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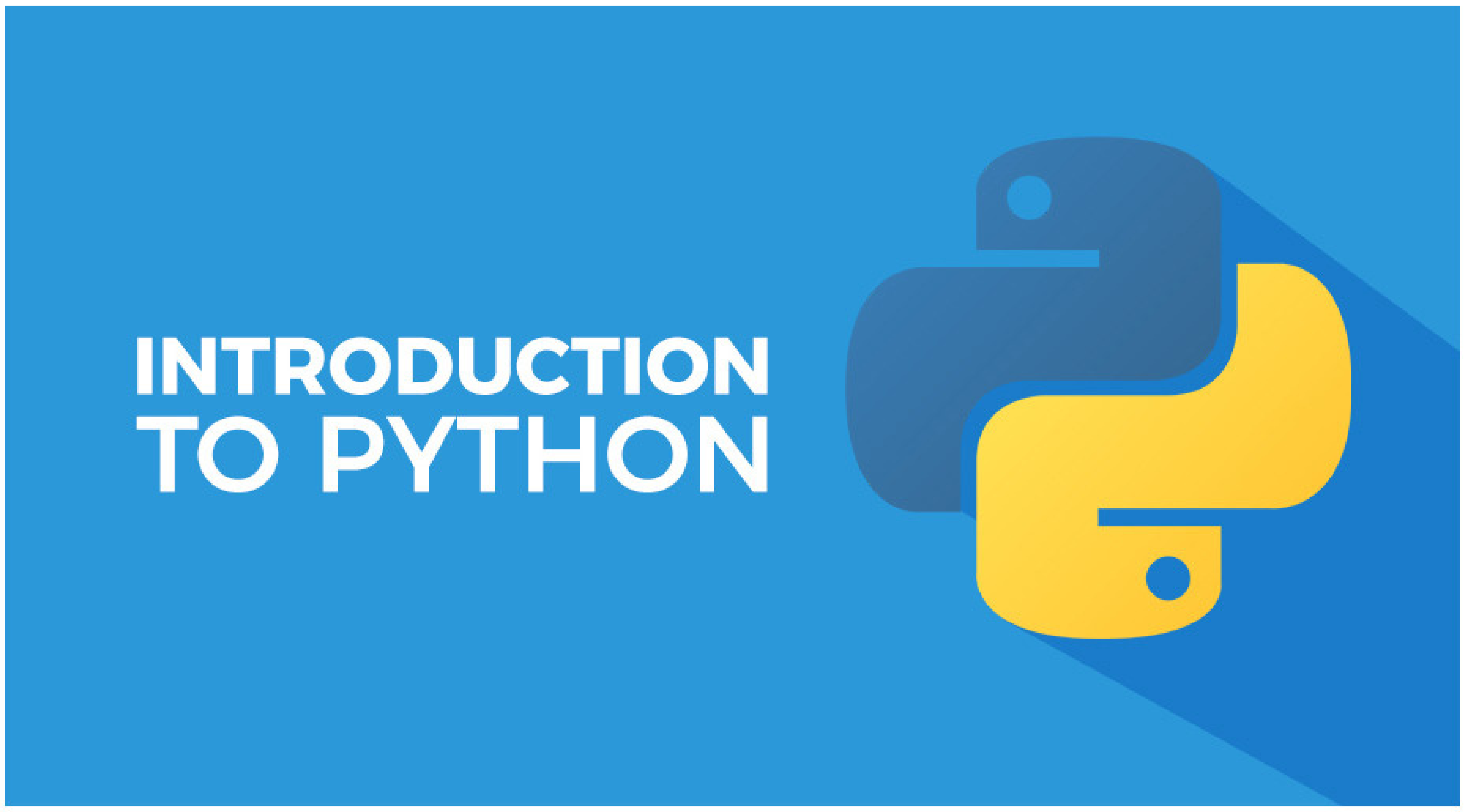
MASTER PYTHON IN JUST 15 DAYS

Day 1-3: Introduction to Python

◆ **Day 1:** Start with an introduction to Python, its history, and its features.

◆ **Day 2:** Set up your Python environment and write your first Python program.

◆ **Day 3:** Study Python data types, variables, and basic input/output operations.

