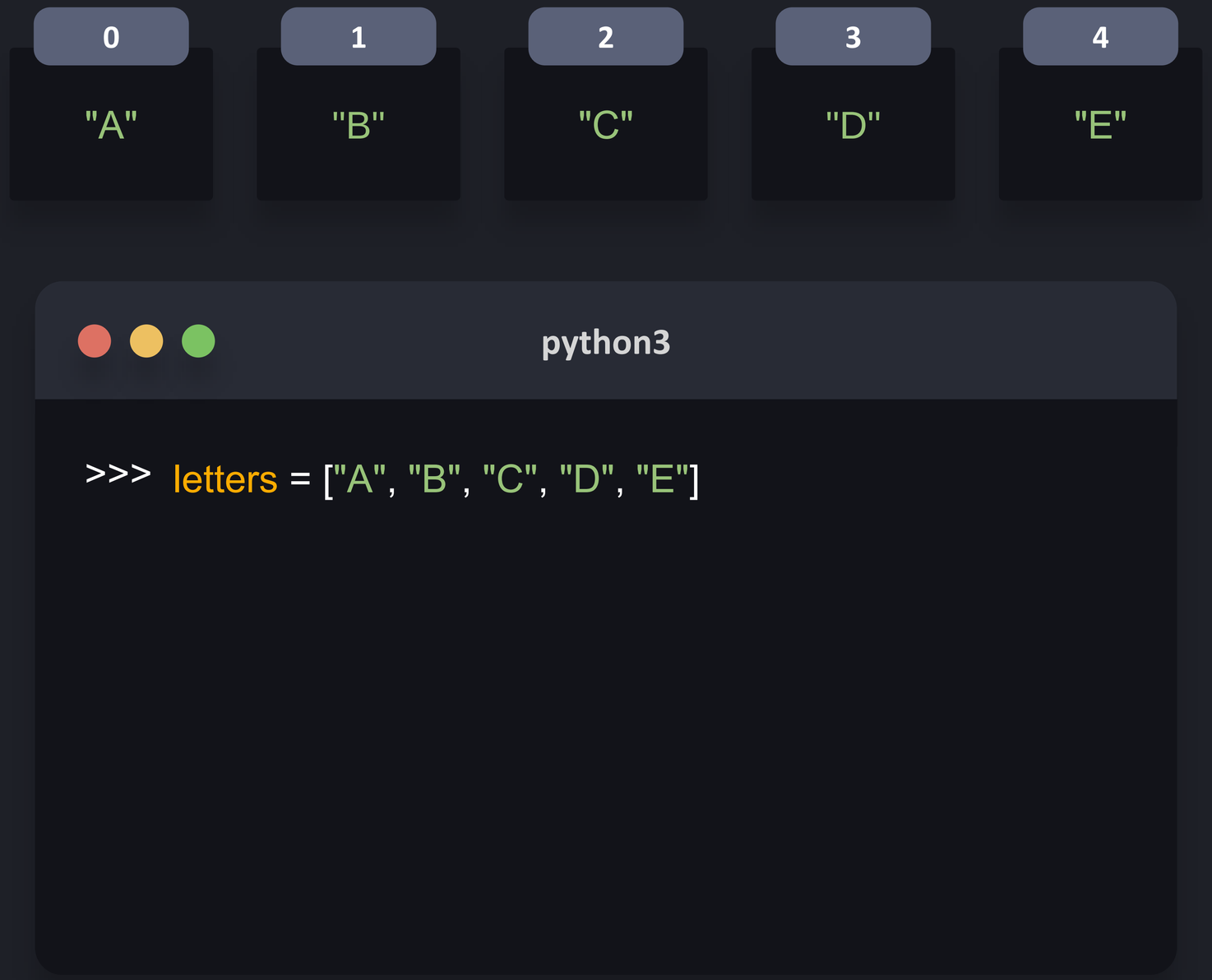
python3

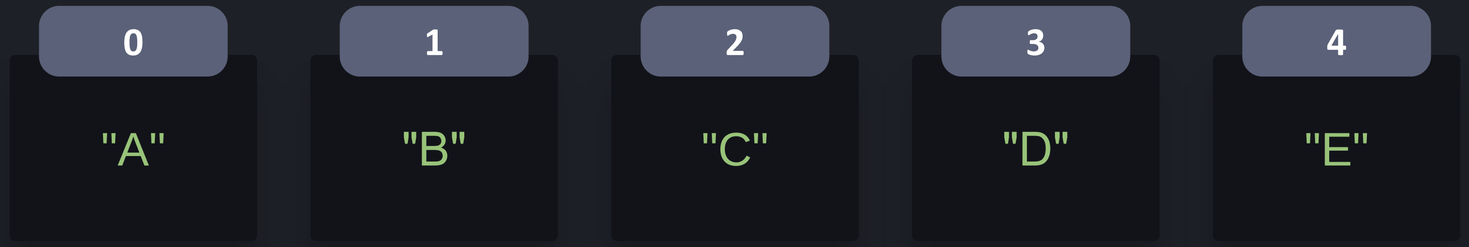
```
>>> name = "Lydia"
>>> ages = [56, 72, 24, 46]
```

KodeKloud

Slicing Lists

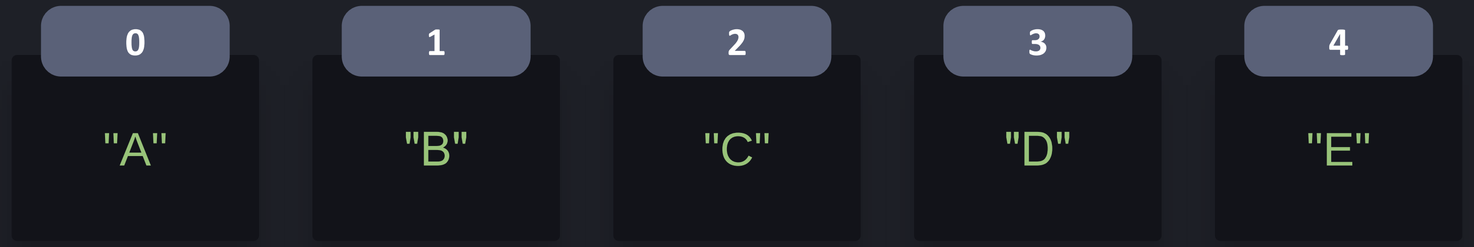
```
list[start:end]
```


0
1
2
3
4
"A"
"B"
"C"
"D"
"E"
python3
>>> letters = ["A", "B", "C", "D", "E"]



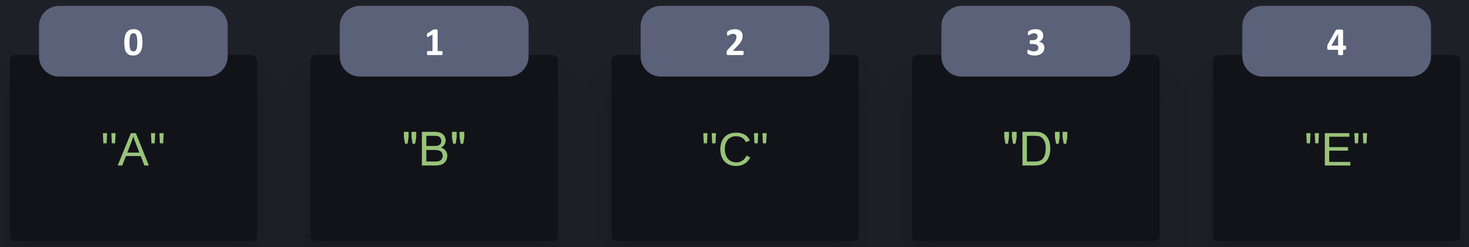
python3

```
>>> letters = ["A", "B", "C", "D", "E"]
>>> firstTwo = letters[0:2]
```



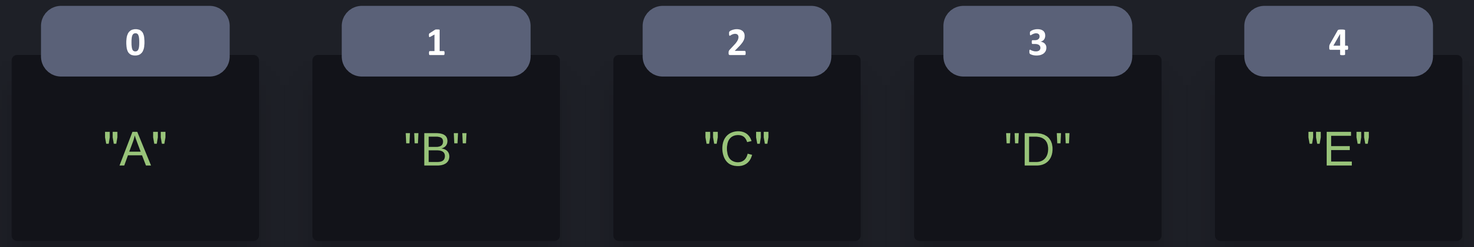
python3

```
>>>  letters = ["A", "B", "C", "D", "E"]
>>>  firstTwo = letters[0:2]
>>>   print(firstTwo)
 ["A", "B"       ]
```



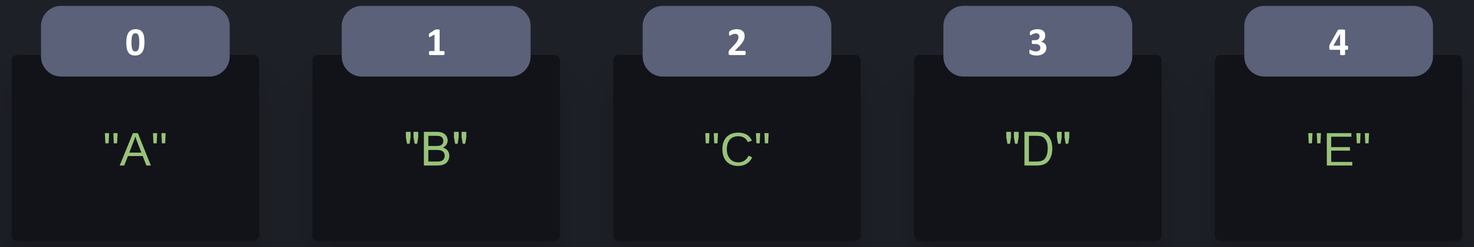
python3

```
>>> letters = ["A", "B", "C", "D", "E"]
>>> firstTwo = letters[0:2]
>>> print(firstTwo)
["A", "B"       ]
>>> print(letters[1:])
```



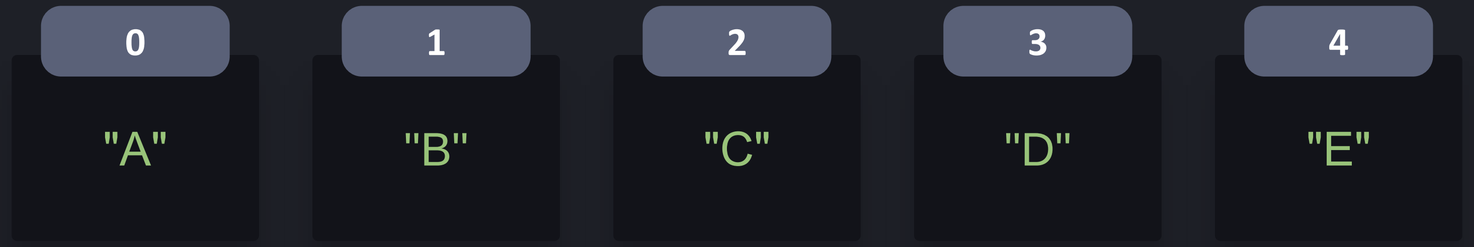
python3

```
>>> letters = ["A", "B", "C", "D", "E"]
>>> firstTwo = letters[0:2]
>>> print(firstTwo)
["A", "B"       ]
>>> print(letters[1:])
["B", "C", "D", "E"]
```



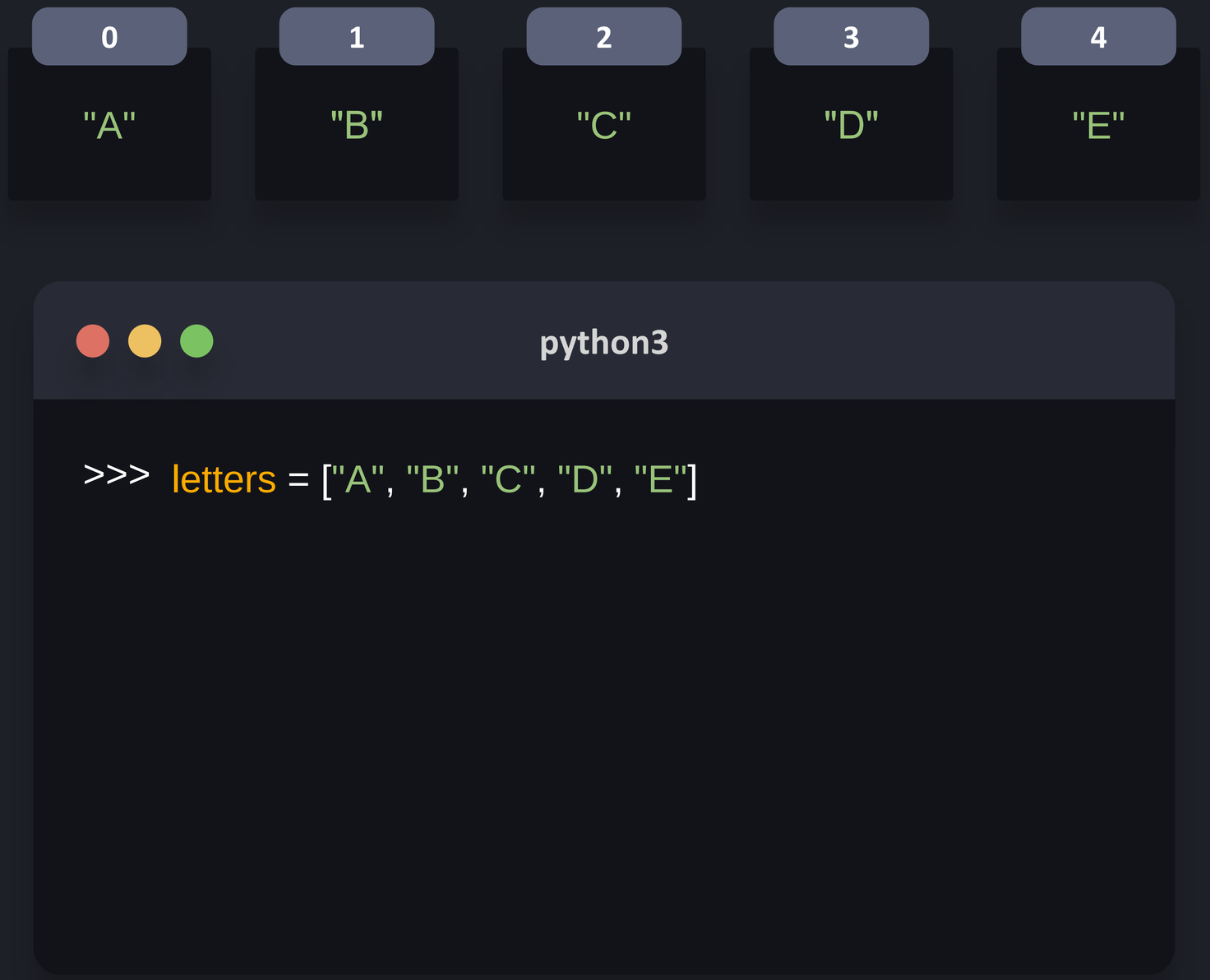
python3

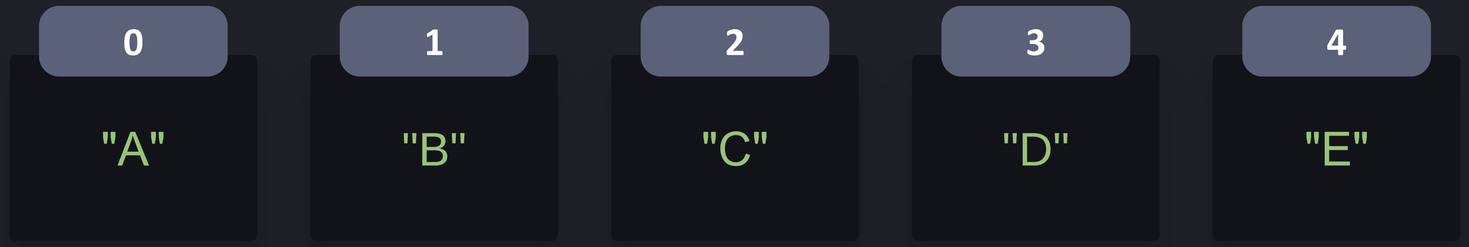
```
>>> letters = ["A", "B", "C", "D", "E"]
>>> firstTwo = letters[0:2]
>>> print(firstTwo)
["A", "B"       ]
>>> print(letters[1:])
["B", "C", "D", "E"]
>>> print(letters[:3])
```



python3

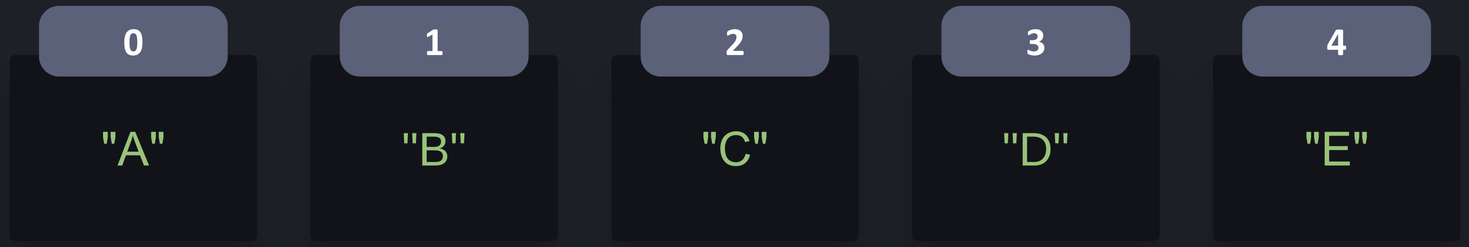
```
>>> letters = ["A", "B", "C", "D", "E"]
>>> firstTwo = letters[0:2]
>>> print(firstTwo)
["A", "B"       ]
>>> print(letters[1:])
["B", "C", "D", "E"]
>>> print(letters[:3])
["A", "B", "C"]
```


0
1
2
3
4
"A"
"B"
"C"
"D"
"E"
python3
>>> letters = ["A", "B", "C", "D", "E"]



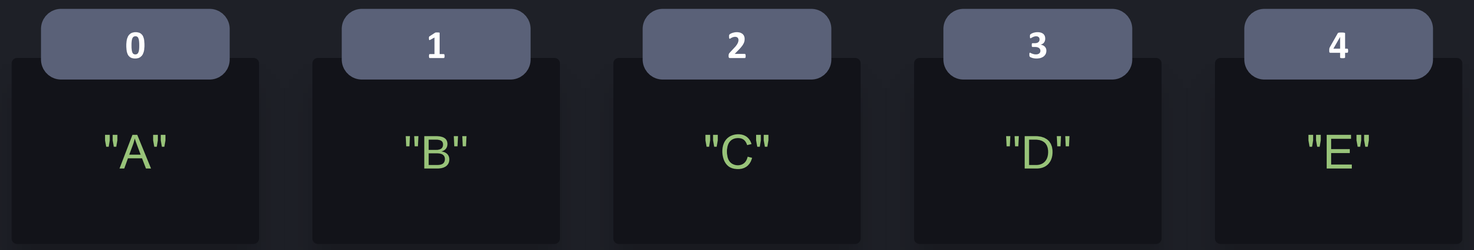
python3

```
>>> letters = ["A", "B", "C", "D", "E"]
>>> print(letters[1:-1])
['B', 'C', 'D']
```



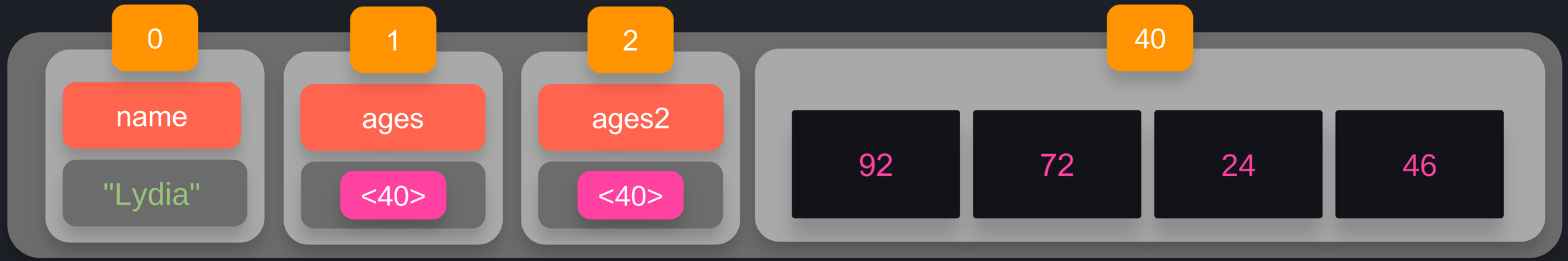
python3

```
>>> letters = ["A", "B", "C", "D", "E"]
>>> print(letters[:])
```



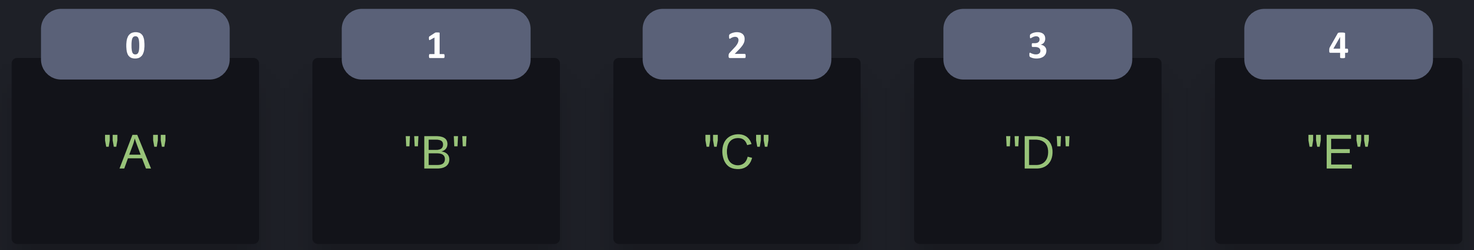
python3

```
>>> letters = ["A", "B", "C", "D", "E"]
>>> print(letters[:])
["A", "B", "C", "D", "E"]
```



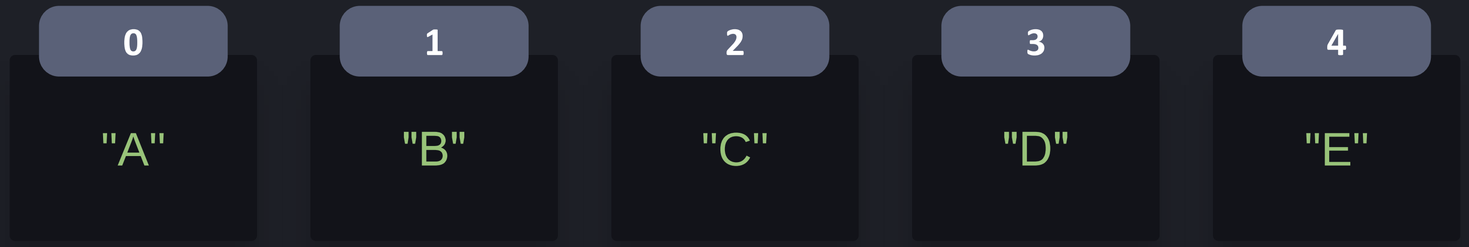
python3

```
>>> name = "Lydia"
>>> ages = [56, 72, 24, 46]
>>> ages2 = ages
>>> ages[0] = 92
>>> print(ages2[0])
92
```



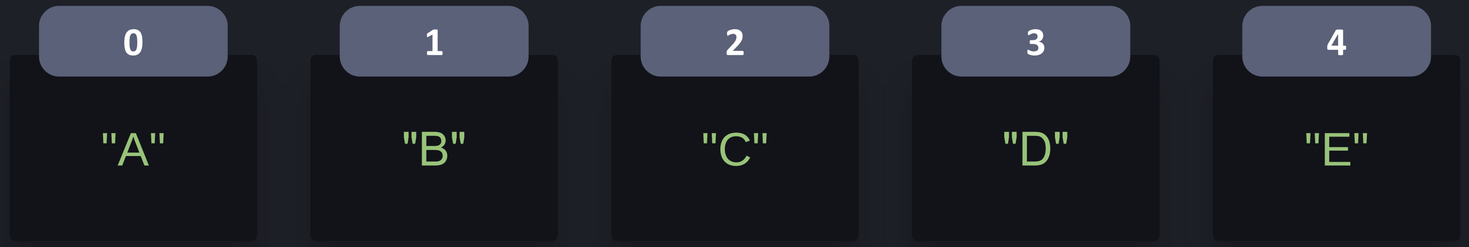
python3

```
>>> letters = ["A", "B", "C", "D", "E"]
>>> print(letters[:])
["A", "B", "C", "D", "E"]
```



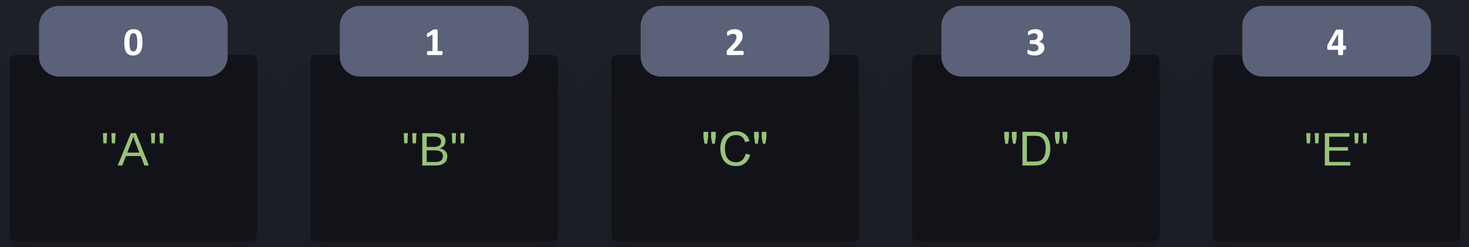
python3

```
>>> letters = ["A", "B", "C", "D", "E"]
>>> del letters[1:3]
```



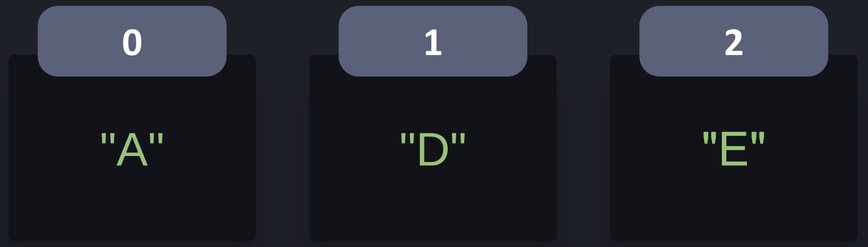
python3

```
>>> letters = ["A", "B", "C", "D", "E"]
>>> del letters[1:3]
```



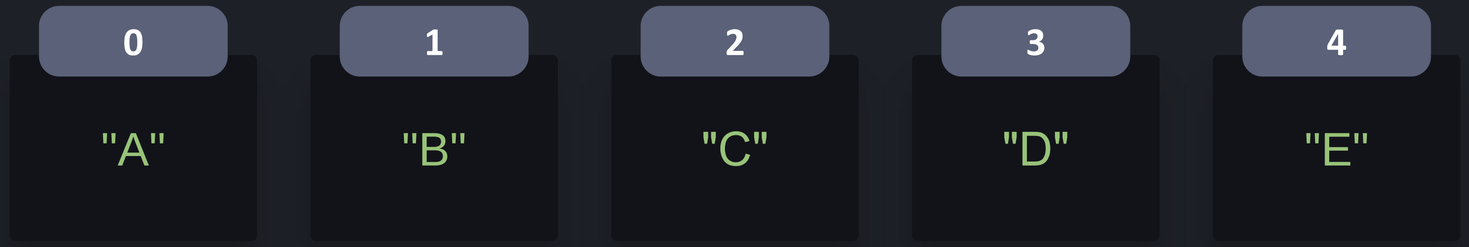
python3

```
>>> letters = ["A", "B", "C", "D", "E"]
>>> del letters[1:3]
```



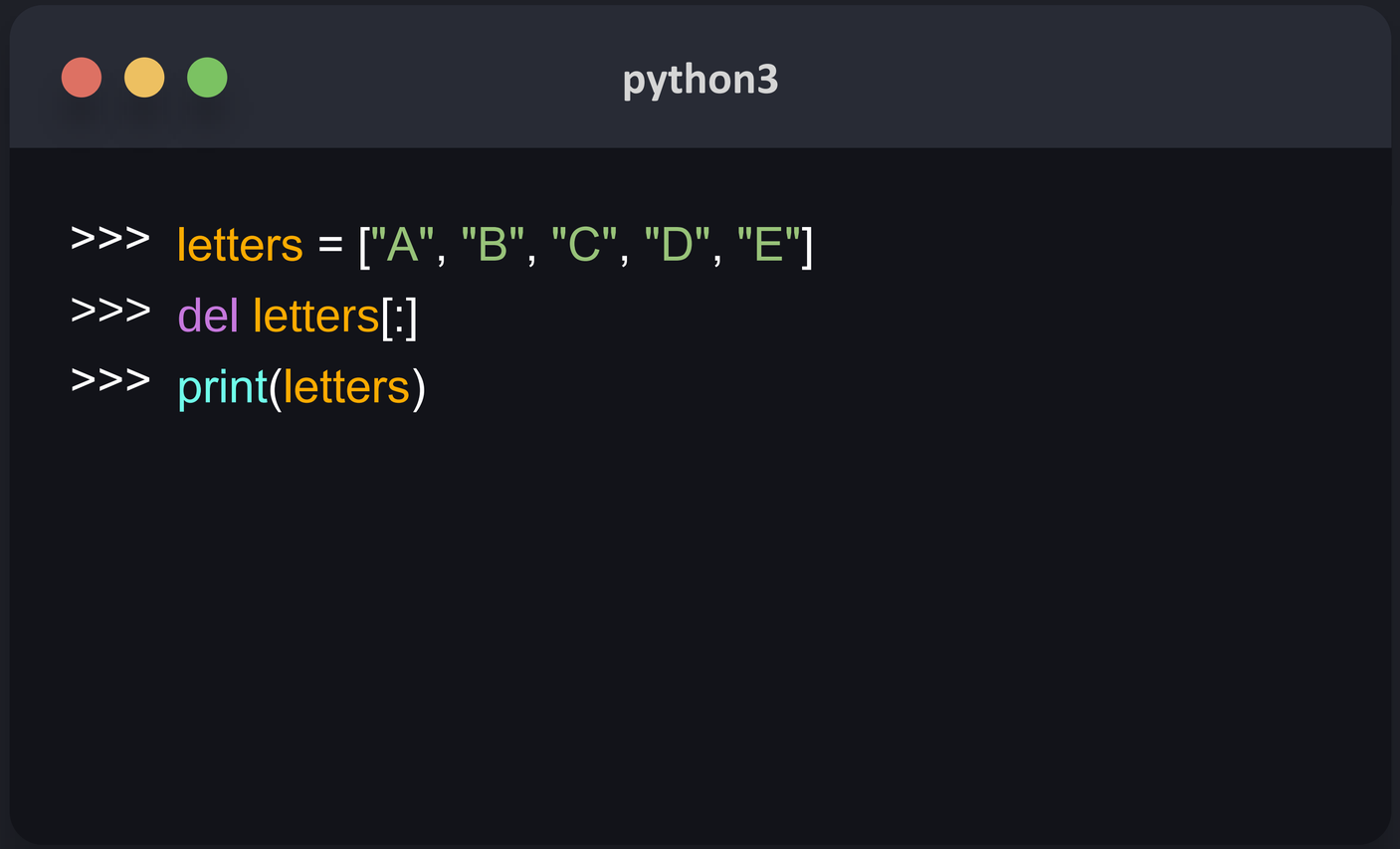
python3

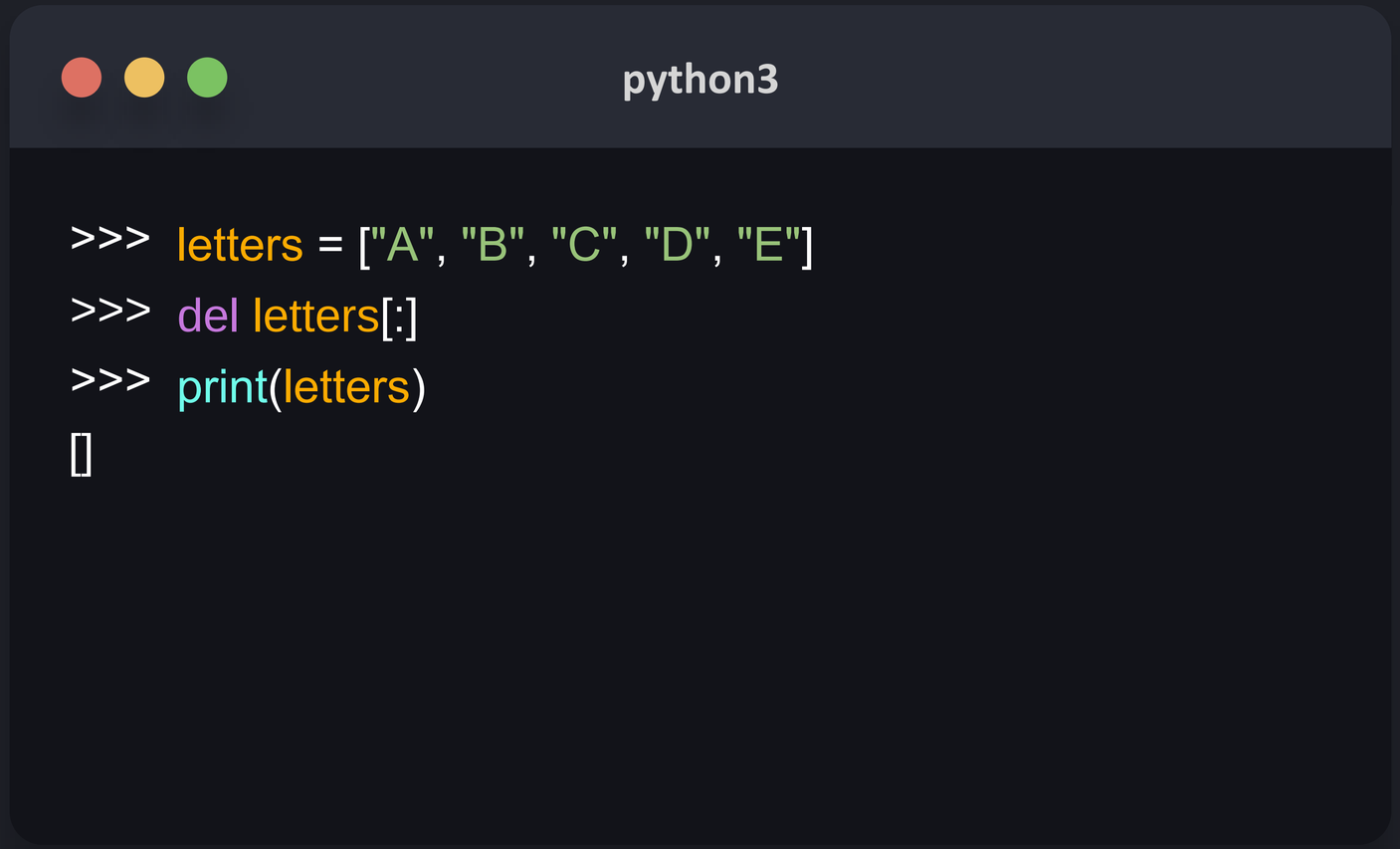
```
>>> letters = ["A", "B", "C", "D", "E"]
>>> del letters[1:3]
```



python3

```
>>> letters = ["A", "B", "C", "D", "E"]
>>> del letters[:]
```


python3
>>> letters = ["A", "B", "C", "D", "E"]
>>> del letters[:]
>>> print(letters)

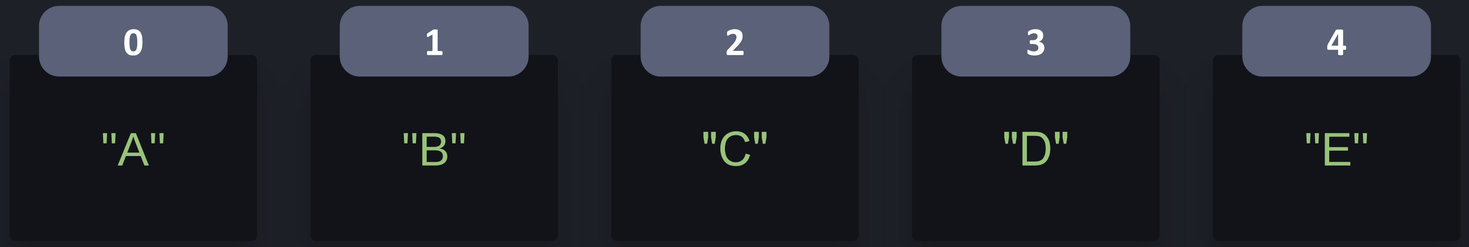

python3
>>> letters = ["A", "B", "C", "D", "E"]
>>> del letters[:]
>>> print(letters)
[]

KodeKloud

Finding in Lists

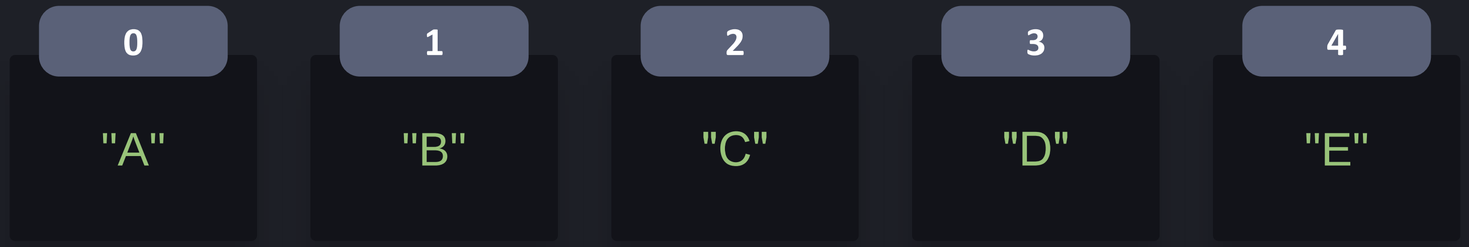
element **in** *list*

element **not in** *list*



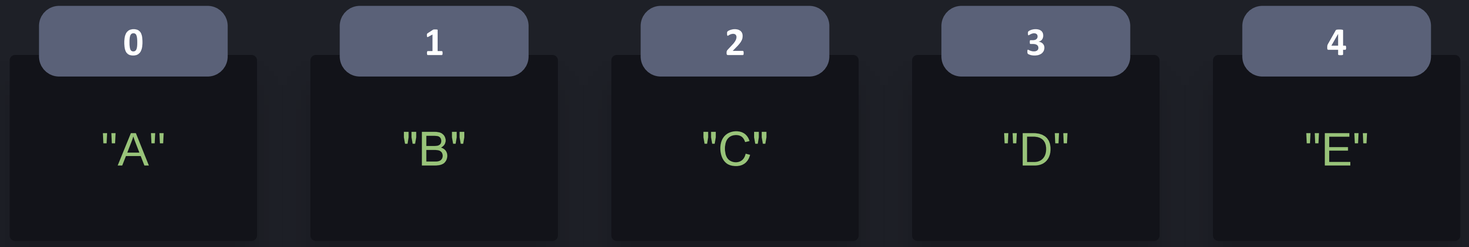
python3

```
>>> letters = ["A", "B", "C", "D", "E"]
>>> print("B" in letters)
```



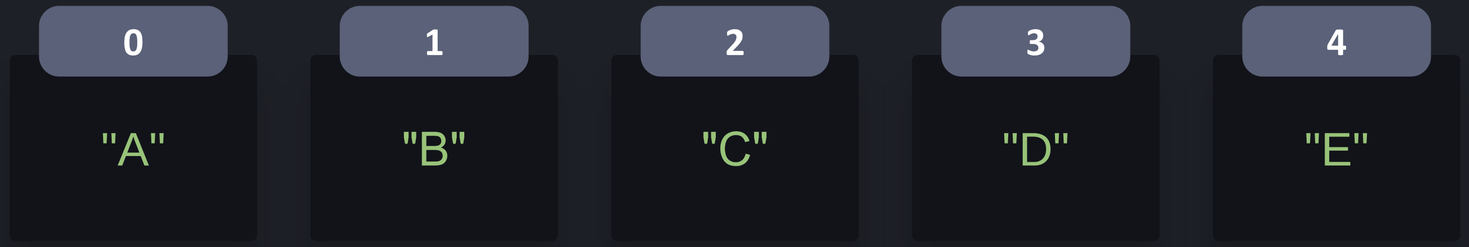
python3

```
>>> letters = ["A", "B", "C", "D", "E"]
>>> print("B" in letters)
 True
```



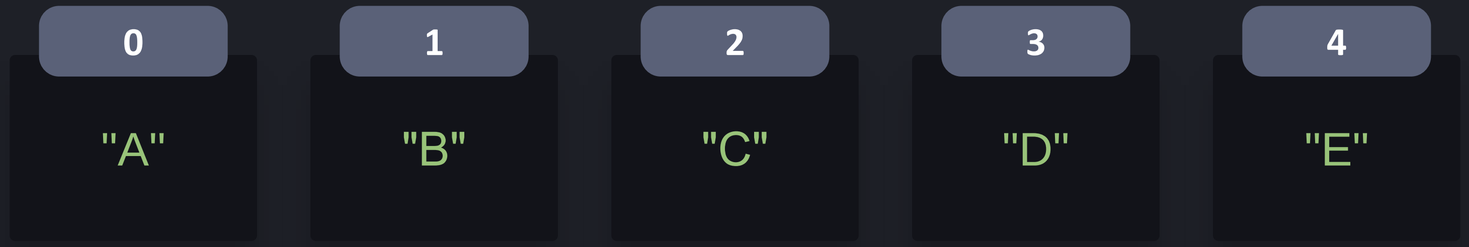
python3

```
>>> letters = ["A", "B", "C", "D", "E"]
>>> print("B" in letters)
True
>>> print("Z" in letters)
False
```



python3

```
>>> letters = ["A", "B", "C", "D", "E"]
>>> print("B" not in letters)
False
>>> print("Z" not in letters)
True
```



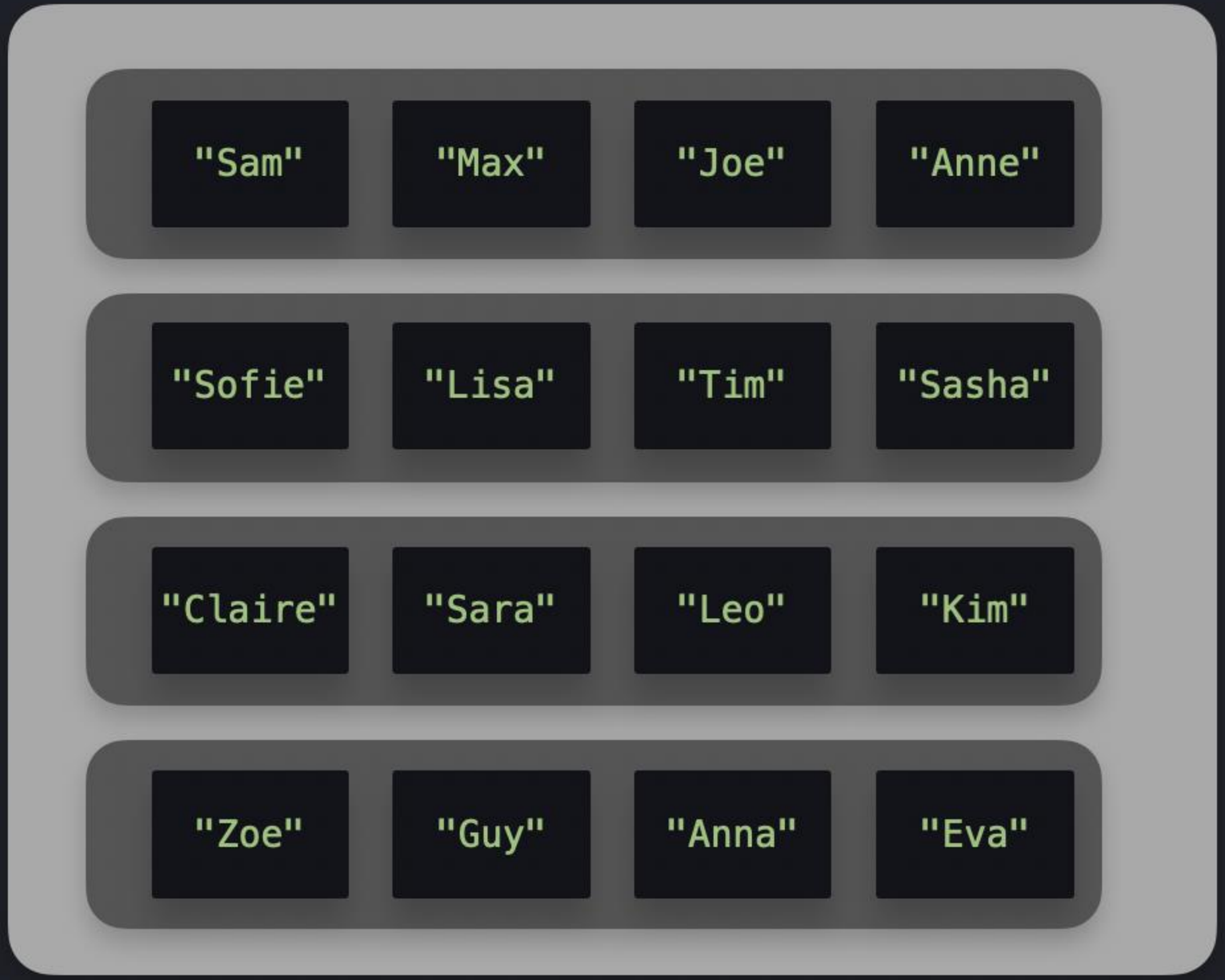
python3

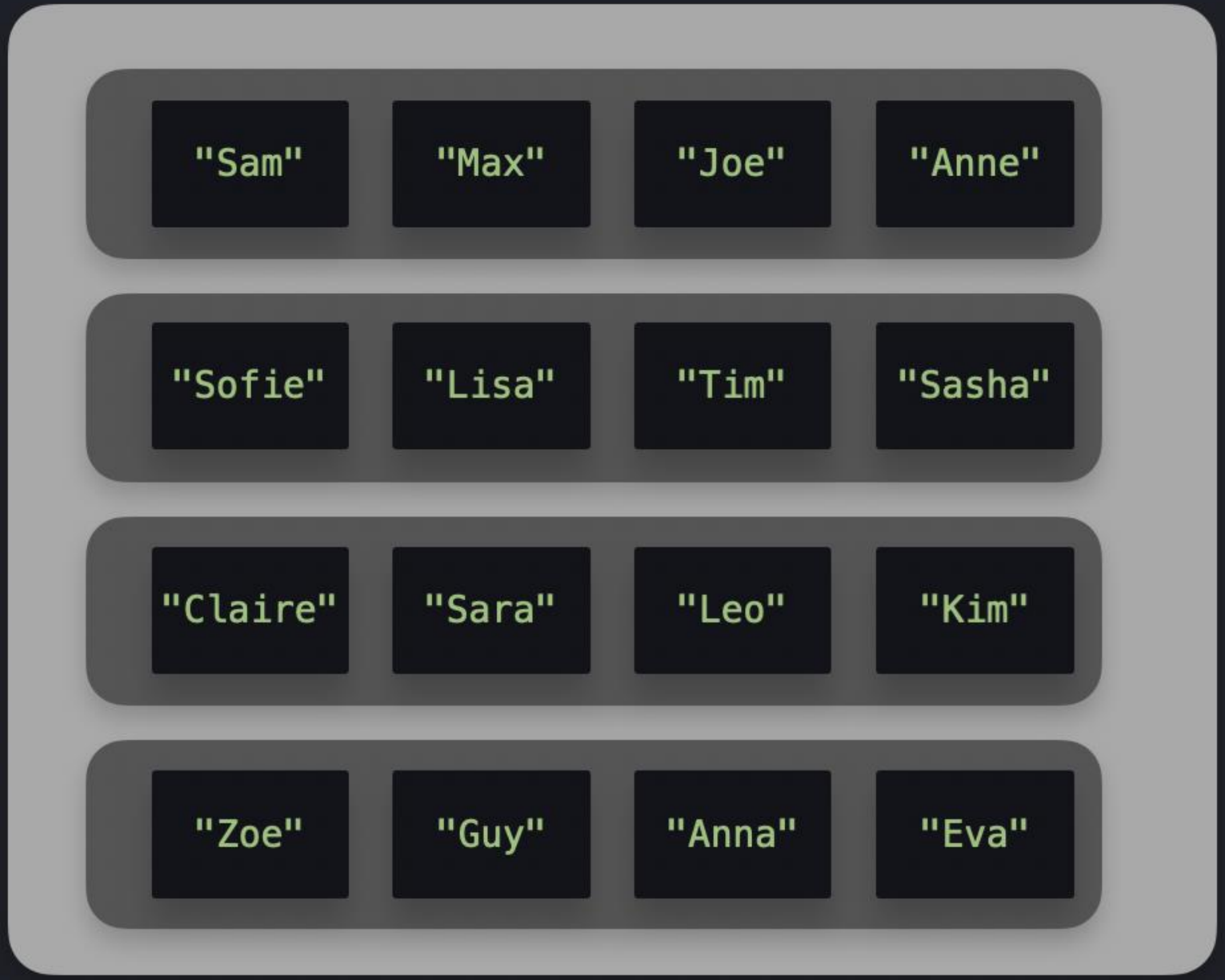
```
>>> letters = ["A", "B", "C", "D", "E"]
>>> print("B" not in letters)
False
>>> print("Z" not in letters)
True
```

KodeKloud

Nested Lists - 2D

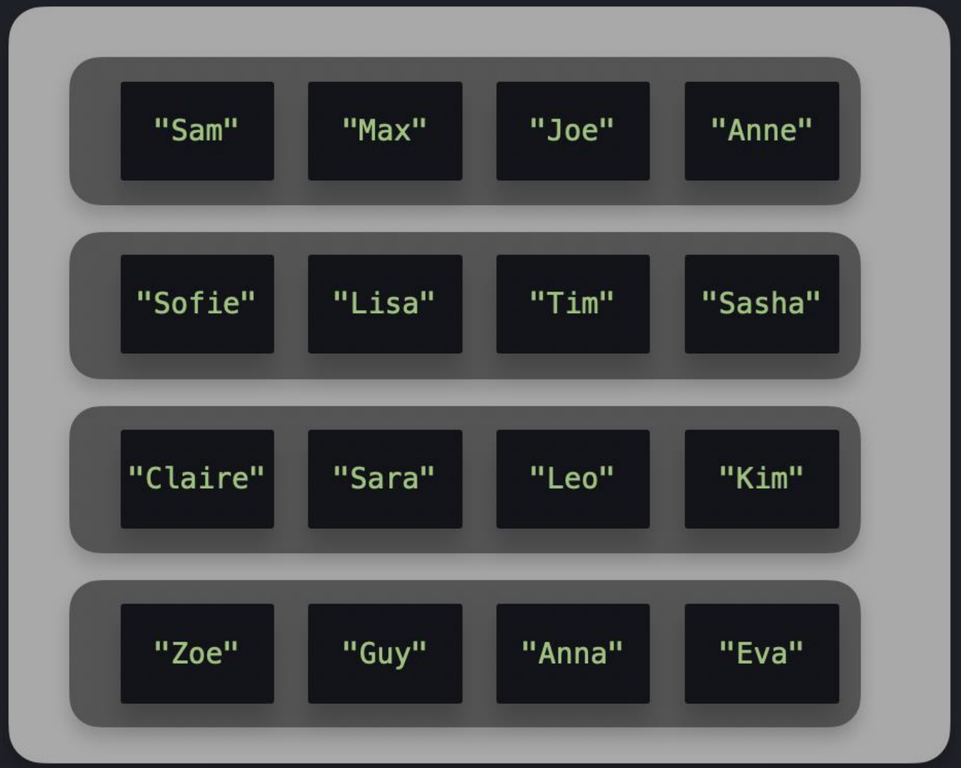
(Matrix)


"Sam"
"Max"
"Joe"
"Anne"
"Sofie"
"Lisa"
"Tim"
"Sasha"
"Claire"
"Sara"
"Leo"
"Kim"
"Zoe"
"Guy"
"Anna"
"Eva"


"Sam"
"Max"
"Joe"
"Anne"
"Sofie"
"Lisa"
"Tim"
"Sasha"
"Claire"
"Sara"
"Leo"
"Kim"
"Zoe"
"Guy"
"Anna"
"Eva"

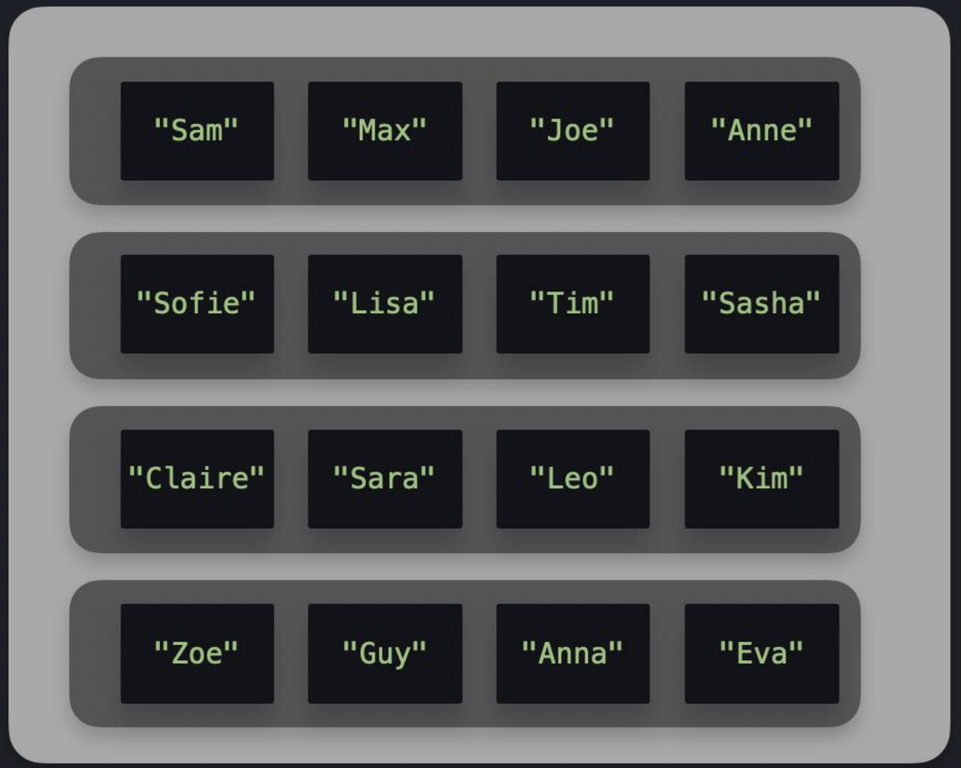
python3

```
>>>
classroom = [ ["Sam", "Max", "Joe", "Anne"],
              ["Sofie", "Lisa", "Tim", "Sasha"],
              ["Claire", "Sara", "Leo", "Kim"],
              ["Zoe", "Guy", "Anna", "Eva"],
    ]
```



python3

```
>>>
    classroom = [  ["Sam", "Max", "Joe", "Anne"],
                   ["Sofie", "Lisa", "Tim", "Sasha"],
                   ["Claire", "Sara", "Leo", "Kim"],
                   ["Zoe", "Guy", "Anna", "Eva"],
    ]
```



python3

```
>>>
classroom = [ ["Sam", "Max", "Joe", "Anne"],
              ["Sofie", "Lisa", "Tim", "Sasha"],
              ["Claire", "Sara", "Leo", "Kim"],
              ["Zoe", "Guy", "Anna", "Eva"],
            ]
>>>
      student = classroom[2]
```

python3

```
>>>
    classroom = [
        ["Sam", "Max", "Joe", "Anne"],
        ["Sofie", "Lisa", "Tim", "Sasha"],
        ["Claire", "Sara", "Leo", "Kim"],
        ["Zoe", "Guy", "Anna", "Eva"],
    ]
>>>
    student = classroom[2]
```

python3

```
>>> classroom = [
        ["Sam", "Max", "Joe", "Anne"],
        ["Sofie", "Lisa", "Tim", "Sasha"],
        ["Claire", "Sara", "Leo", "Kim"],
        ["Zoe", "Guy", "Anna", "Eva"],
    ]
>>> student = classroom[2][1]
```

python3

```
>>>
        classroom = [
            ["Sam", "Max", "Joe", "Anne"],
            ["Sofie", "Lisa", "Tim", "Sasha"],
            ["Claire", "Sara", "Leo", "Kim"],
            ["Zoe", "Guy", "Anna", "Eva"],
        ]
>>> student = classroom[2][1]
>>>  print(student)
```

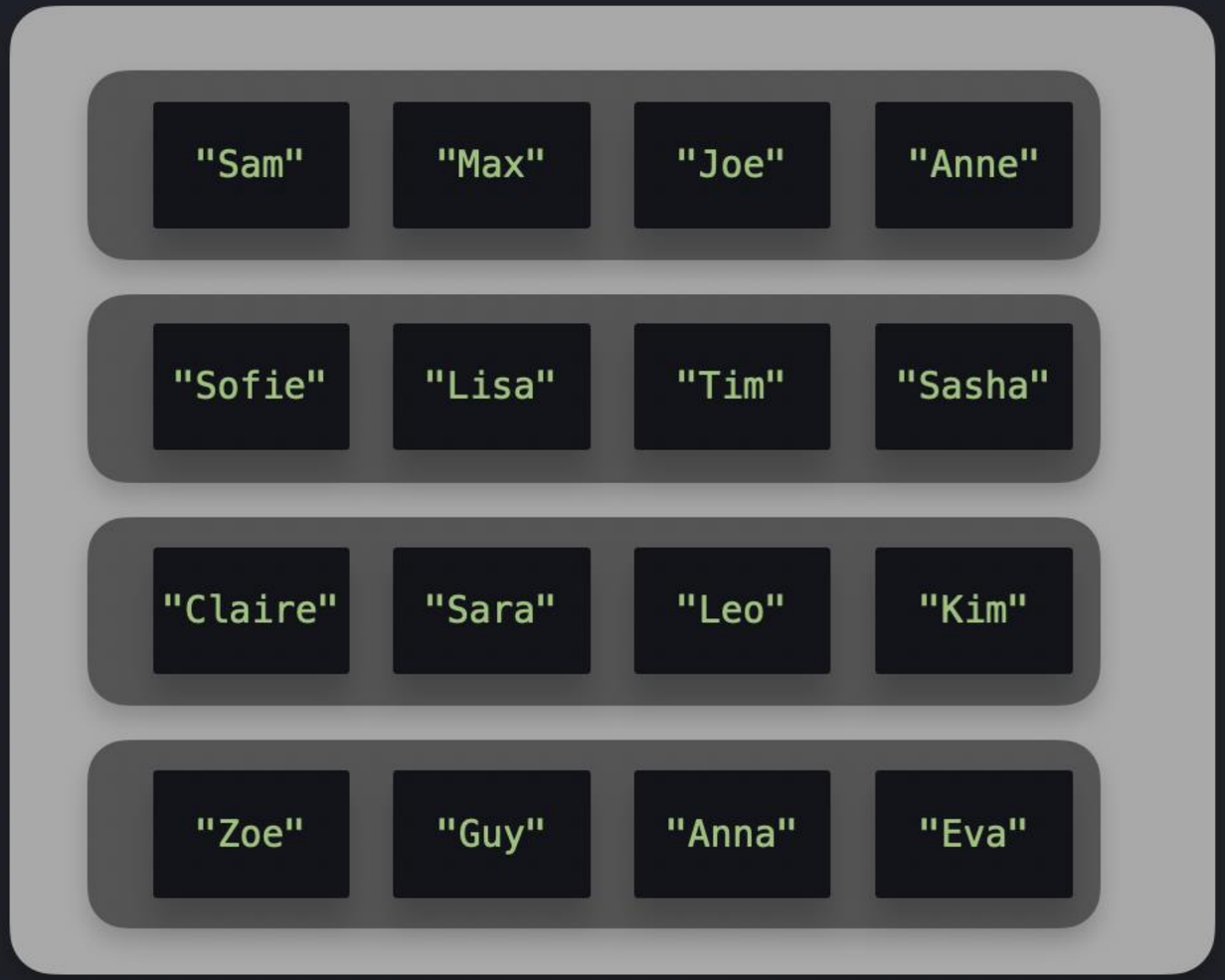
python3

```
>>>
        classroom = [
            ["Sam", "Max", "Joe", "Anne"],
            ["Sofie", "Lisa", "Tim", "Sasha"],
            ["Claire", "Sara", "Leo", "Kim"],
            ["Zoe", "Guy", "Anna", "Eva"],
        ]
>>> student = classroom[2][1]
>>> print(student)
 "Sara"
```

KodeKloud

Nested Lists - 3D

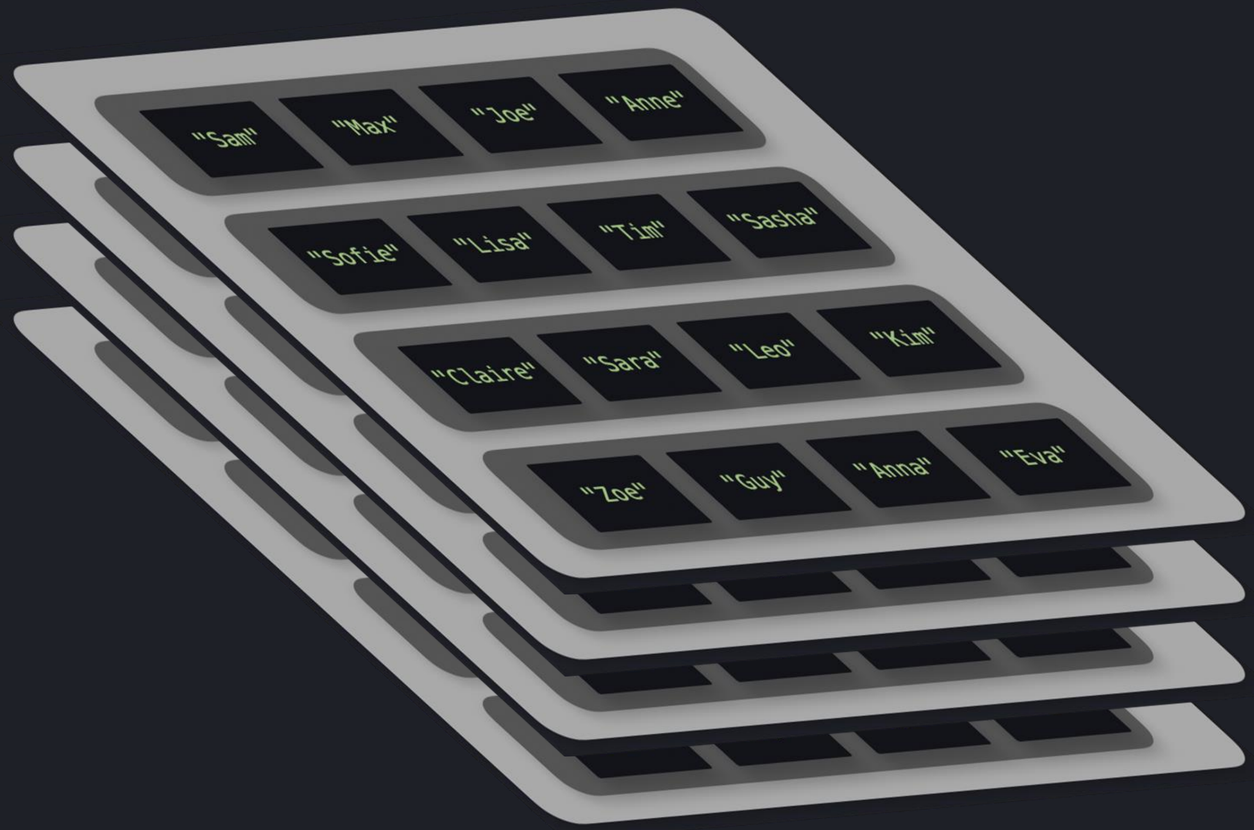
(Cube)


"Sam"
"Max"
"Joe"
"Anne"
"Sofie"
"Lisa"
"Tim"
"Sasha"
"Claire"
"Sara"
"Leo"
"Kim"
"Zoe"
"Guy"
"Anna"
"Eva"


"Sam"
"Max"
"Joe"
"Anne"
"Sofie"
"Lisa"
"Tim"
"Sasha"
"Claire"
"Sara"
"Leo"
"Kim"
"Zoe"
"Guy"
"Anna"
"Eva"

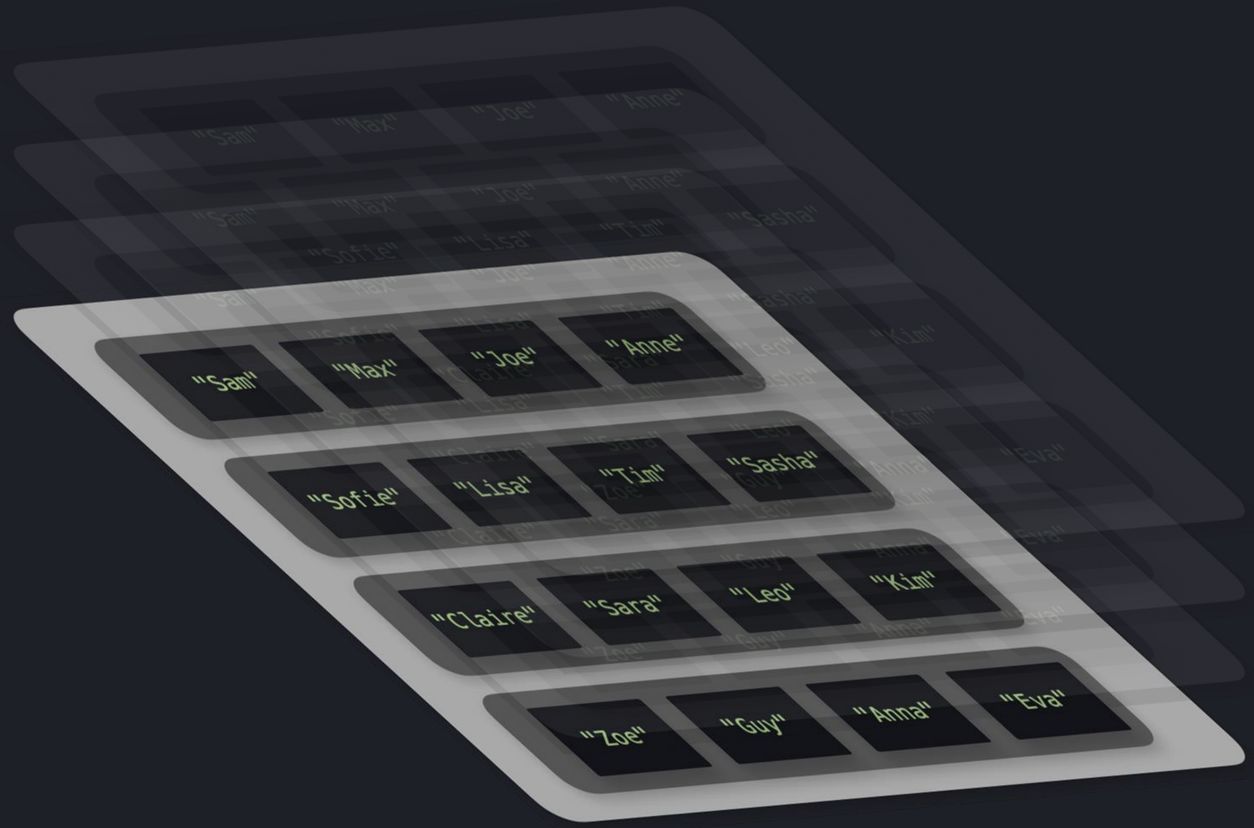
python3

```
>>> school = [
        [
            ["Sara", "Kim", "Anne", "Eva"],
            ["Johan", "Collin", "Sam", "Alex"],
            ["Luke", "Sara", "Haley", "Jennifer"],
            ["Katy", "Mara", "Max", "Roy"],
        ],
        [
            ["Anne", "Leo", "Sasha", "Tim"],
            ["Claire", "Guy", "Eva", "Zoe"],
            ["Lisa", "Max", "Evan", "Chloe"],
            ["Brent", "Sam", “Sarah", "Anne"],
        ],
        [
            ["Maria", "Julian", "Chris", "Tom"],
            ["Zoe", "Anna", "Kim", "Leo"],
            ["Vera", "Pim", "Leo", "Guy"],
            ["Anne", "Sofie", "Max", "Joe"],
        ],
        [
            ["Sam", "Max", "Joe", "Anne"],
            ["Sofie", "Lisa", "Tim", "Sasha"],
            ["Claire", "Sara", "Leo", "Kim"],
            ["Zoe", "Guy", "Anna", "Eva"],
        ]
    ]
```



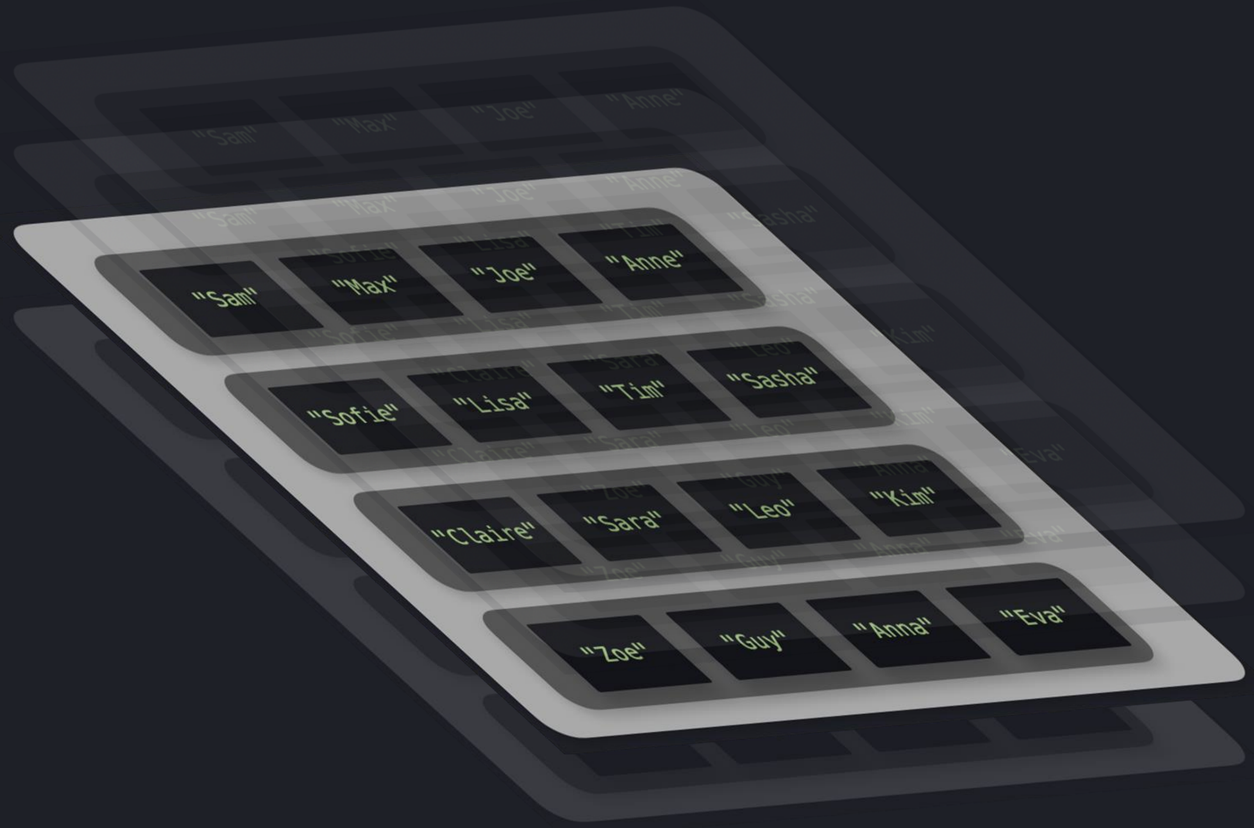
python3

```
>>> school = [
        [
            ["Sara", "Kim", "Anne", "Eva"],
            ["Johan", "Collin", "Sam", "Alex"],
            ["Luke", "Sara", "Haley", "Jennifer"],
            ["Katy", "Mara", "Max", "Roy"],
        ],
        [
            ["Anne", "Leo", "Sasha", "Tim"],
            ["Claire", "Guy", "Eva", "Zoe"],
            ["Lisa", "Max", "Evan", "Chloe"],
            ["Brent", "Sam", "Sarah", "Anne"],
        ],
        [
            ["Maria", "Julian", "Chris", "Tom"],
            ["Zoe", "Anna", "Kim", "Leo"],
            ["Vera", "Pim", "Leo", "Guy"],
            ["Anne", "Sofie", "Max", "Joe"],
        ],
        [
            ["Sam", "Max", "Joe", "Anne"],
            ["Sofie", "Lisa", "Tim", "Sasha"],
            ["Claire", "Sara", "Leo", "Kim"],
            ["Zoe", "Guy", "Anna", "Eva"],
        ]
    ]
```



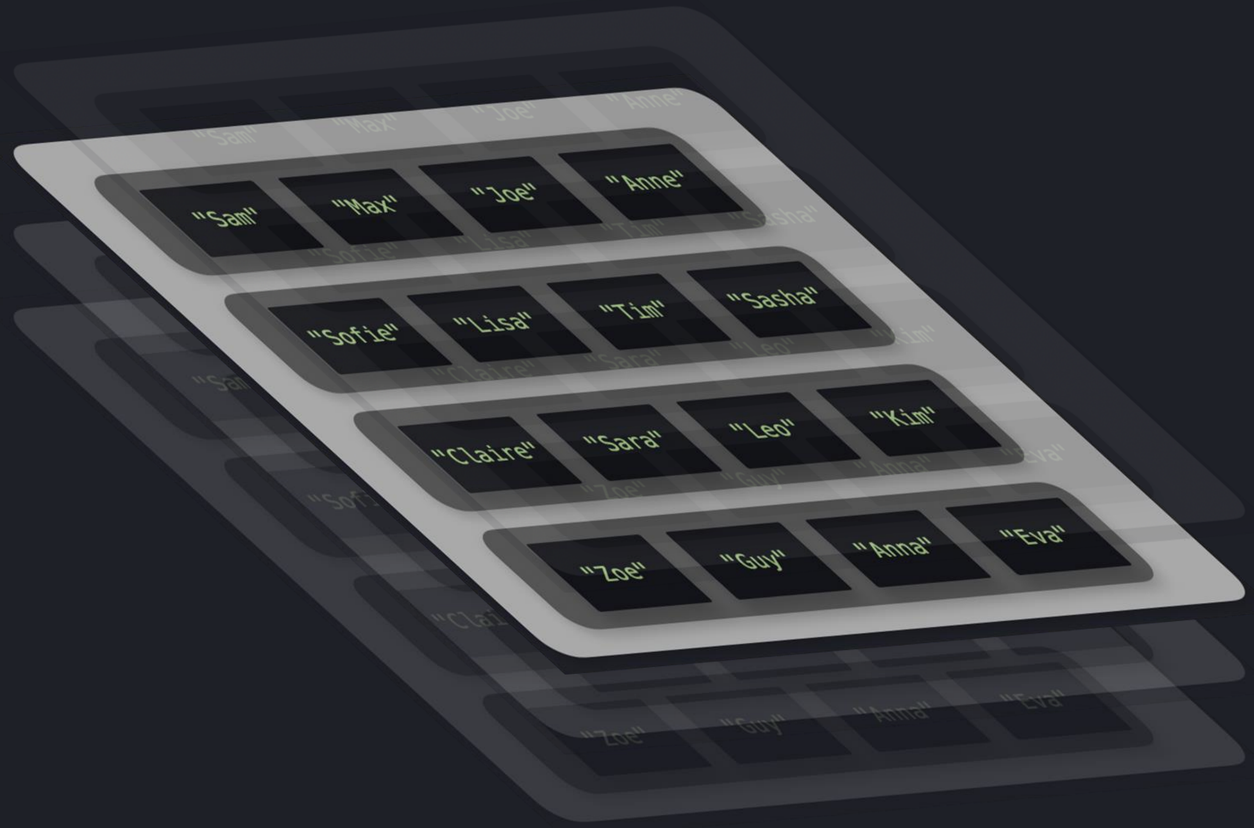
python3

```
>>> school = [
        [
            ["Sara", "Kim", "Anne", "Eva"],
            ["Johan", "Collin", "Sam", "Alex"],
            ["Luke", "Sara", "Haley", "Jennifer"],
            ["Katy", "Mara", "Max", "Roy"],
        ],
        [
            ["Anne", "Leo", "Sasha", "Tim"],
            ["Claire", "Guy", "Eva", "Zoe"],
            ["Lisa", "Max", "Evan", "Chloe"],
            ["Brent", "Sam", “Sarah", "Anne"],
        ],
        [
            ["Maria", "Julian", "Chris", "Tom"],
            ["Zoe", "Anna", "Kim", "Leo"],
            ["Vera", "Pim", "Leo", "Guy"],
            ["Anne", "Sofie", "Max", "Joe"],
        ],
        [
            ["Sam", "Max", "Joe", "Anne"],
            ["Sofie", "Lisa", "Tim", "Sasha"],
            ["Claire", "Sara", "Leo", "Kim"],
            ["Zoe", "Guy", "Anna", "Eva"],
        ]
    ]
```



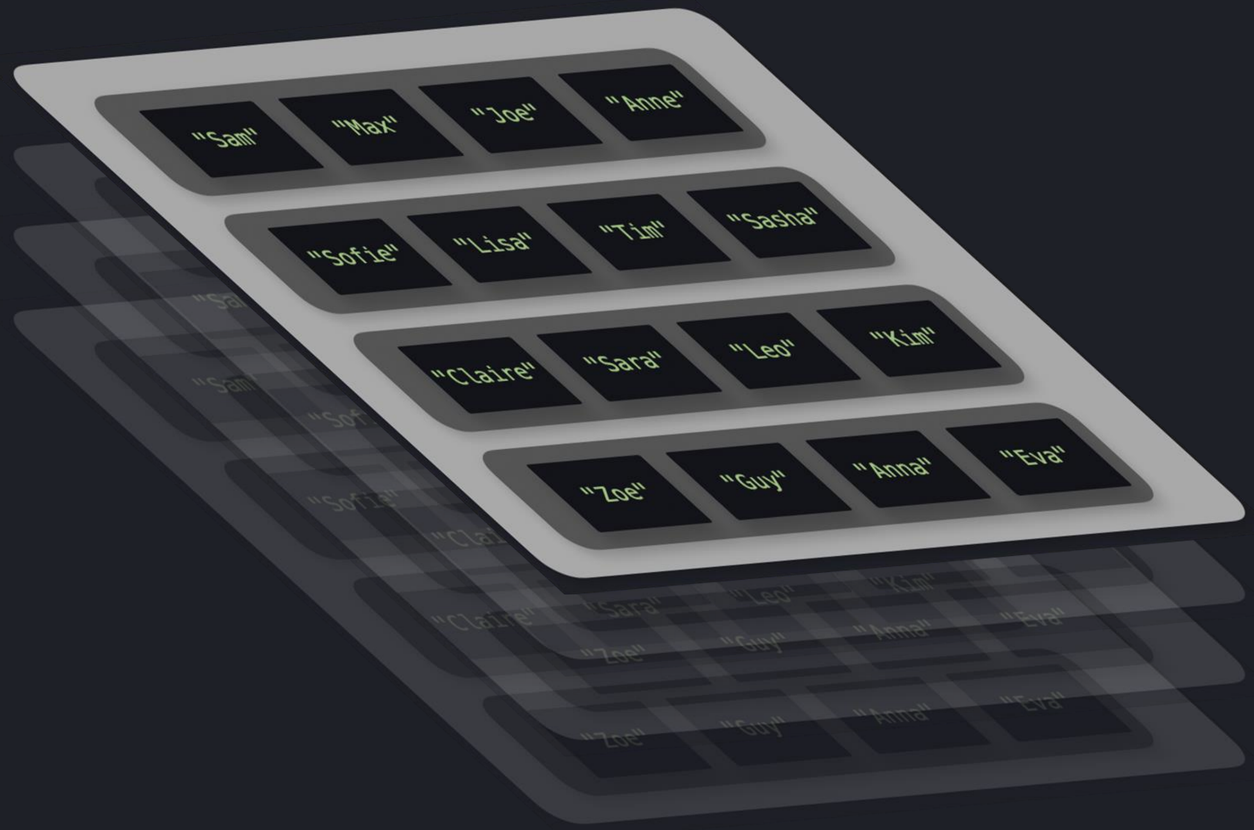
python3

```
>>> school = [
        [
            ["Sara", "Kim", "Anne", "Eva"],
            ["Johan", "Collin", "Sam", "Alex"],
            ["Luke", "Sara", "Haley", "Jennifer"],
            ["Katy", "Mara", "Max", "Roy"],
        ],
        [
            ["Anne", "Leo", "Sasha", "Tim"],
            ["Claire", "Guy", "Eva", "Zoe"],
            ["Lisa", "Max", "Evan", "Chloe"],
            ["Brent", "Sam", "Sarah", "Anne"],
        ],
        [
            ["Maria", "Julian", "Chris", "Tom"],
            ["Zoe", "Anna", "Kim", "Leo"],
            ["Vera", "Pim", "Leo", "Guy"],
            ["Anne", "Sofie", "Max", "Joe"],
        ],
        [
            ["Sam", "Max", "Joe", "Anne"],
            ["Sofie", "Lisa", "Tim", "Sasha"],
            ["Claire", "Sara", "Leo", "Kim"],
            ["Zoe", "Guy", "Anna", "Eva"],
        ]
    ]
```



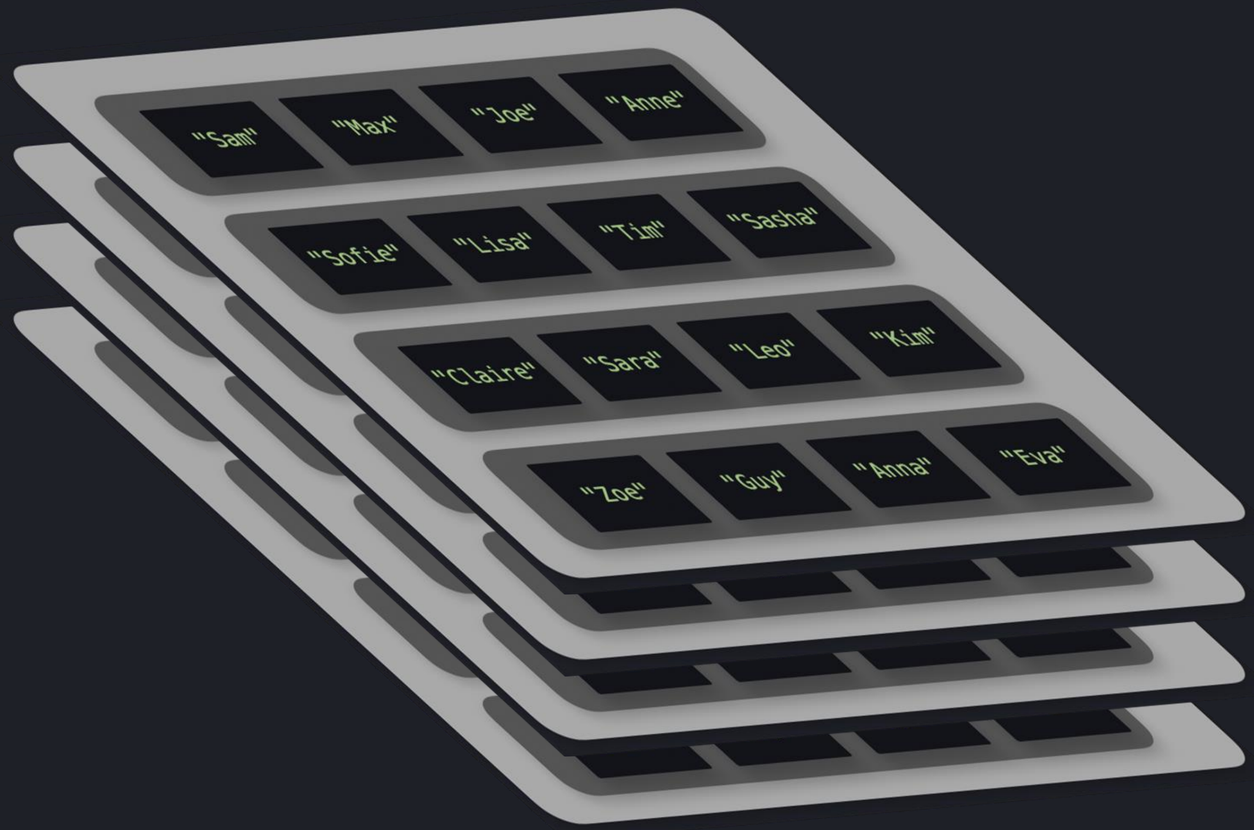
python3

```
>>> school = [
        [
            ["Sara", "Kim", "Anne", "Eva"],
            ["Johan", "Collin", "Sam", "Alex"],
            ["Luke", "Sara", "Haley", "Jennifer"],
            ["Katy", "Mara", "Max", "Roy"],
        ],
        [
            ["Anne", "Leo", "Sasha", "Tim"],
            ["Claire", "Guy", "Eva", "Zoe"],
            ["Lisa", "Max", "Evan", "Chloe"],
            ["Brent", "Sam", "Sarah", "Anne"],
        ],
        [
            ["Maria", "Julian", "Chris", "Tom"],
            ["Zoe", "Anna", "Kim", "Leo"],
            ["Vera", "Pim", "Leo", "Guy"],
            ["Anne", "Sofie", "Max", "Joe"],
        ],
        [
            ["Sam", "Max", "Joe", "Anne"],
            ["Sofie", "Lisa", "Tim", "Sasha"],
            ["Claire", "Sara", "Leo", "Kim"],
            ["Zoe", "Guy", "Anna", "Eva"],
        ]
    ]
```



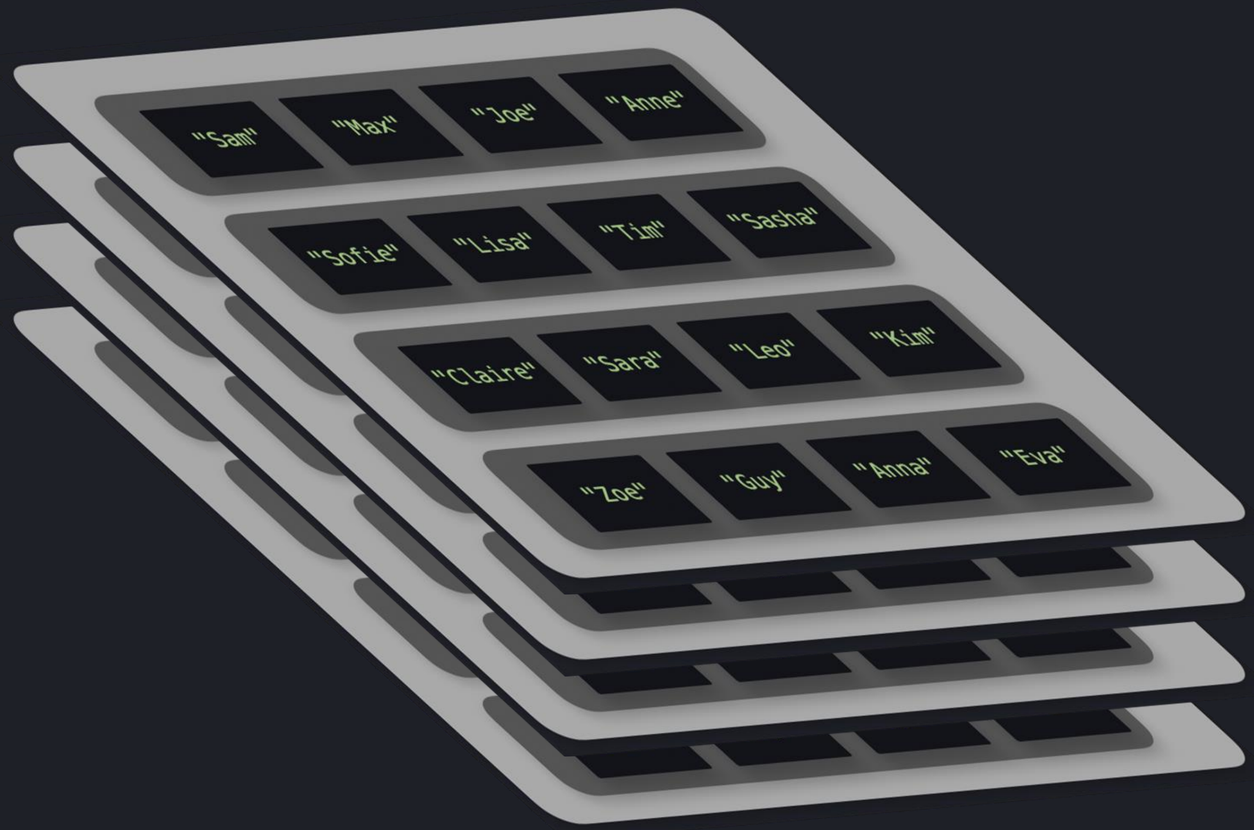
python3

```
>>> school = [
        [
            ["Sara", "Kim", "Anne", "Eva"],
            ["Johan", "Collin", "Sam", "Alex"],
            ["Luke", "Sara", "Haley", "Jennifer"],
            ["Katy", "Mara", "Max", "Roy"],
        ],
        [
            ["Anne", "Leo", "Sasha", "Tim"],
            ["Claire", "Guy", "Eva", "Zoe"],
            ["Lisa", "Max", "Evan", "Chloe"],
            ["Brent", "Sam", “Sarah", "Anne"],
        ],
        [
            ["Maria", "Julian", "Chris", "Tom"],
            ["Zoe", "Anna", "Kim", "Leo"],
            ["Vera", "Pim", "Leo", "Guy"],
            ["Anne", "Sofie", "Max", "Joe"],
        ],
        [
            ["Sam", "Max", "Joe", "Anne"],
            ["Sofie", "Lisa", "Tim", "Sasha"],
            ["Claire", "Sara", "Leo", "Kim"],
            ["Zoe", "Guy", "Anna", "Eva"],
        ]
    ]
```



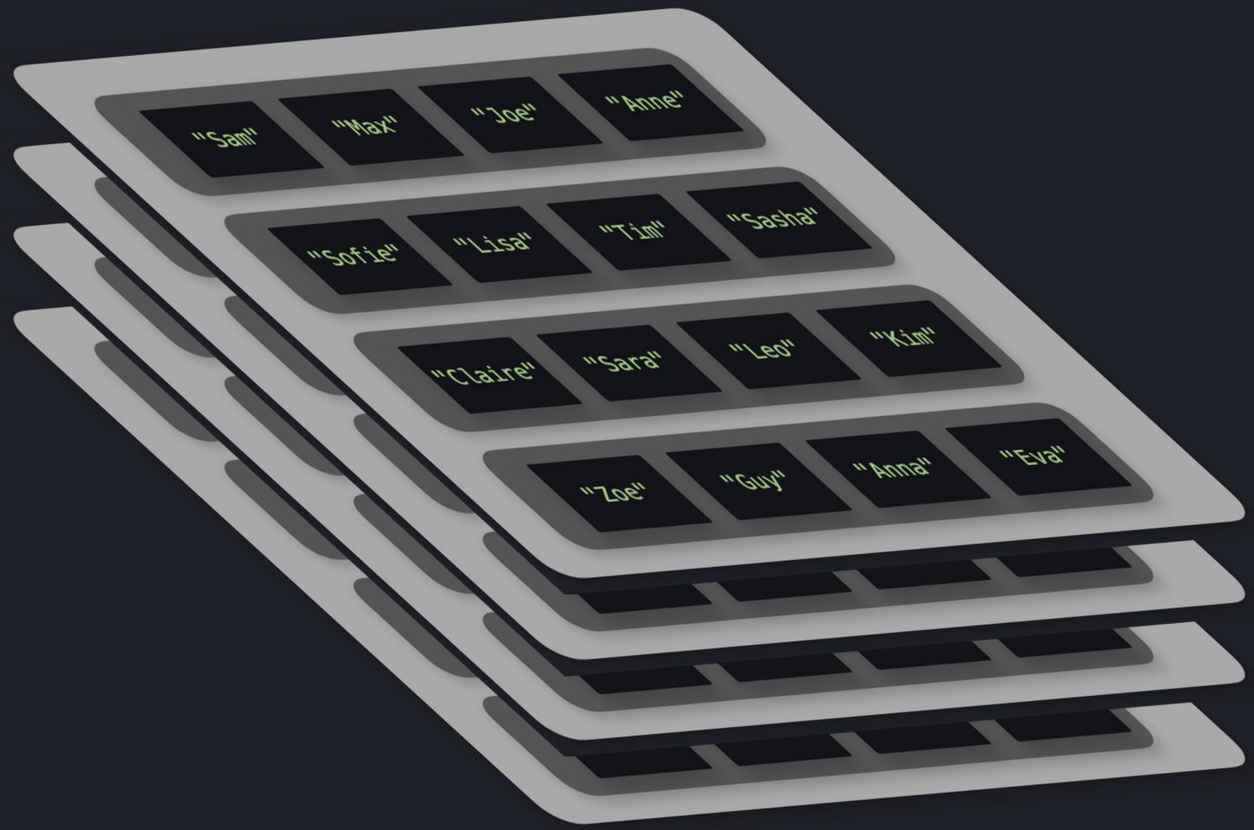
python3

```
>>>  school = [
        [
            ["Sara", "Kim", "Anne", "Eva"],
            ["Johan", "Collin", "Sam", "Alex"],
            ["Luke", "Sara", "Haley", "Jennifer"],
            ["Katy", "Mara", "Max", "Roy"],
        ],
        [
            ["Anne", "Leo", "Sasha", "Tim"],
            ["Claire", "Guy", "Eva", "Zoe"],
            ["Lisa", "Max", "Evan", "Chloe"],
            ["Brent", "Sam", “Sarah", "Anne"],
        ],
        [
            ["Maria", "Julian", "Chris", "Tom"],
            ["Zoe", "Anna", "Kim", "Leo"],
            ["Vera", "Pim", "Leo", "Guy"],
            ["Anne", "Sofie", "Max", "Joe"],
        ],
        [
            ["Sam", "Max", "Joe", "Anne"],
            ["Sofie", "Lisa", "Tim", "Sasha"],
            ["Claire", "Sara", "Leo", "Kim"],
            ["Zoe", "Guy", "Anna", "Eva"],
        ]
    ]
>>>
```



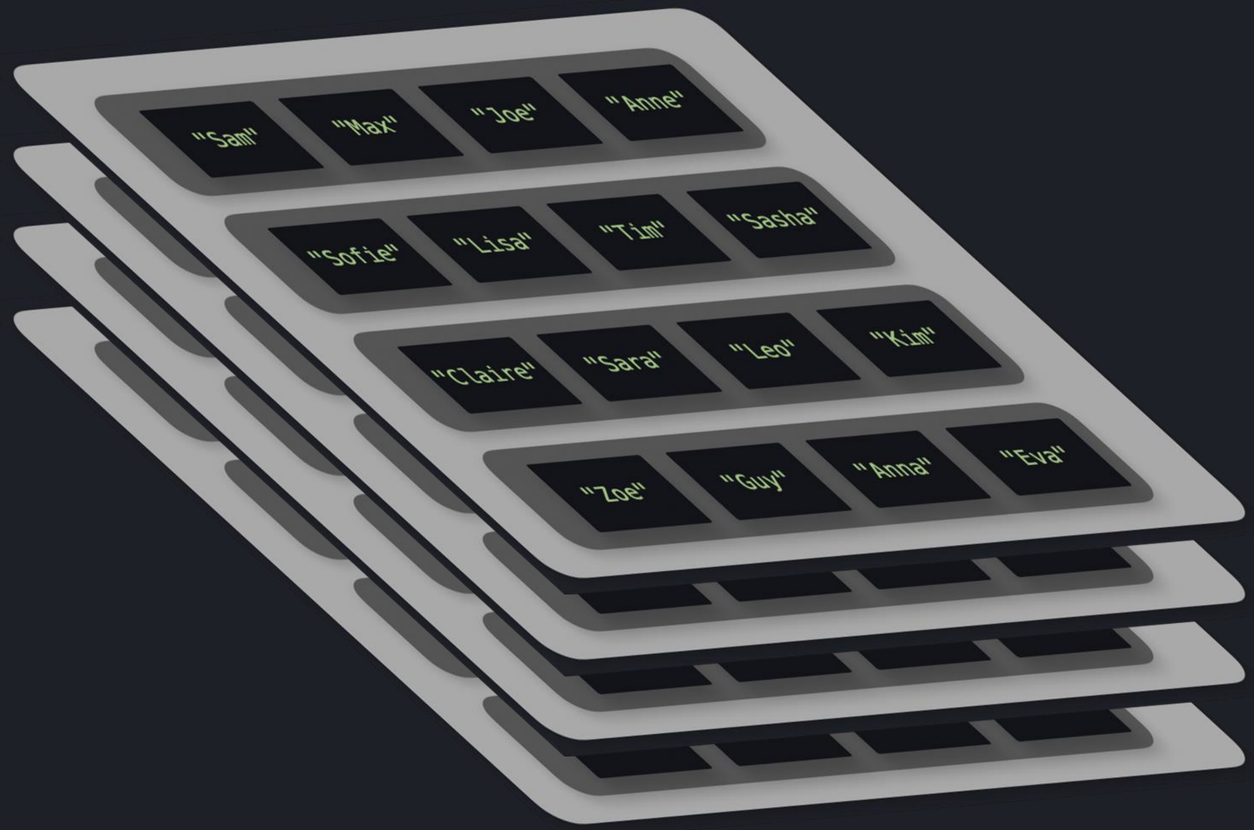
python3

```
>>> school = [
        [
            ["Sara", "Kim", "Anne", "Eva"],
            ["Johan", "Collin", "Sam", "Alex"],
            ["Luke", "Sara", "Haley", "Jennifer"],
            ["Katy", "Mara", "Max", "Roy"],
        ],
        [
            ["Anne", "Leo", "Sasha", "Tim"],
            ["Claire", "Guy", "Eva", "Zoe"],
            ["Lisa", "Max", "Evan", "Chloe"],
            ["Brent", "Sam", “Sarah", "Anne"],
        ],
        [
            ["Maria", "Julian", "Chris", "Tom"],
            ["Zoe", "Anna", "Kim", "Leo"],
            ["Vera", "Pim", "Leo", "Guy"],
            ["Anne", "Sofie", "Max", "Joe"],
        ],
        [
            ["Sam", "Max", "Joe", "Anne"],
            ["Sofie", "Lisa", "Tim", "Sasha"],
            ["Claire", "Sara", "Leo", "Kim"],
            ["Zoe", "Guy", "Anna", "Eva"],
        ]
    ]
>>>
```



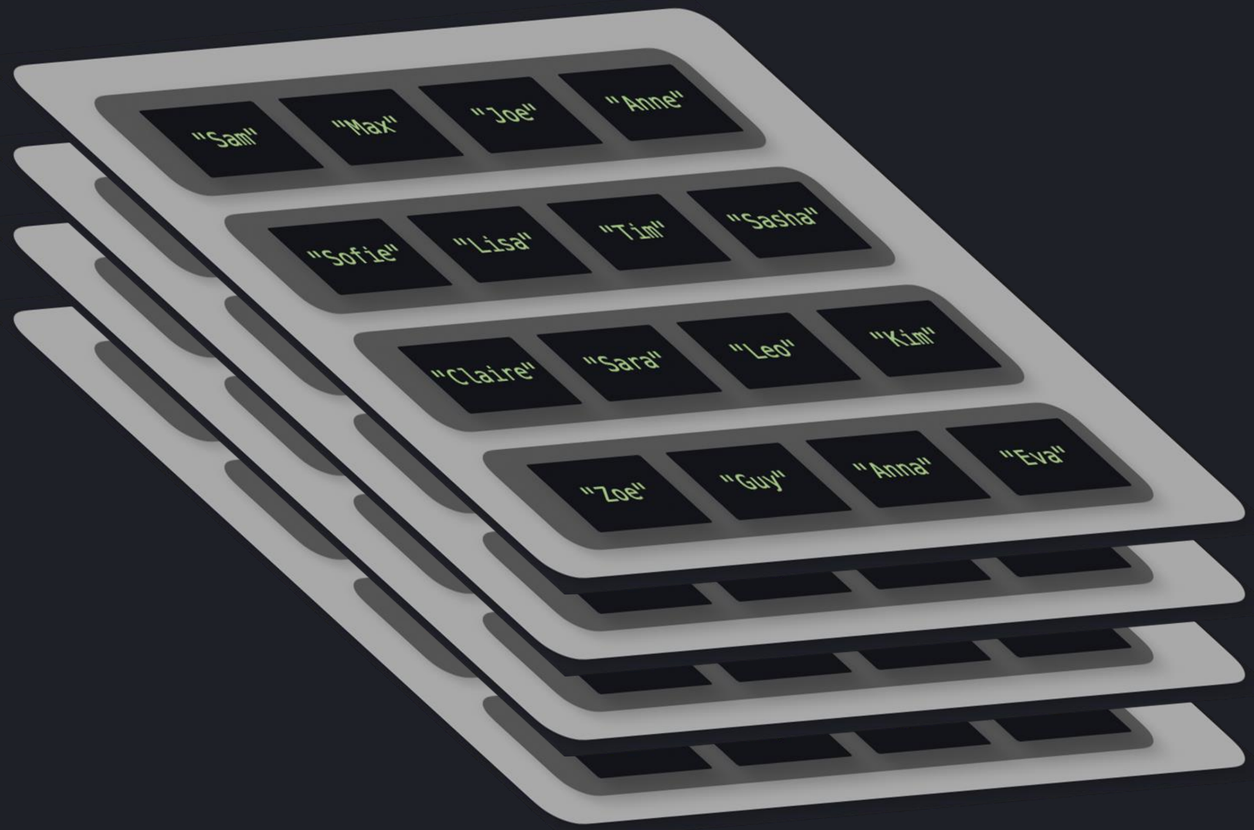
python3

```
>>> school = [
        [
            ["Sara", "Kim", "Anne", "Eva"],
            ["Johan", "Collin", "Sam", "Alex"],
            ["Luke", "Sara", "Haley", "Jennifer"],
            ["Katy", "Mara", "Max", "Roy"],
        ],
        [
            ["Anne", "Leo", "Sasha", "Tim"],
            ["Claire", "Guy", "Eva", "Zoe"],
            ["Lisa", "Max", "Evan", "Chloe"],
            ["Brent", "Sam", "Sarah", "Anne"],
        ],
        [
            ["Maria", "Julian", "Chris", "Tom"],
            ["Zoe", "Anna", "Kim", "Leo"],
            ["Vera", "Pim", "Leo", "Guy"],
            ["Anne", "Sofie", "Max", "Joe"],
        ],
        [
            ["Sam", "Max", "Joe", "Anne"],
            ["Sofie", "Lisa", "Tim", "Sasha"],
            ["Claire", "Sara", "Leo", "Kim"],
            ["Zoe", "Guy", "Anna", "Eva"],
        ]
    ]
>>> student = school[1]
```