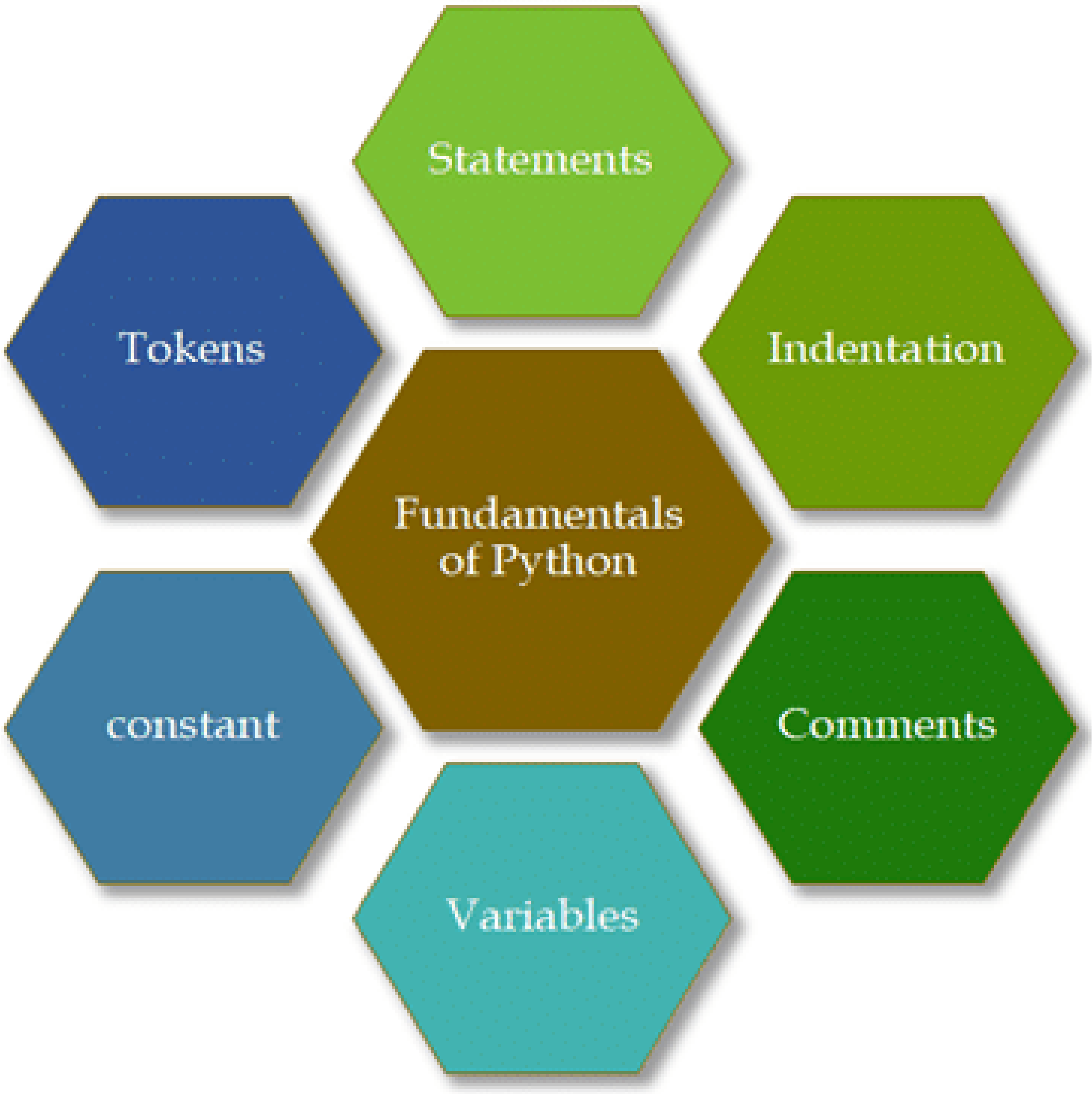


Days 4-6: Python Fundamentals

◆ **Day 4:** Learn about Python control structures, including if-else statements and loops.

◆ **Day 5:** Understand Python functions, modules, and packages.

◆ **Day 6:** Explore Python's object-oriented programming (OOP) features.

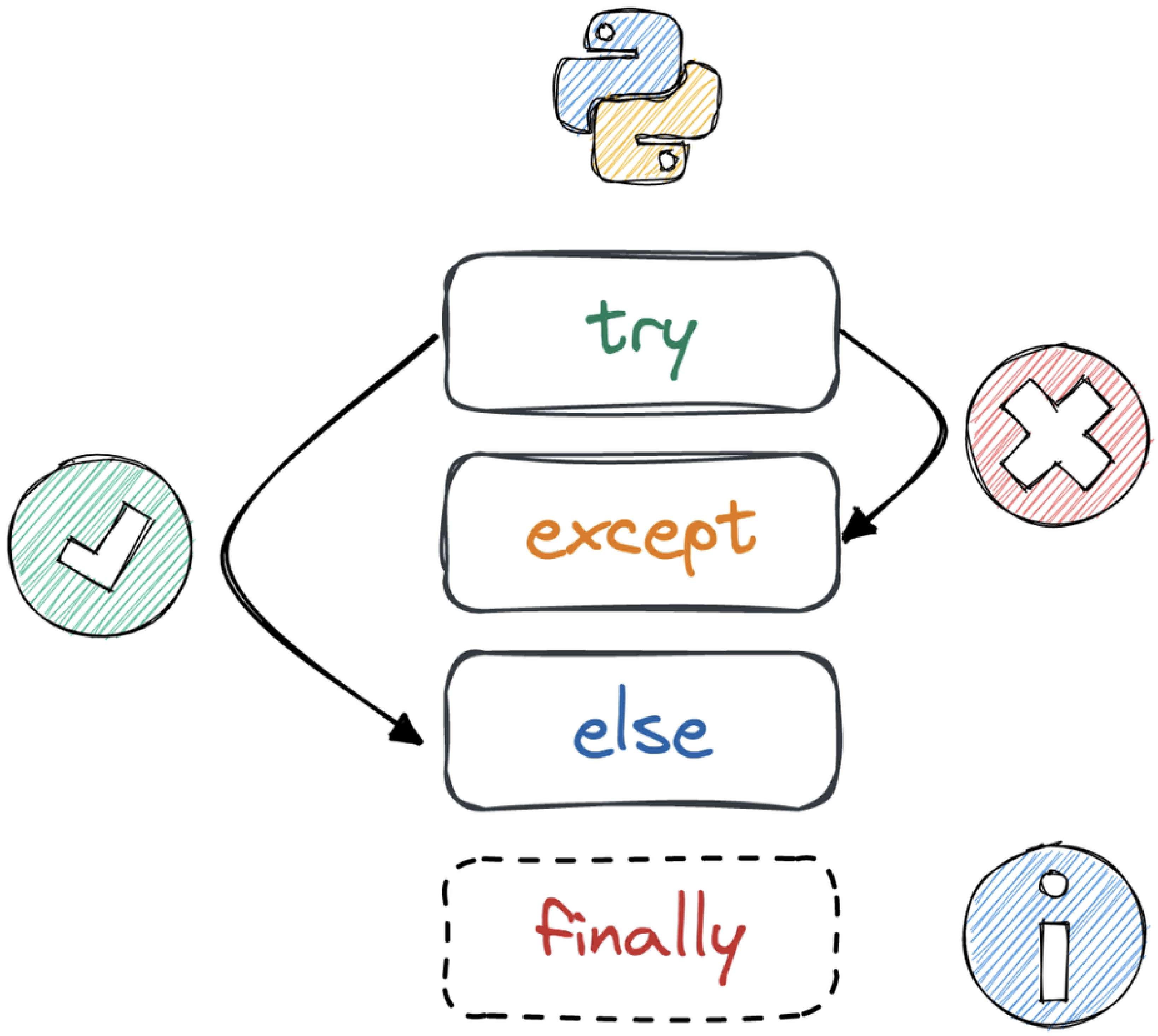


Days 7-9: File Handling and Exception Handling

◆ **Day 7:** Study file input and output operations in Python.

◆ **Day 8:** Learn about exception handling in Python and how to raise and handle exceptions.

◆ **Day 9:** Practice file handling and exception handling with coding exercises.