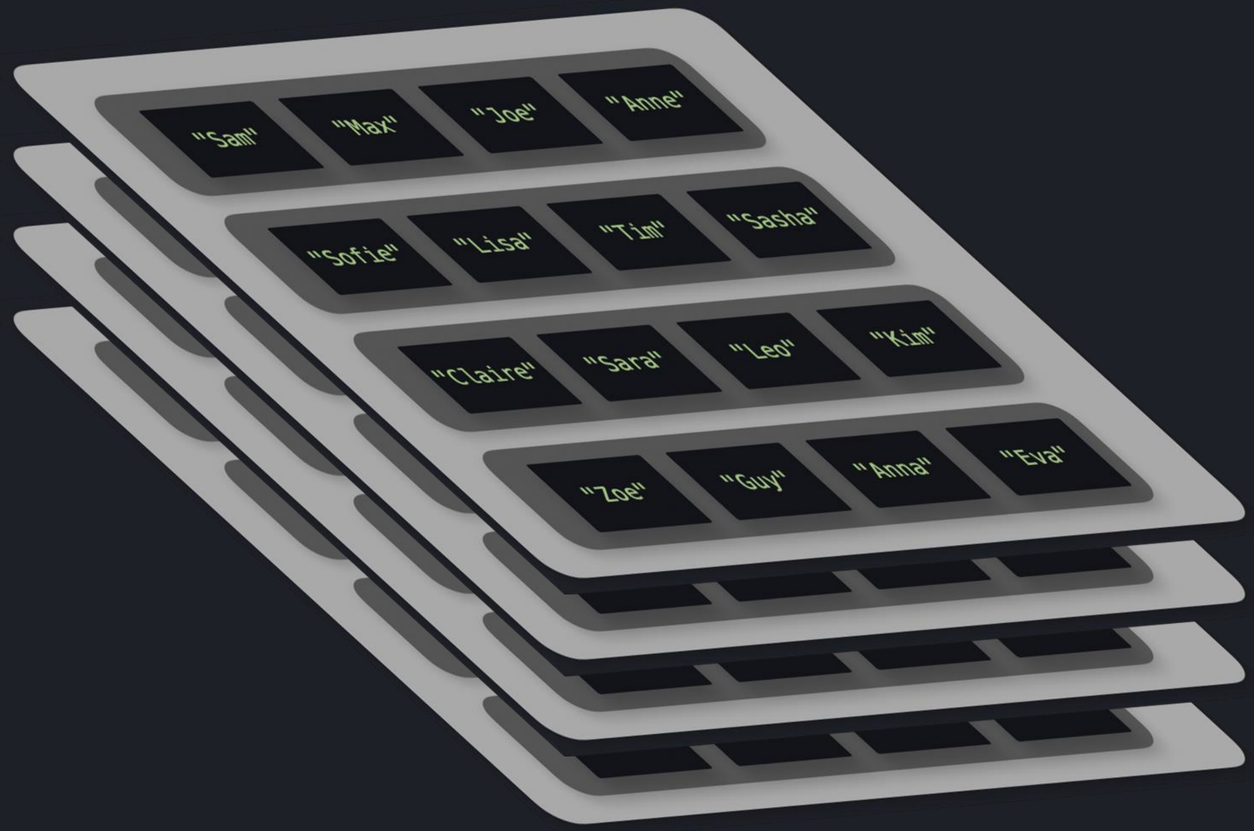
python3

```
>>>  school = [
        [
            ["Sara", "Kim", "Anne", "Eva"],
            ["Johan", "Collin", "Sam", "Alex"],
            ["Luke", "Sara", "Haley", "Jennifer"],
            ["Katy", "Mara", "Max", "Roy"],
        ],
        [
            ["Anne", "Leo", "Sasha", "Tim"],
            ["Claire", "Guy", "Eva", "Zoe"],
            ["Lisa", "Max", "Evan", "Chloe"],
            ["Brent", "Sam", “Sarah", "Anne"],
        ].
        [
            ["Maria", "Julian", "Chris", "Tom"],
            ["Zoe", "Anna", "Kim", "Leo"],
            ["Vera", "Pim", "Leo", "Guy"],
            ["Anne", "Sofie", "Max", "Joe"],
        ],
        [
            ["Sam", "Max", "Joe", "Anne"],
            ["Sofie", "Lisa", "Tim", "Sasha"],
            ["Claire", "Sara", "Leo", "Kim"],
            ["Zoe", "Guy", "Anna", "Eva"],
        ]
    ]
>>>  student = school[1]
```



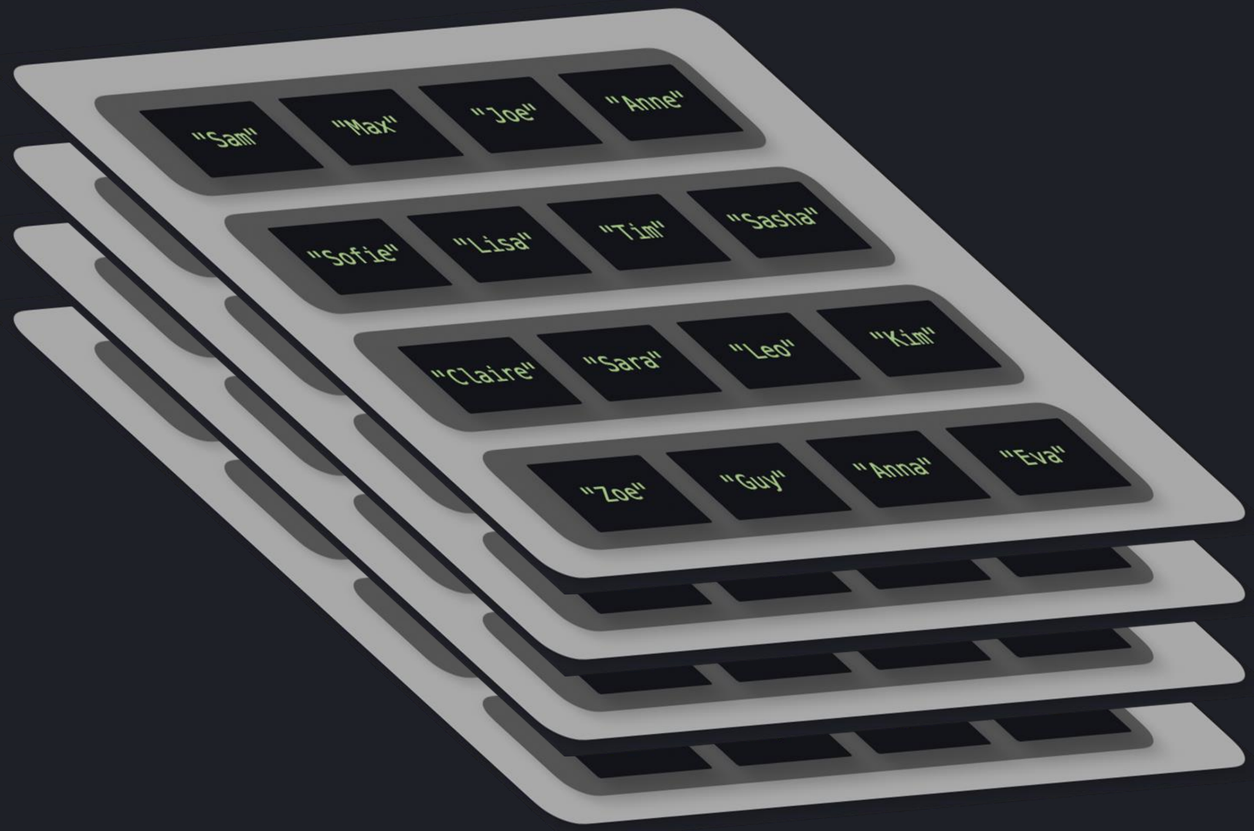
python3

```
>>> school = [
        [
            ["Sara", "Kim", "Anne", "Eva"],
            ["Johan", "Collin", "Sam", "Alex"],
            ["Luke", "Sara", "Haley", "Jennifer"],
            ["Katy", "Mara", "Max", "Roy"],
        ],
        [
            ["Anne", "Leo", "Sasha", "Tim"],
            ["Claire", "Guy", "Eva", "Zoe"],
            ["Lisa", "Max", "Evan", "Chloe"],
            ["Brent", "Sam", "Sarah", "Anne"],
        ],
        [
            ["Maria", "Julian", "Chris", "Tom"],
            ["Zoe", "Anna", "Kim", "Leo"],
            ["Vera", "Pim", "Leo", "Guy"],
            ["Anne", "Sofie", "Max", "Joe"],
        ],
        [
            ["Sam", "Max", "Joe", "Anne"],
            ["Sofie", "Lisa", "Tim", "Sasha"],
            ["Claire", "Sara", "Leo", "Kim"],
            ["Zoe", "Guy", "Anna", "Eva"],
        ]
    ]
>>> student = school[1]        [2]
```



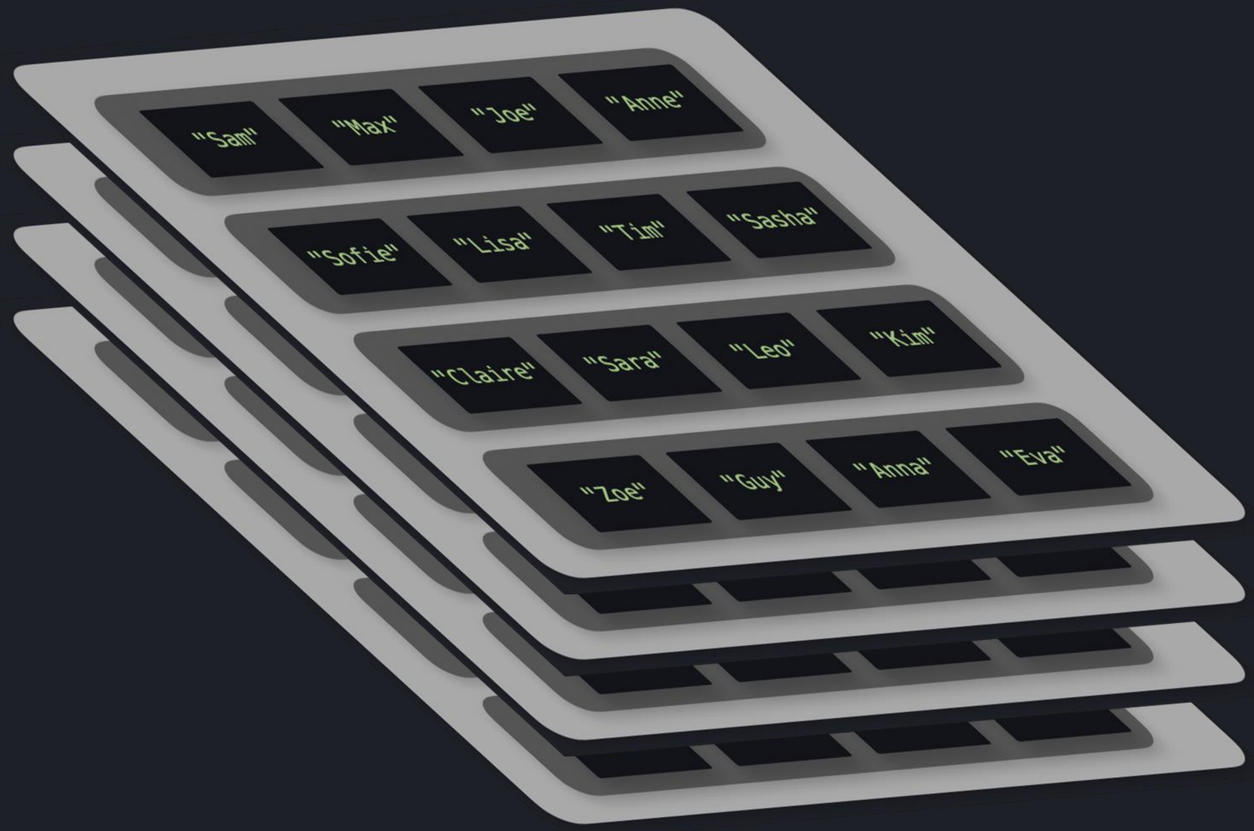
python3

```
>>> school = [
        [
            ["Sara", "Kim", "Anne", "Eva"],
            ["Johan", "Collin", "Sam", "Alex"],
            ["Luke", "Sara", "Haley", "Jennifer"],
            ["Katy", "Mara", "Max", "Roy"],
        ],
        [
            ["Anne", "Leo", "Sasha", "Tim"],
            ["Claire", "Guy", "Eva", "Zoe"],
            ["Lisa", "Max", "Evan", "Chloe"],
            ["Brent", "Sam", "Sarah", "Anne"],
        ],
        [
            ["Maria", "Julian", "Chris", "Tom"],
            ["Zoe", "Anna", "Kim", "Leo"],
            ["Vera", "Pim", "Leo", "Guy"],
            ["Anne", "Sofie", "Max", "Joe"],
        ],
        [
            ["Sam", "Max", "Joe", "Anne"],
            ["Sofie", "Lisa", "Tim", "Sasha"],
            ["Claire", "Sara", "Leo", "Kim"],
            ["Zoe", "Guy", "Anna", "Eva"],
        ]
    ]
>>> student = school[1]        [2]
```



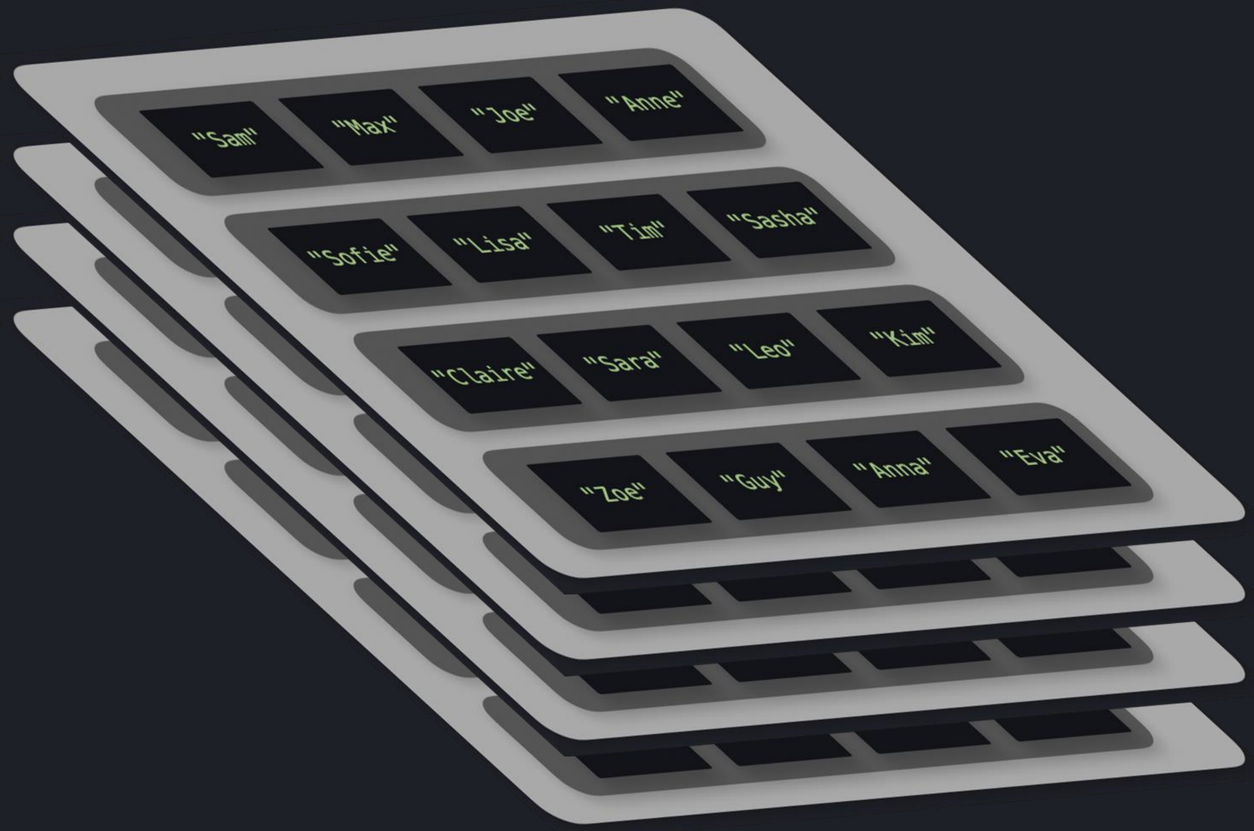
python3

```
>>>  school = [
        [
            ["Sara", "Kim", "Anne", "Eva"],
            ["Johan", "Collin", "Sam", "Alex"],
            ["Luke", "Sara", "Haley", "Jennifer"],
            ["Katy", "Mara", "Max", "Roy"],
        ],
        [
            ["Anne", "Leo", "Sasha", "Tim"],
            ["Claire", "Guy", "Eva", "Zoe"],
            ["Lisa", "Max", "Evan", "Chloe"],
            ["Brent", "Sam", "Sarah", "Anne"],
        ],
        [
            ["Maria", "Julian", "Chris", "Tom"],
            ["Zoe", "Anna", "Kim", "Leo"],
            ["Vera", "Pim", "Leo", "Guy"],
            ["Anne", "Sofie", "Max", "Joe"],
        ],
        [
            ["Sam", "Max", "Joe", "Anne"],
            ["Sofie", "Lisa", "Tim", "Sasha"],
            ["Claire", "Sara", "Leo", "Kim"],
            ["Zoe", "Guy", "Anna", "Eva"],
        ]
    ]
>>>  student = school[1]        [2]  [1]
```



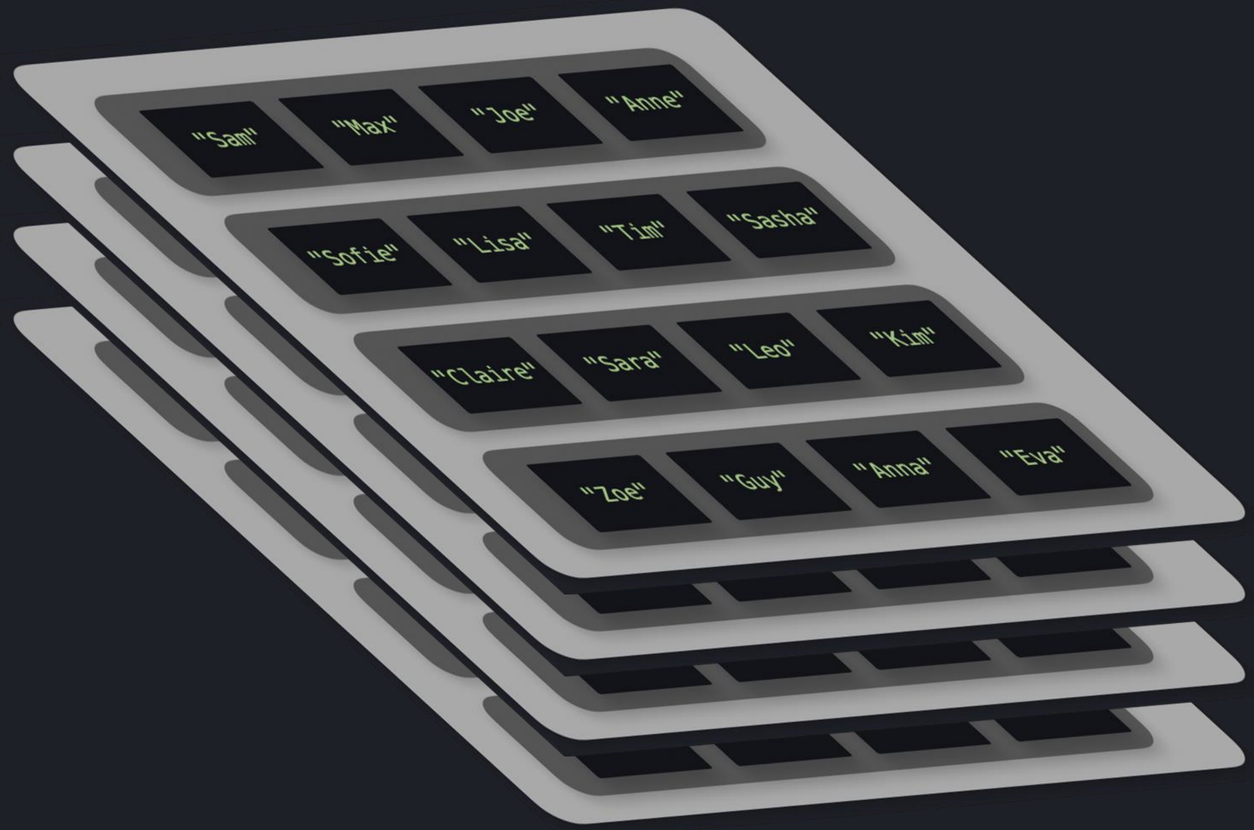
python3

```
>>>  school = [
        [
            ["Sara", "Kim", "Anne", "Eva"],
            ["Johan", "Collin", "Sam", "Alex"],
            ["Luke", "Sara", "Haley", "Jennifer"],
            ["Katy", "Mara", "Max", "Roy"],
        ],
        [
            ["Anne", "Leo", "Sasha", "Tim"],
            ["Claire", "Guy", "Eva", "Zoe"],
            ["Lisa", "Max", "Evan", "Chloe"],
            ["Brent", "Sam", "Sarah", "Anne"],
        ],
        [
            ["Maria", "Julian", "Chris", "Tom"],
            ["Zoe", "Anna", "Kim", "Leo"],
            ["Vera", "Pim", "Leo", "Guy"],
            ["Anne", "Sofie", "Max", "Joe"],
        ],
        [
            ["Sam", "Max", "Joe", "Anne"],
            ["Sofie", "Lisa", "Tim", "Sasha"],
            ["Claire", "Sara", "Leo", "Kim"],
            ["Zoe", "Guy", "Anna", "Eva"],
        ]
    ]
>>>  student = school[1]        [2]  [1]
```



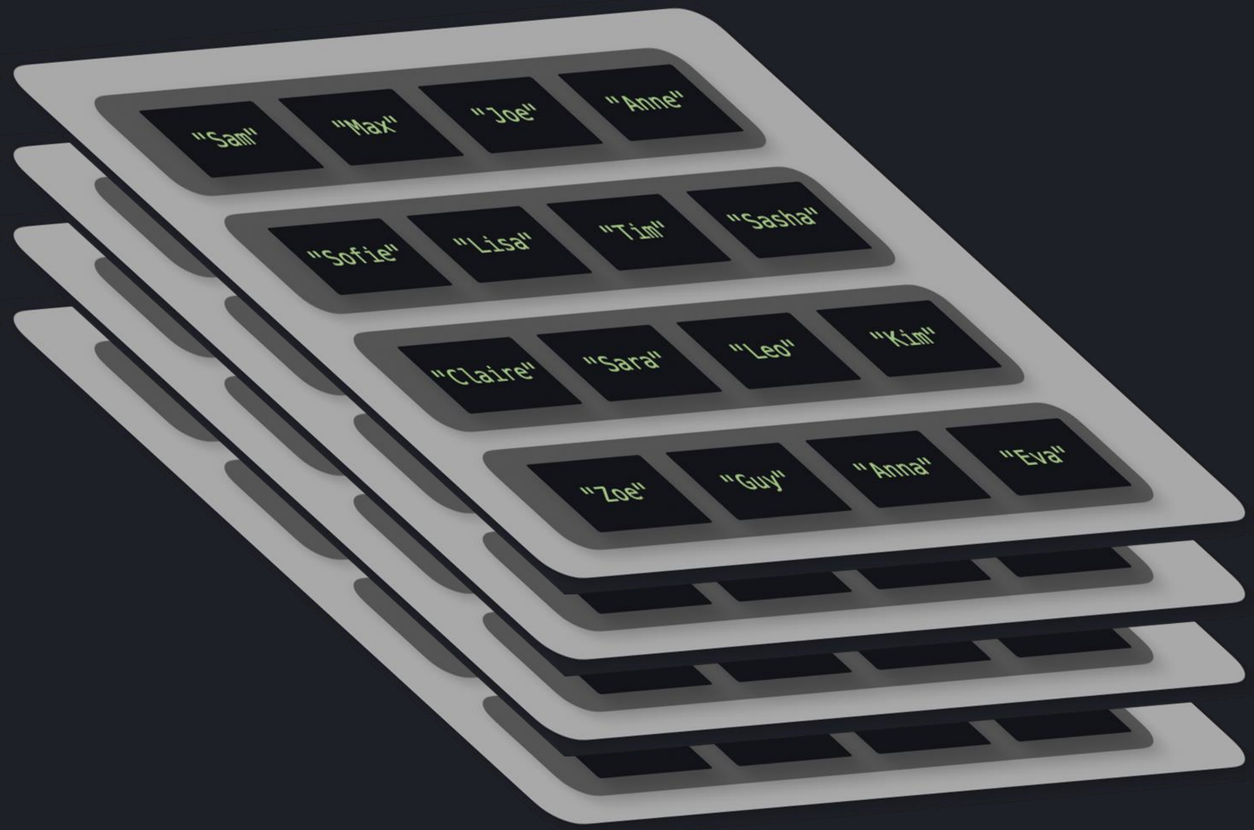
python3

```
>>> student = school[1]        [2]  [1]
>>> print(student)
```



python3

```
>>>  student = school[1]        [2]  [1]
>>>  print(student)
 "Max"
```



KodeKloud

Functions

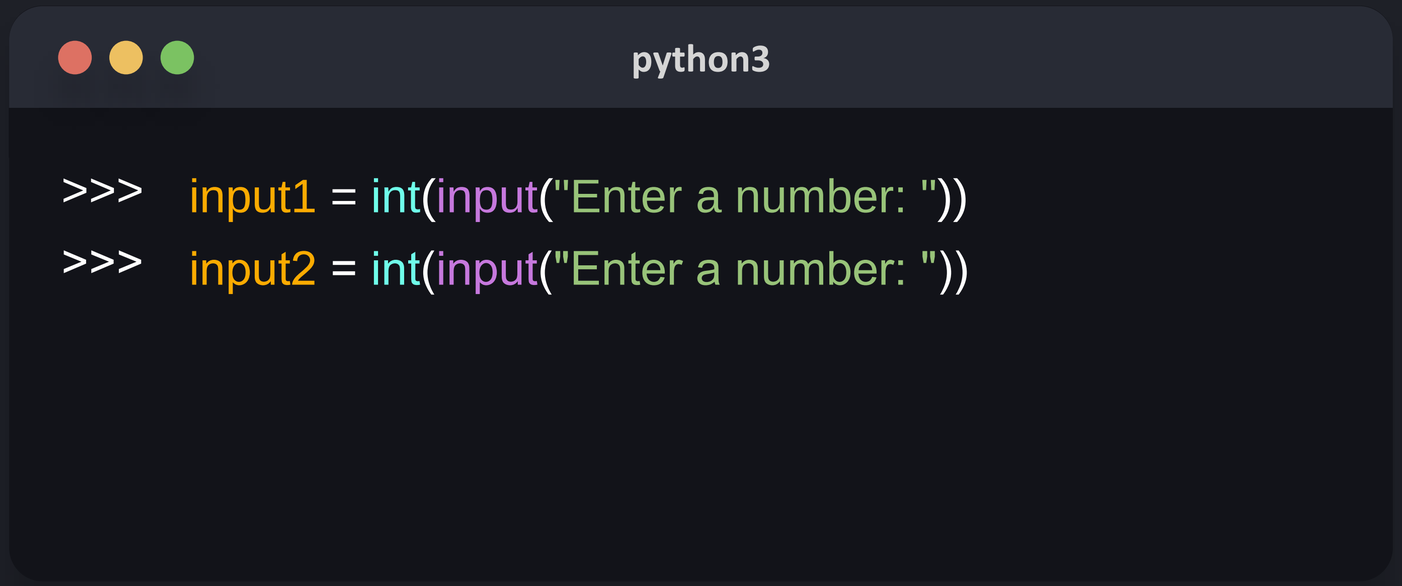
Functions

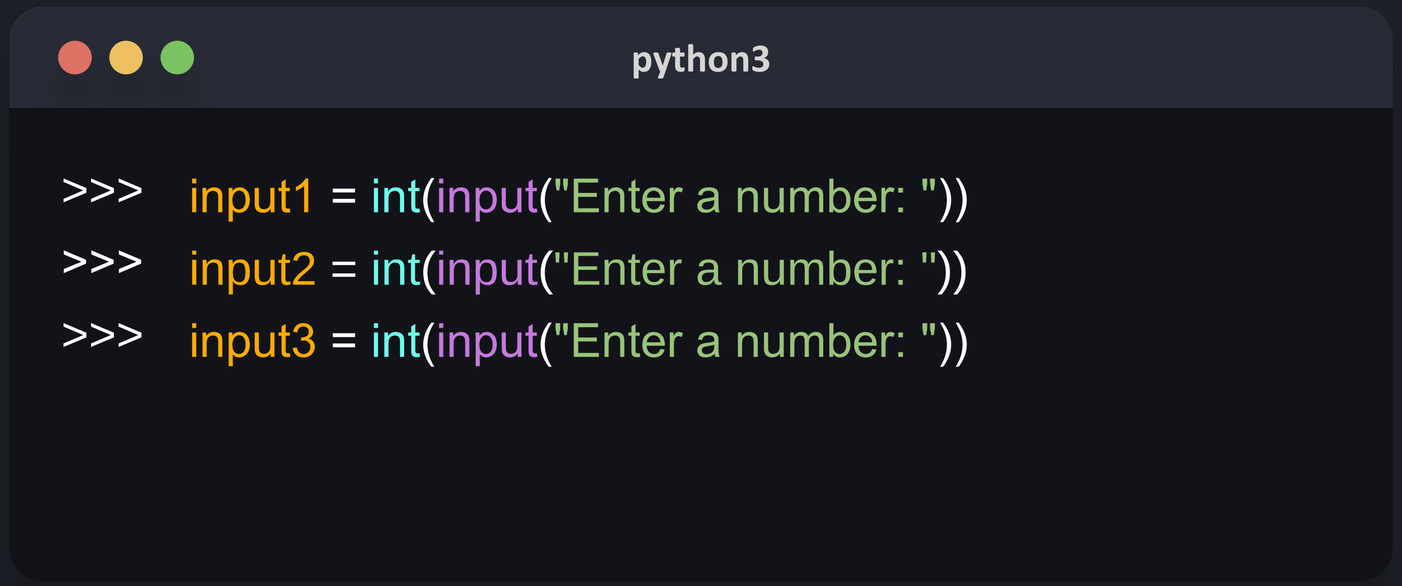
- `print()`
- `len()`
- `input()`

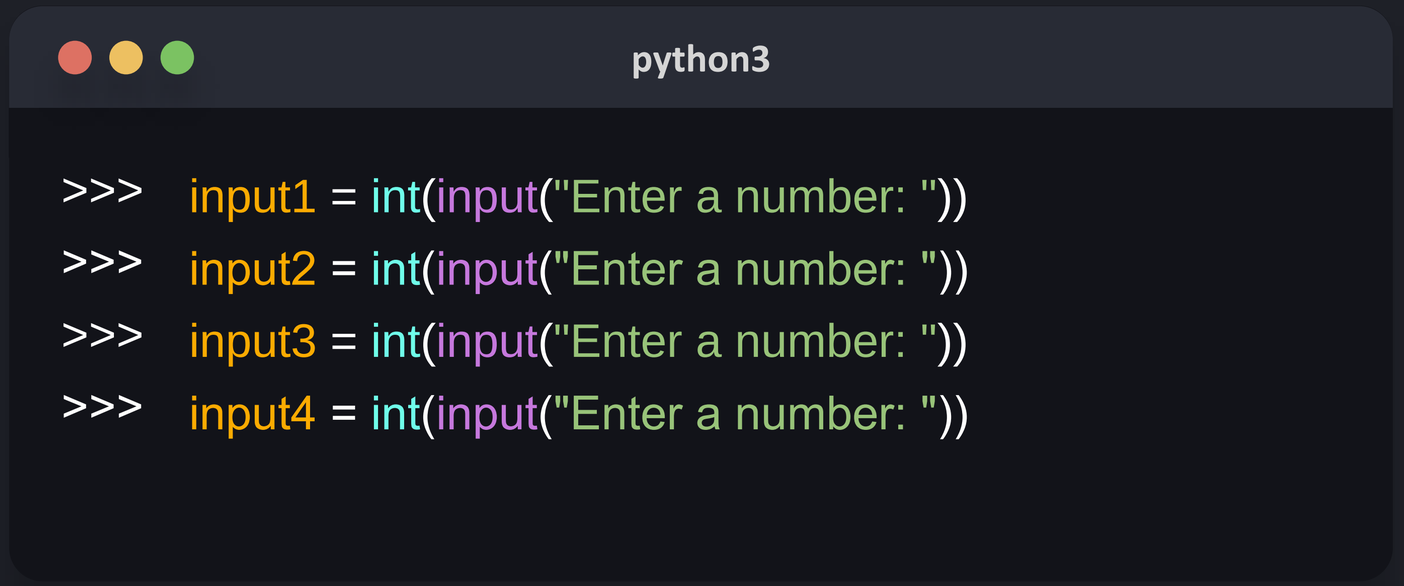
Methods

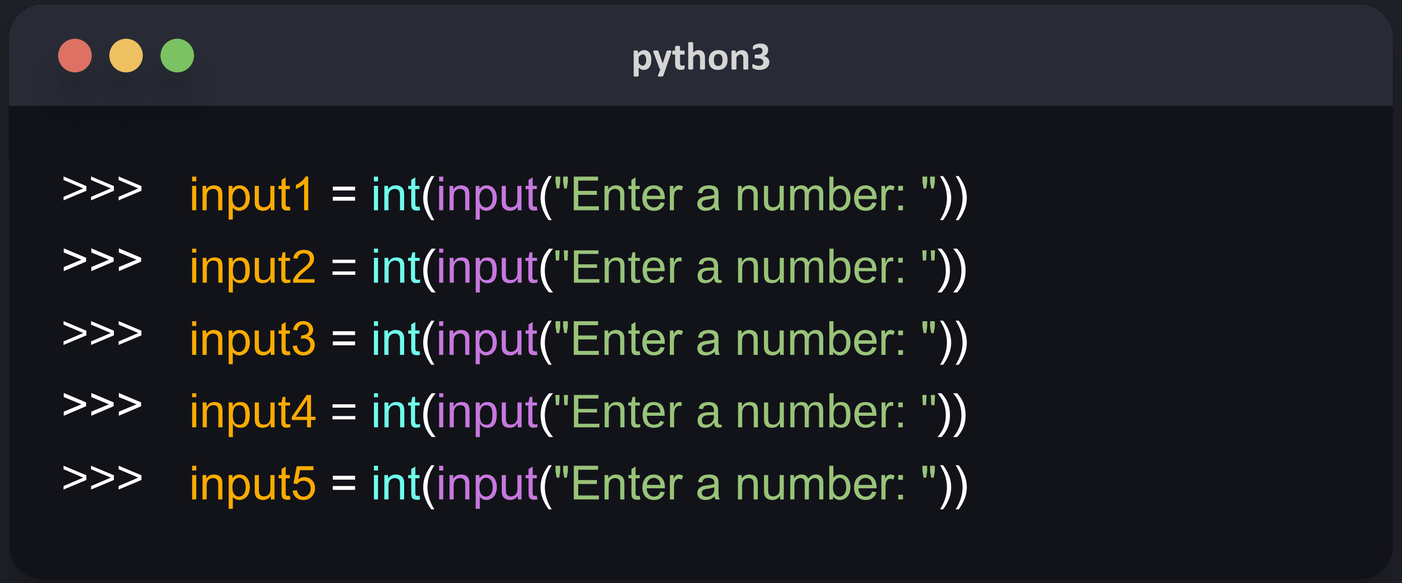
- *list*.`append()`
- *list*.`insert()`

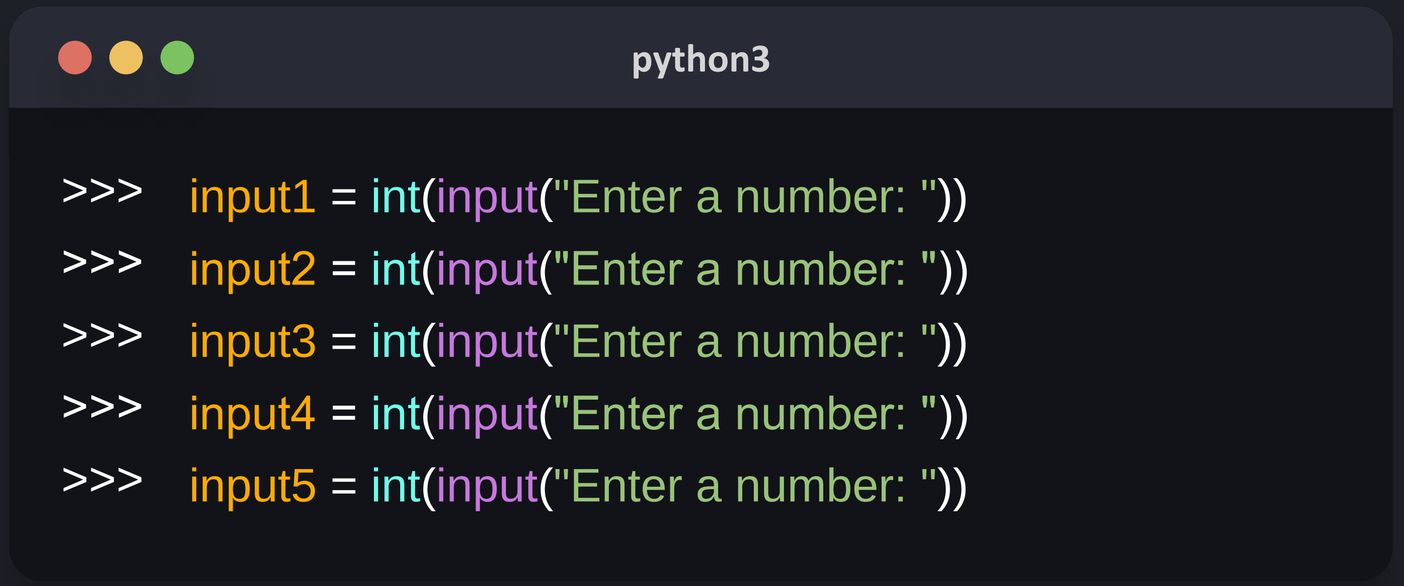

python3
>>> input1 = int(input("Enter a number: "))


python3
>>> input1 = int(input("Enter a number: "))
>>> input2 = int(input("Enter a number: "))


python3
>>> input1 = int(input("Enter a number: "))
>>> input2 = int(input("Enter a number: "))
>>> input3 = int(input("Enter a number: "))


python3
>>> input1 = int(input("Enter a number: "))
>>> input2 = int(input("Enter a number: "))
>>> input3 = int(input("Enter a number: "))
>>> input4 = int(input("Enter a number: "))


python3
>>> input1 = int(input("Enter a number: "))
>>> input2 = int(input("Enter a number: "))
>>> input3 = int(input("Enter a number: "))
>>> input4 = int(input("Enter a number: "))
>>> input5 = int(input("Enter a number: "))


python3
>>> input1 = int(input("Enter a number: "))
>>> input2 = int(input("Enter a number: "))
>>> input3 = int(input("Enter a number: "))
>>> input4 = int(input("Enter a number: "))
>>> input5 = int(input("Enter a number: "))

python3

```
>>>  input1 = int(input("Enter a number: "))
>>>  input3 = int(input("Enter a number: "))
>>>  input3 = int(input("Enter a number: "))
>>>  input4 = int(input("Enter a number: "))
>>>  input5 = int(input("Enter a number: "))
```

python3

```
>>>  def input_number():
         return int(input("Enter a number: "))
```

python3

```
>>>   input1 = int(input("Enter a number: "))
>>>   input3 = int(input("Enter a number: "))
>>>   input3 = int(input("Enter a number: "))
>>>   input4 = int(input("Enter a number: "))
>>>   input5 = int(input("Enter a number: "))
```

```
def input_number():
    return int(input("Enter a number: "))
```

python3

```
>>>
```

python3

```
>>>   input1 = int(input("Enter a number: "))
>>>   input3 = int(input("Enter a number: "))
>>>   input3 = int(input("Enter a number: "))
>>>   input4 = int(input("Enter a number: "))
>>>   input5 = int(input("Enter a number: "))
```

```
def input_number():
    return int(input("Enter a number: "))
```

python3

```
>>>
```

python3

```
>>>   input1 = int(input("Enter a number: "))
>>>   input3 = int(input("Enter a number: "))
>>>   input3 = int(input("Enter a number: "))
>>>   input4 = int(input("Enter a number: "))
>>>   input5 = int(input("Enter a number: "))
```

```
def input_number():
    return int(input("Enter a number: "))
```

python3

```
>>>
```

python3

```
>>>   input1 = int(input("Enter a number: "))
>>>   input3 = int(input("Enter a number: "))
>>>   input3 = int(input("Enter a number: "))
>>>   input4 = int(input("Enter a number: "))
>>>   input5 = int(input("Enter a number: "))
```

```
def input_number():
    return int(input("Enter a number: "))
```

python3

```
>>>
```

python3

```
>>>   input1 = int(input("Enter a number: "))
>>>   input3 = int(input("Enter a number: "))
>>>   input3 = int(input("Enter a number: "))
>>>   input4 = int(input("Enter a number: "))
>>>   input5 = int(input("Enter a number: "))
```

```
def input  number():
    return int(input("Enter a number: "))
```

python3

```
>>>
```

python3

```
>>>   input1 = int(input("Enter a number: "))
>>>   input3 = int(input("Enter a number: "))
>>>   input3 = int(input("Enter a number: "))
>>>   input4 = int(input("Enter a number: "))
>>>   input5 = int(input("Enter a number: "))
```

```
def input  number():
    return int(input("Enter a number: "))
```

python3

```
>>>
```

python3

```
>>>   input1 = int(input("Enter a number: "))
>>>   input3 = int(input("Enter a number: "))
>>>   input3 = int(input("Enter a number: "))
>>>   input4 = int(input("Enter a number: "))
>>>   input5 = int(input("Enter a number: "))
```

```
def input  number():
    return int(input("Enter a number: "))
```

python3

```
>>>
```

python3

```
>>>   input1 = int(input("Enter a number: "))
>>>   input3 = int(input("Enter a number: "))
>>>   input3 = int(input("Enter a number: "))
>>>   input4 = int(input("Enter a number: "))
>>>   input5 = int(input("Enter a number: "))
```

```
def input  number():
    return int(input("Enter a number: "))
```

python3

```
>>>
```

python3

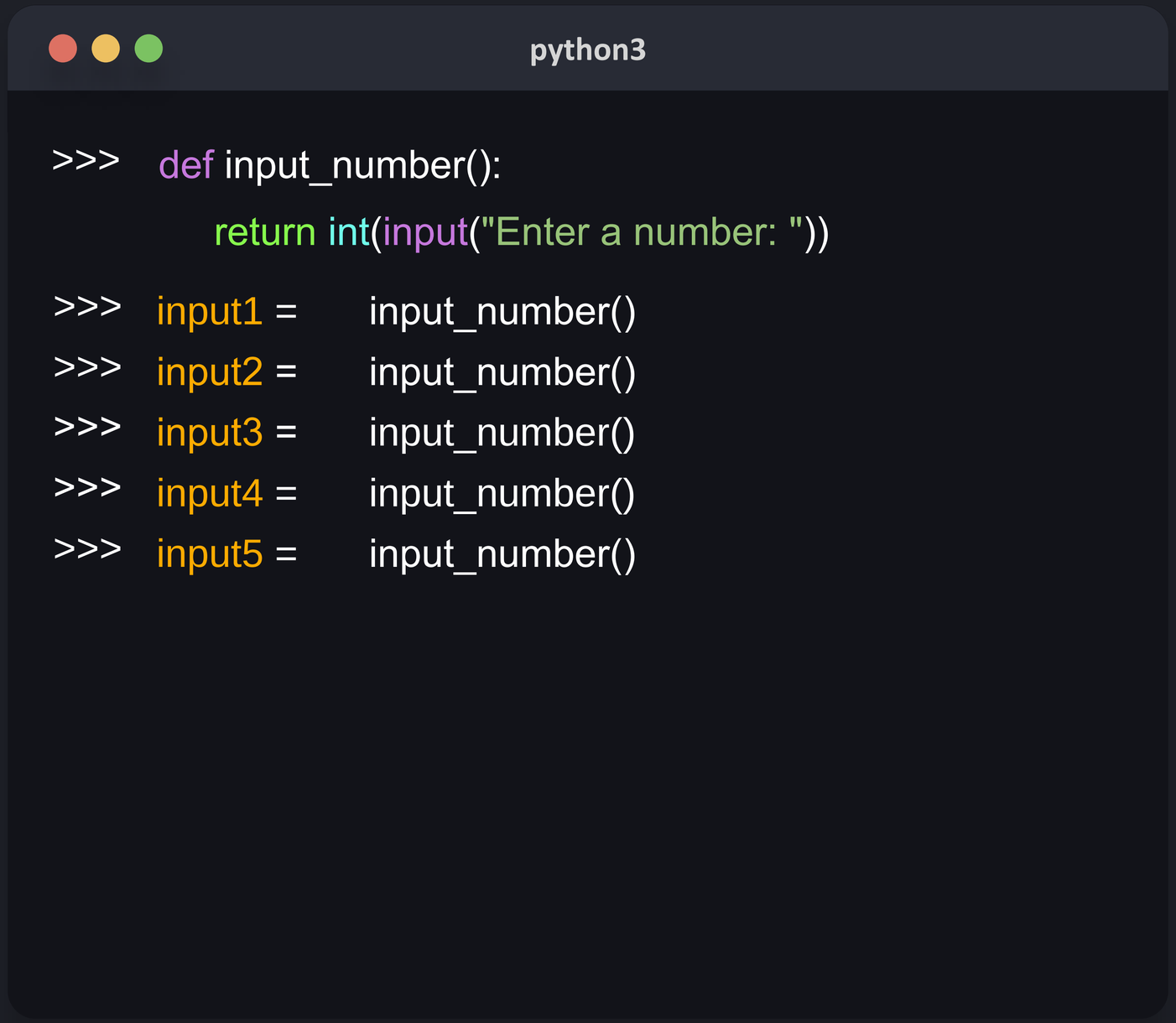
```
>>> def input_number():
        return int(input("Enter a number: "))
```

python3

```
>>> input1 = int(input("Enter a number: "))
>>> input2 = int(input("Enter a number: "))
>>> input3 = int(input("Enter a number: "))
>>> input4 = int(input("Enter a number: "))
>>> input5 = int(input("Enter a number: "))
```

python3

```
>>>  def input_number():
         return int(input("Enter a number: "))
>>>  input1 =     input_number()
>>>  input2 =     input_number()
>>>  input3 =     input_number()
>>>  input4 =     input_number()
>>>  input5 =     input_number()
```


python3
>>> def input_number():
return int(input("Enter a number: "))
>>> input1 = input_number()
>>> input2 = input_number()
>>> input3 = input_number()
>>> input4 = input_number()
>>> input5 = input_number()

python3

```
>>>  def input_number():
         return int(input("Enter a number: "))
>>>  input1 =     input_number()
>>>  input2 =     input_number()
>>>  input3 =     input_number()
>>>  input4 =     input_number()
>>>  input5 =     input_number()
>>>  input1
```

python3

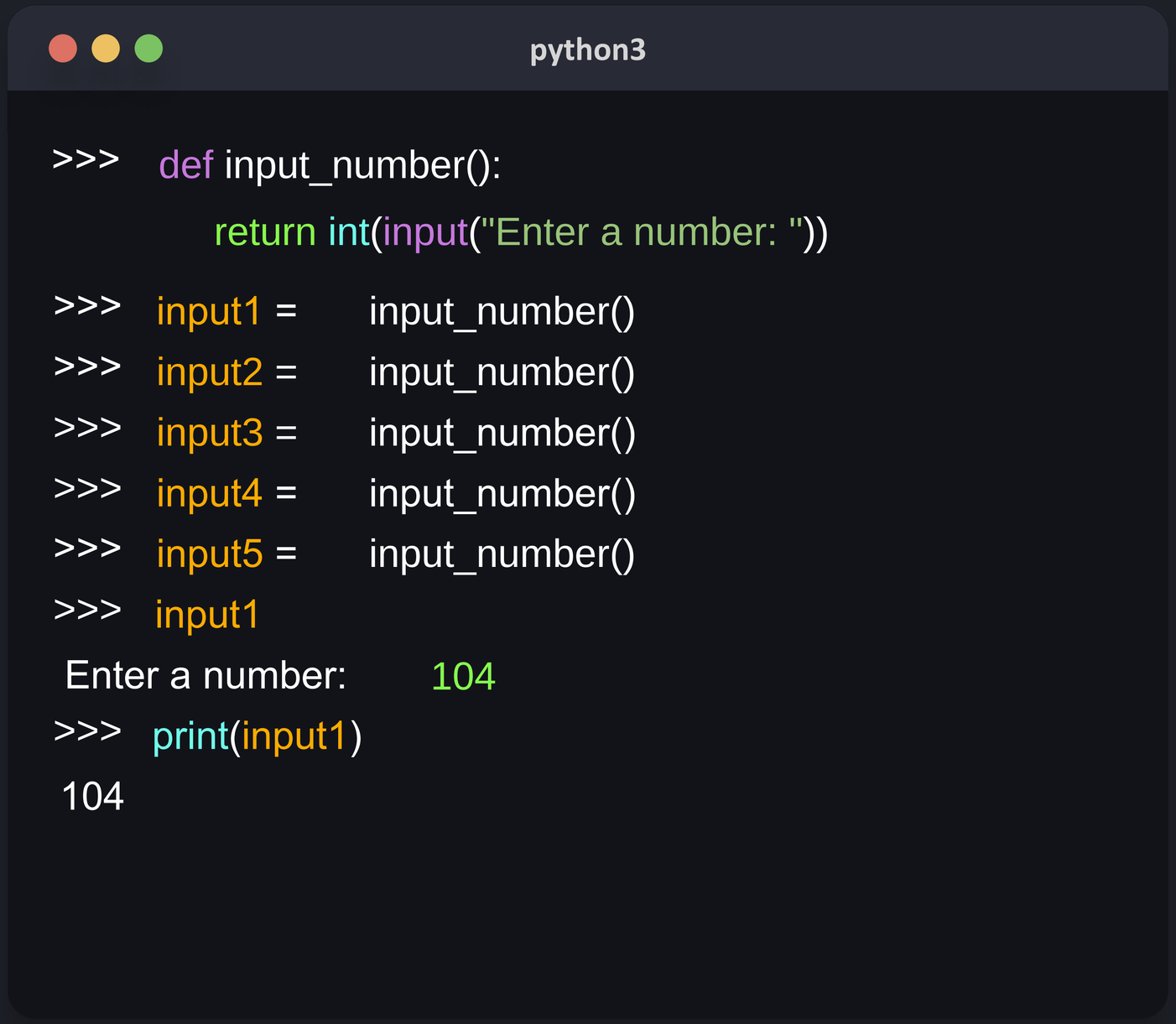
```
>>>  def input_number():
         return int(input("Enter a number: "))
>>>  input1 =     input_number()
>>>  input2 =     input_number()
>>>  input3 =     input_number()
>>>  input4 =     input_number()
>>>  input5 =     input_number()
>>>  input1
 Enter a number:      104
```

python3

```
>>>   def input_number():
          return int(input("Enter a number: "))
>>>   input1 =      input_number()
>>>   input2 =      input_number()
>>>   input3 =      input_number()
>>>   input4 =      input_number()
>>>   input5 =      input_number()
>>>   input1
 Enter a number:       104
>>>   print(input1)
```

python3

```
>>>   def input_number():
          return int(input("Enter a number: "))
>>>   input1 =      input_number()
>>>   input2 =      input_number()
>>>   input3 =      input_number()
>>>   input4 =      input_number()
>>>   input5 =      input_number()
>>>   input1
 Enter a number:       104
>>>   print(input1)
 104
```


python3
>>> def input_number():
return int(input("Enter a number: "))
>>> input1 = input_number()
>>> input2 = input_number()
>>> input3 = input_number()
>>> input4 = input_number()
>>> input5 = input_number()
>>> input1
Enter a number: 104
>>> print(input1)
104

python3

```
>>>  def input_number():
         return int(input("Enter a number: "))
>>>  input1 =     input_number()
>>>  input2 =     input_number()
>>>  input3 =     input_number()
>>>  input4 =     input_number()
>>>  input5 =     input_number()
>>>  input1
 Enter a number:      104
>>>  print(input1)
 104
>>>  input2
```

python3

```
>>>   def input_number():
          return int(input("Enter a number: "))
>>>   input1 =      input_number()
>>>   input2 =      input_number()
>>>   input3 =      input_number()
>>>   input4 =      input_number()
>>>   input5 =      input_number()
>>>   input1
 Enter a number:       104
>>>   print(input1)
 104
>>>   input2
 Enter a number:       34
```

python3

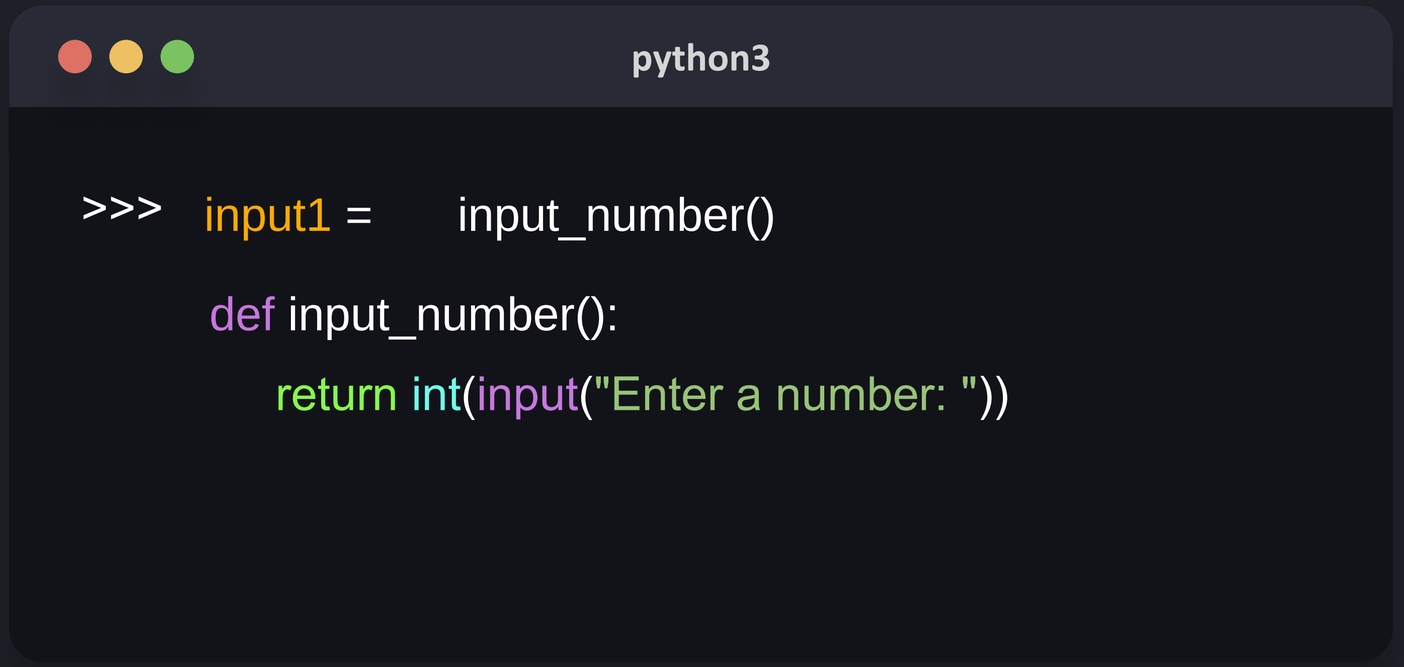
```
>>>  def input_number():
         return int(input("Enter a number: "))
>>>  input1 =     input_number()
>>>  input2 =     input_number()
>>>  input3 =     input_number()
>>>  input4 =     input_number()
>>>  input5 =     input_number()
>>>  input1
 Enter a number:      104
>>>  print(input1)
 104
>>>  input2
 Enter a number:      34
>>>  print(input2)
```

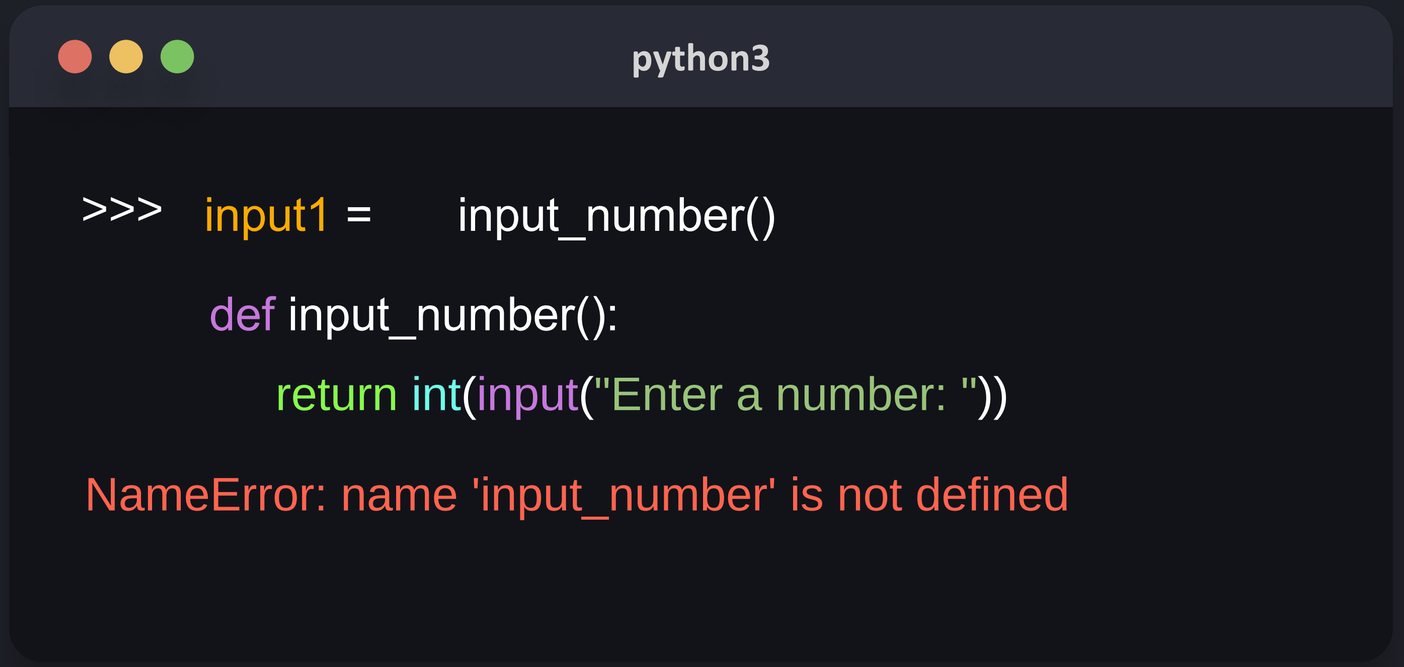
python3

```
>>>  def input_number():
         return int(input("Enter a number: "))
>>>  input1 =     input_number()
>>>  input2 =     input_number()
>>>  input3 =     input_number()
>>>  input4 =     input_number()
>>>  input5 =     input_number()
>>>  input1
 Enter a number:      104
>>>  print(input1)
 104
>>>  input2
 Enter a number:      34
>>>  print(input2)
 34
```

python3

```
>>>  def input_number():
         return int(input("Enter a number: "))
>>>  input1 =     input_number()
>>>  input2 =     input_number()
>>>  input3 =     input_number()
>>>  input4 =     input_number()
>>>  input5 =     input_number()
>>>  input1
 Enter a number:      104
>>>  print(input1)
 104
>>>  input2
 Enter a number:      34
>>>  print(input2)
 34
```


python3
>>> input1 = input_number()
def input_number():
return int(input("Enter a number: "))


python3
>>> input1 = input_number()
def input_number():
return int(input("Enter a number: "))
NameError: name 'input_number' is not defined

KodeKloud

Function - Arguments

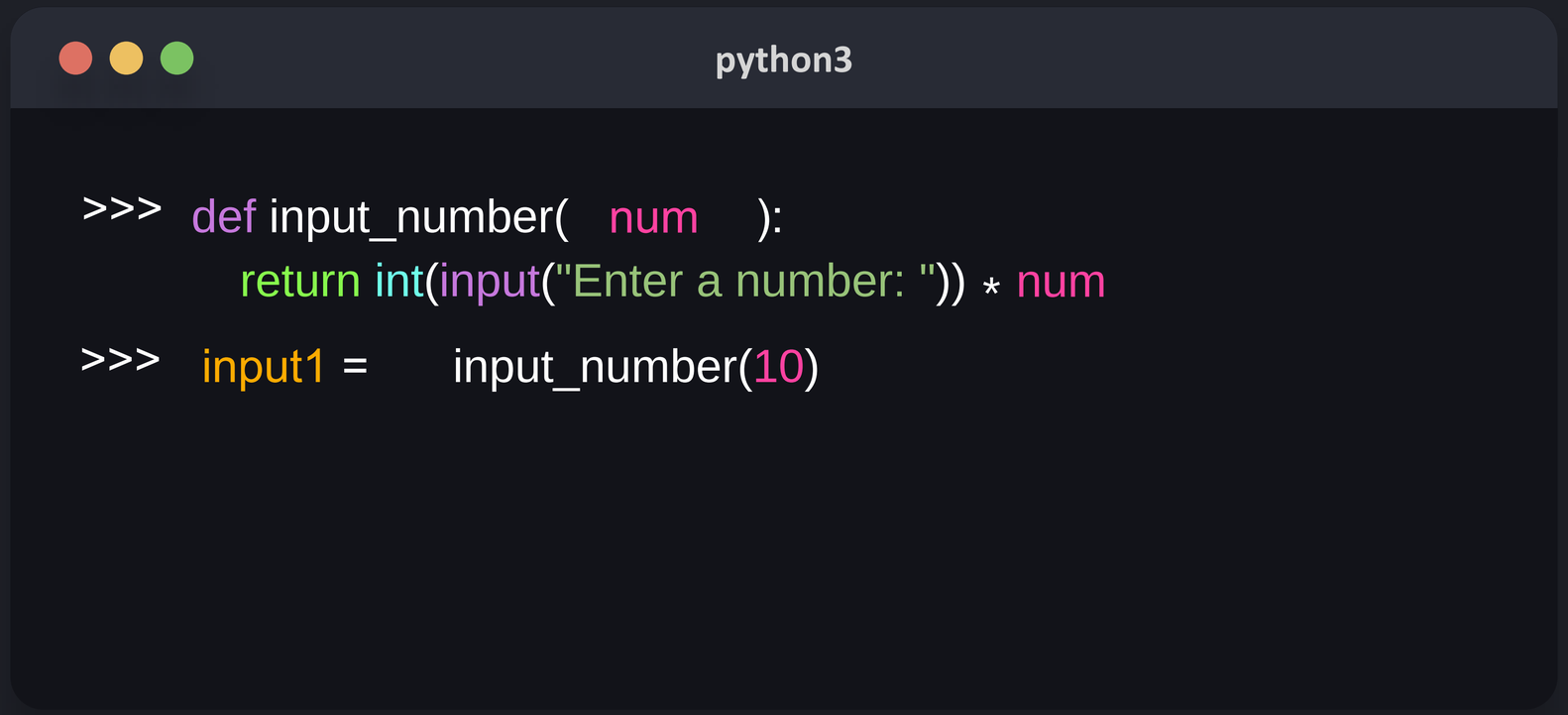
python3

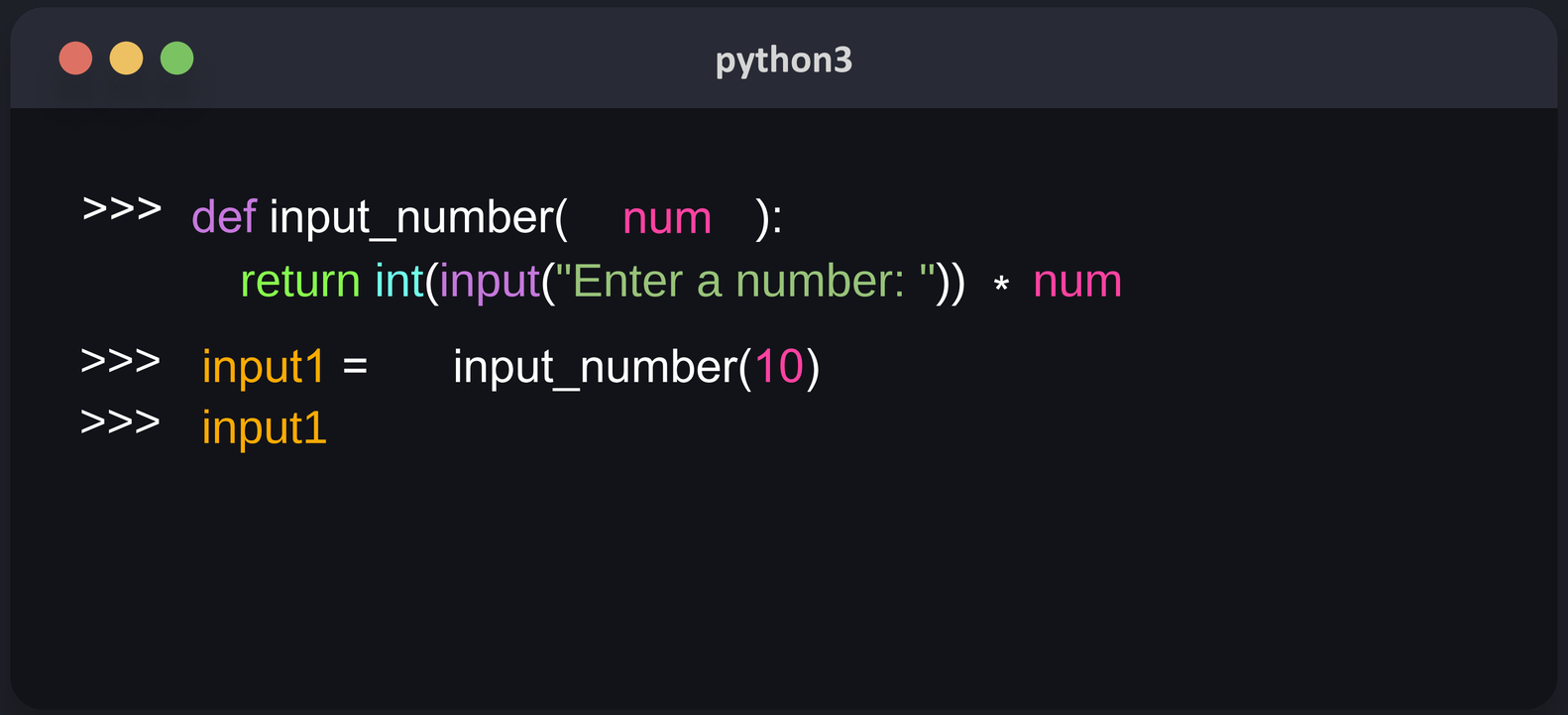
```
>>>
def input_number(        ):
    return int(input("Enter a number: "))
```

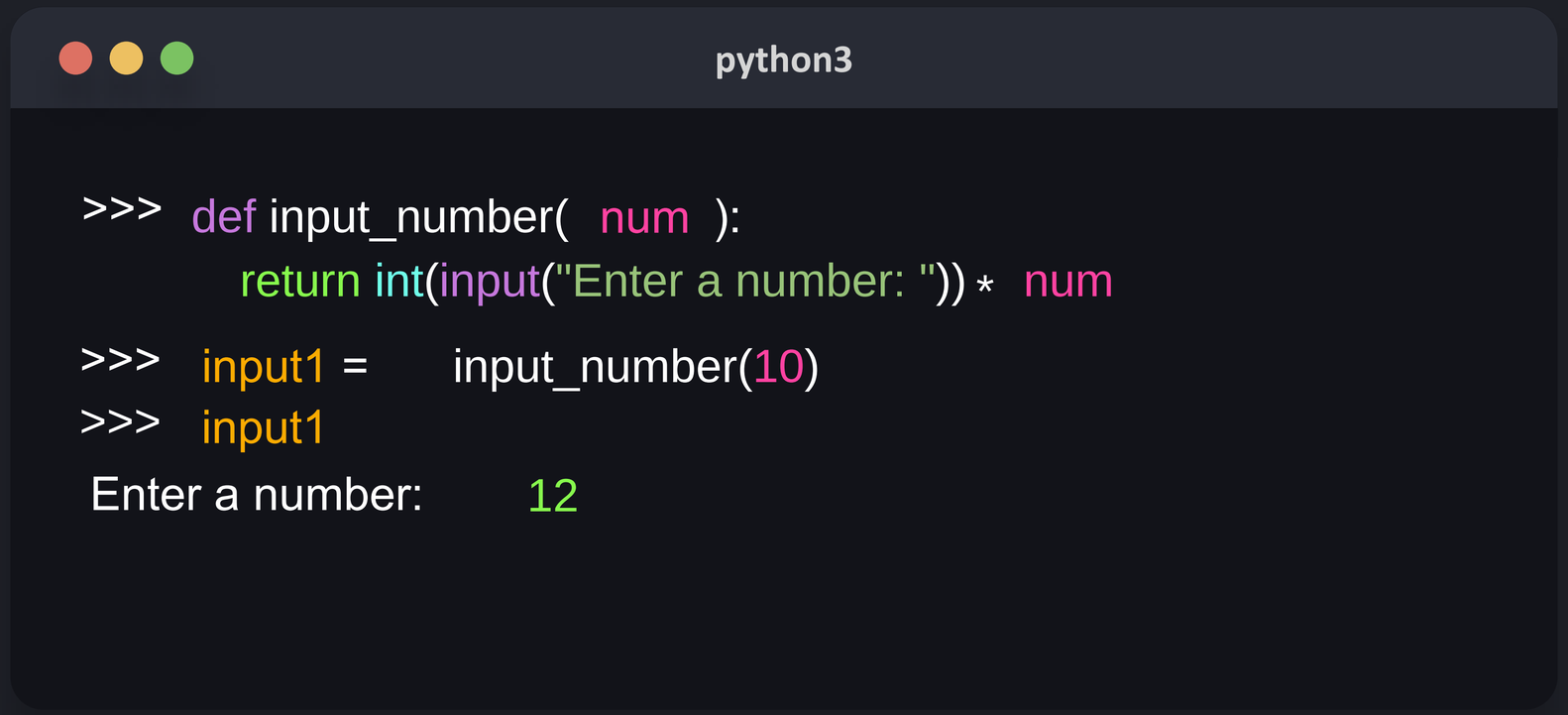
python3

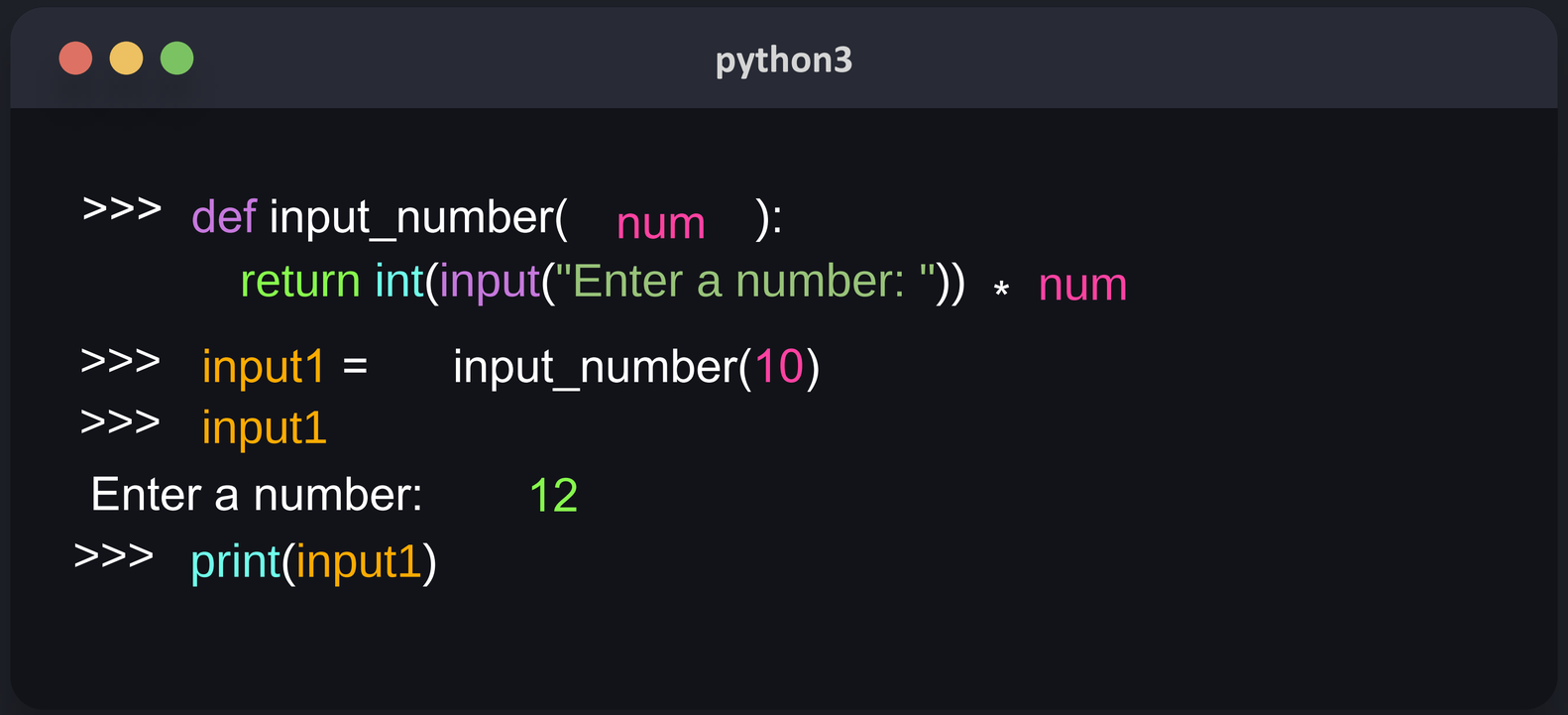
```
>>>
def input_number(  num ):
    return int(input("Enter a number: ")) * num
```

```
>>>
def input_number(num ):
    return int(input("Enter a number: ")) * num
```


python3
>>> def input_number(num):
return int(input("Enter a number: ")) * num
>>> input1 = input_number(10)


python3
>>> def input_number(num):
return int(input("Enter a number: ")) * num
>>> input1 = input_number(10)
>>> input1

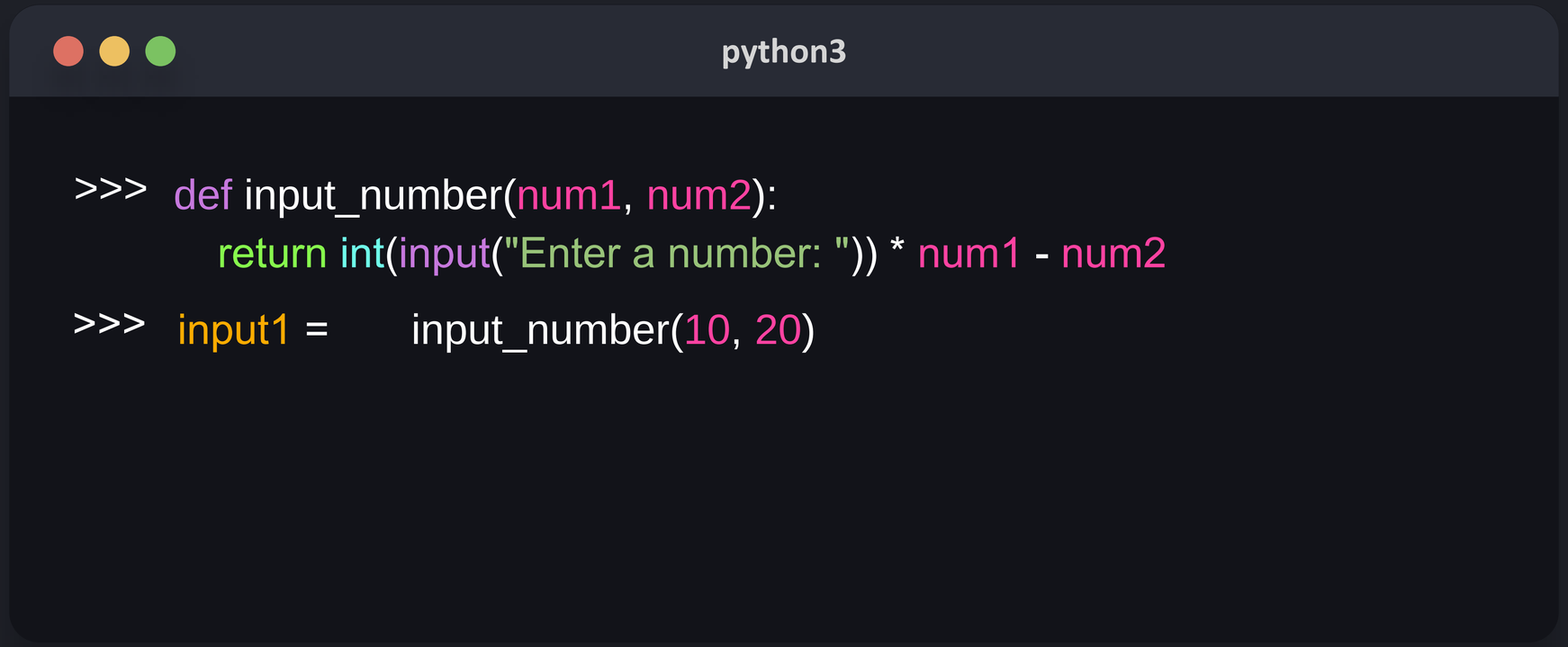

python3
>>> def input_number(num):
return int(input("Enter a number: ")) * num
>>> input1 = input_number(10)
>>> input1
Enter a number: 12


python3
>>> def input_number(num):
return int(input("Enter a number: ")) * num
>>> input1 = input_number(10)
>>> input1
Enter a number: 12
>>> print(input1)

python3

```
>>> def input_number(    num   ):
        return int(input("Enter a number: ")) *  num
>>>  input1 =      input_number(10)
>>>  input1
 Enter a number:       12
>>>  print(input1)
 120
```


python3
>>> def input_number(num1, num2):
return int(input("Enter a number: ")) * num1 - num2

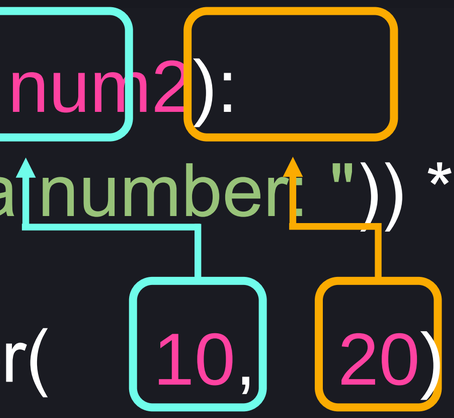

python3
>>> def input_number(num1, num2):
return int(input("Enter a number: ")) * num1 - num2
>>> input1 = input_number(10, 20)

python3

```
def input_number(num1, num2):
    return int(input("Enter a number: ")) * num1 - num2

input1 =      input_number(     10,    20)
```

python3

```
def input_number(num1, num2):
    return int(input("Enter a number: ")) * num1 - num2

input1 =      input_number(    10,   20)
```

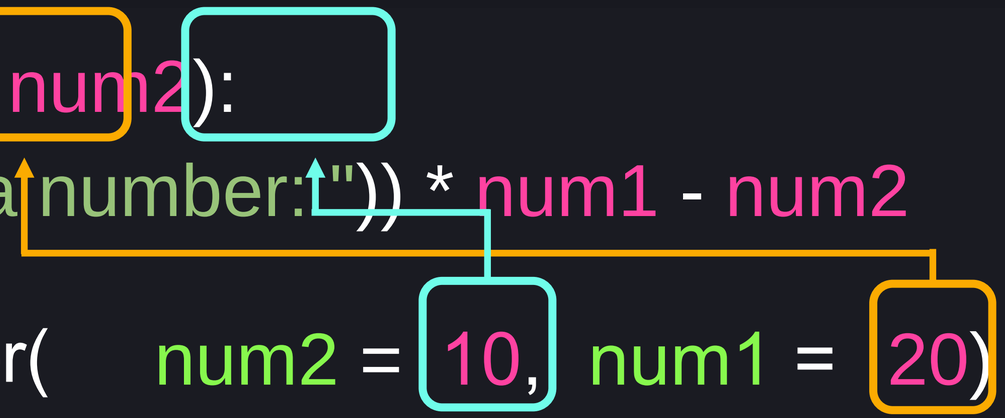


python3

```
def input_number(num1, num2):
    return int(input("Enter a number: ")) * num1 - num2

input1 =      input_number(     num2 =  10,  num1 =   20)
```

python3

```
def input_number(num1, num2):
    return int(input("Enter a number:")) * num1 - num2

input1 =      input_number(     num2 = 10,  num1 =  20)
```



python3

```
def input_number(num1, num2):
    return int(input("Enter a number: ")) * num1 - num2

input1 =      input_number(10, num1 = 20)
```

python3

```
>>> def input_number(num1, num2):
        return int(input("Enter a number: ")) * num1 - num2
>>> input1 =      input_number(10, num1 = 20)
```

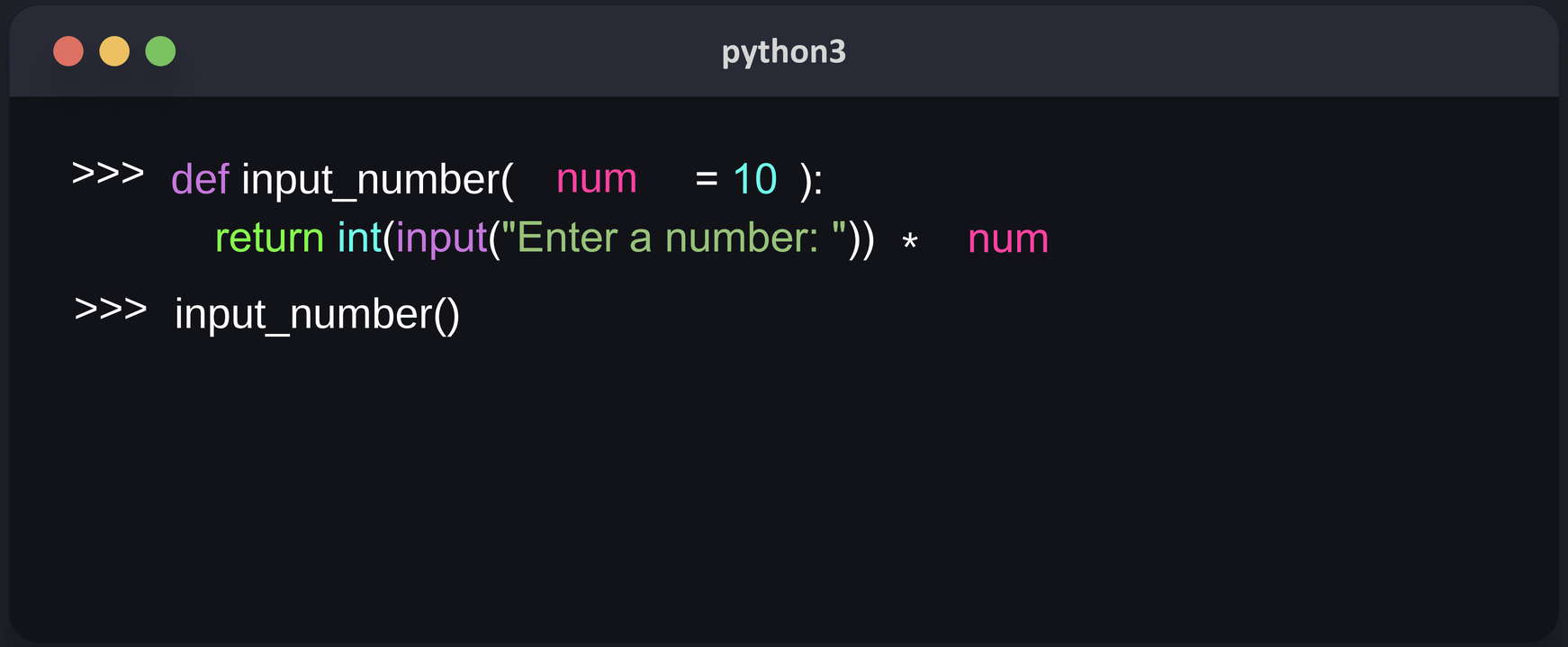
```
TypeError: input_number() got multiple values
for argument 'num1'
```

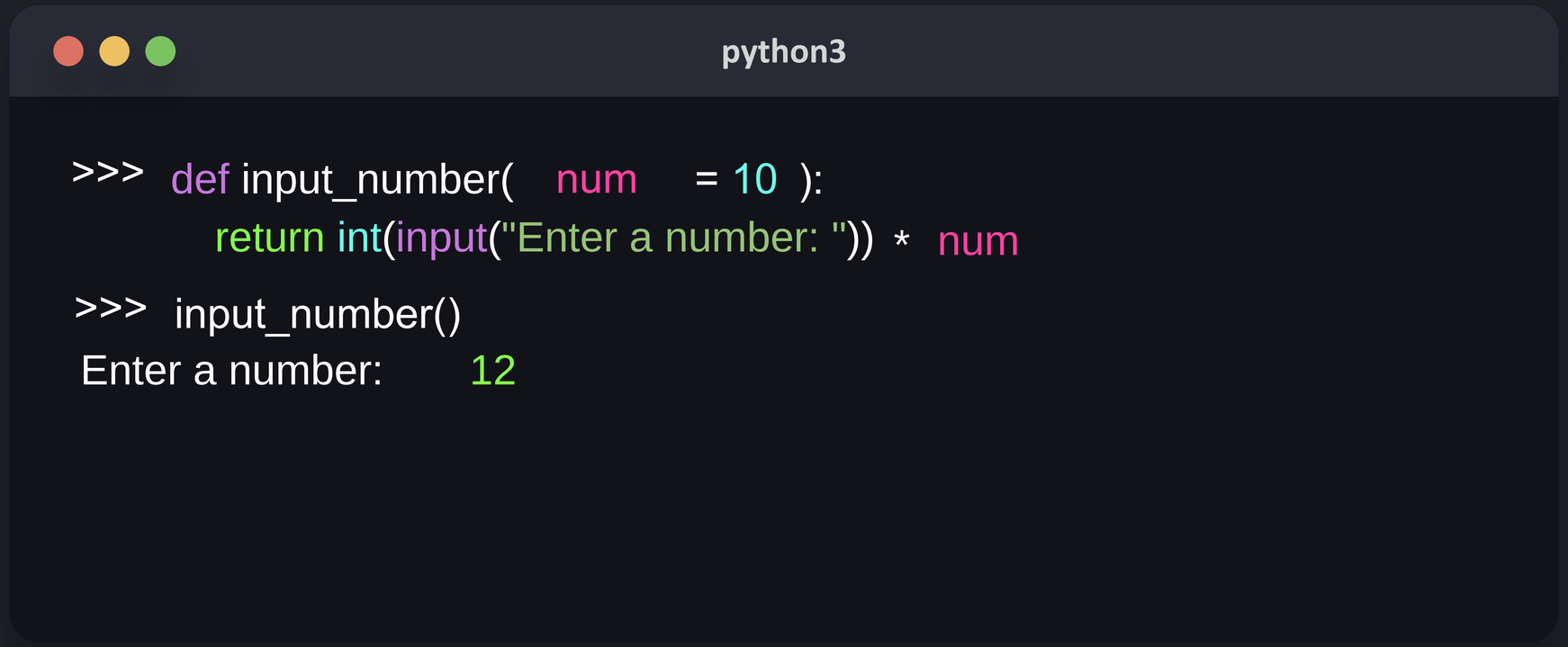
python3

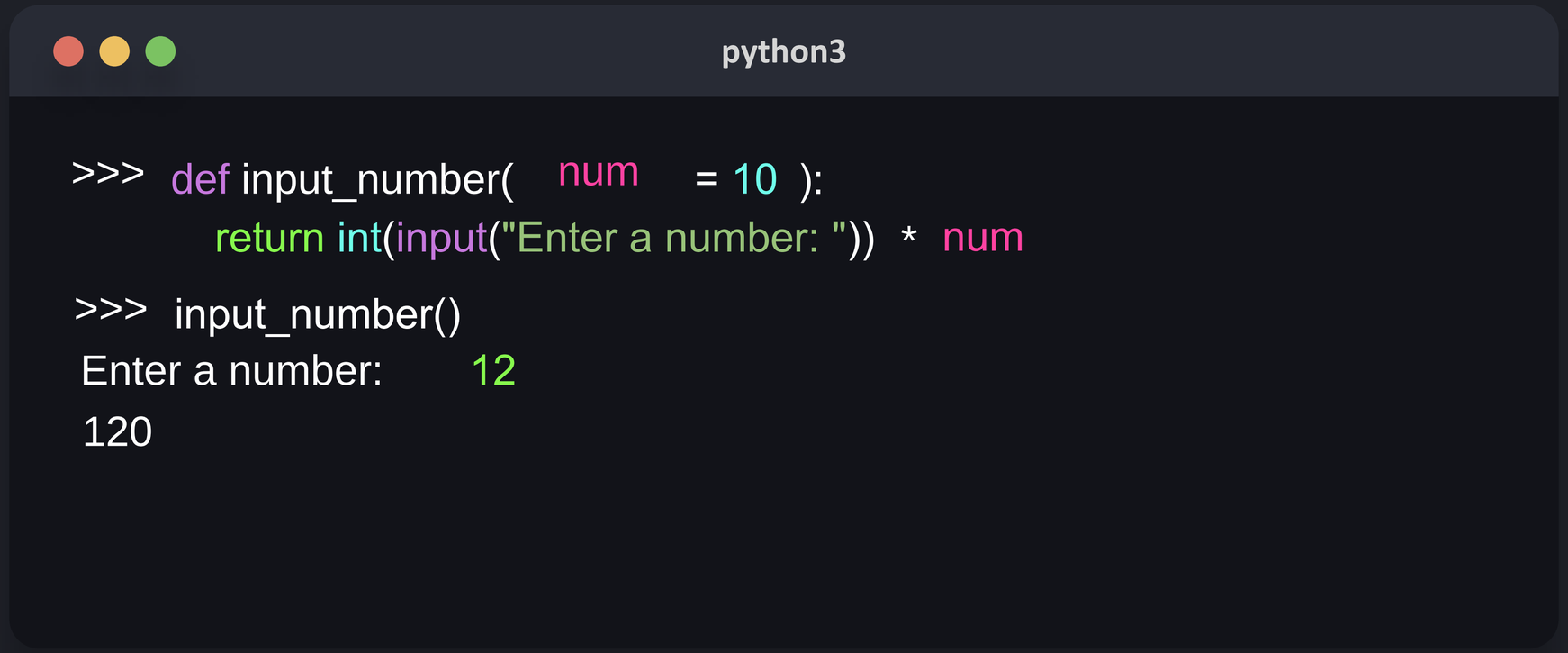
```
>>>  def input_number(     num    ):
         return int(input("Enter a number: "))  *  num
```

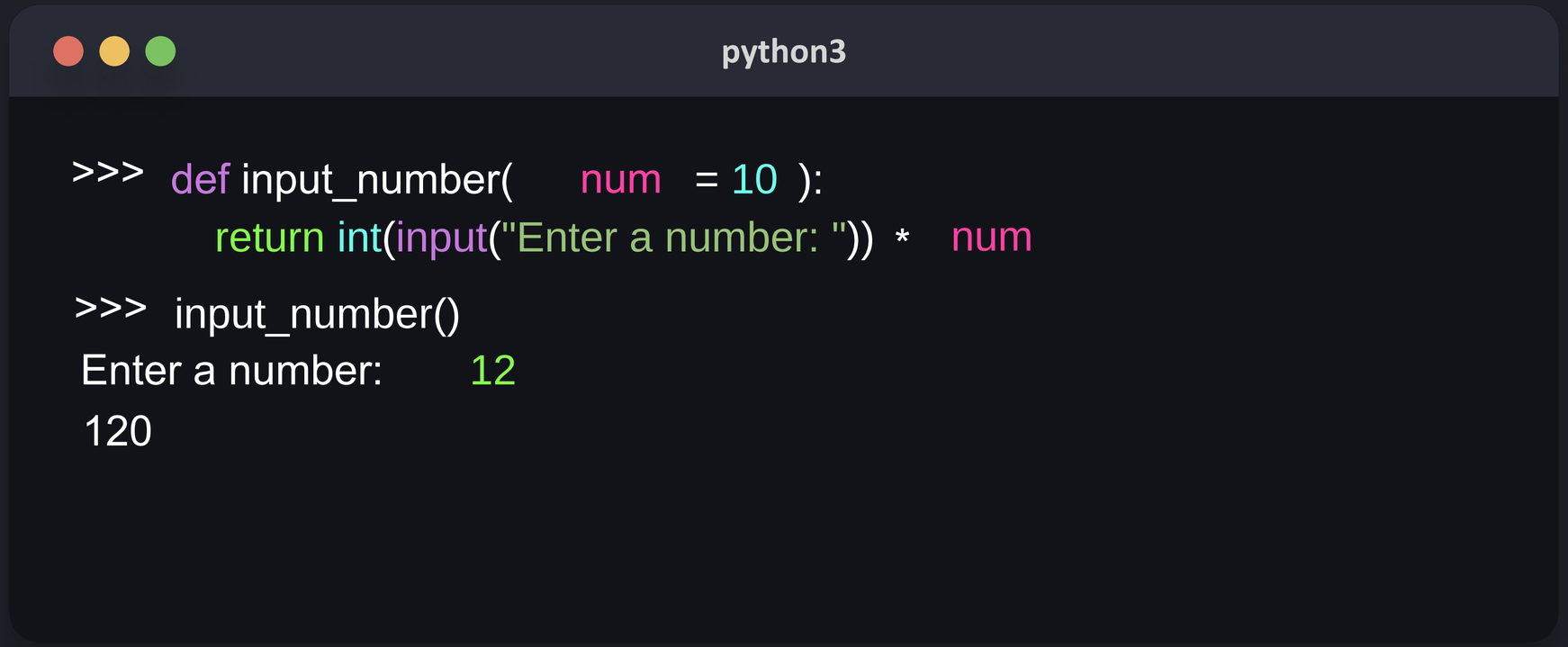
python3

```
>>> def input_number(      num    = 10  ):
        return int(input("Enter a number: ")) *  num
```


python3
>>> def input_number(num = 10):
return int(input("Enter a number: ")) * num
>>> input_number()

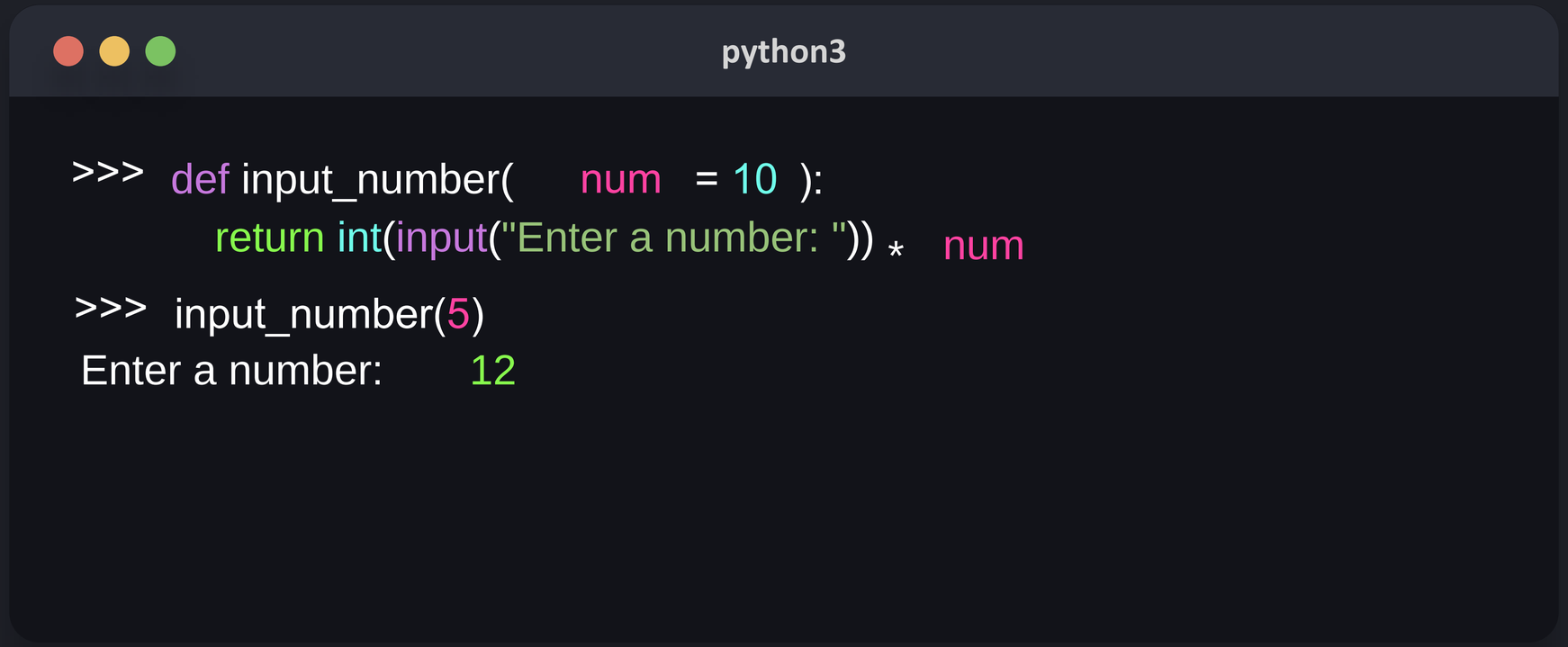

python3
>>> def input_number(num = 10):
return int(input("Enter a number: ")) * num
>>> input_number()
Enter a number: 12

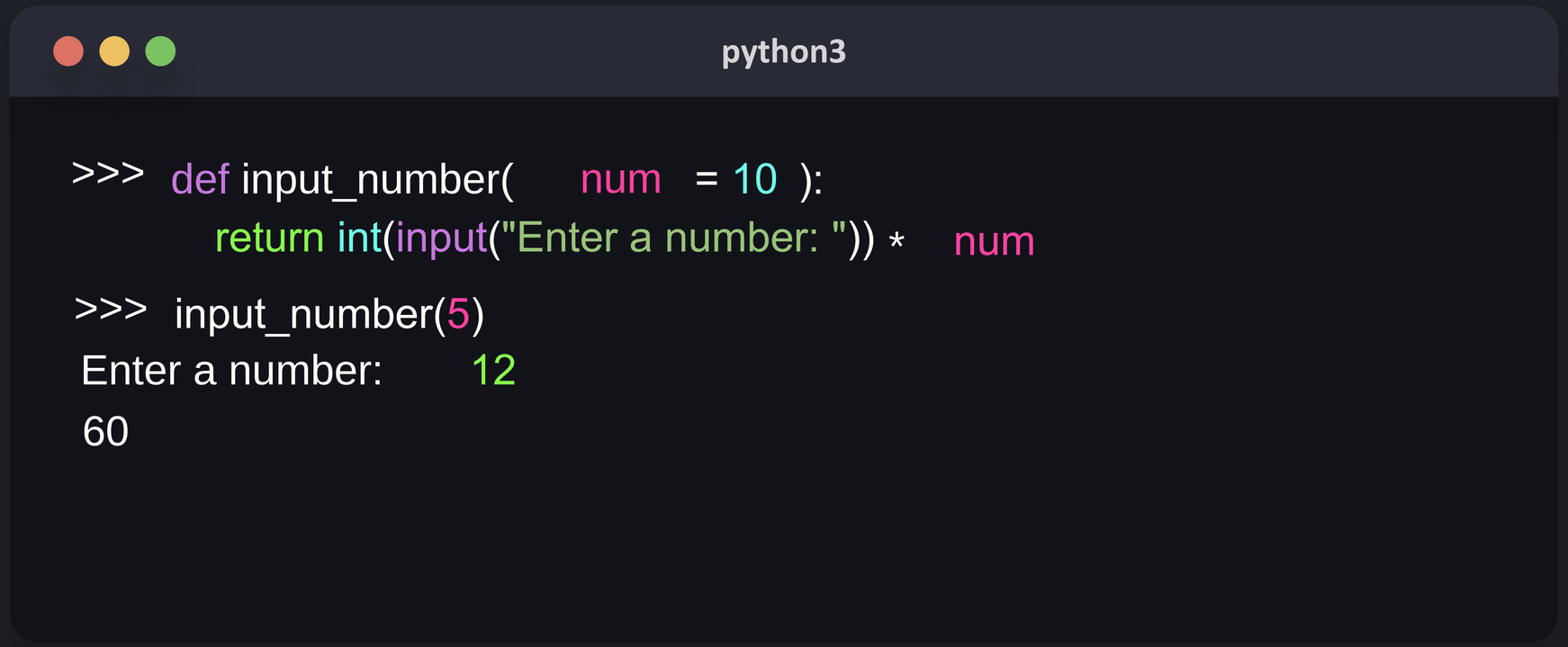

python3
>>> def input_number(num = 10):
return int(input("Enter a number: ")) * num
>>> input_number()
Enter a number: 12
120