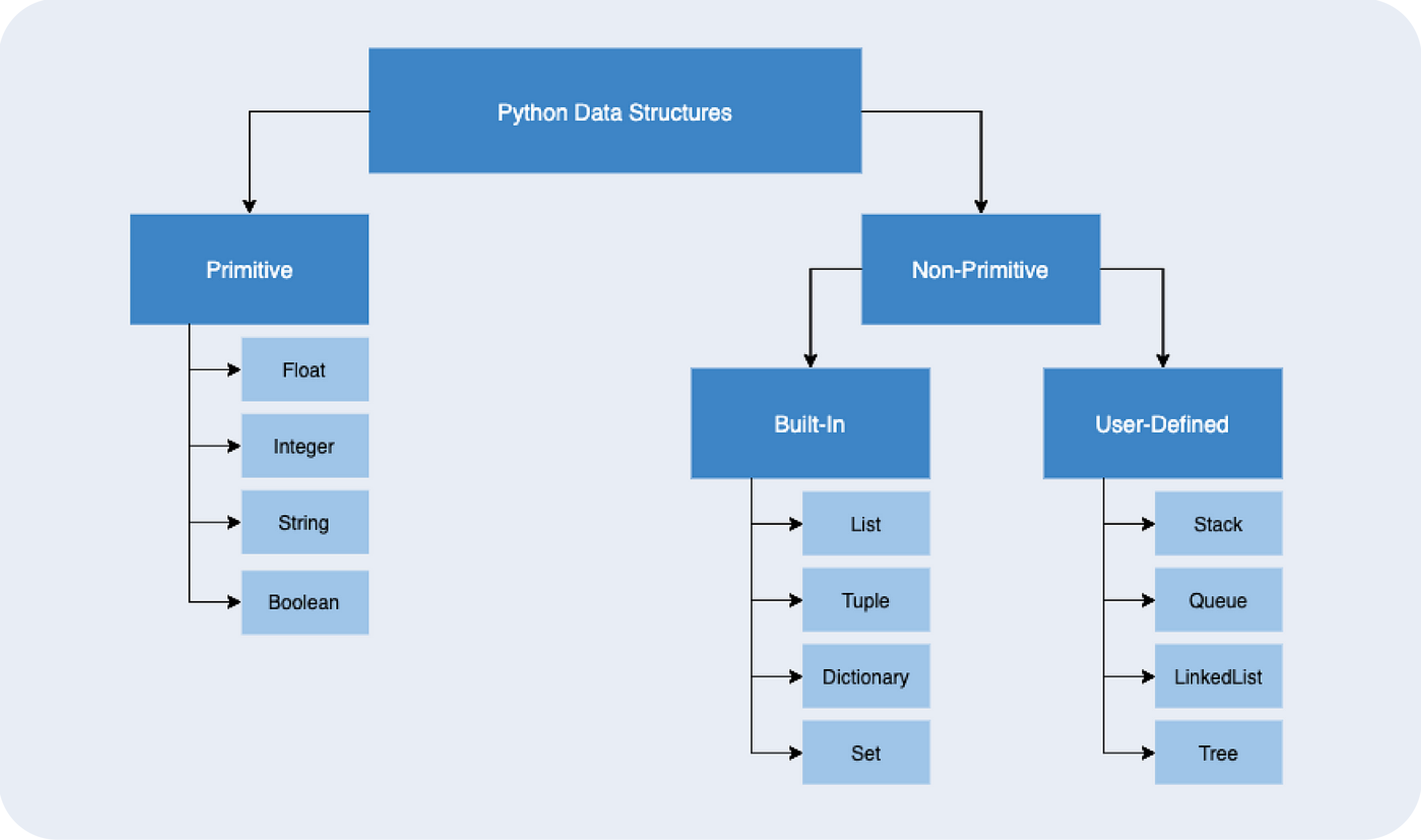


Days 10-12: Python Data Structures

🔷 **Day 10:** Study Python's built-in data structures, including lists, dictionaries, and sets.