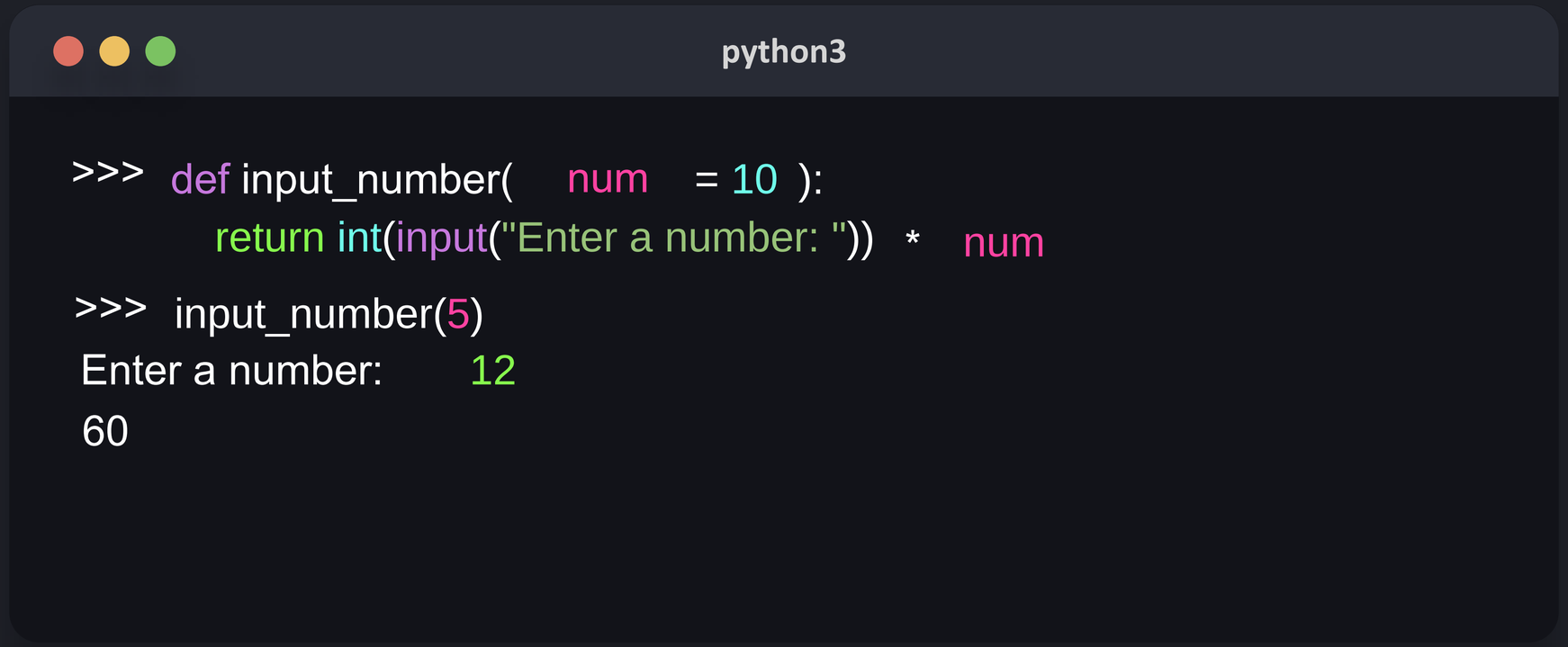

python3
>>> def input_number(num = 10):
return int(input("Enter a number: ")) * num
>>> input_number()
Enter a number: 12
120

python3

```
>>> def input_number(      num    = 10  ):
        return int(input("Enter a number: ")) *  num
>>> input_number(5)
```


python3
>>> def input_number(num = 10):
return int(input("Enter a number: ")) * num
>>> input_number(5)
Enter a number: 12

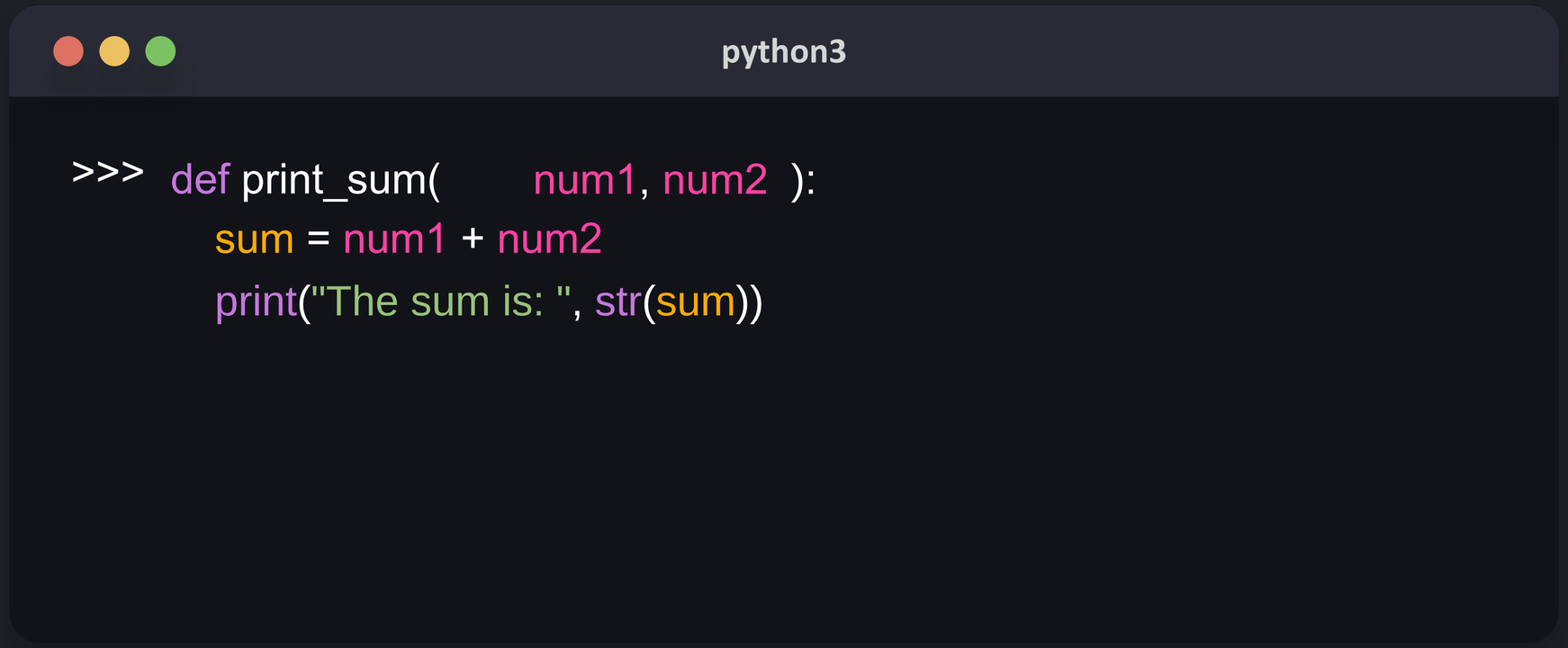

python3
>>> def input_number(num = 10):
return int(input("Enter a number: ")) * num
>>> input_number(5)
Enter a number: 12
60

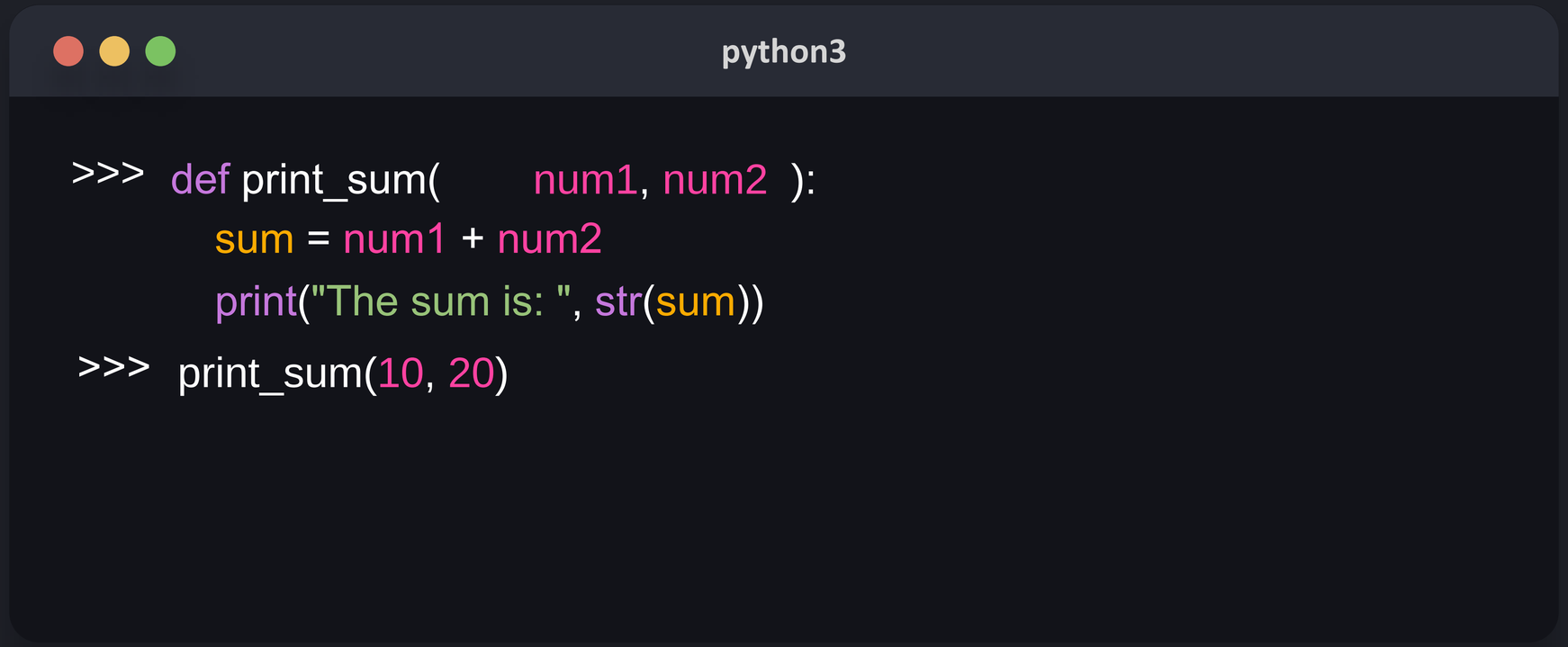

python3
>>> def input_number(num = 10):
return int(input("Enter a number: ")) * num
>>> input_number(5)
Enter a number: 12
60

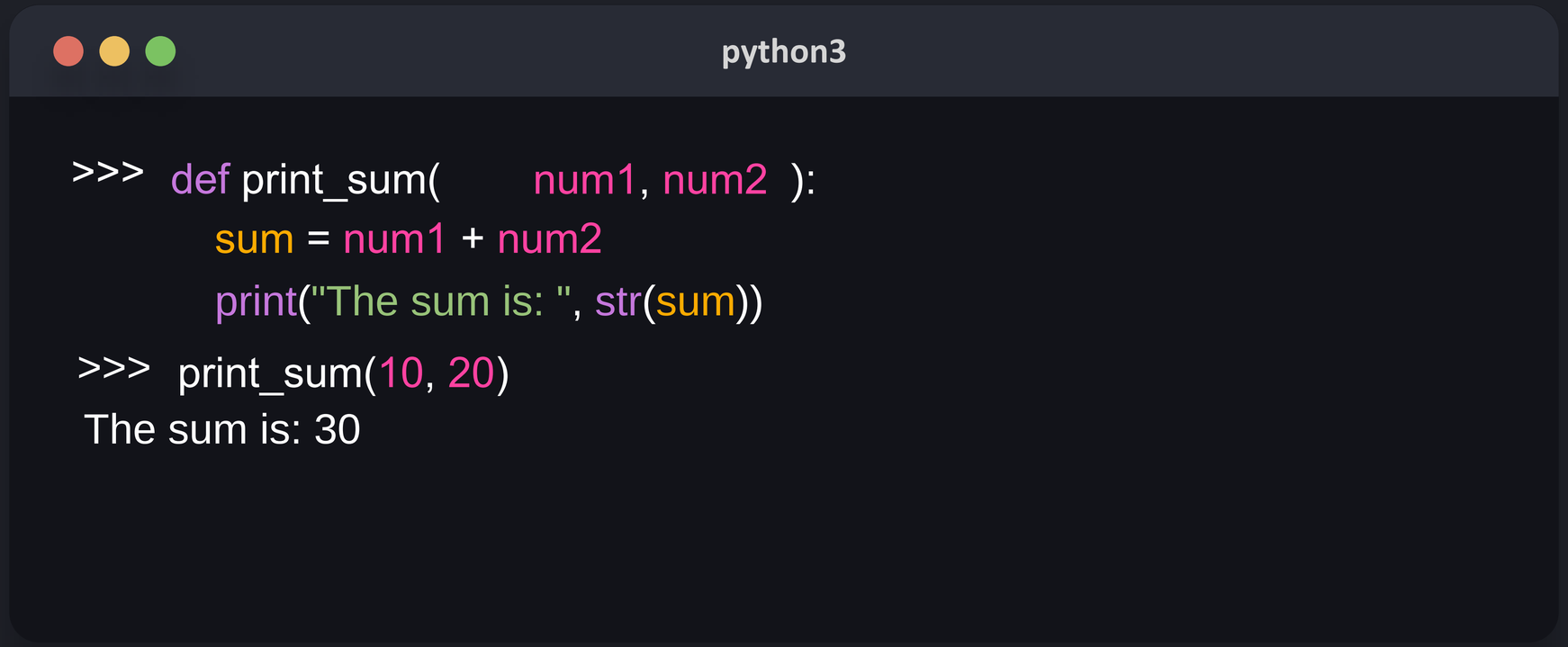
KodeKloud

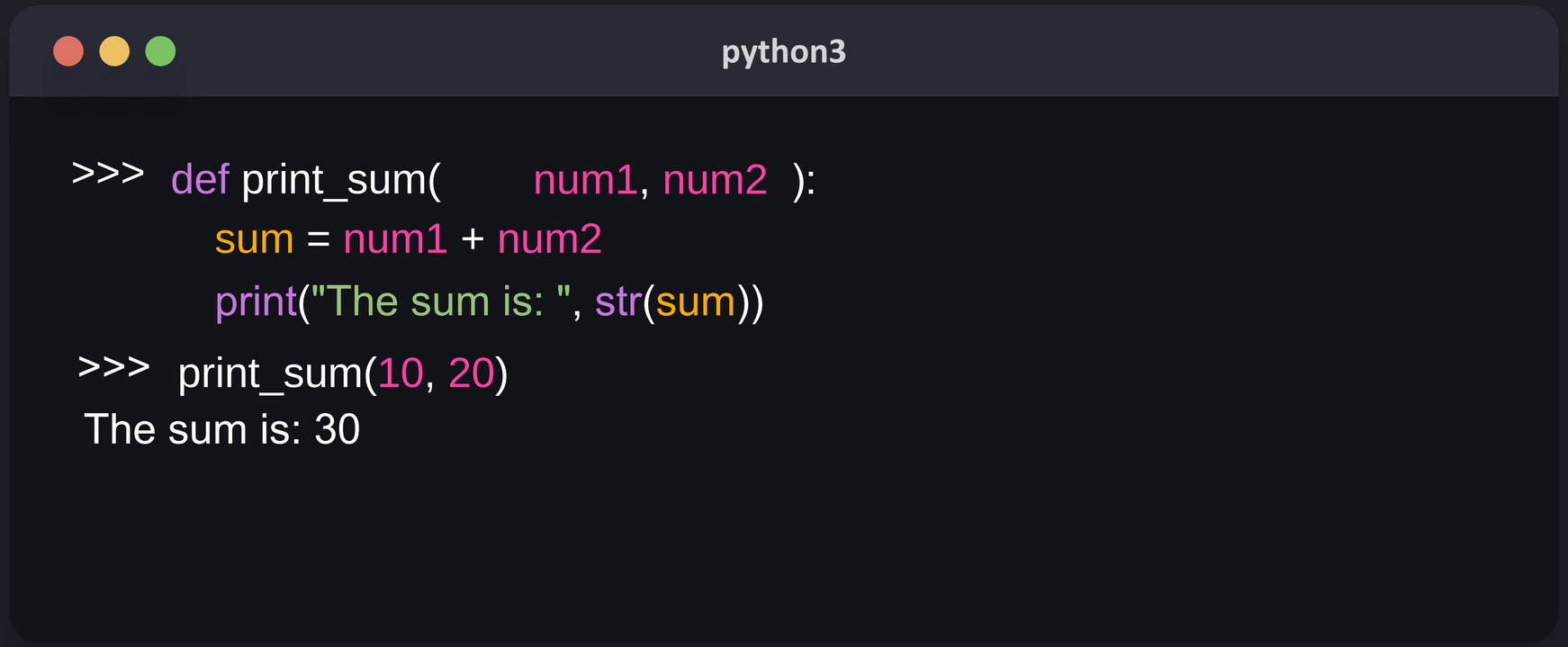
Function - Return

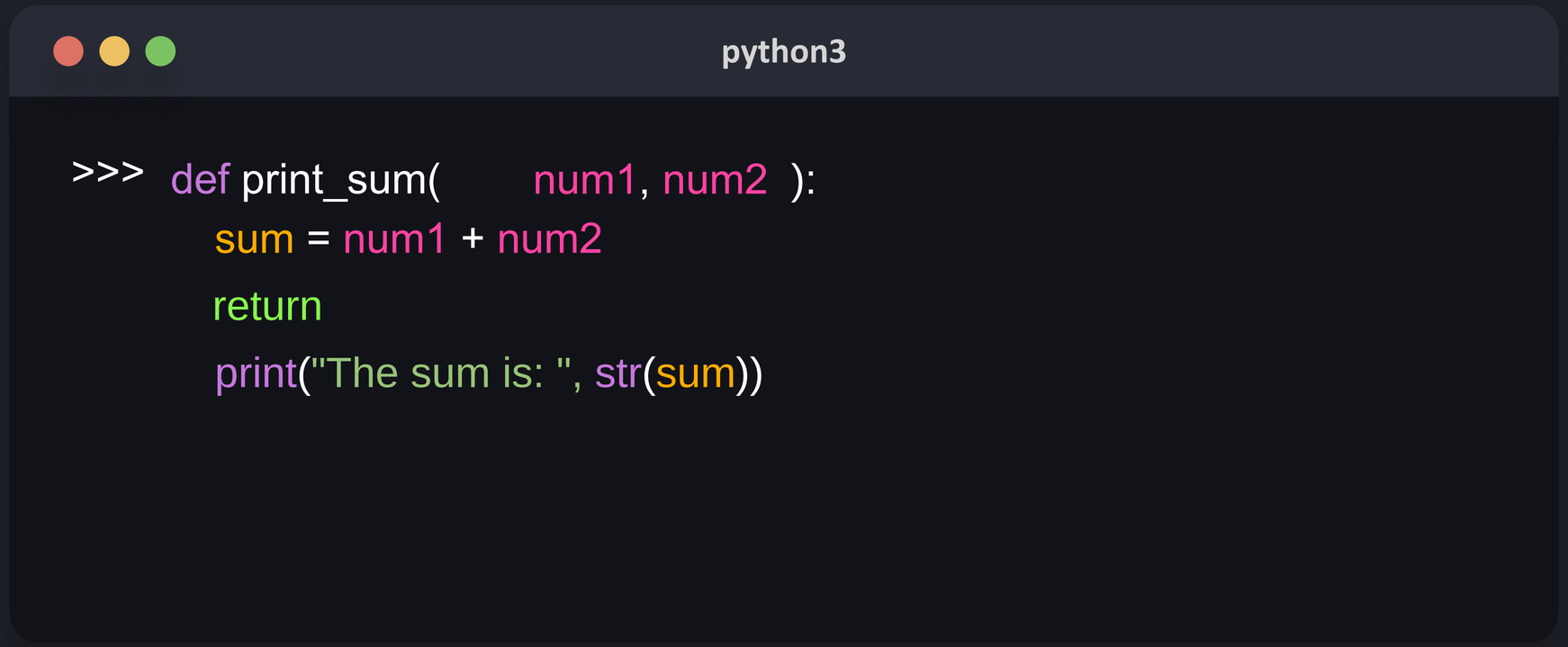

python3
>>> def input_number(num = 10):
return int(input("Enter a number: ")) * num

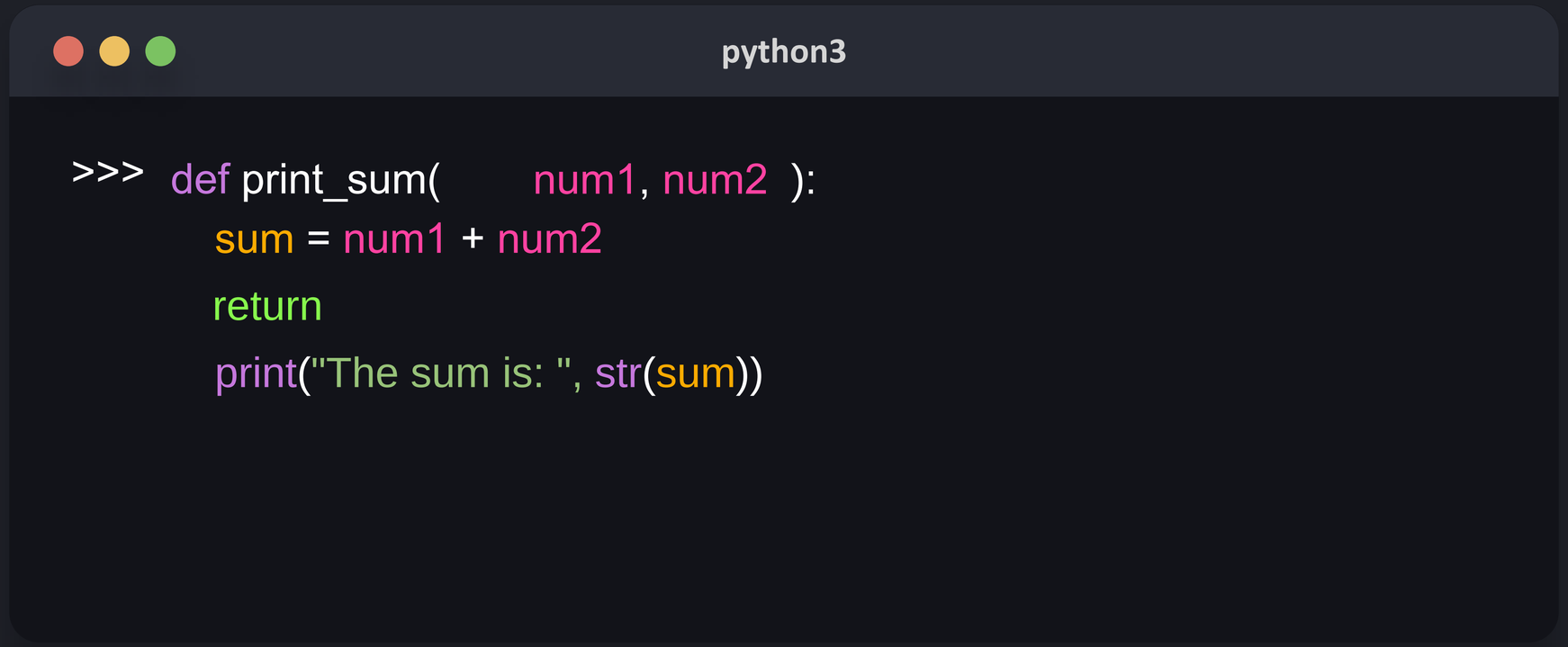

python3
>>> def print_sum(num1, num2):
sum = num1 + num2
print("The sum is: ", str(sum))

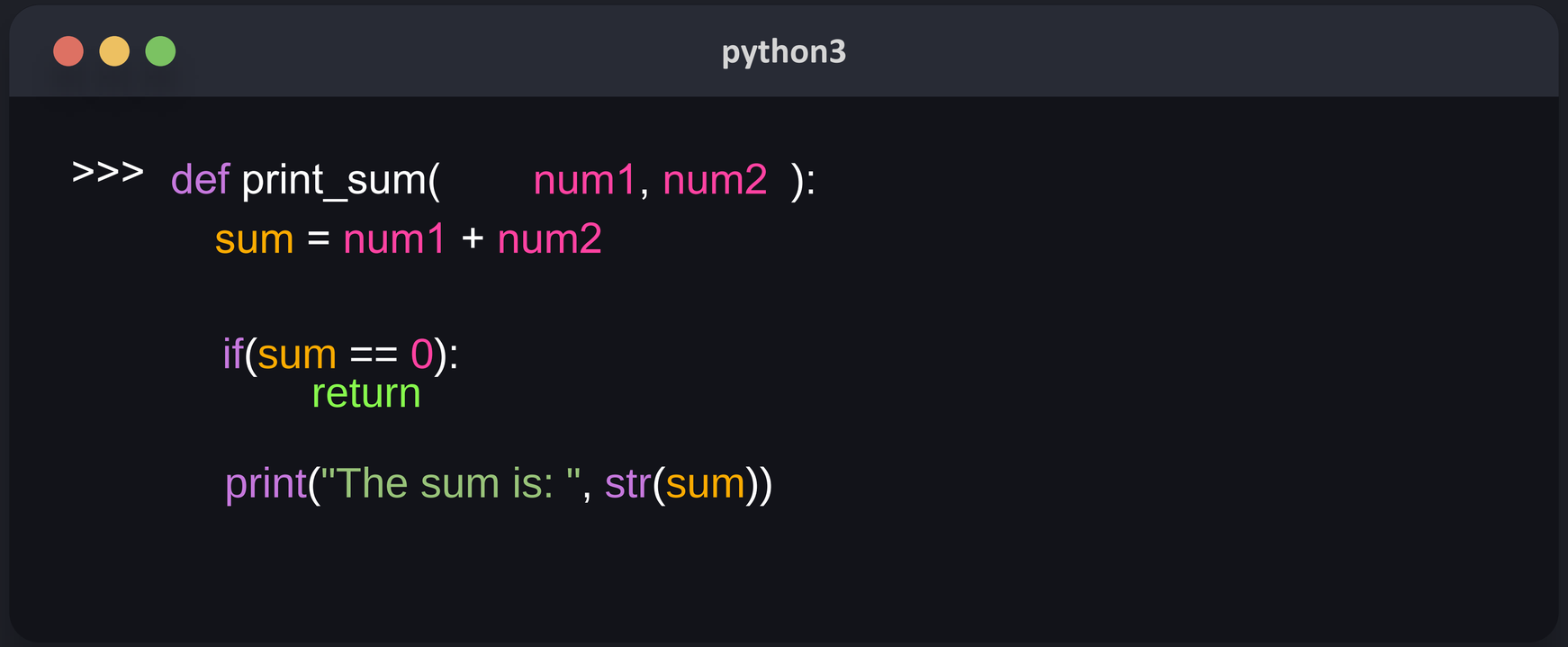

python3
>>> def print_sum(num1, num2):
sum = num1 + num2
print("The sum is: ", str(sum))
>>> print_sum(10, 20)


python3
>>> def print_sum(num1, num2):
sum = num1 + num2
print("The sum is: ", str(sum))
>>> print_sum(10, 20)
The sum is: 30


python3
>>> def print_sum(num1, num2):
sum = num1 + num2
print("The sum is: ", str(sum))
>>> print_sum(10, 20)
The sum is: 30

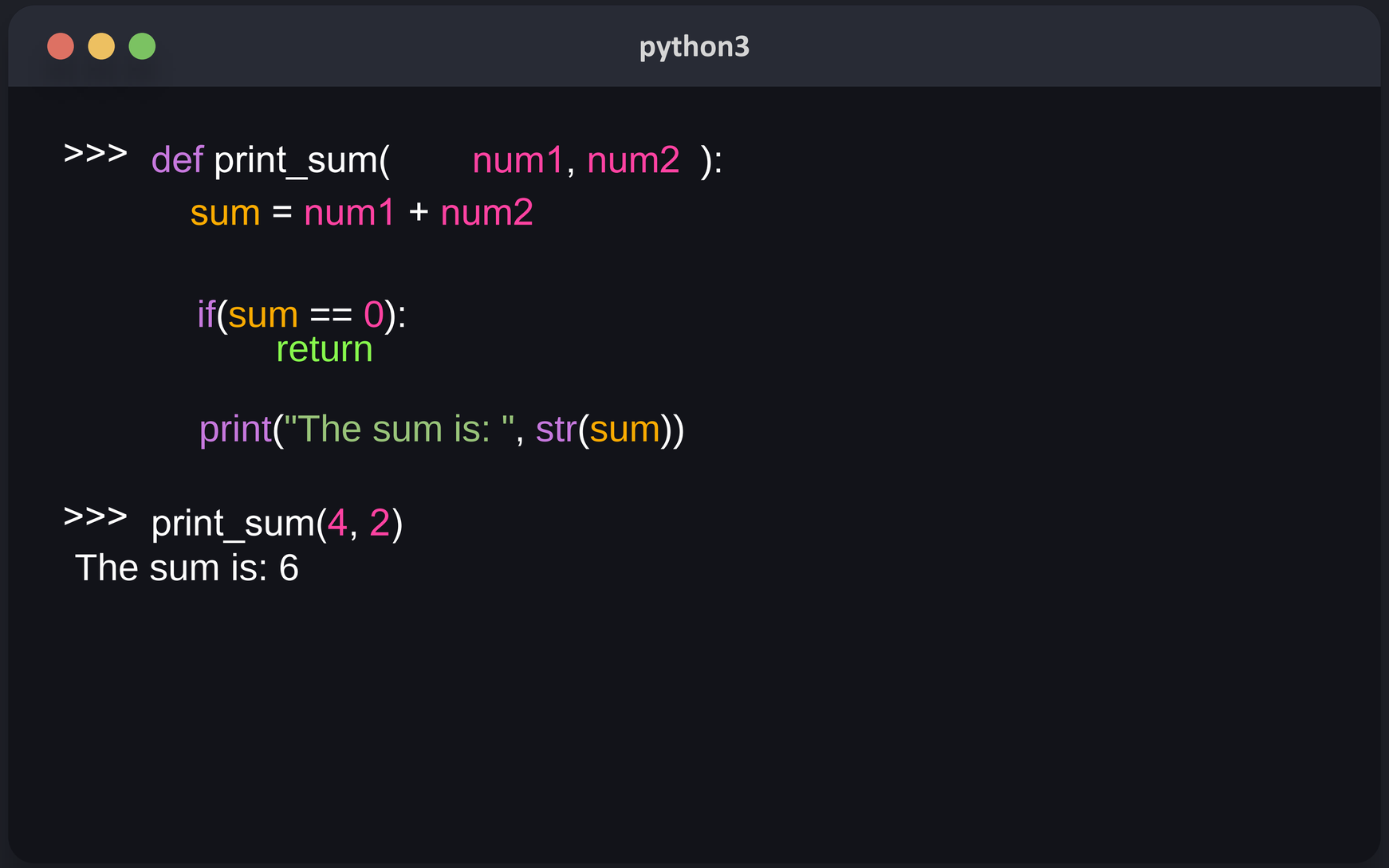

python3
>>> def print_sum(num1, num2):
sum = num1 + num2
return
print("The sum is: ", str(sum))


python3
>>> def print_sum(num1, num2):
sum = num1 + num2
return
print("The sum is: ", str(sum))


python3
>>> def print_sum(num1, num2):
sum = num1 + num2
if(sum == 0):
return
print("The sum is: ", str(sum))

python3

```
>>> def print_sum(       num1, num2  ):
        sum = num1 + num2

        if(sum == 0):
            return

        print("The sum is: ", str(sum))

>>> print_sum(4, 2)
```


python3
>>> def print_sum(num1, num2):
sum = num1 + num2
if(sum == 0):
return
print("The sum is: ", str(sum))
>>> print_sum(4, 2)
The sum is: 6

python3

```
>>>  def print_sum(       num1, num2  ):
         sum = num1 + num2


         if(sum == 0):
             return

         print("The sum is: ", str(sum))

>>>  print_sum(4, 2)
 The sum is: 6

>>>  print_sum(-1, 1)
```

python3

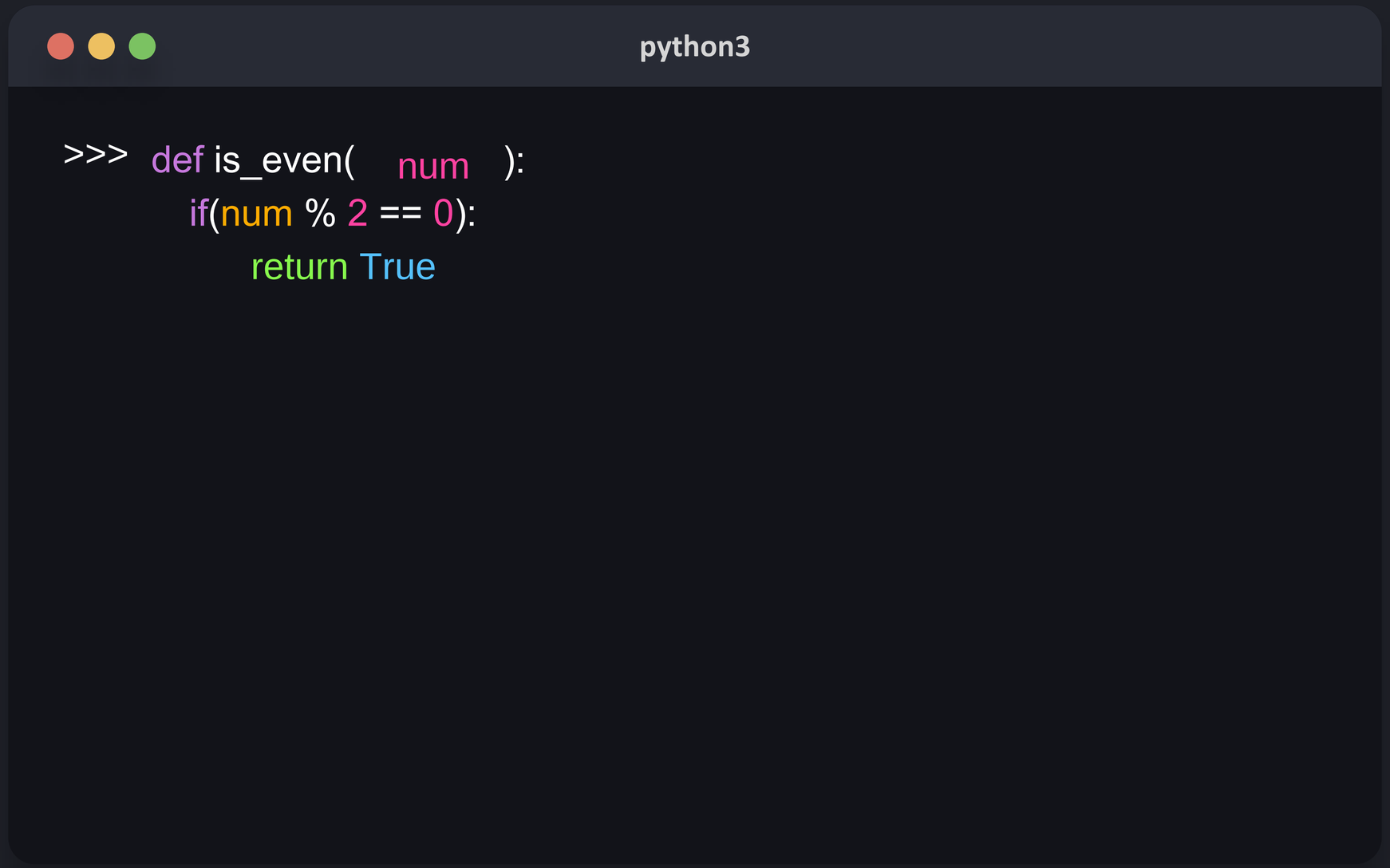
```
>>>  def print_sum(       num1, num2  ):
         sum = num1 + num2


         if(sum == 0):
             return

         print("The sum is: ", str(sum))

>>>  print_sum(4, 2)
 The sum is: 6

>>>  print_sum(-1, 1)
>>>
```

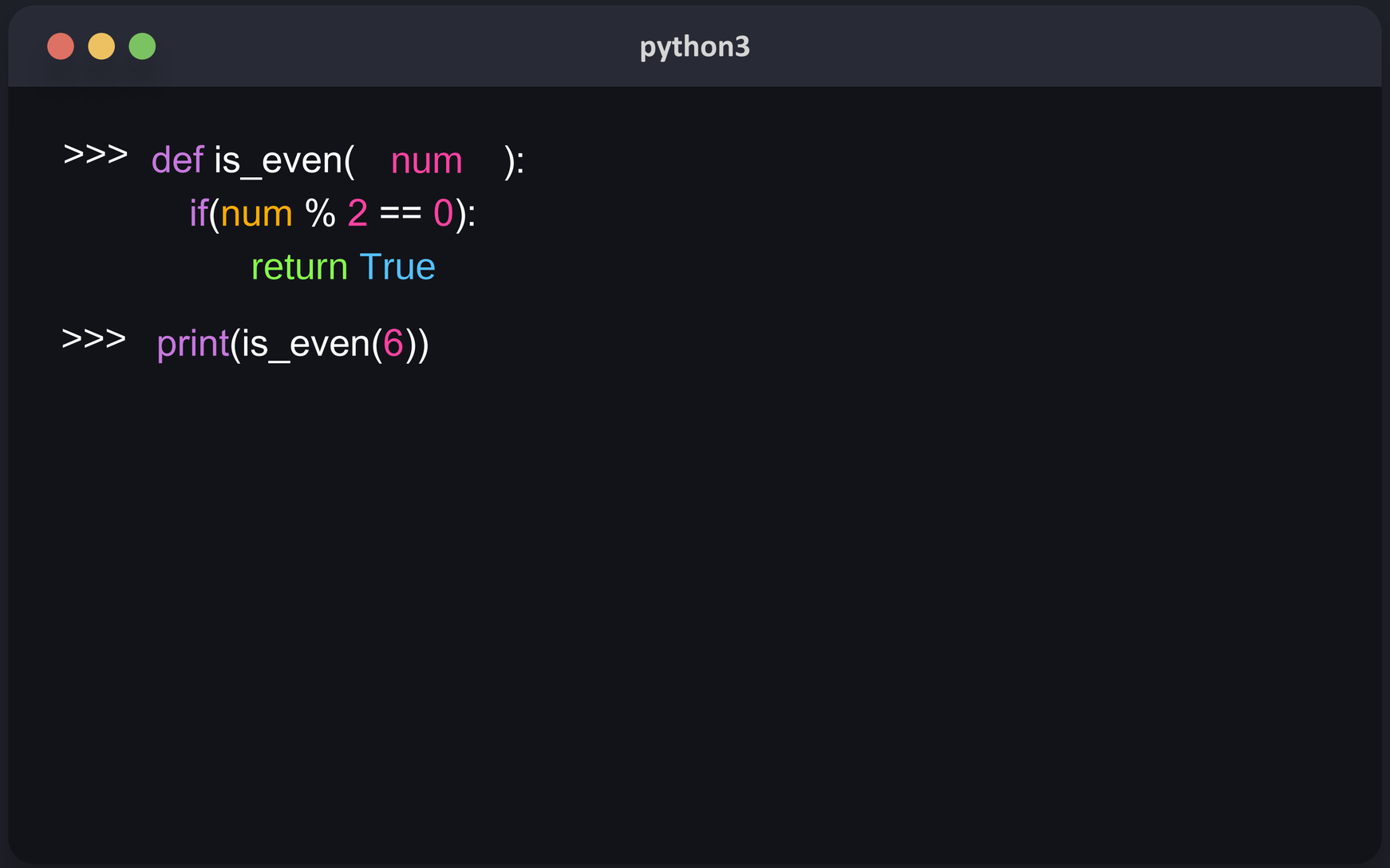
python3

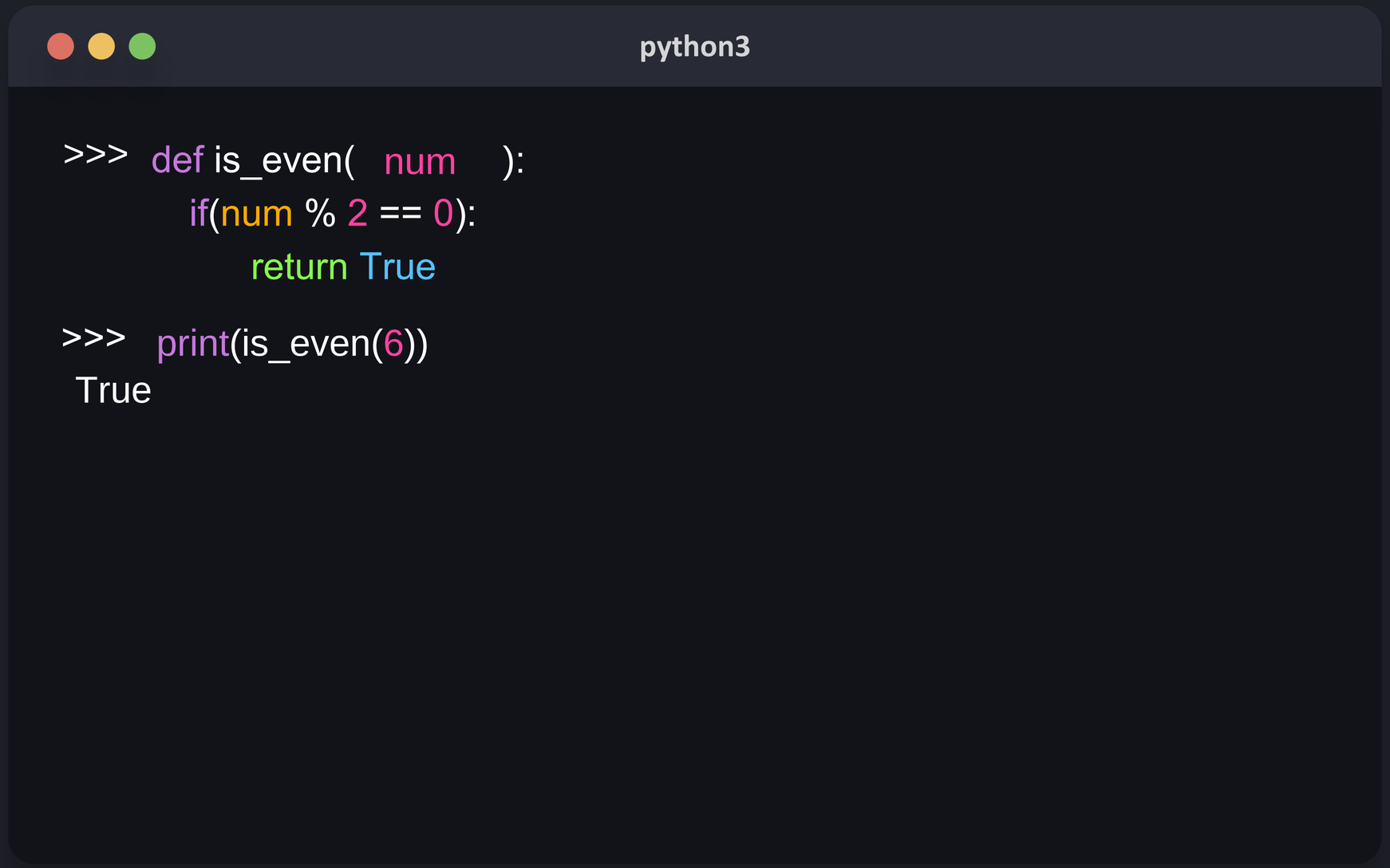
```
>>>  def print_sum(       num1, num2  ):
         sum = num1 + num2

         if(sum == 0):
             return

         print("The sum is: ", str(sum))

>>>  print_sum(4, 2)
 The sum is: 6

>>>  print_sum(-1, 1)
>>>
```

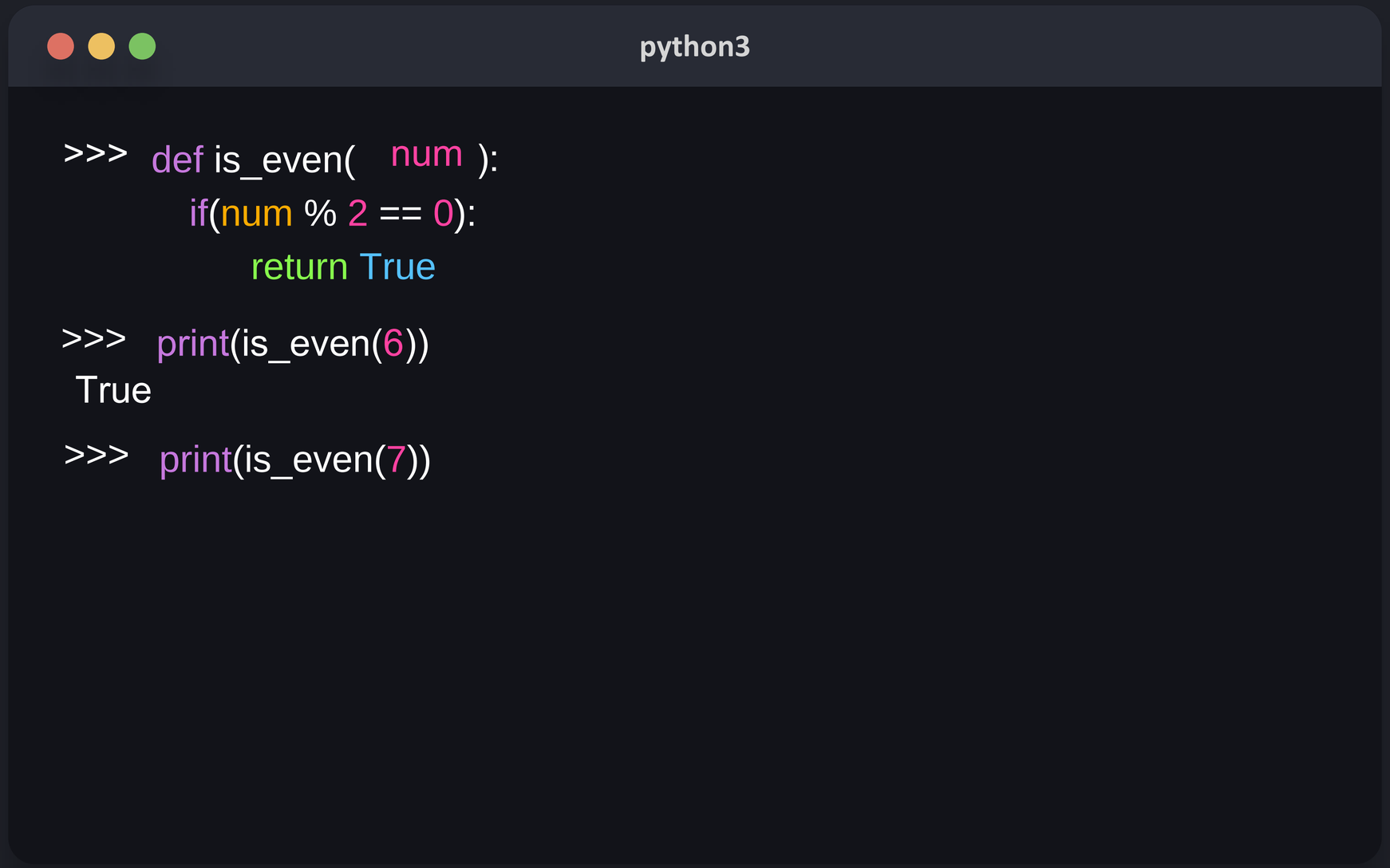
python3

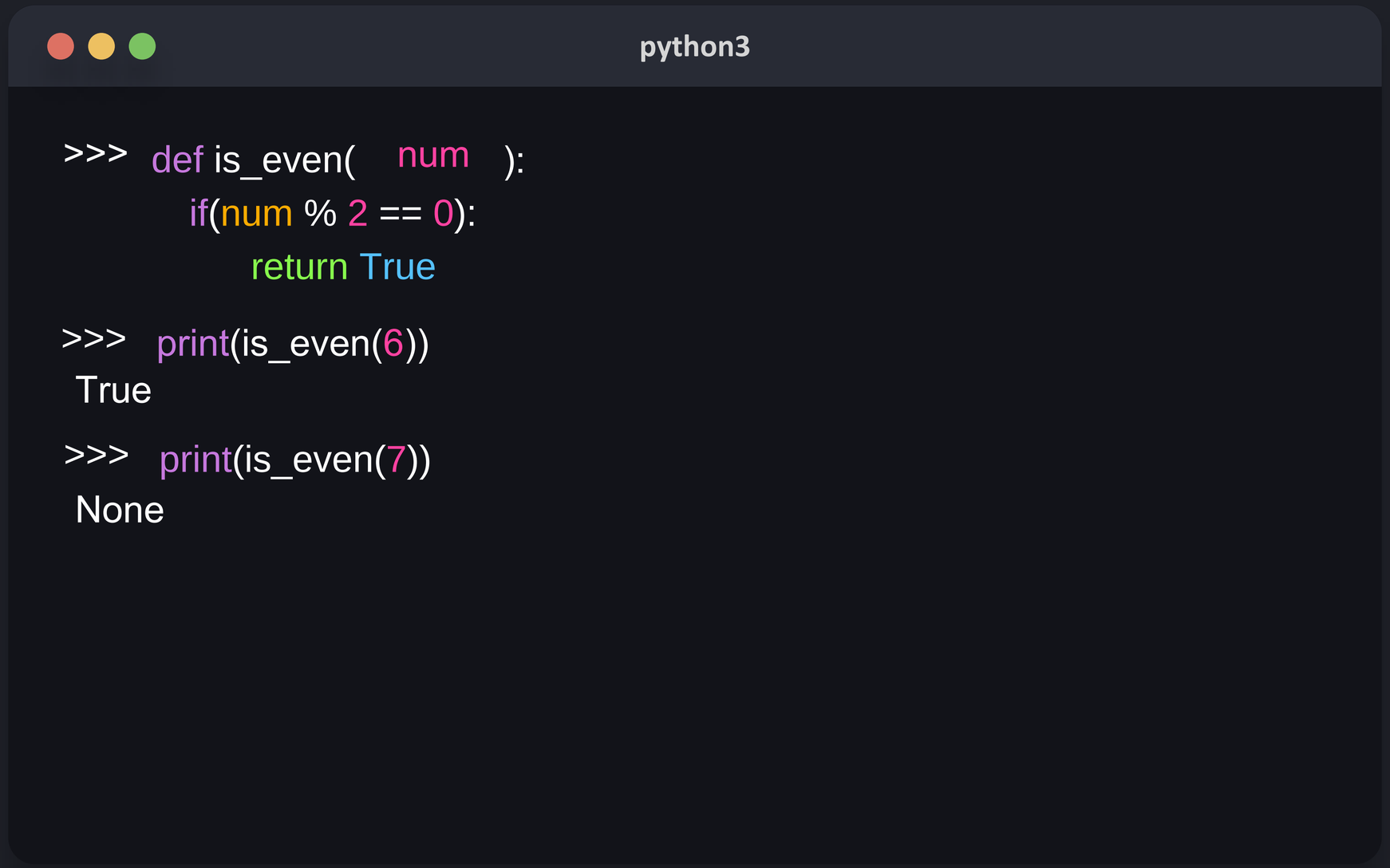
```
>>>  def print_sum(       num1, num2  ):
         sum = num1 + num2


         if(sum == 0):
             return

         print("The sum is: ", str(sum))

>>>  print_sum(4, 2)
 The sum is: 6

>>>  print_sum(-1, 1)
>>>
```


python3
>>> def is_even(num):
if(num % 2 == 0):
return True


python3
>>> def is_even(num):
if(num % 2 == 0):
return True
>>> print(is_even(6))

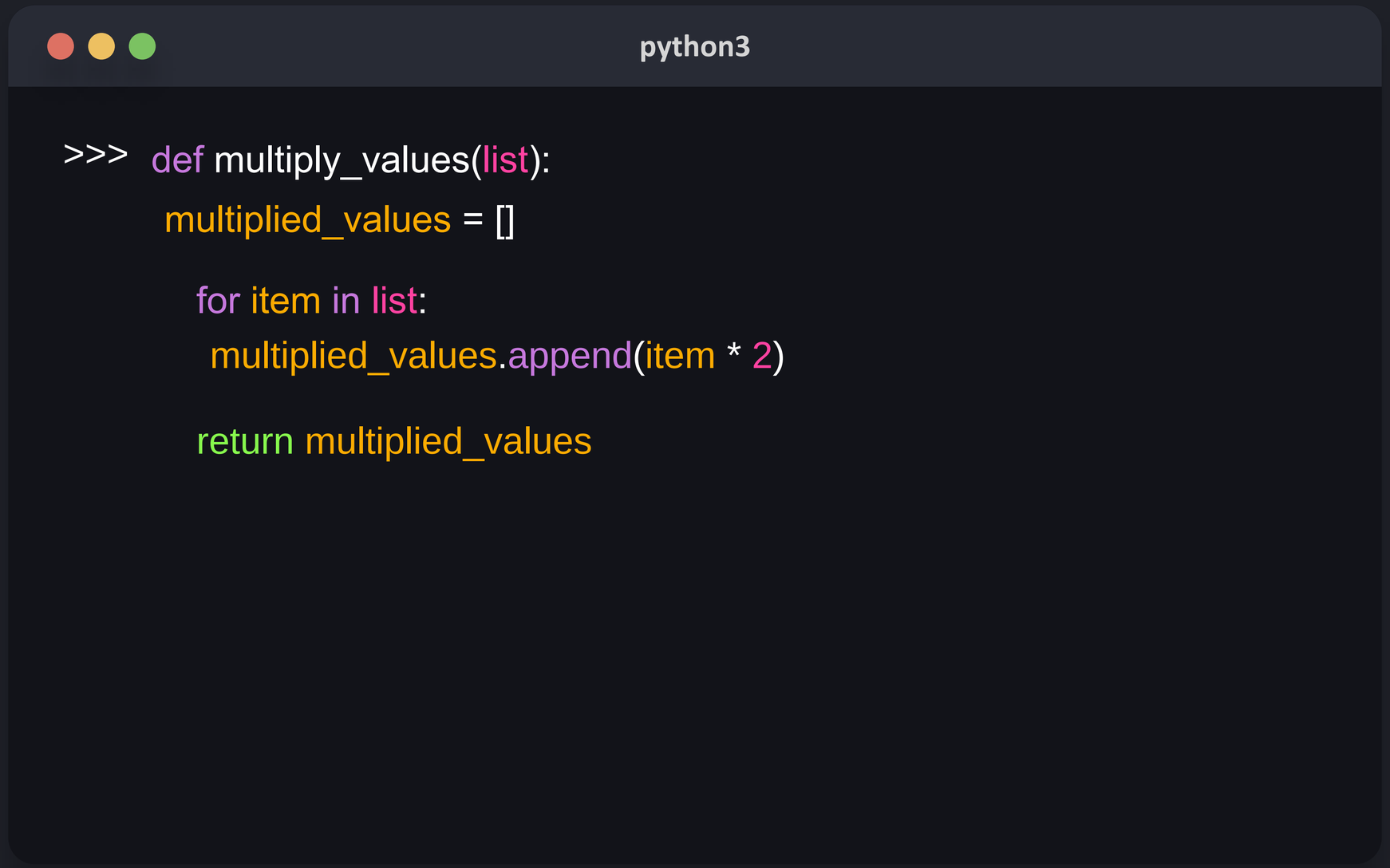

python3
>>> def is_even(num):
if(num % 2 == 0):
return True
>>> print(is_even(6))
True


python3
>>> def is_even(num):
if(num % 2 == 0):
return True
>>> print(is_even(6))
True
>>> print(is_even(7))


python3
>>> def is_even(num):
if(num % 2 == 0):
return True
>>> print(is_even(6))
True
>>> print(is_even(7))
None

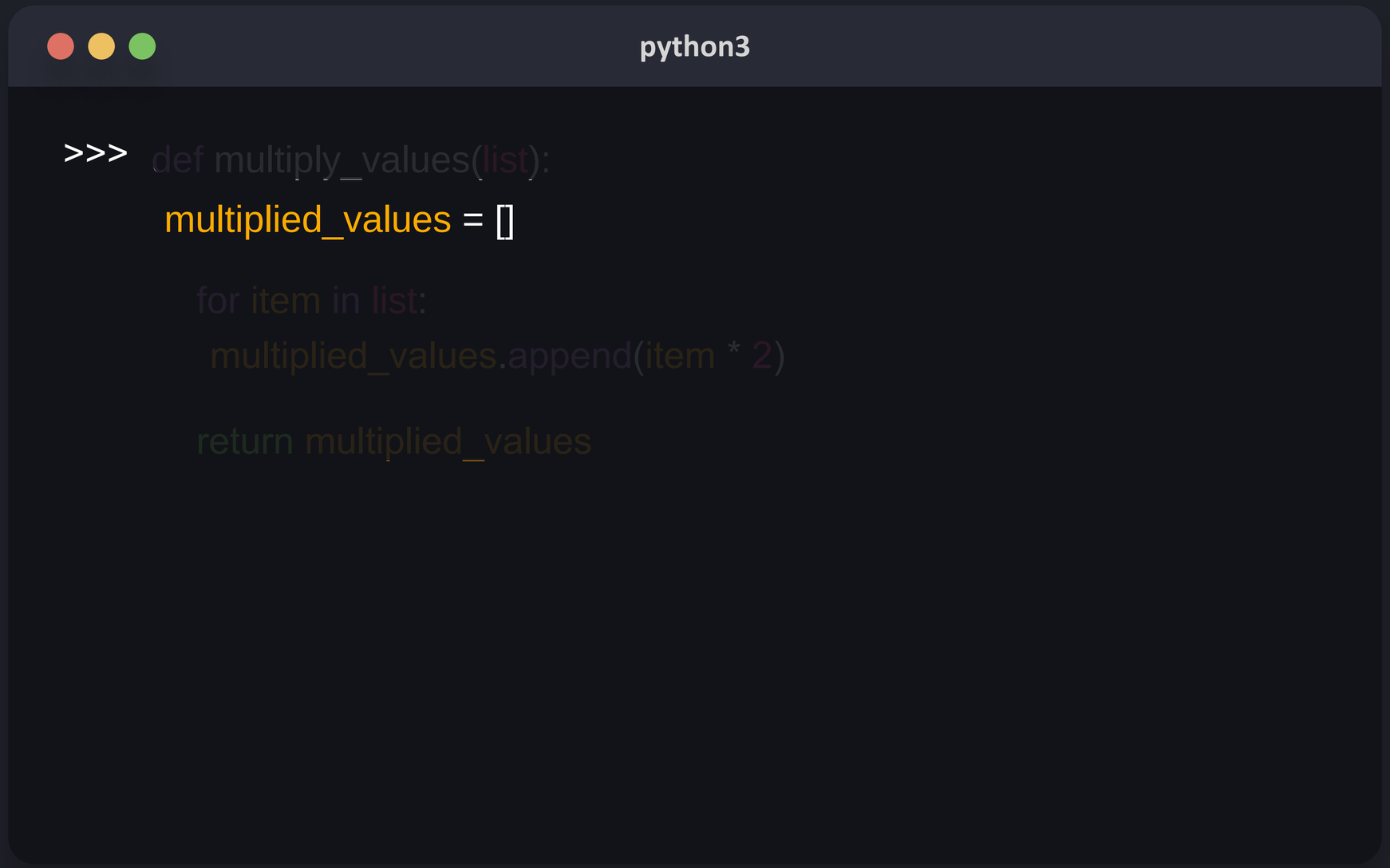
KodeKloud

Function - List as Argument


python3
>>> def multiply_values(list):
multiplied_values = []
for item in list:
multiplied_values.append(item * 2)
return multiplied_values

python3

```
>>> def multiply_values(list):
        multiplied_values = []

        for item in list:
            multiplied_values.append(item * 2)

        return multiplied_values
```


python3
>>> def multiply_values(list):
multiplied_values = []
for item in list:
multiplied_values.append(item * 2)
return multiplied_values

python3

```
>>> def multiply_values(list):
        multiplied_values = []
        for item in list:
            multiplied_values.append(item * 2)
        return multiplied_values
```

python3

```
>>> def multiply_values(list):
        multiplied_values = []
        for item in list:
            multiplied_values.append(item * 2)
        return multiplied_values
```

python3

```
>>> def multiply_values(list):
        multiplied_values = []

        for item in list:
            multiplied_values.append(item * 2)

        return multiplied_values
```

python3

```
>>> def multiply_values(list):
        multiplied_values = []

        for item in list:
            multiplied_values.append(item * 2)

        return multiplied_values

>>> print(multiply_values([1, 2, 3]))
```

python3

```
>>> def multiply_values(list):
        multiplied_values = []

        for item in list:
            multiplied_values.append(item * 2)

        return multiplied_values

>>> print(multiply_values([1, 2, 3]))
[2, 4, 6]
```

python3

```
>>> def multiply_values(list):
        multiplied_values = []

        for item in list:
            multiplied_values.append(item * 2)

        return multiplied_values

>>> print(multiply_values([1, 2, 3]))
[2, 4, 6]
>>> print(multiply_values([-4, -8, -10]))
```

python3

```
>>> def multiply_values(list):
        multiplied_values = []

        for item in list:
            multiplied_values.append(item * 2)

        return multiplied_values

>>> print(multiply_values([1, 2, 3]))
[2, 4, 6]
>>> print(multiply_values([-4, -8, -10]))
[-8, -16, -20]
```

python3

```
>>> def multiply_values(list):
        multiplied_values = []

        for item in list:
            multiplied_values.append(item * 2)

        return multiplied_values

>>> print(multiply_values([1, 2, 3]))
[2, 4, 6]
>>> print(multiply_values([-4, -8, -10]))
[-8, -16, -20]
>>> print(multiply_values(1))
```

python3

```
>>> def multiply_values(list):
        multiplied_values = []

            for item in list:
             multiplied_values.append(item * 2)

            return multiplied_values

>>> print(multiply_values([1, 2, 3]))
[2, 4, 6]
>>> print(multiply_values([-4, -8, -10]))
[-8, -16, -20]
>>> print(multiply_values(1))

TypeError: 'int' object is not iterable
```

KodeKloud

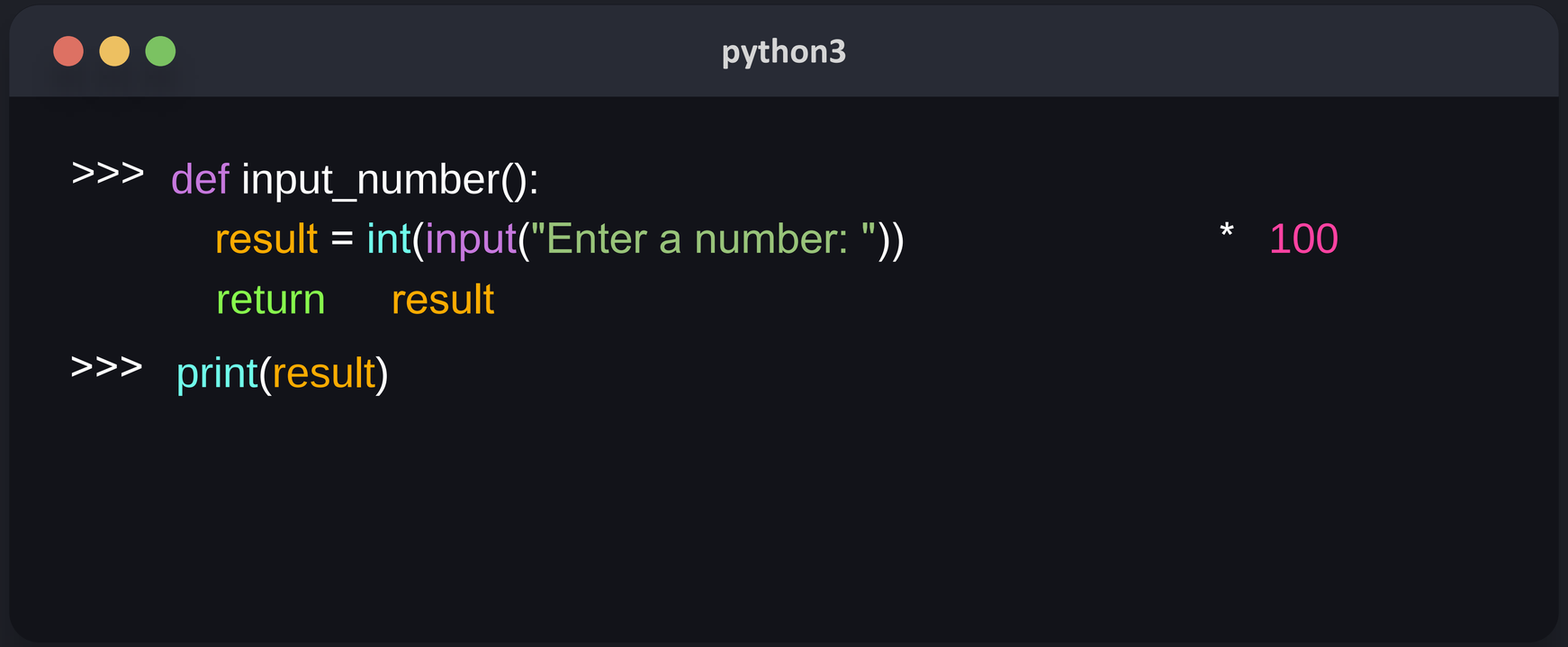
Scopes

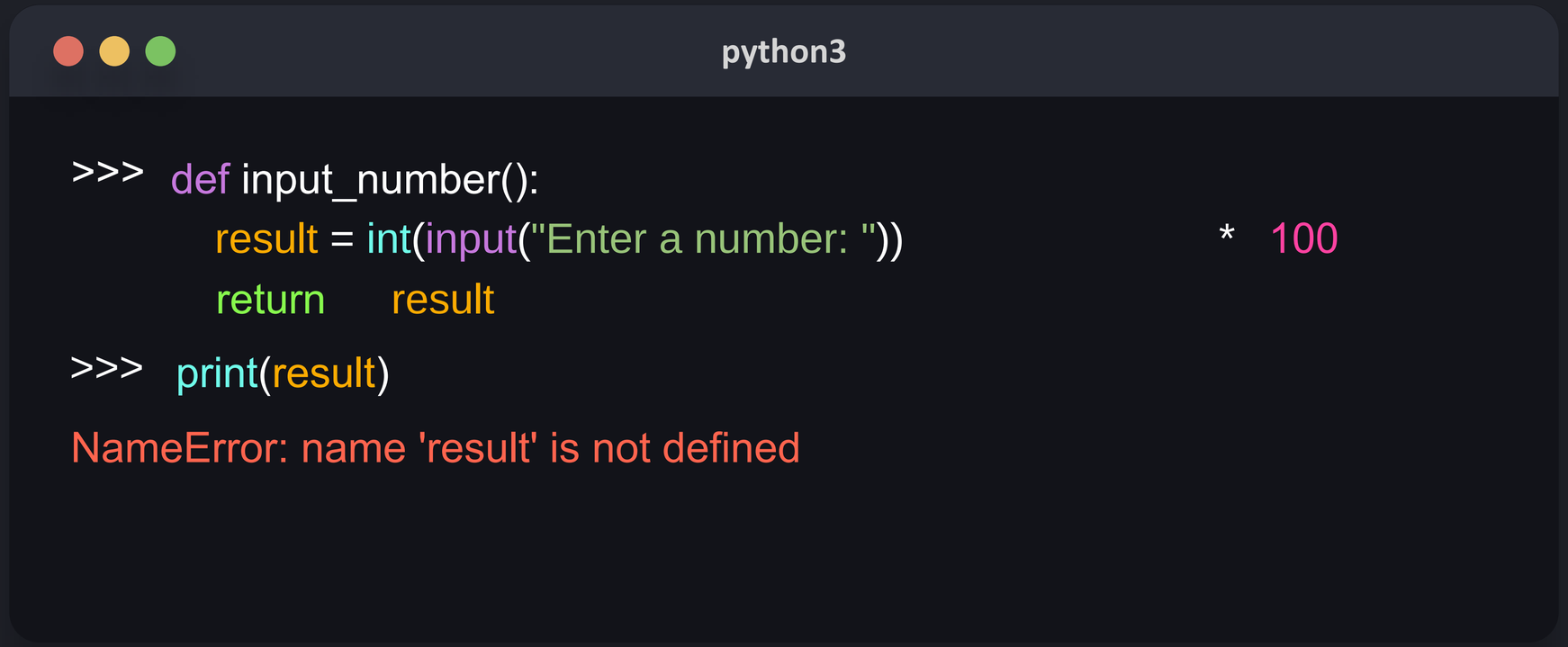
python3

```
>>> def input_number():
        result = int(input("Enter a number: "))          *  100
        return     result
```

python3

```
>>> def input_number():
        result = int(input("Enter a number: "))          *  100
        return     result
```


python3
>>> def input_number():
result = int(input("Enter a number: ")) * 100
return result
>>> print(result)


python3
>>> def input_number():
result = int(input("Enter a number: ")) * 100
return result
>>> print(result)
NameError: name 'result' is not defined


python3
>>> num = 100
>>> def input_number():
result = int(input("Enter a number: "))
return result
nu
*
m

python3

```
>>> num = 100
>>> def input_number():
        num = 50
        result = int(input("Enter a number: "))
        return      result
```

```
nu
*
m
```

python3

```
>>> num = 100
>>> def input_number():
        num = 50
        result = int(input("Enter a number: "))
        return      result
```

```
    nu
*
    m
```

python3

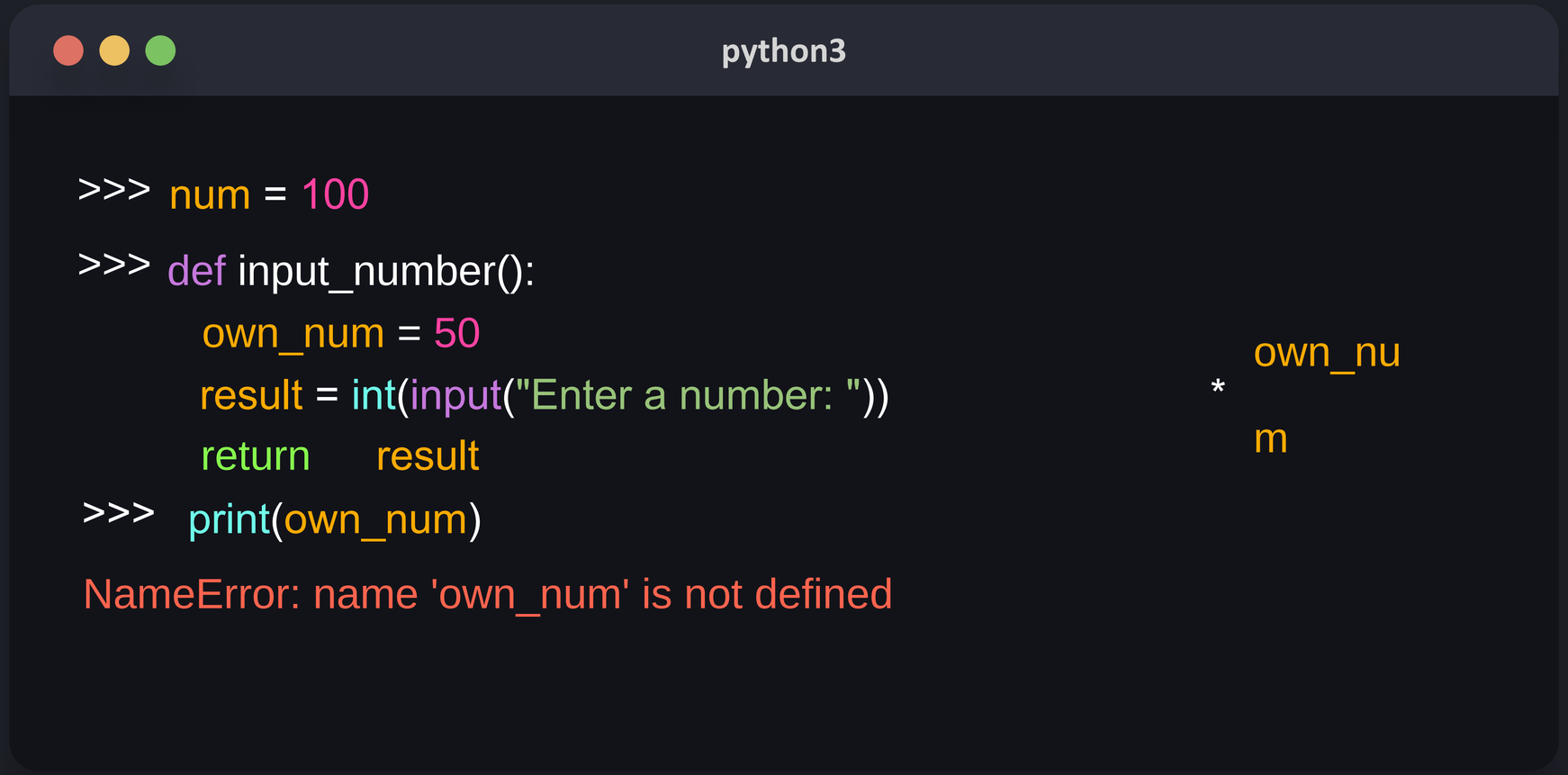
```
>>> num = 100
>>> def input_number():
        result = int(input("Enter a number: "))
        return      result
```

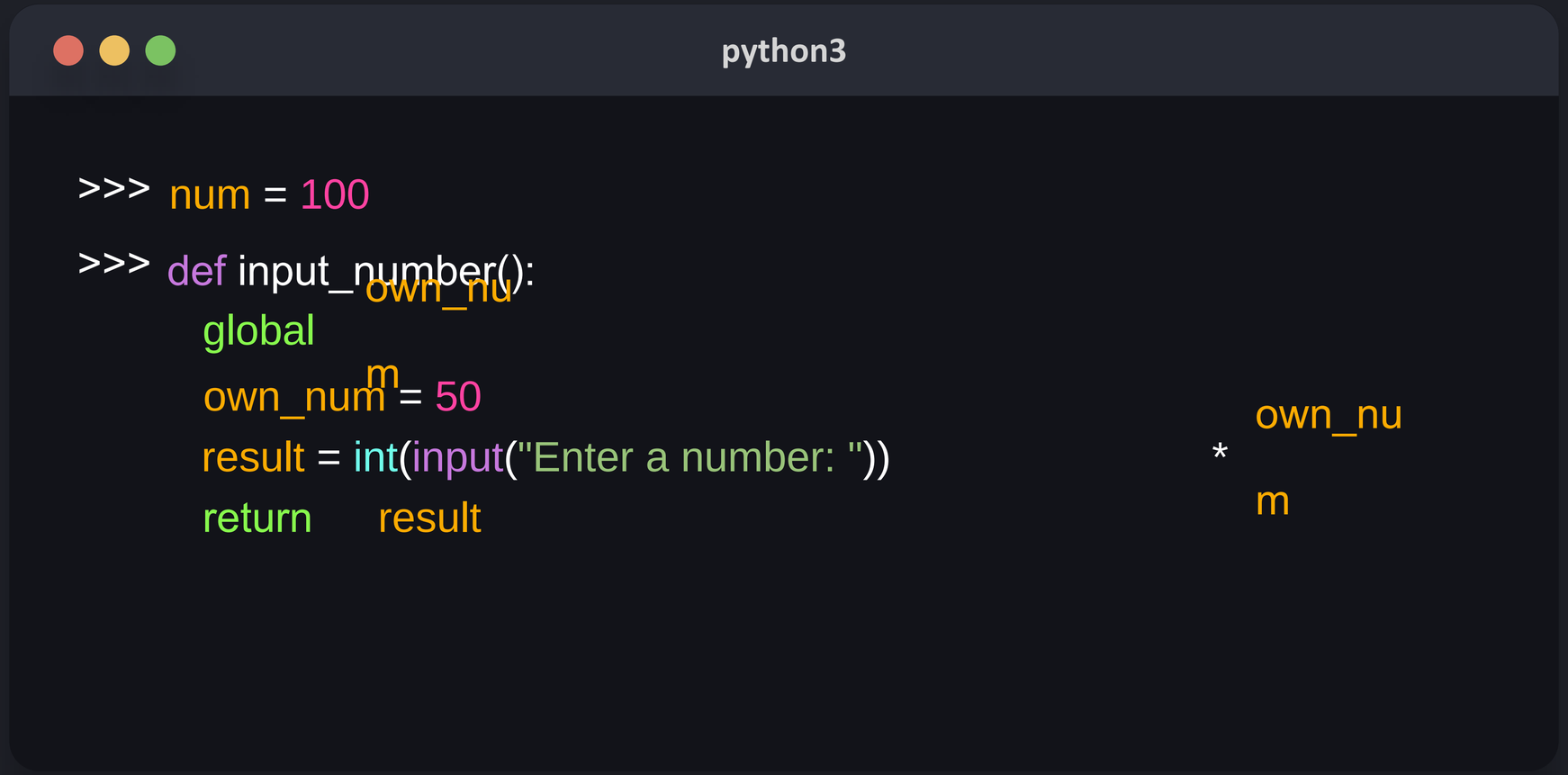
```
nu
*
m
```

python3

```
>>> num = 100
>>> def input_number():
        own_num = 50
        result = int(input("Enter a number: "))
        return      result
>>>   print(own_num)
```

```
    own_nu
*
    m
```


python3
>>> num = 100
>>> def input_number():
own_num = 50
result = int(input("Enter a number: "))
return result
>>> print(own_num)
NameError: name 'own_num' is not defined
own_nu
*
m


python3
>>> num = 100
>>> def input_number():
global own_num
own_num = 50
result = int(input("Enter a number: "))
return result
own_nu
m
*
own_nu
m

python3

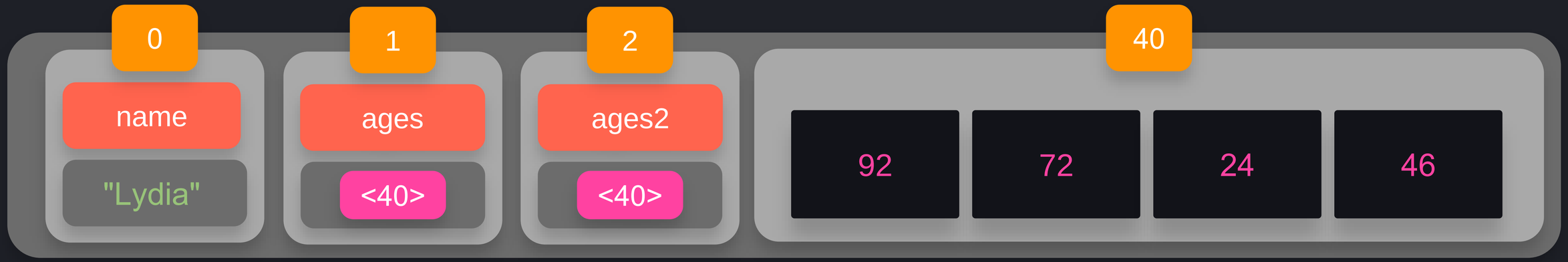
```
>>> num = 100
>>> def input_number():
        global  own_num
        own_num = 50
        result = int(input("Enter a number: "))  *  own_num
        return     result
>>>  print(own_num)
```

python3

```
>>> num = 100
>>> def input_number():
        global own_num
        own_num = 50
        result = int(input("Enter a number: ")) * own_num
        return      result
>>>   print(own_num)
 50
```

KodeKloud

Function - Arguments Explained

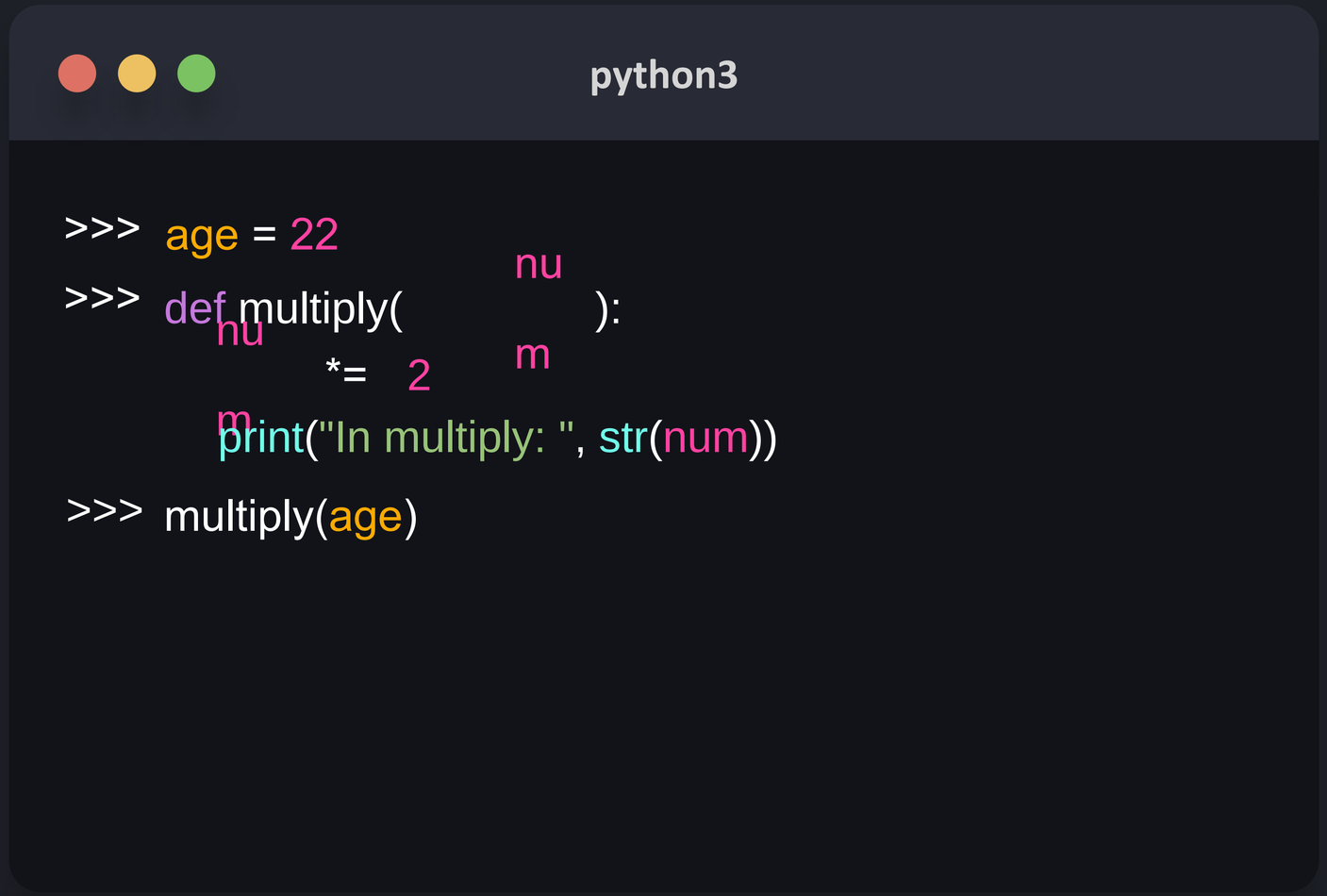


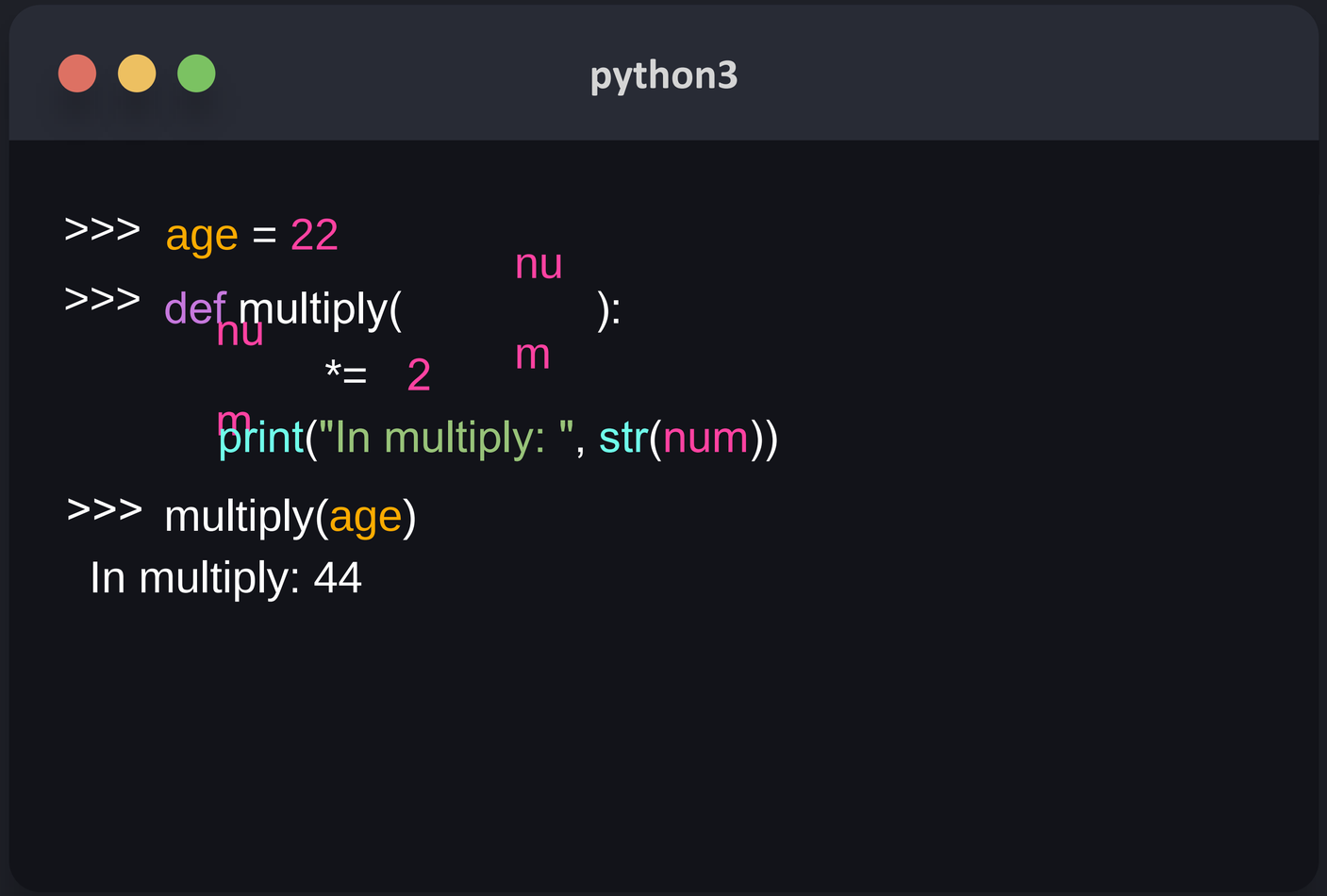
python3

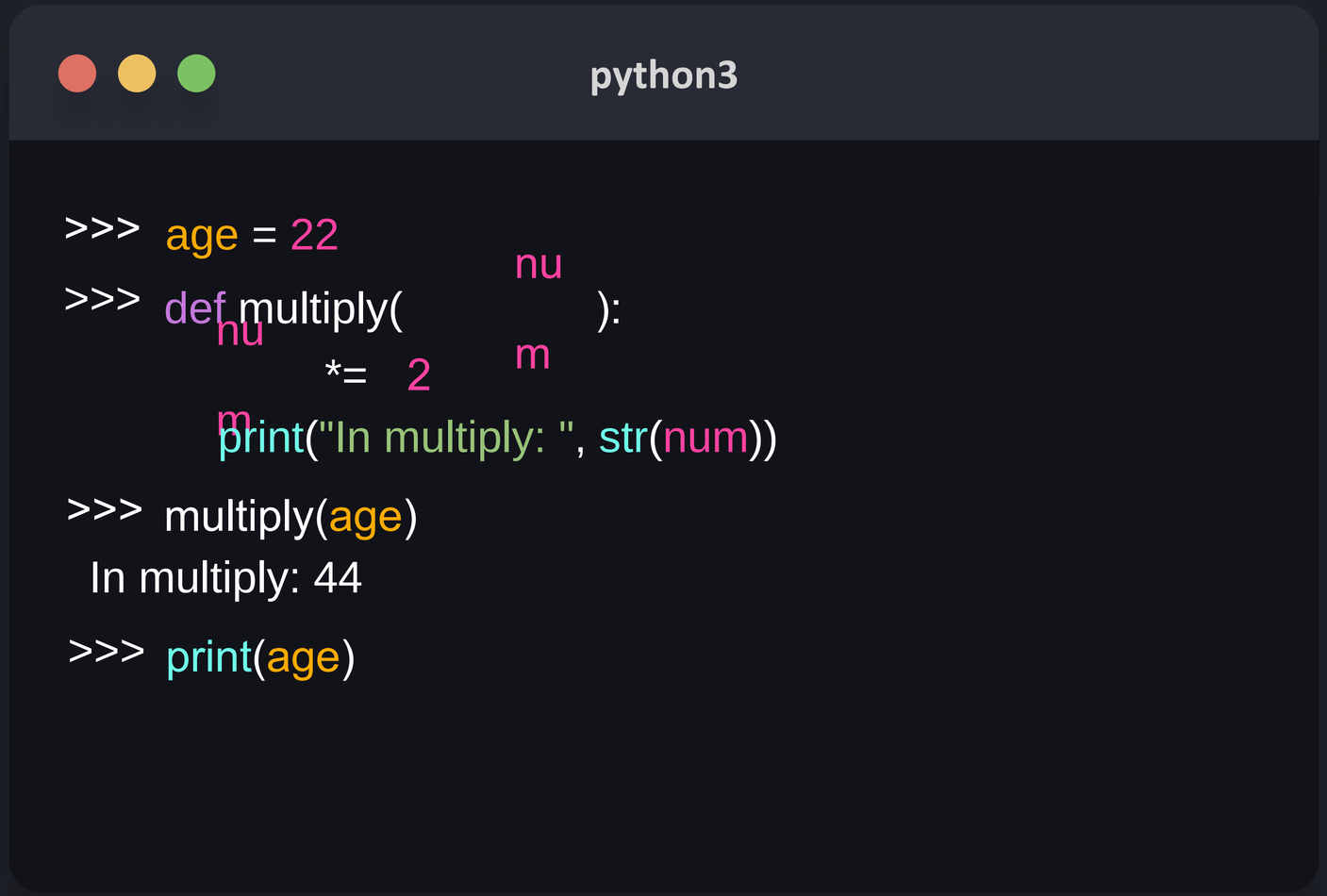
```
>>> name = "Lydia"
>>> ages = [56, 72, 24, 46]
>>> ages2 = ages
>>> ages[0] = 92
>>> print(ages2[0])
92
```

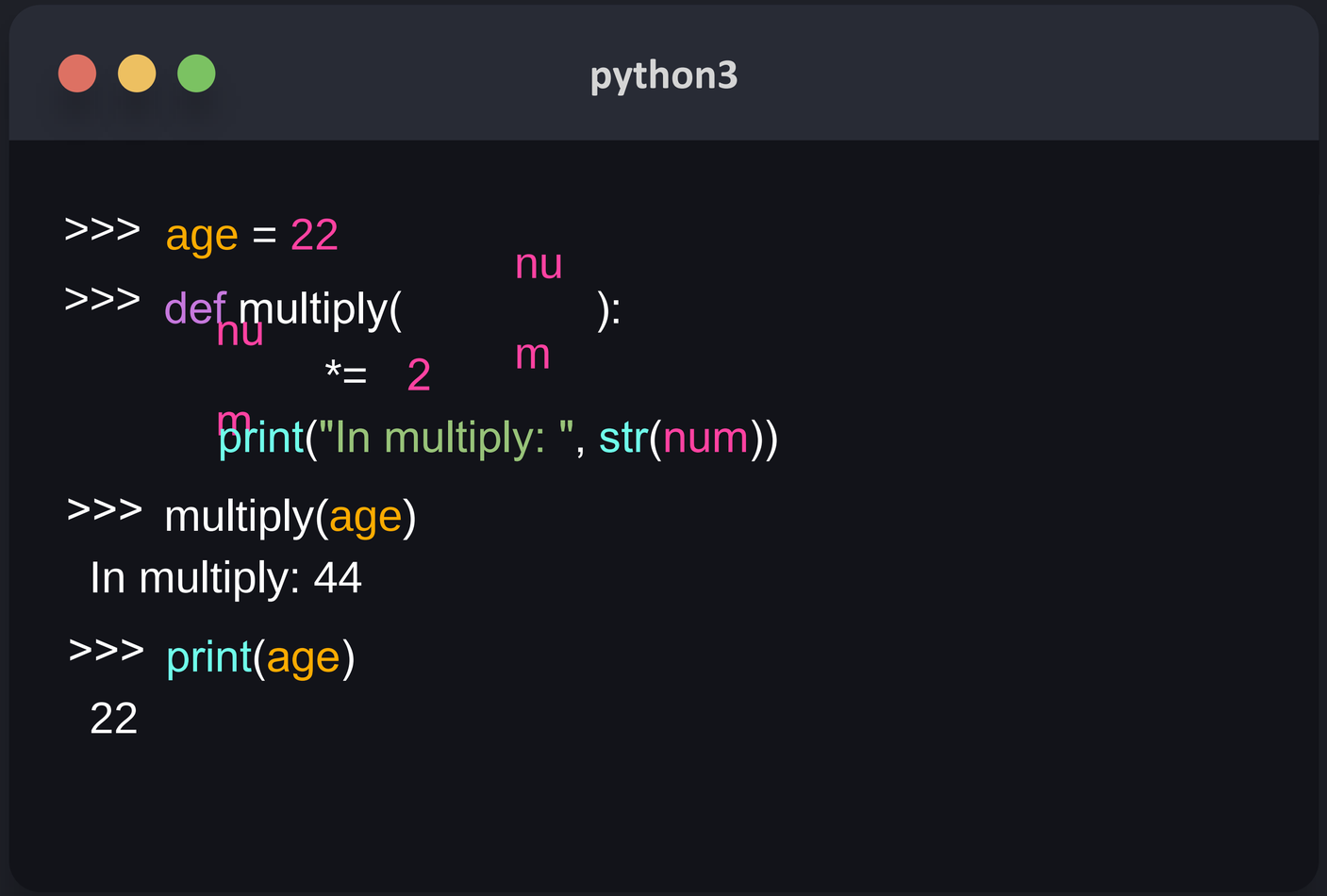
python3

```
>>> age = 22
>>> def multiply(num):
        num *= 2
        print("In multiply: ", str(num))
```


python3
>>> age = 22
>>> def multiply( ):
*= 2
print("In multiply: ", str(num))
>>> multiply(age)

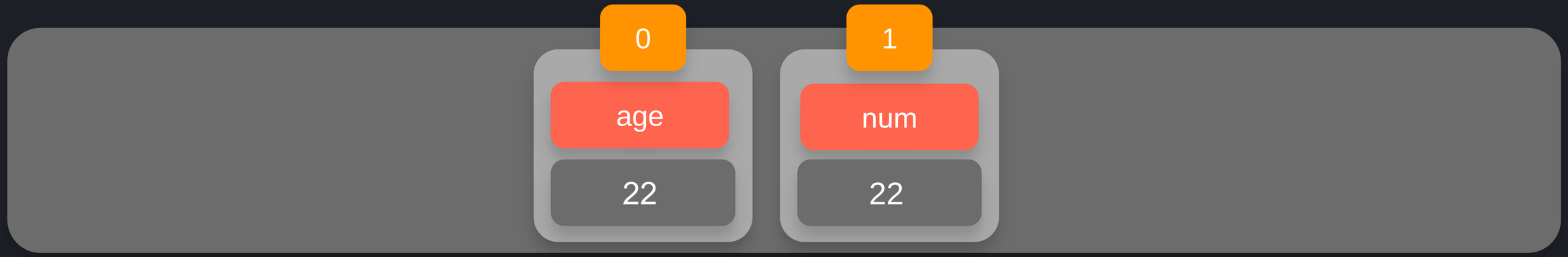

python3
>>> age = 22
>>> def multiply( ):
*= 2
print("In multiply: ", str(num))
>>> multiply(age)
In multiply: 44


python3
>>> age = 22
>>> def multiply( ):
*= 2
print("In multiply: ", str(num))
>>> multiply(age)
In multiply: 44
>>> print(age)


python3
>>> age = 22
>>> def multiply( ):
*= 2
print("In multiply: ", str(num))
>>> multiply(age)
In multiply: 44
>>> print(age)
22

python3

```
>>> age = 22
>>> def multiply(num):
        num *= 2
        print("In multiply: ", str(num))
>>> multiply(age)
```



python3

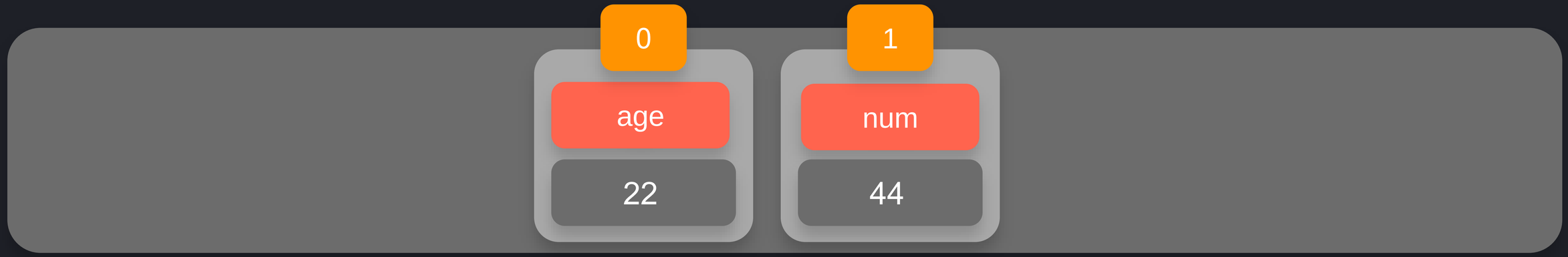
```
>>> age = 22
>>> def multiply(          ):
        *=  2
    print("In multiply: ", str(num))
>>> multiply(age)
```

python3

```
>>> age = 22
>>> def multiply(num):
        num *= 2
        print("In multiply: ", str(num))
>>> multiply(age)
```

python3

```
>>> age = 22
>>> def multiply(num):
        num *= 2
        print("In multiply: ", str(num))
>>> multiply(age)
 In multiply: 44
```



python3

```
>>> age = 22
>>> def multiply(num):
        num *= 2
        print("In multiply: ", str(num))
>>> multiply(age)
 In multiply: 44
>>> print(age)
 22
```

python3

```
>>> nums = [1, 2, 3]
>>> def change_first_item(list):
        list[0] = 9
```

python3

```
>>>  nums = [1, 2, 3]
>>>  def change_first_item(list):
        list[0] = 9
```

python3

```
>>> nums = [1, 2, 3]
>>> def change_first_item(list):
        list[0] = 9
```

python3

```
>>> nums = [1, 2, 3]
>>> def change_first_item(list):
        list[0] = 9
>>> change_first_item(nums)
```

python3

```
>>> nums = [1, 2, 3]
>>> def change_first_item(list):
        list[0] = 9
>>> change_first_item(nums)
```

python3

```
>>>  nums = [1, 2, 3]
>>>  def change_first_item(list):
        list[0] = 9
>>>  change_first_item(nums)
```

python3

```
>>>  nums = [1, 2, 3]
>>>  def change_first_item(list):
        list[0] = 9
>>>  change_first_item(nums)
>>>  print(nums)
```

python3

```
>>>  nums = [1, 2, 3]
>>>  def change_first_item(list):
        list[0] = 9
>>>  change_first_item(nums)
>>>  print(nums)
 [9, 2, 3]
```

KodeKloud

Tuples

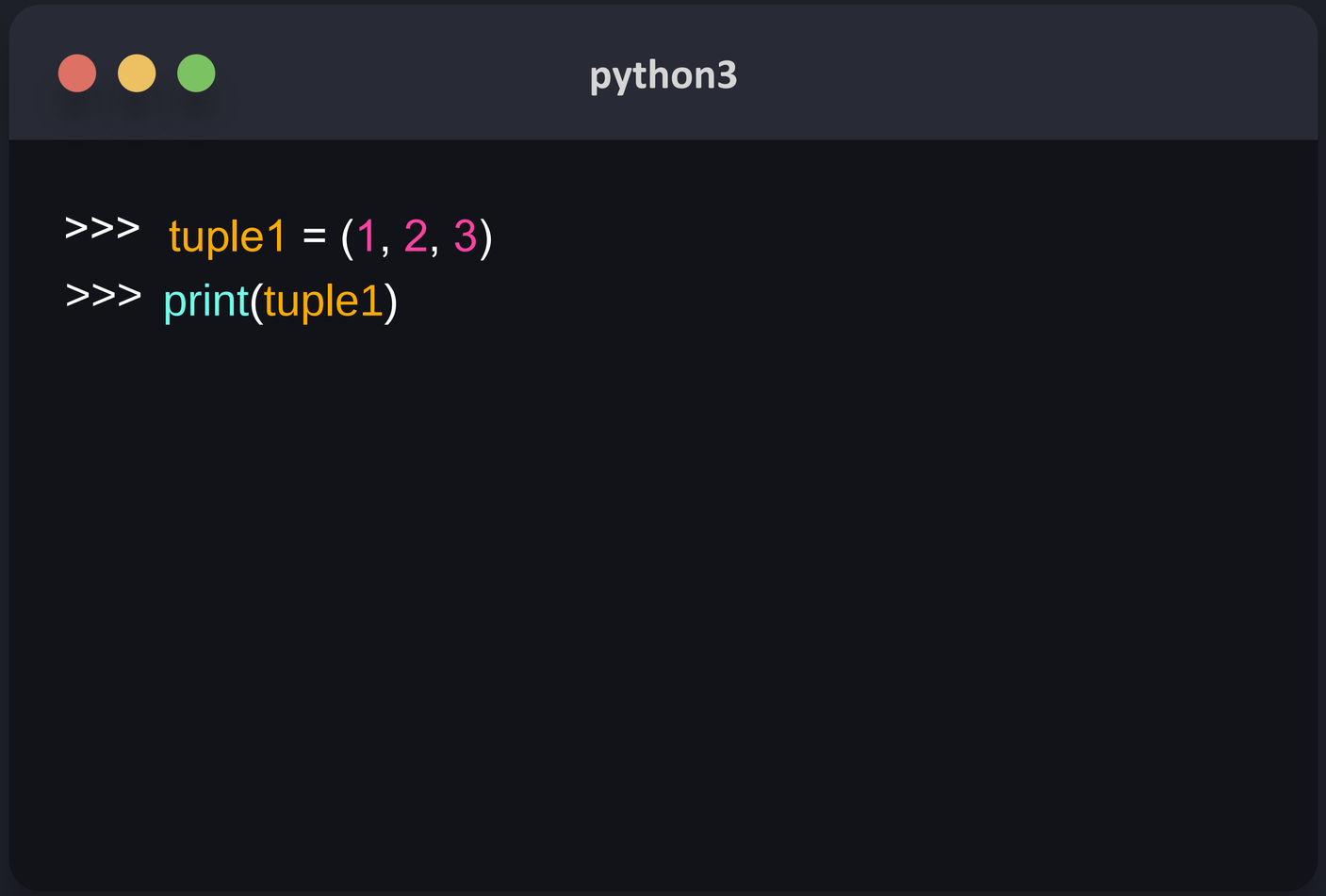
```
[1, 2, 3]
```

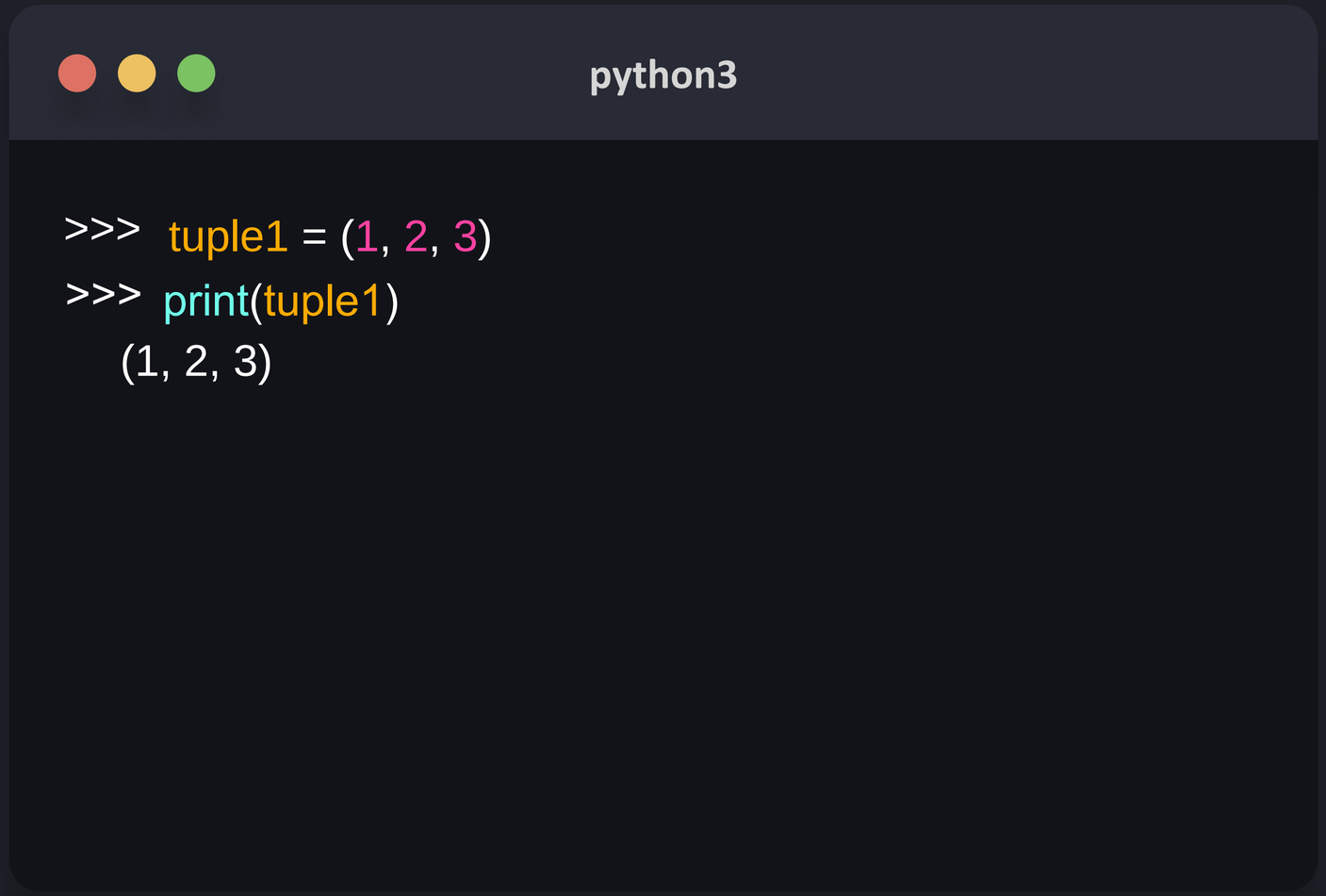
```
[1, 2, 3]
```

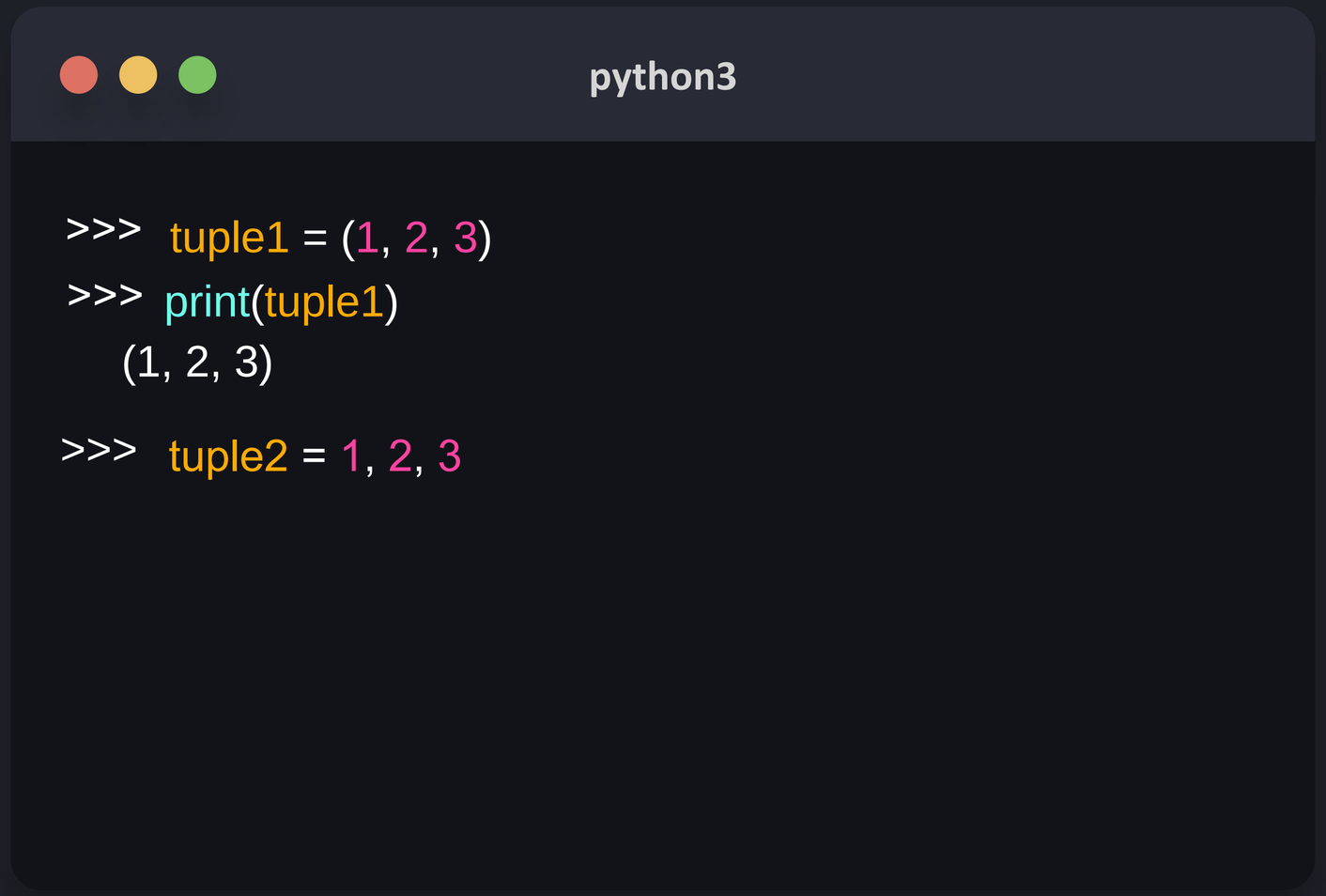
```
del myList[1]
```

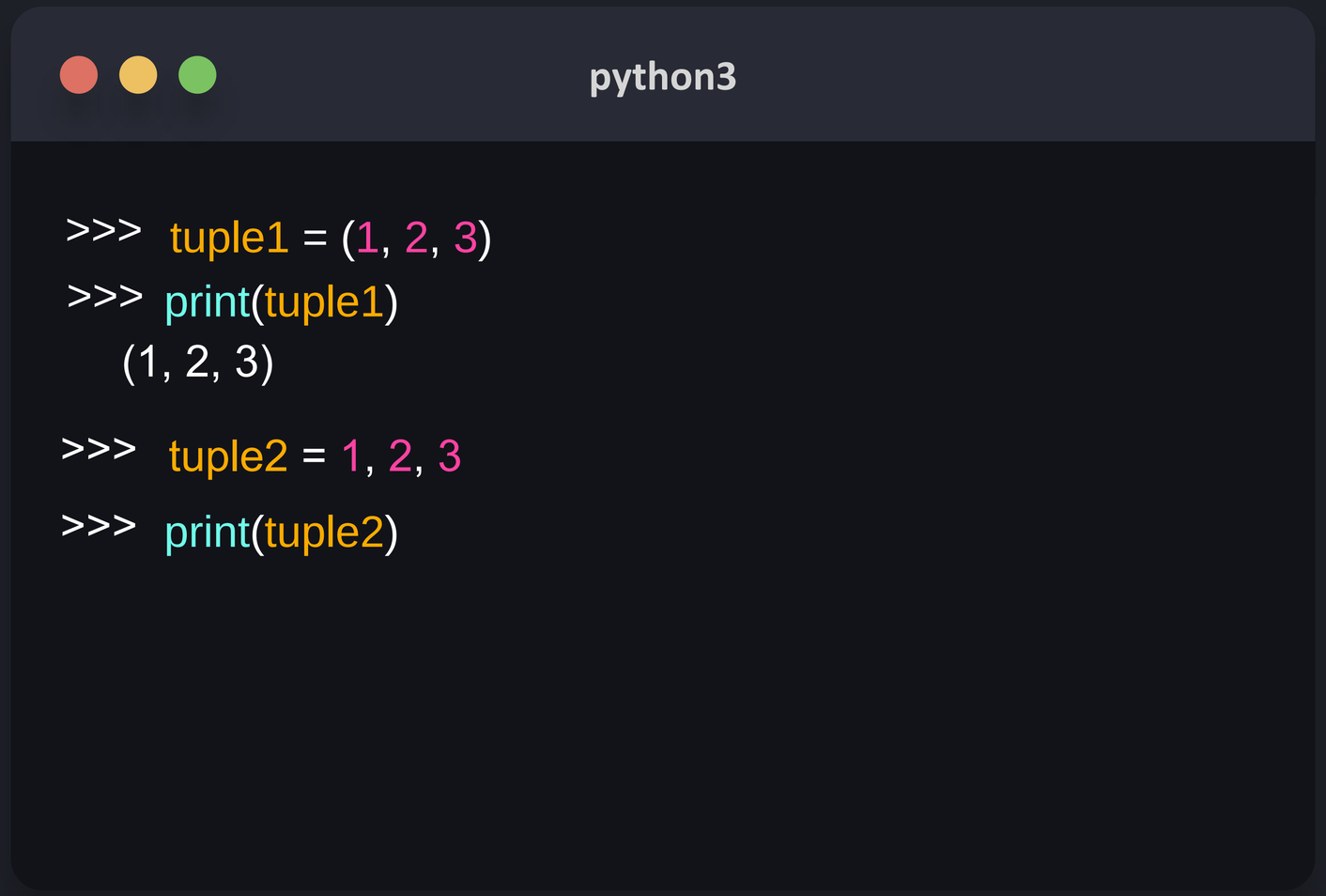
```
myList.append(4)
```

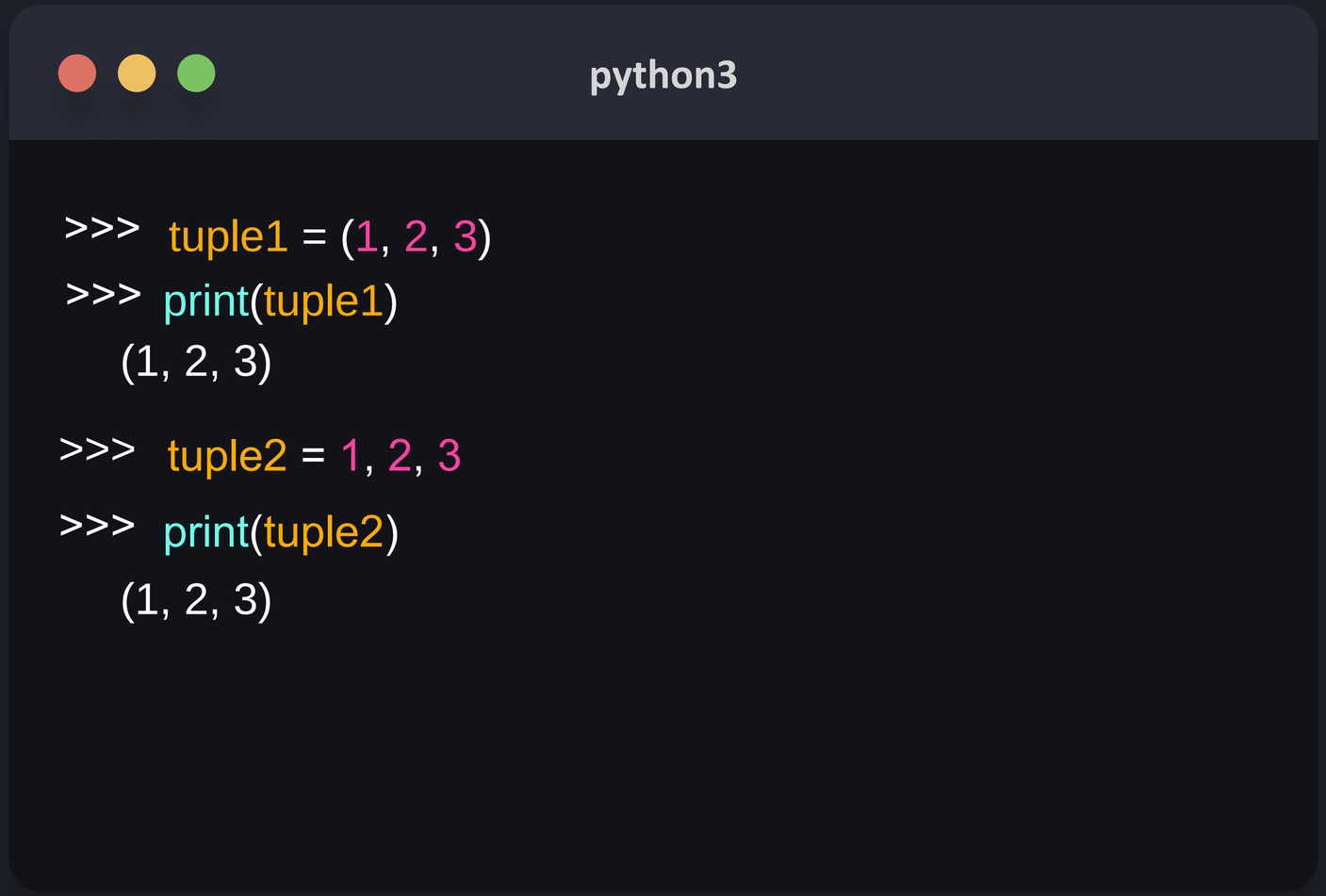

python3
>>> tuple1 = (1, 2, 3)

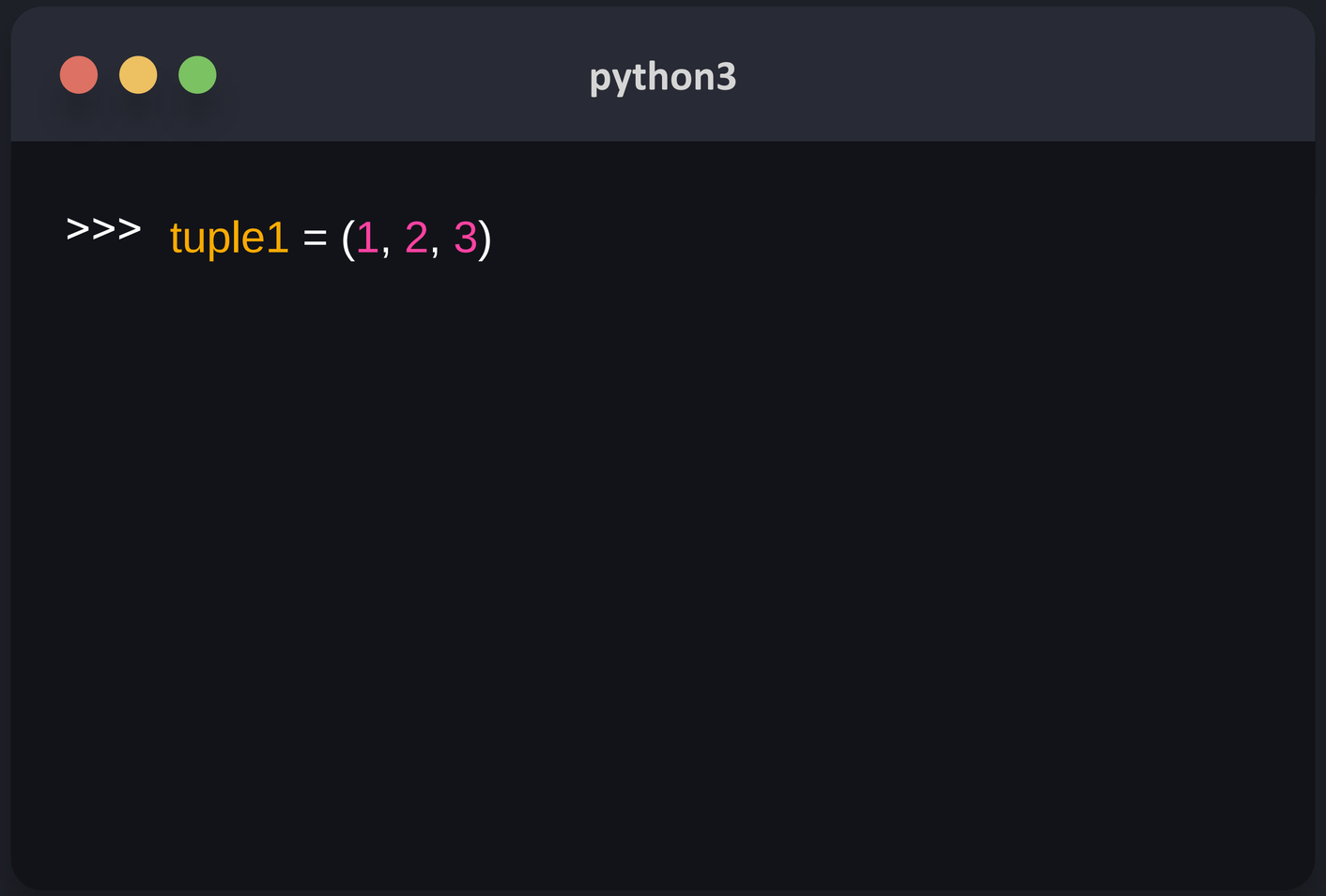

python3
>>> tuple1 = (1, 2, 3)
>>> print(tuple1)

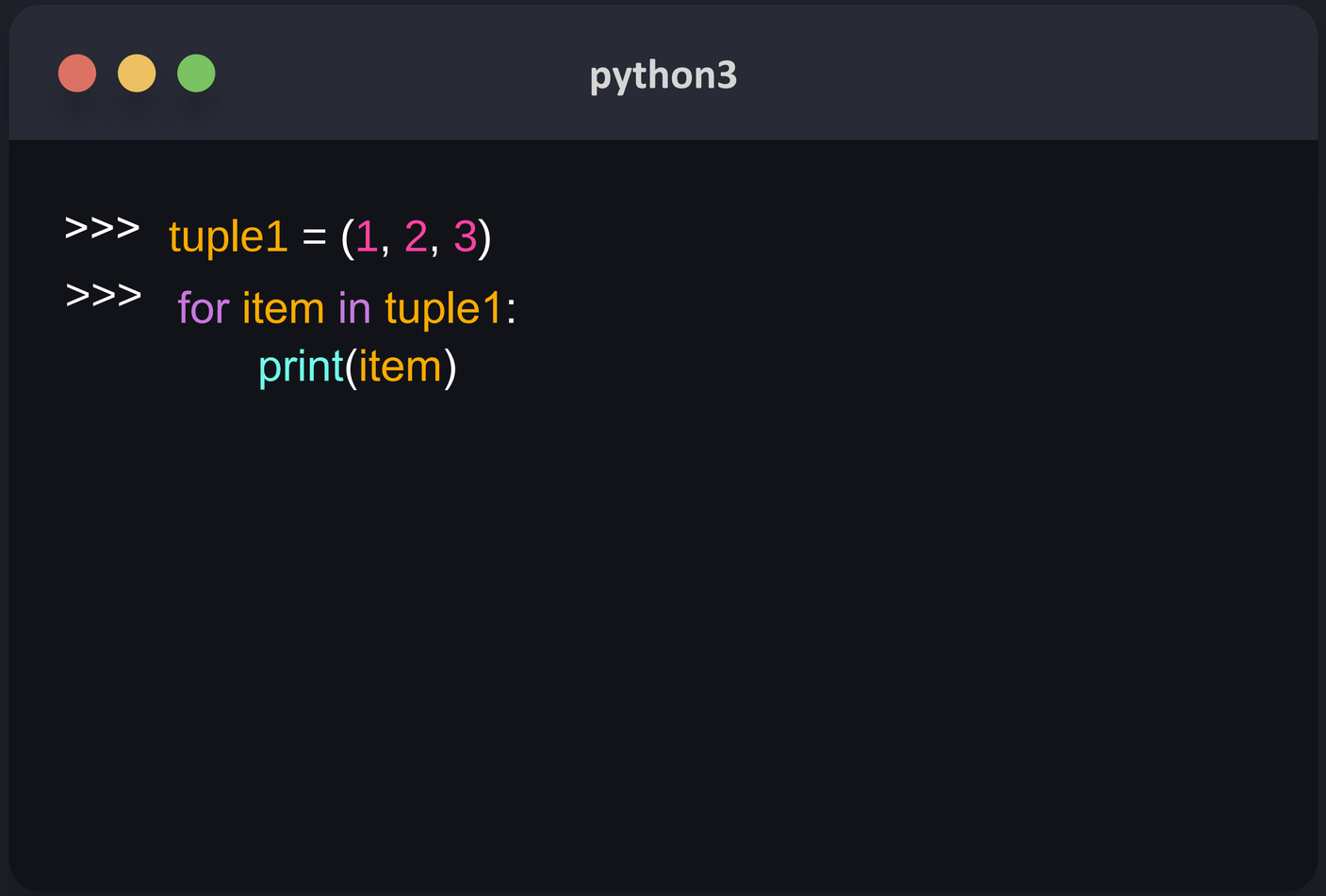

python3
>>> tuple1 = (1, 2, 3)
>>> print(tuple1)
(1, 2, 3)

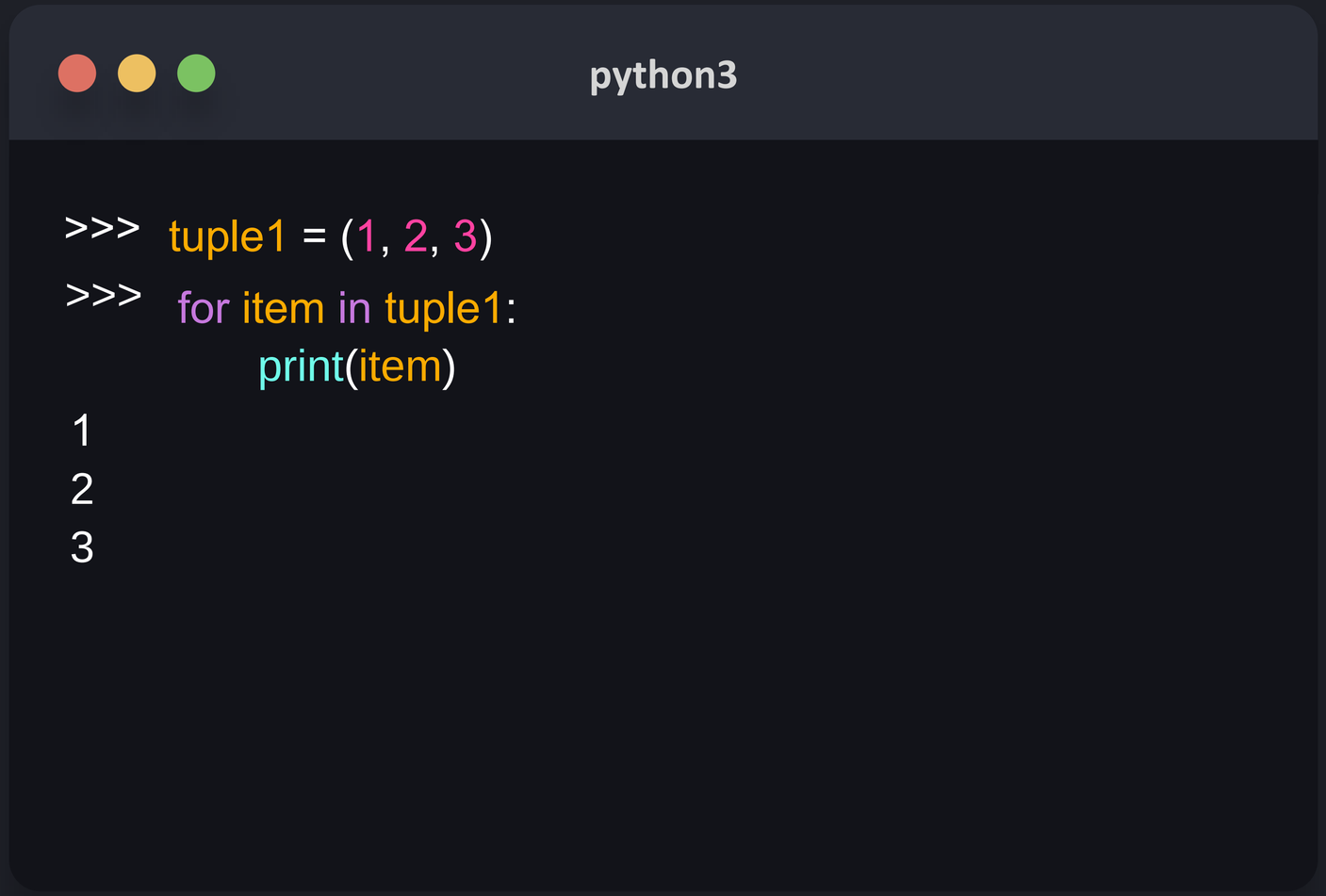

python3
>>> tuple1 = (1, 2, 3)
>>> print(tuple1)
(1, 2, 3)
>>> tuple2 = 1, 2, 3

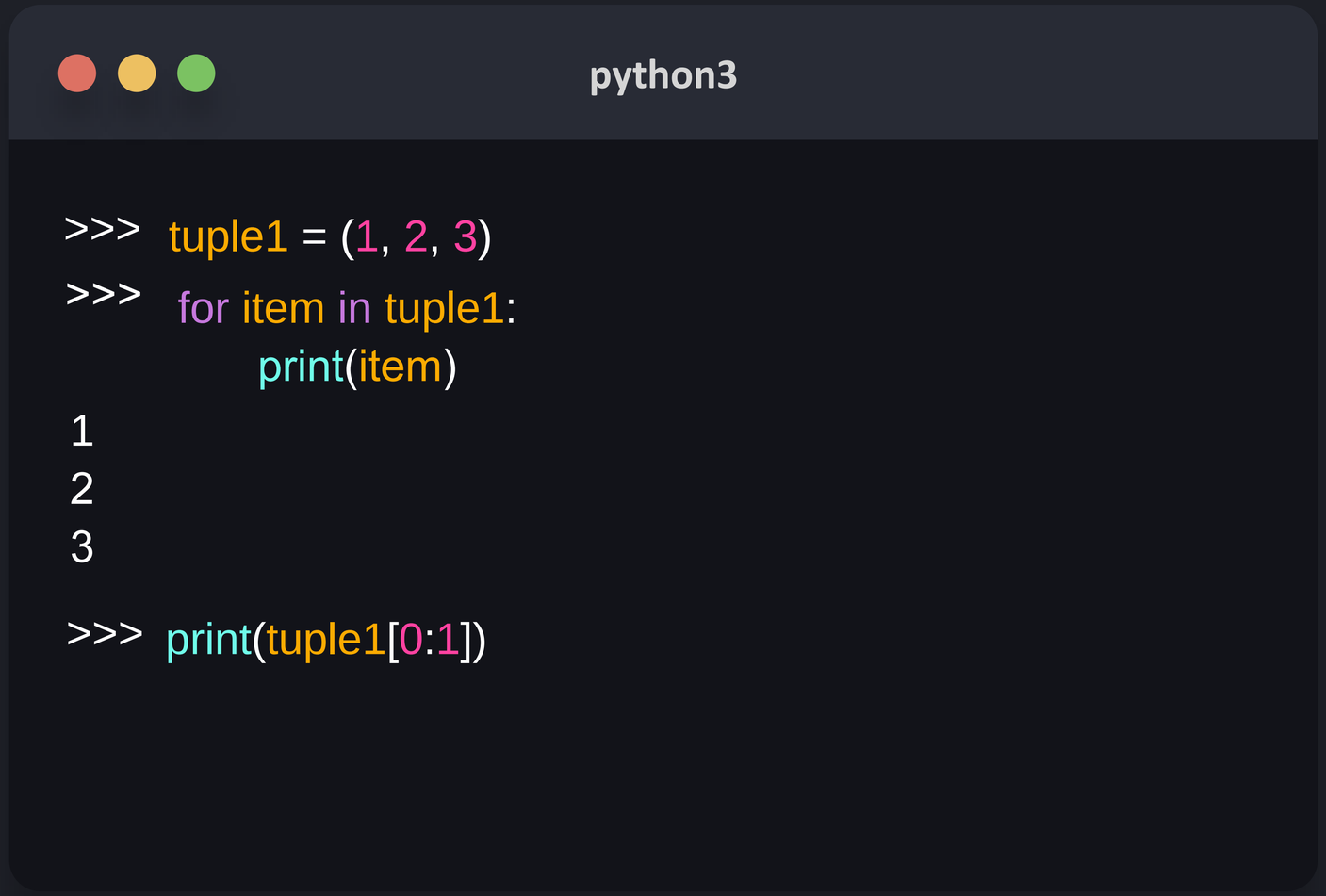

python3
>>> tuple1 = (1, 2, 3)
>>> print(tuple1)
(1, 2, 3)
>>> tuple2 = 1, 2, 3
>>> print(tuple2)


python3
>>> tuple1 = (1, 2, 3)
>>> print(tuple1)
(1, 2, 3)
>>> tuple2 = 1, 2, 3
>>> print(tuple2)
(1, 2, 3)


python3
>>> tuple1 = (1, 2, 3)


python3
>>> tuple1 = (1, 2, 3)
>>> for item in tuple1:
print(item)

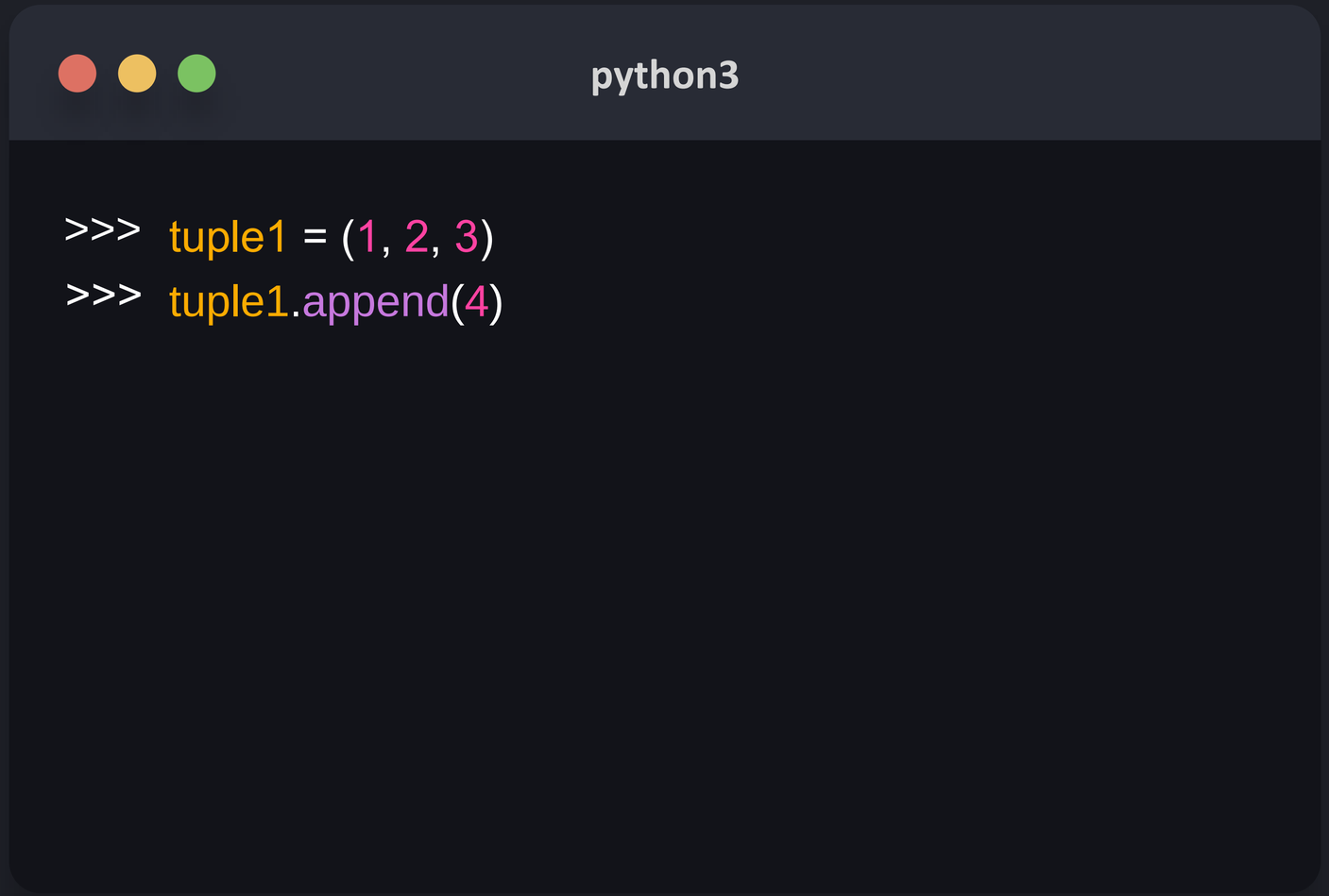

python3
>>> tuple1 = (1, 2, 3)
>>> for item in tuple1:
print(item)
1
2
3

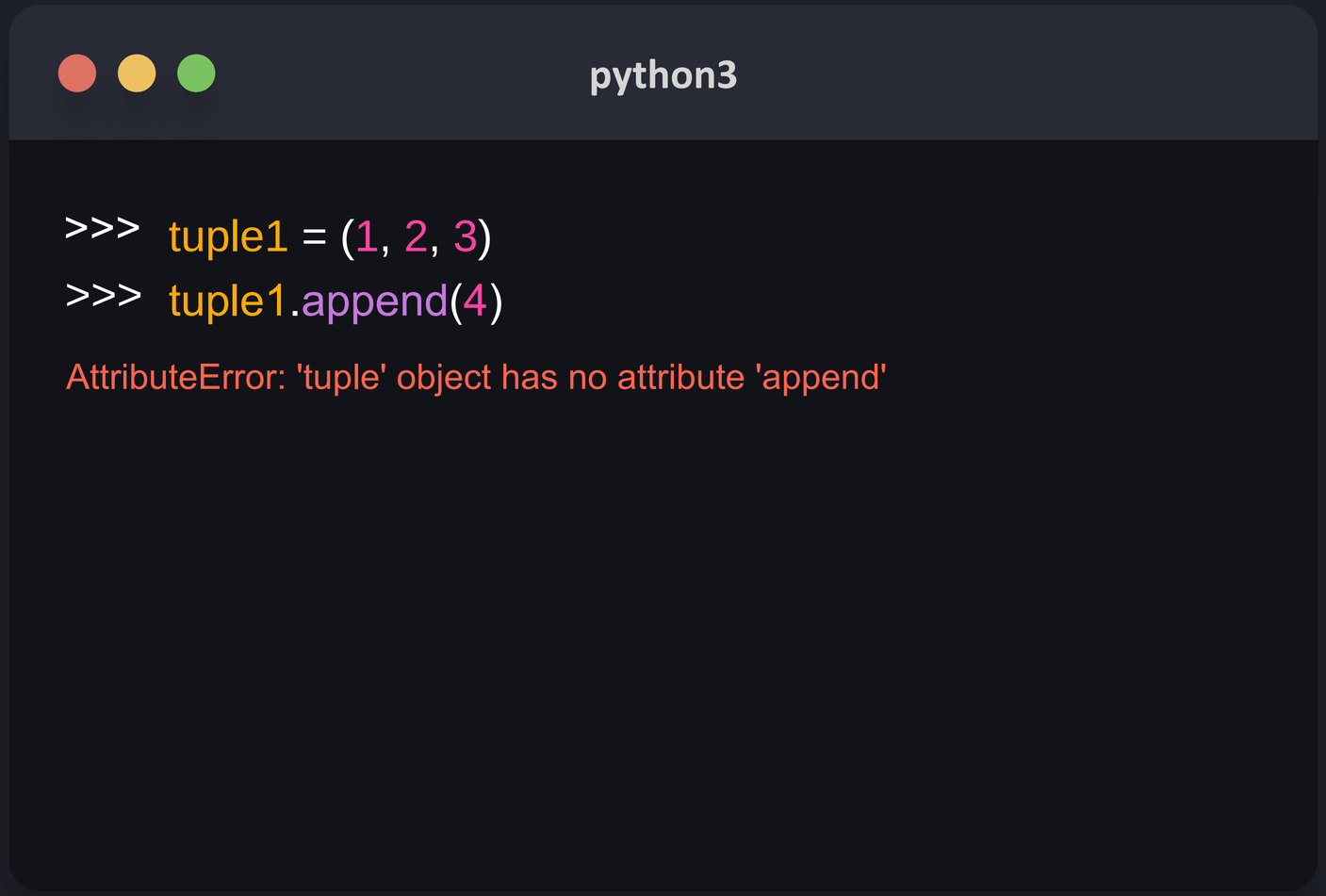

python3
>>> tuple1 = (1, 2, 3)
>>> for item in tuple1:
print(item)
1
2
3
>>> print(tuple1[0:1])

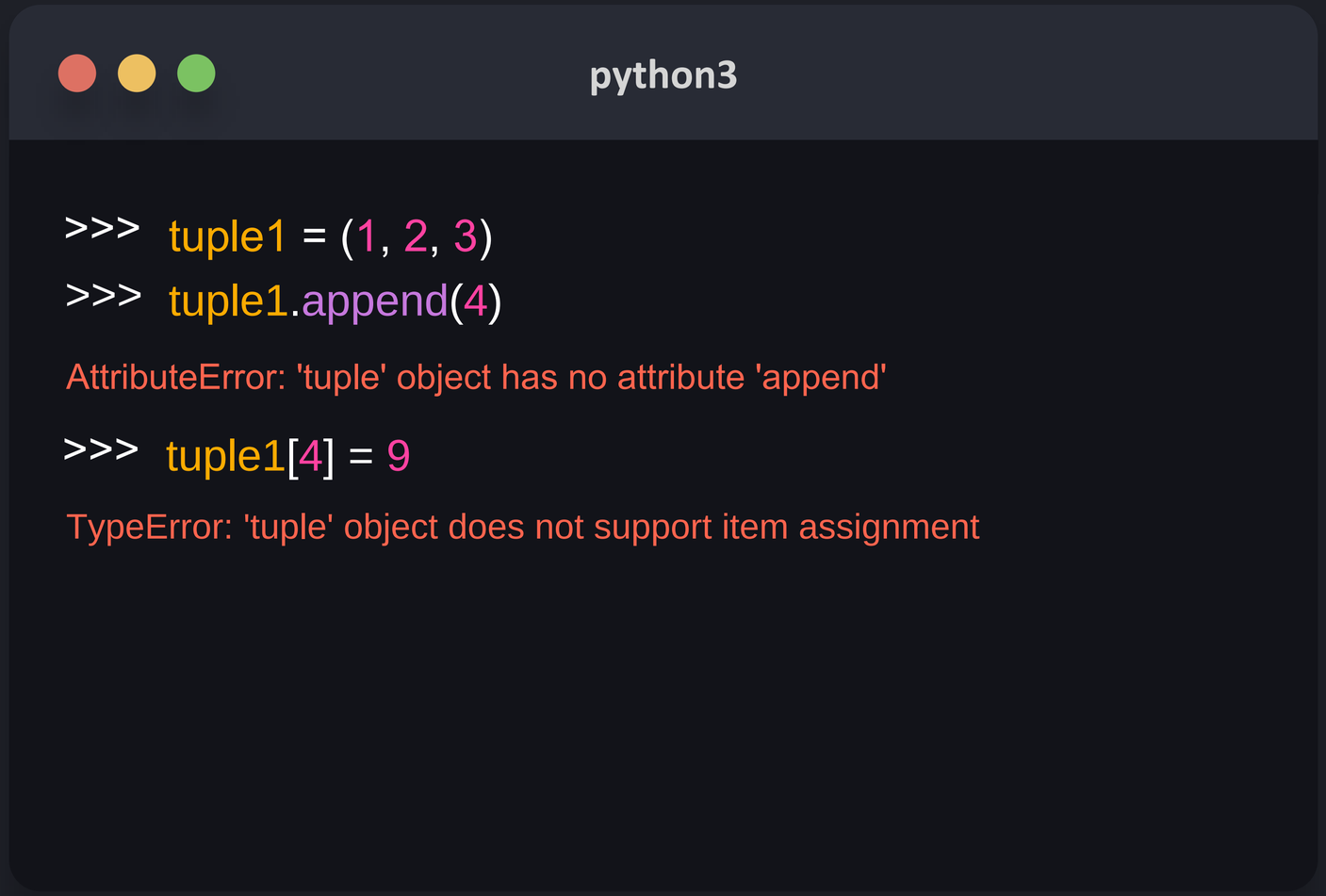
python3

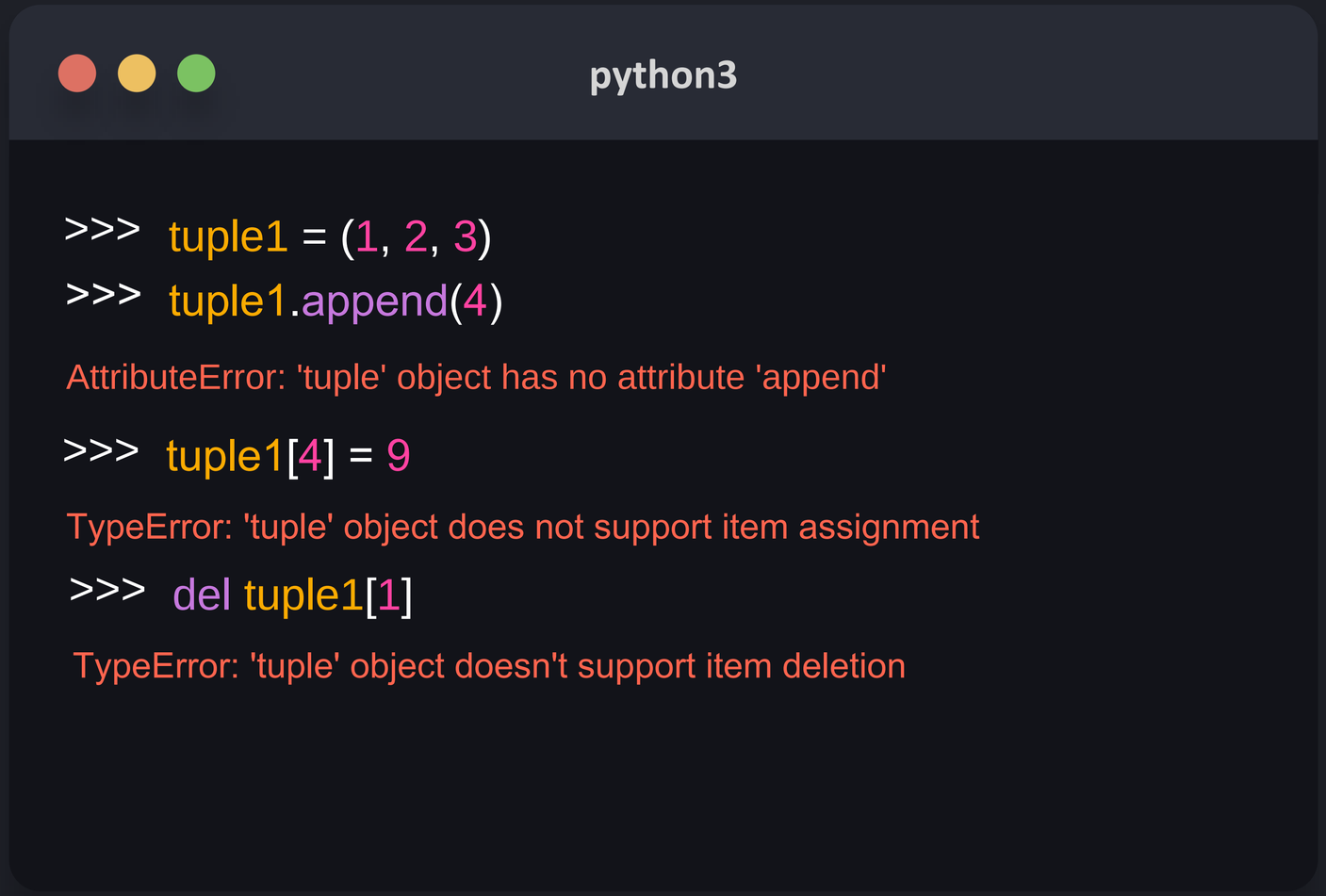
```
>>> tuple1 = (1, 2, 3)
>>> for item in tuple1:
        print(item)
1
2
3

>>> print(tuple1[0:1])
(0, 1)
```

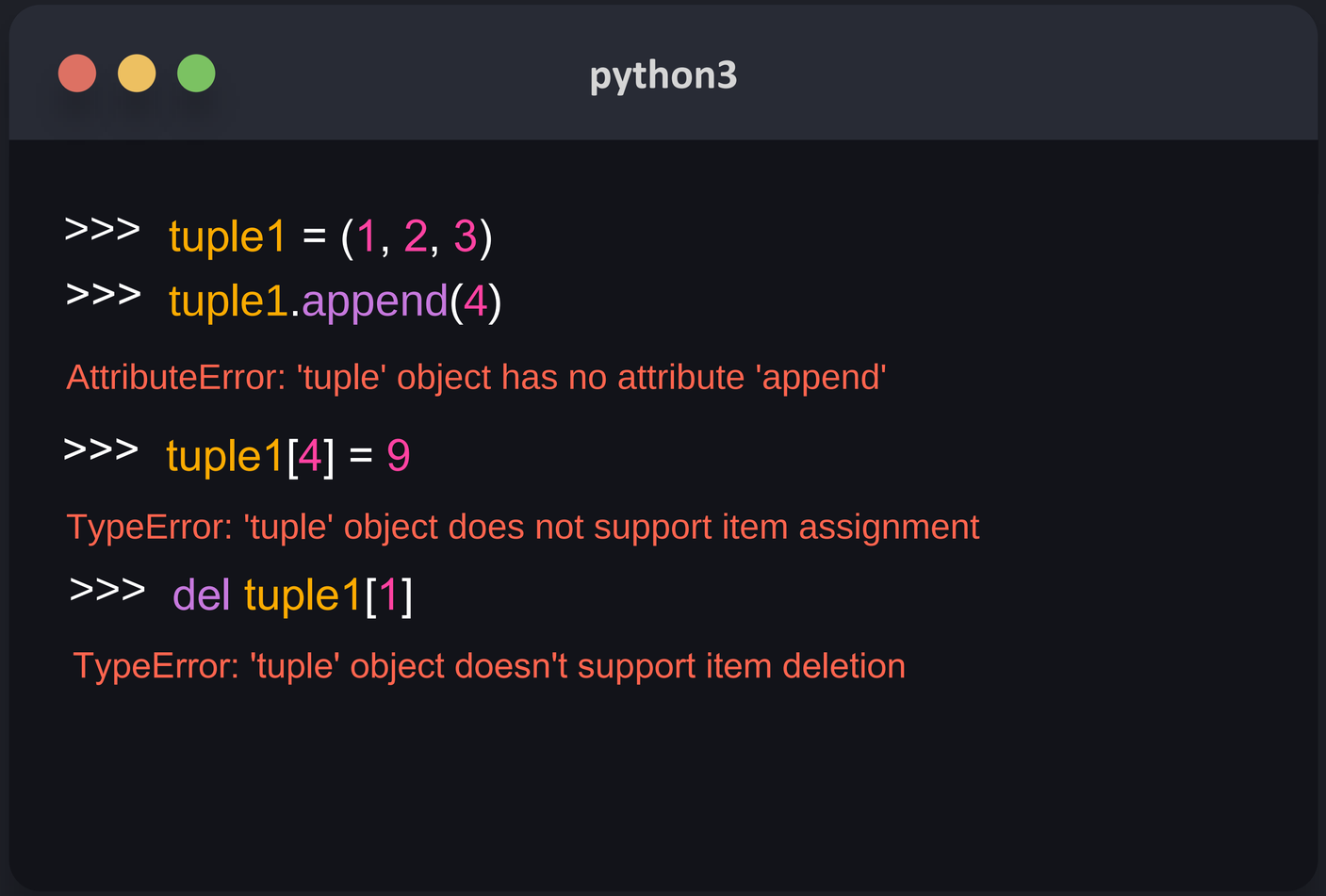

python3
>>> tuple1 = (1, 2, 3)


python3
>>> tuple1 = (1, 2, 3)
>>> tuple1.append(4)

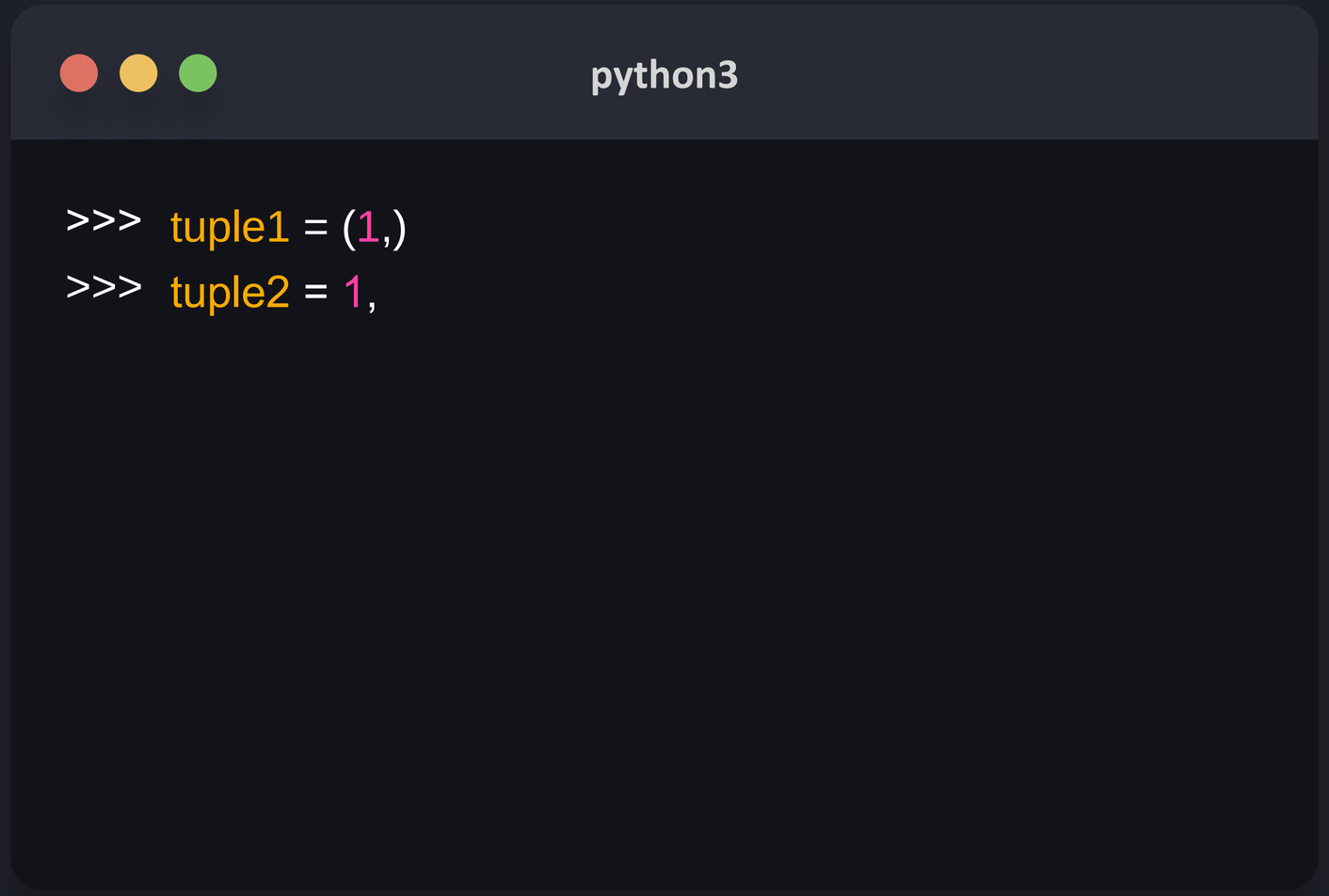

python3
>>> tuple1 = (1, 2, 3)
>>> tuple1.append(4)
AttributeError: 'tuple' object has no attribute 'append'


python3
>>> tuple1 = (1, 2, 3)
>>> tuple1.append(4)
AttributeError: 'tuple' object has no attribute 'append'
>>> tuple1[4] = 9
TypeError: 'tuple' object does not support item assignment


python3
>>> tuple1 = (1, 2, 3)
>>> tuple1.append(4)
AttributeError: 'tuple' object has no attribute 'append'
>>> tuple1[4] = 9
TypeError: 'tuple' object does not support item assignment
>>> del tuple1[1]
TypeError: 'tuple' object doesn't support item deletion


python3
>>> tuple1 = (1, 2, 3)
>>> tuple1.append(4)
AttributeError: 'tuple' object has no attribute 'append'
>>> tuple1[4] = 9
TypeError: 'tuple' object does not support item assignment
>>> del tuple1[1]
TypeError: 'tuple' object doesn't support item deletion


python3
>>> age = 22
>>> tuple1 = (1, "Lydia", age, (1, 2))


python3
>>> tuple1 = (1,)
>>> tuple2 = 1,

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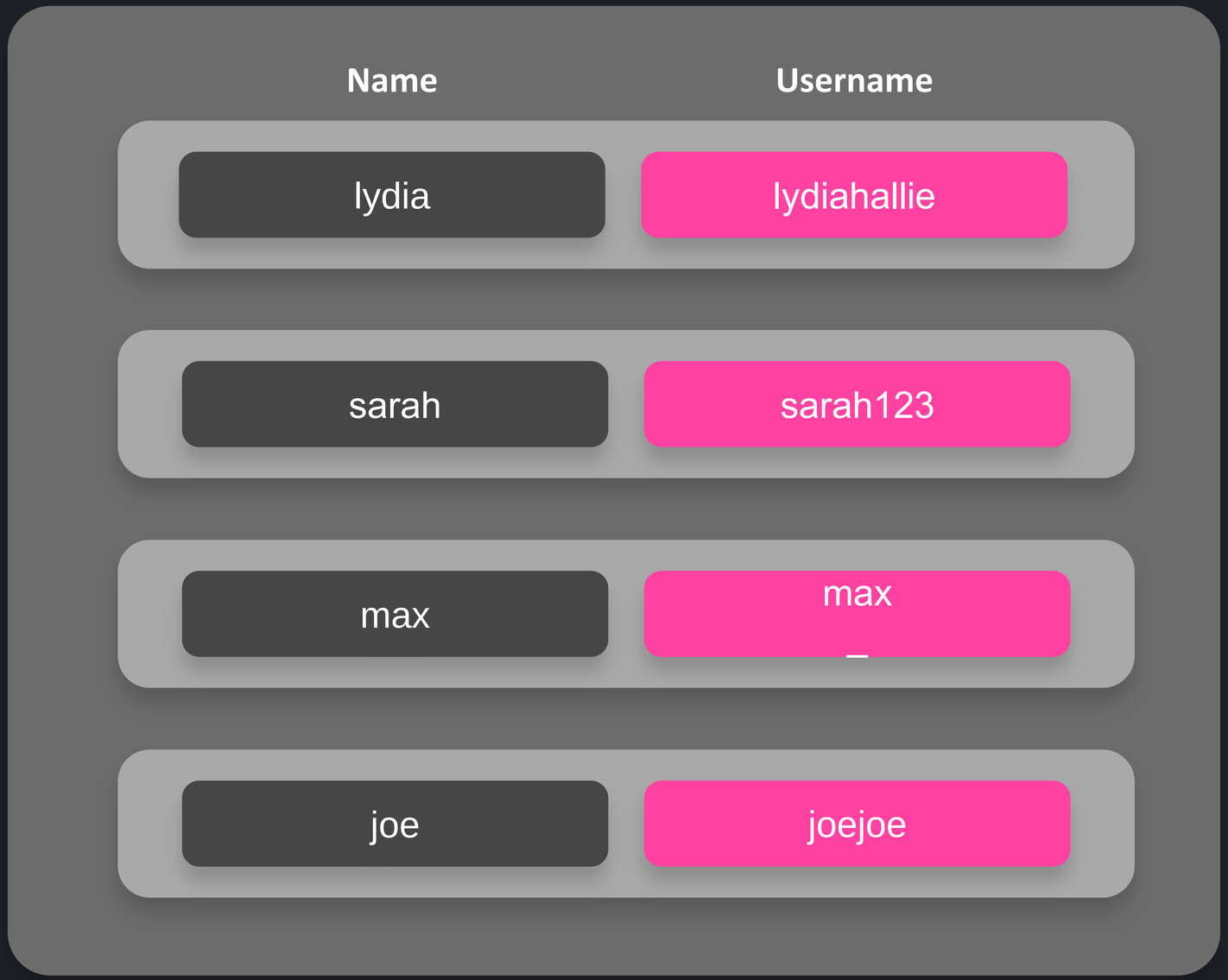
Dictionaries


Name
Username
lydia
lydiahallie
sarah
sarah123
max
max
joe
joejoe

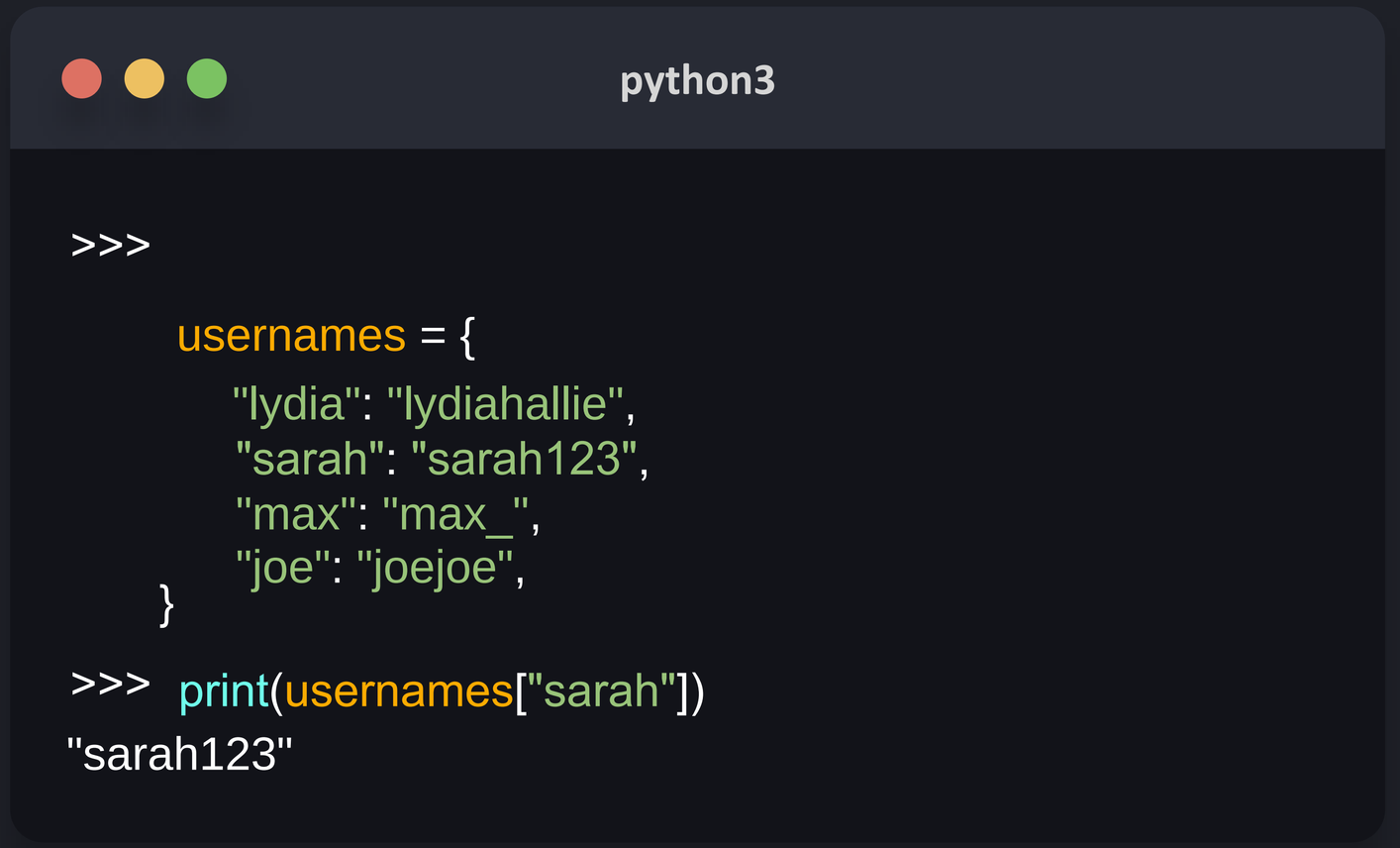
python3

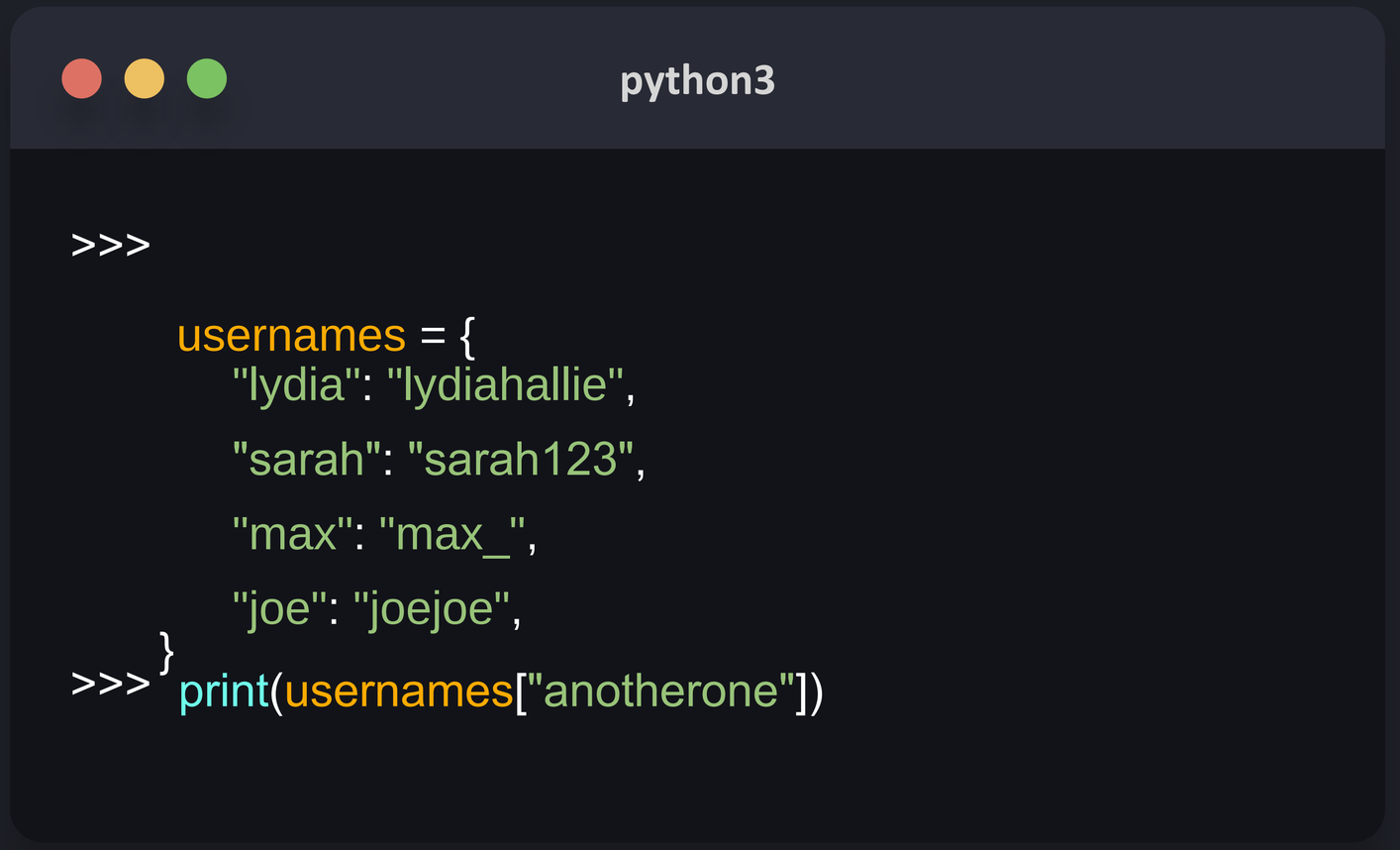
```
>>> usernames = {
        "lydia": "lydiahallie",
        "sarah": "sarah123",
        "max": "max_",
        "joe": "joejoe",
    }
```

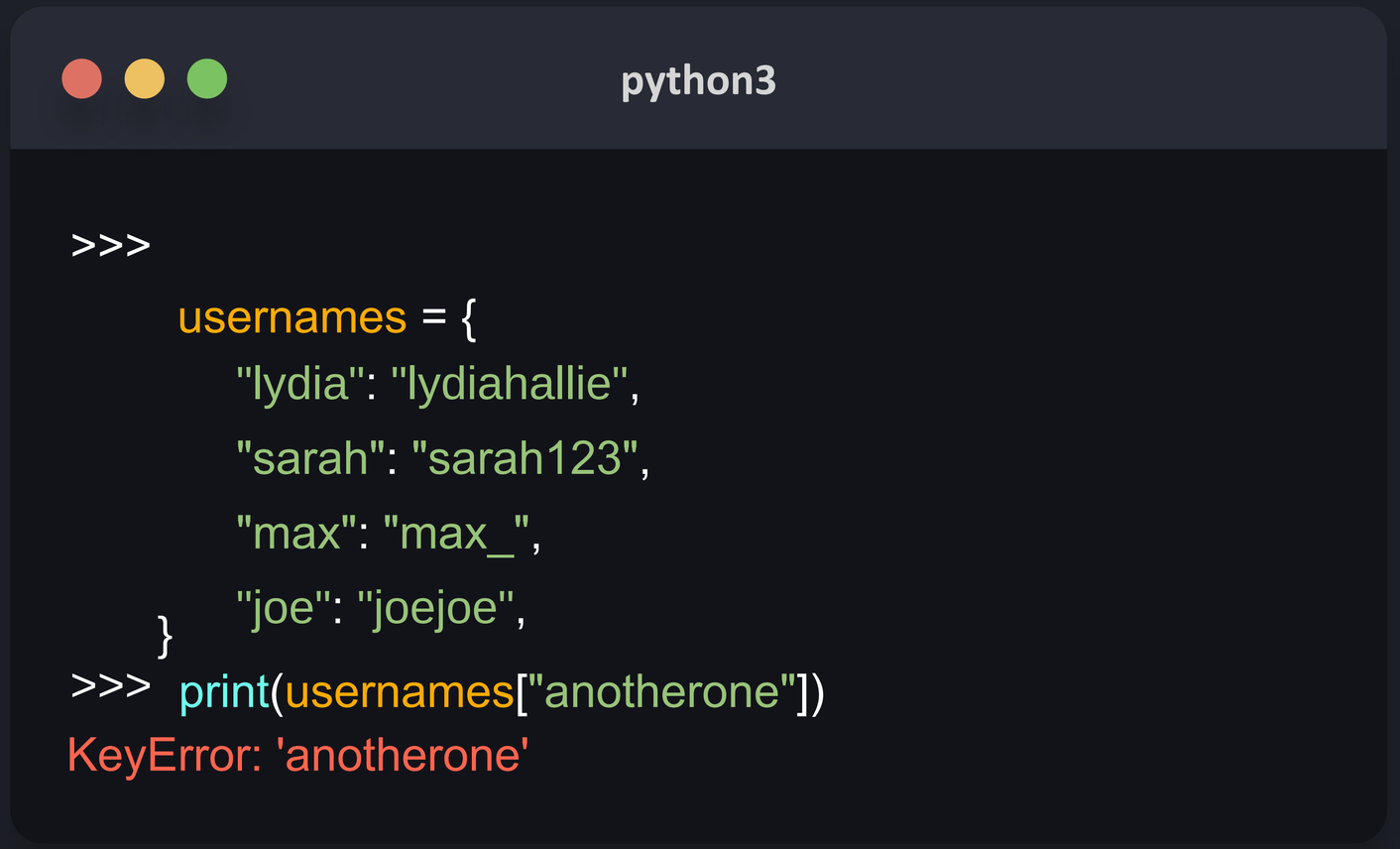
Name	Username
lydia	lydiahallie
sarah	sarah123
max	max_
joe	joejoe

python3

```
>>>
        usernames = {
                        "lydia": "lydiahallie",
                        "sarah": "sarah123",
                        "max": "max_",
                        "joe": "joejoe",
                }
```


python3
>>>
usernames = {
"lydia": "lydiahallie",
"sarah": "sarah123",
"max": "max_",
"joe": "joejoe",
}
>>> print(usernames["sarah"])
"sarah123"


python3
>>>
usernames = {
"lydia": "lydiahallie",
"sarah": "sarah123",
"max": "max_",
"joe": "joejoe",
}
>>> print(usernames["anotherone"])


python3
>>>
usernames = {
"lydia": "lydiahallie",
"sarah": "sarah123",
"max": "max_",
"joe": "joejoe",
}
>>> print(usernames["anotherone"])
KeyError: 'anotherone'

Methods

dictionary.keys()

dictionary.values()

dictionary.items()

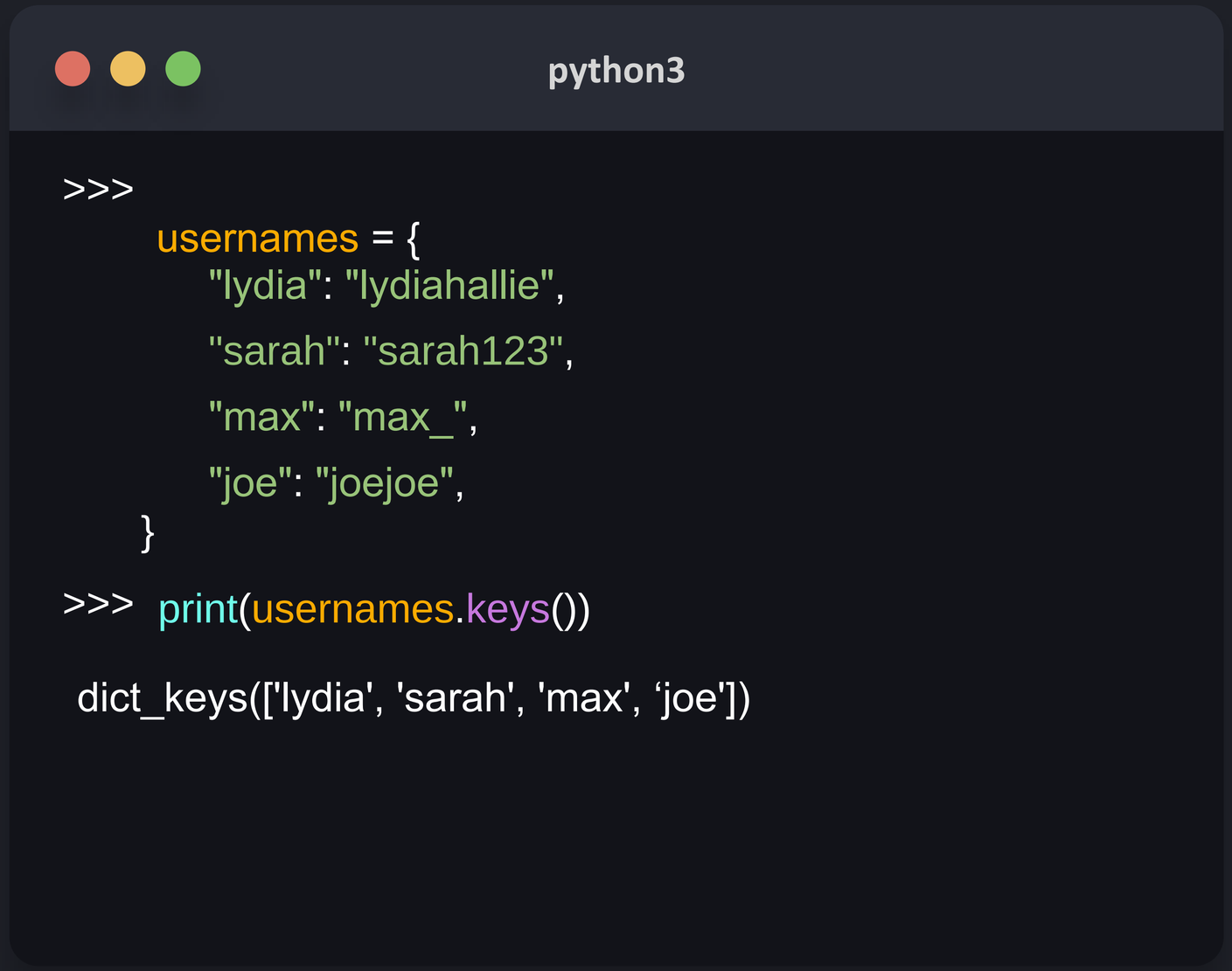
python3

```
>>>
        usernames = {
            "lydia": "lydiahallie",
            "sarah": "sarah123",
            "max": "max_",
            "joe": "joejoe",
        }
>>>  print(usernames.keys())
```

python3

```
>>>
        usernames = {
            "lydia": "lydiahallie",
            "sarah": "sarah123",
            "max": "max_",
            "joe": "joejoe",
        }

>>>  print(usernames.keys())
 dict_keys(['lydia', 'sarah', 'max', ‘joe'])
```


python3
>>>
usernames = {
"lydia": "lydiahallie",
"sarah": "sarah123",
"max": "max_",
"joe": "joejoe",
}
>>> print(usernames.keys())
dict_keys(['lydia', 'sarah', 'max', ‘joe'])

python3

```
>>> usernames = {
        "lydia": "lydiahallie",
        "sarah": "sarah123",
        "max": "max_",
        "joe": "joejoe",
    }

>>> for key in usernames.keys():
        print(key + " - " + usernames[key])
```

python3

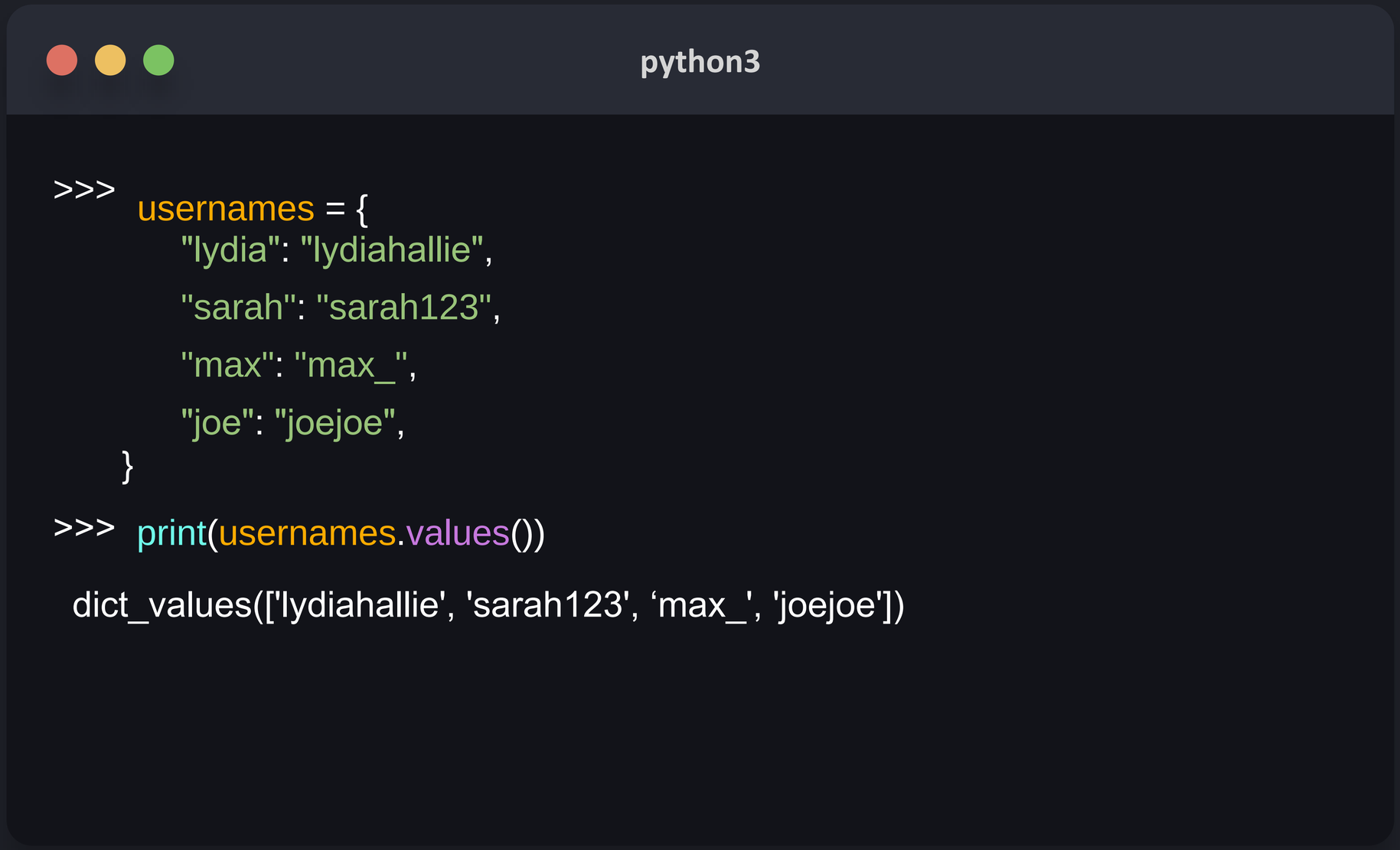
```
>>> usernames = {
        "lydia": "lydiahallie",
        "sarah": "sarah123",
        "max": "max_",
        "joe": "joejoe",
    }

>>> for key in usernames.keys():
        print(key + " - " + usernames[key])

lydia - lydiahallie
sarah - sarah123
max - max_
joe - joejoe
```

python3

```
>>> usernames = {
        "lydia": "lydiahallie",
        "sarah": "sarah123",
        "max": "max_",
        "joe": "joejoe",
    }
>>> print(usernames.values())
```


python3
>>> usernames = {
"lydia": "lydiahallie",
"sarah": "sarah123",
"max": "max_",
"joe": "joejoe",
}
>>> print(usernames.values())
dict_values(['lydiahallie', 'sarah123', ‘max_', 'joejoe'])

python3

```
>>> usernames = {
        "lydia": "lydiahallie",
        "sarah": "sarah123",
        "max": "max_",
        "joe": "joejoe",
    }
>>> print(usernames.items())
```

python3

```
>>> 
      usernames = {
          "lydia": "lydiahallie",
          "sarah": "sarah123",
          "max": "max_",
          "joe": "joejoe",
      }
>>>  print(usernames.items())
    dict_items([
      ('lydia', 'lydiahallie'),
      ('sarah', 'sarah123'),
      ('max', 'max_')
      ('joe', 'joejoe')
    ])
```

Methods

dictionary.keys()

dictionary.values()

dictionary.items()

python3

```
>>>
        usernames = {
                        "lydia": "lydiahallie",
                        "sarah": "sarah123",
                        "max": "max_",
                        "joe": "joejoe",

            }
```

python3

```
>>>
        usernames = {
            "lydia": "lydiahallie",
            "sarah": "sarah123",
            "max": "max_",
            "joe": "joejoe",
        }

 >>>  usernames["max"] = "max123"
```

python3

```
>>>
        usernames = {
                            "lydia": "lydiahallie",
                            "sarah": "sarah123",
                            "max": "max_",
                            "joe": "joejoe",
                }
 >>>  usernames["max"] = "max123"
 >>>  print(usernames["max"])
```

python3

```
>>>
        usernames = {
                            "lydia": "lydiahallie",
                            "sarah": "sarah123",
                            "max": "max_",
                            "joe": "joejoe",
                        }
 >>>  usernames["max"] = "max123"
 >>>  print(usernames["max"])
  "max123"
```

python3

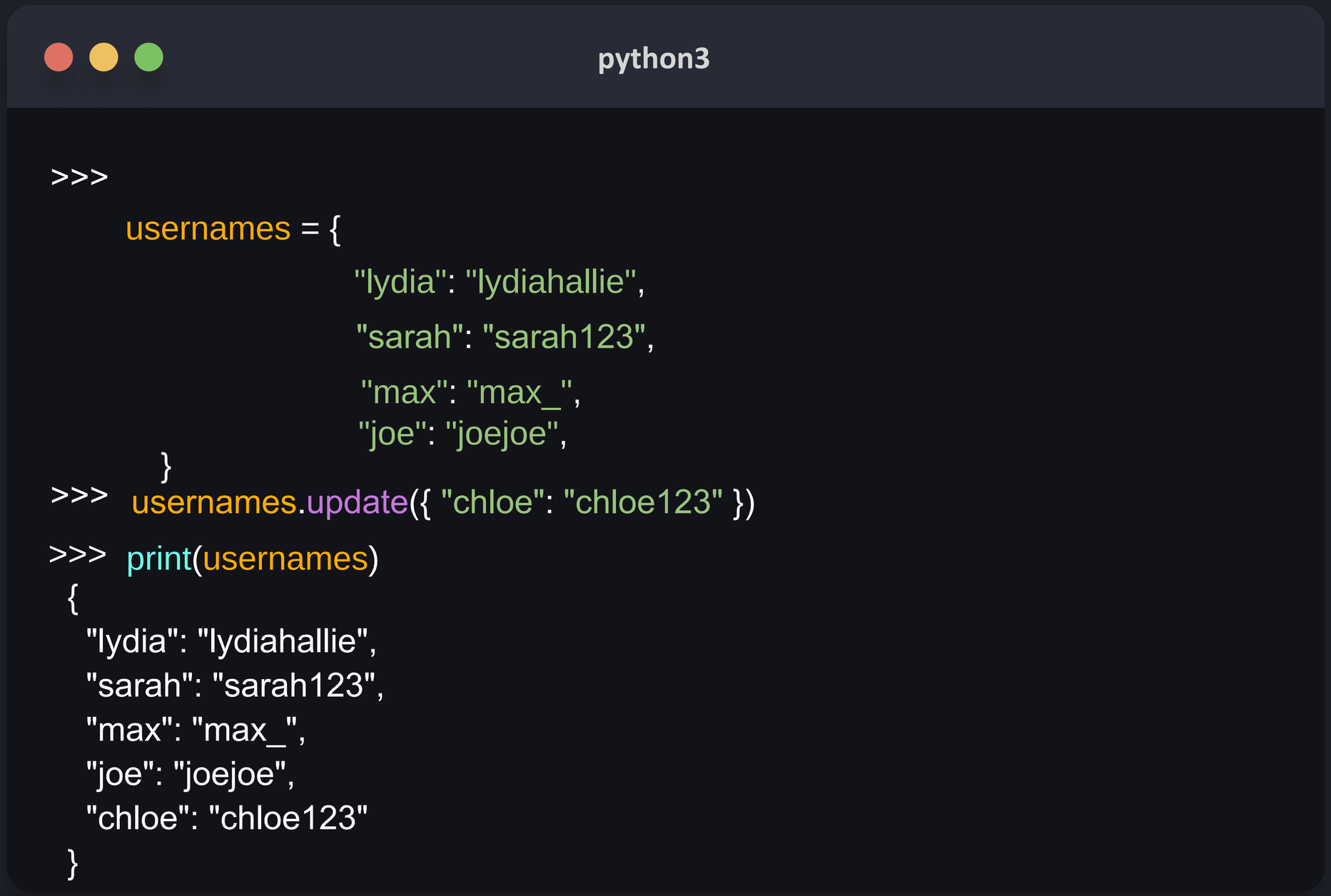
```
>>> usernames = {
        "lydia": "lydiahallie",
        "sarah": "sarah123",
        "max": "max_",
        "joe": "joejoe",
    }
```

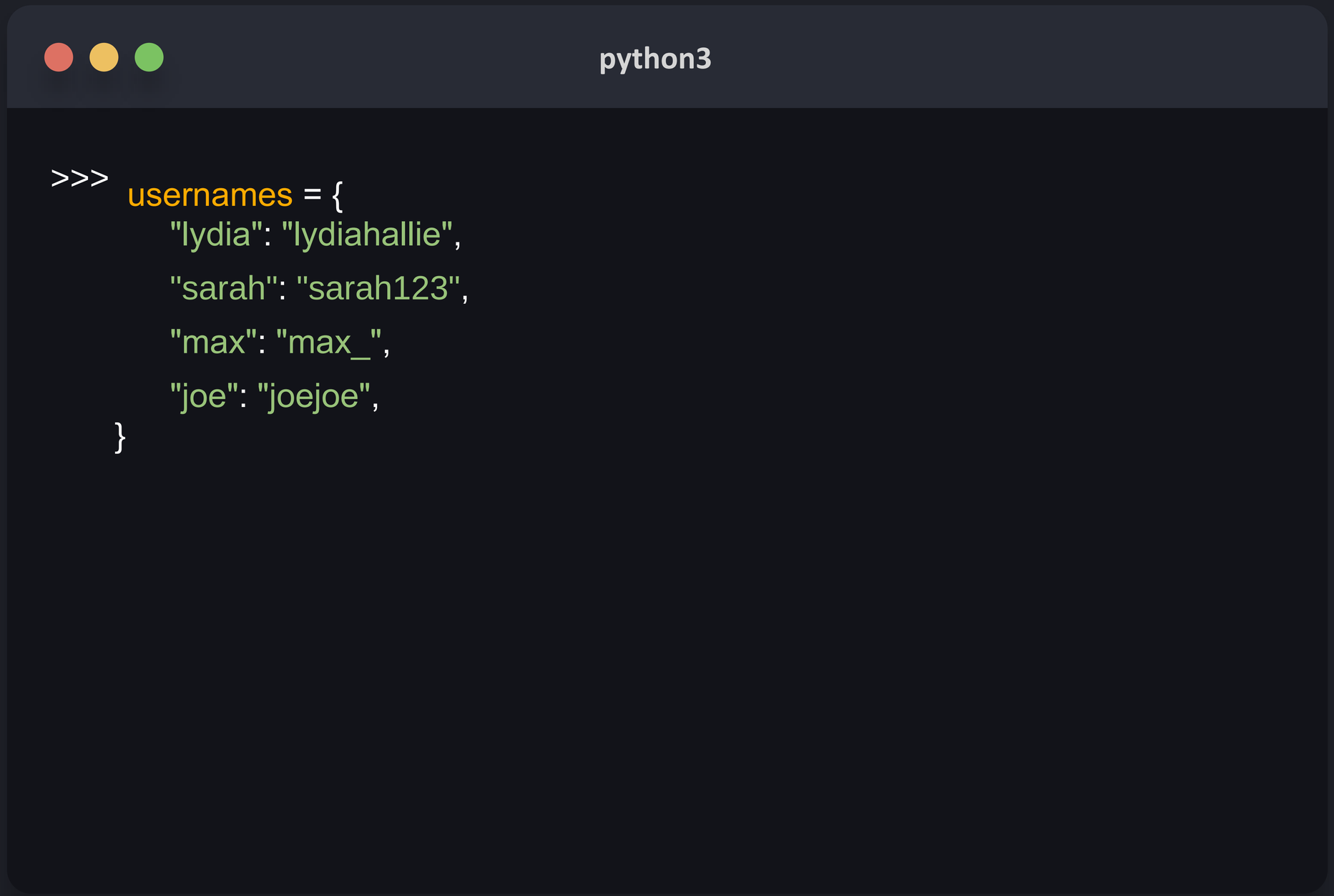
python3

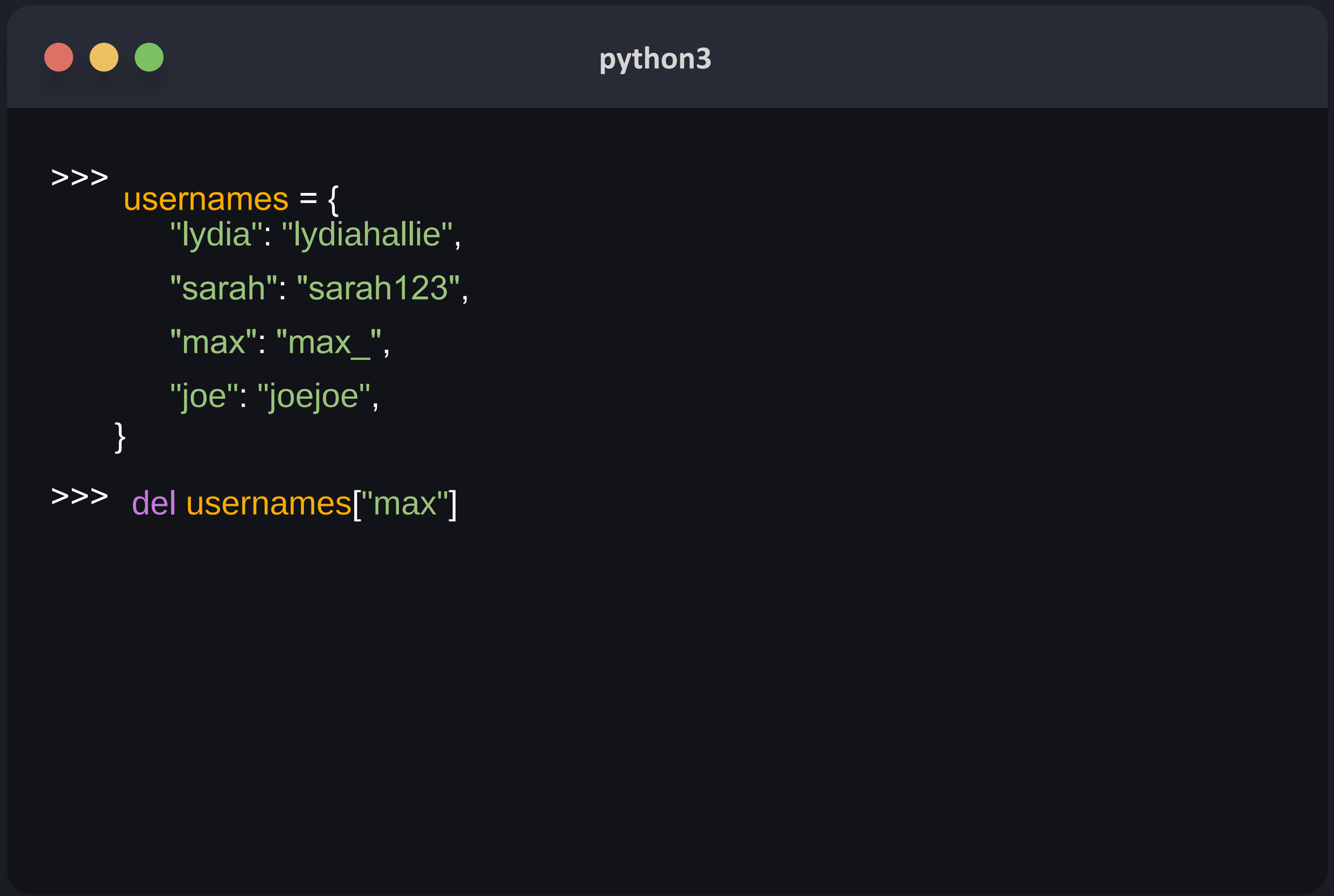
```
>>> usernames = {
        "lydia": "lydiahallie",
        "sarah": "sarah123",
        "max": "max_",
        "joe": "joejoe",
    }
>>> usernames.update({ "chloe": "chloe123" })
```

python3

```
>>>
        usernames = {
                            "lydia": "lydiahallie",
                             "sarah": "sarah123",
                              "max": "max_",
                              "joe": "joejoe",
        }
>>>  usernames.update({ "chloe": "chloe123" })
>>>  print(usernames)
```


python3
>>>
usernames = {
"lydia": "lydiahallie",
"sarah": "sarah123",
"max": "max_",
"joe": "joejoe",
}
>>> usernames.update({ "chloe": "chloe123" })
>>> print(usernames)
{
"lydia": "lydiahallie",
"sarah": "sarah123",
"max": "max_",
"joe": "joejoe",
"chloe": "chloe123"
}


python3
>>> usernames = {
"lydia": "lydiahallie",
"sarah": "sarah123",
"max": "max_",
"joe": "joejoe",
}

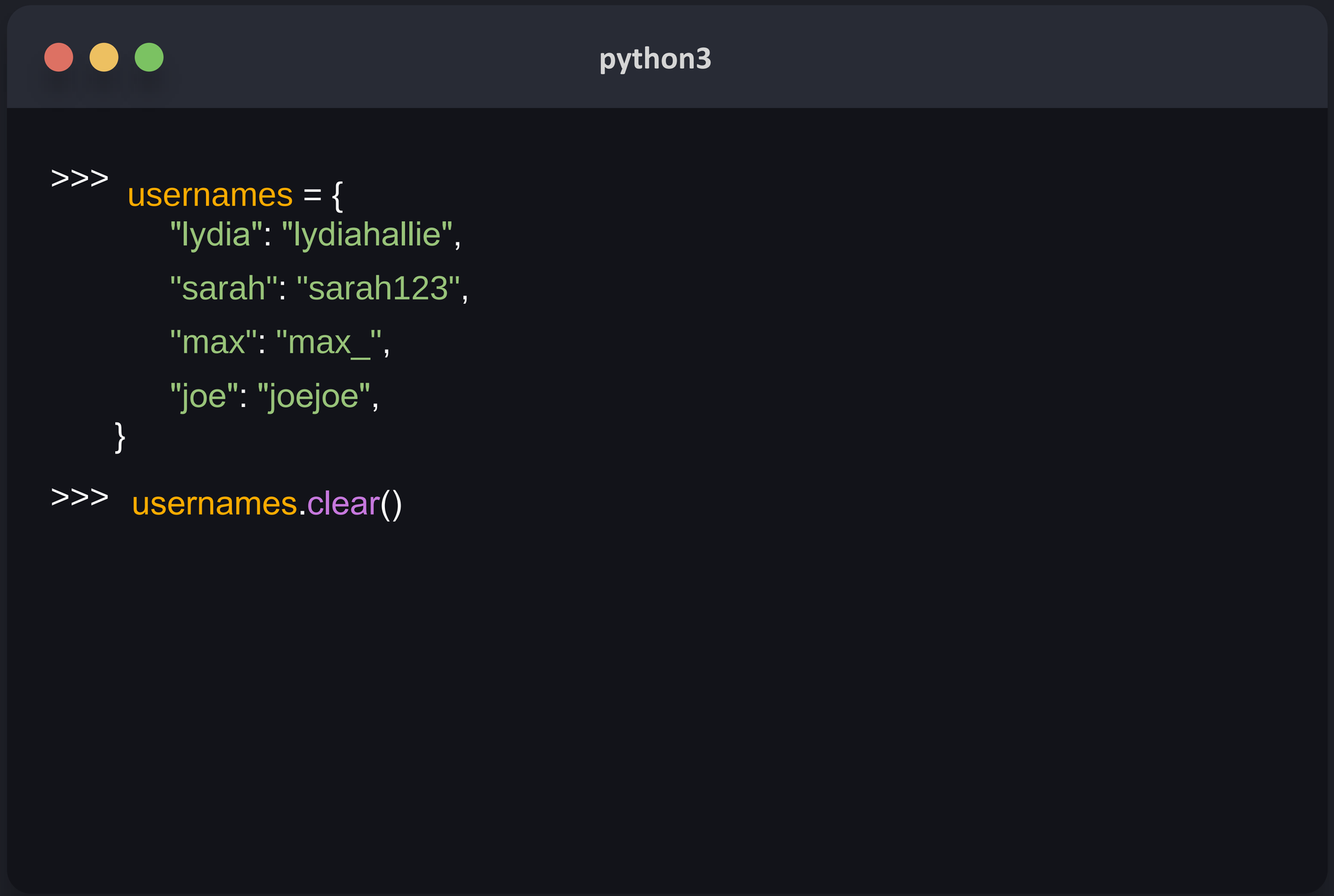

python3
>>> usernames = {
"lydia": "lydiahallie",
"sarah": "sarah123",
"max": "max_",
"joe": "joejoe",
}
>>> del usernames["max"]

python3

```
>>> usernames = {
        "lydia": "lydiahallie",
        "sarah": "sarah123",
        "max": "max_",
        "joe": "joejoe",
    }
>>> del usernames["max"]
>>> print(usernames)
```

python3

```
>>> usernames = {
        "lydia": "lydiahallie",
        "sarah": "sarah123",
        "max": "max_",
        "joe": "joejoe",
    }
>>> del usernames["max"]
>>> print(usernames)
 {
   "lydia": "lydiahallie",
   "sarah": "sarah123",
   "joe": "joejoe"
 }
```


python3
>>> usernames = {
"lydia": "lydiahallie",
"sarah": "sarah123",
"max": "max_",
"joe": "joejoe",
}
>>> usernames.clear()

python3

```
>>> usernames = {
        "lydia": "lydiahallie",
        "sarah": "sarah123",
        "max": "max_",
        "joe": "joejoe",
    }
>>> usernames.clear()
>>> print(usernames)
```

python3

```
>>> 
        usernames = {
            "lydia": "lydiahallie",
            "sarah": "sarah123",
            "max": "max_",
            "joe": "joejoe",
        }
>>>  usernames.clear()
>>>  print(usernames)
 {}
```

python3

```
>>> usernames = {
        "lydia": "lydiahallie",
        "sarah": "sarah123",
        "max": "max_",
        "joe": "joejoe",
    }
>>> usernames.popitem()
>>> print(usernames)
```

python3

```
>>>
      usernames = {
          "lydia": "lydiahallie",
          "sarah": "sarah123",
          "max": "max_",
          "joe": "joejoe",
      }
>>>  usernames.popitem()
>>>  print(usernames)
 {
   "lydia": "lydiahallie",
   "sarah": "sarah123",
   "max": "max_"
 }
```

python3

```
>>>
        usernames = {
                        "lydia": "lydiahallie",
                        "sarah": "sarah123",
                        "max": "max_",
                        "joe": "joejoe",
                    }
>>>  usernames_copy =   usernames.copy()
```

python3

```
>>>
usernames = {
                    "lydia": "lydiahallie",
                   "sarah": "sarah123",
                    "max": "max_",
                    "joe": "joejoe",
            }
>>>  usernames_copy =      usernames.copy()
>>>  print(usernames_copy)
```

python3

```
>>>
        usernames = {
                        "lydia": "lydiahallie",
                        "sarah": "sarah123",
                        "max": "max_",
                         "joe": "joejoe",
            }
>>>  usernames_copy =      usernames.copy()
>>>  print(usernames_copy)
 {
   "lydia": "lydiahallie",
   "sarah": "sarah123",
   "max": "max_",
   "joe": "joejoe"
 }
```

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