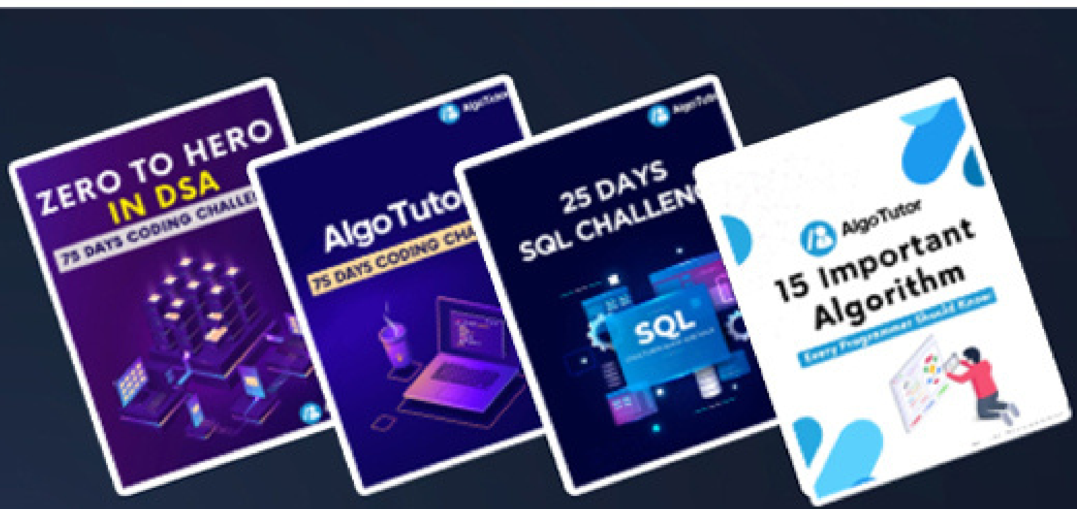
🔷 **Day 11:** Learn about tuples, strings, and advanced data structures like collections.

🔷 **Day 12:** Explore Python's functional programming features and comprehensions.



Days 13-15: Advanced Python Concepts

- **Day 13:** Study decorators, generators, and context managers in Python.
- **Day 14:** Learn about multithreading, multiprocessing, and asynchronous programming in Python.
- **Day 15:** Recap your Python knowledge and focus on more advanced topics like web development and data science libraries (if relevant to your goals).



Python Important Interview Questions

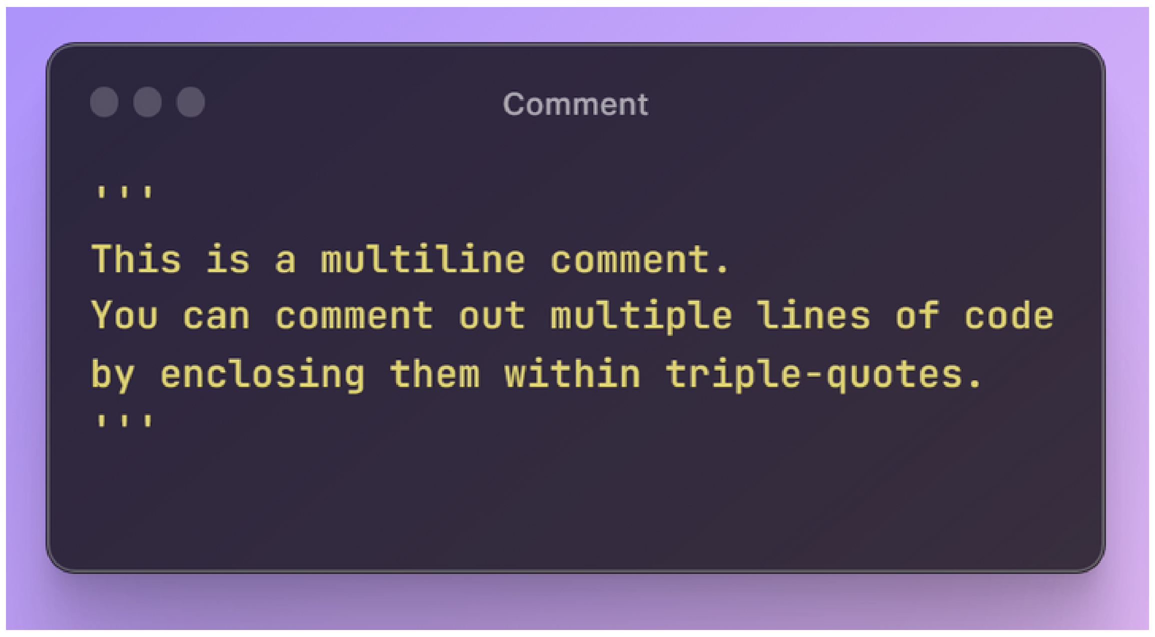
Q 1. What is Python?

Ans: Python is a high-level, interpreted programming language known for its readability and simplicity.

It emphasizes code readability and allows developers to express concepts in fewer lines of code.

Q 2. How do you comment out multiple lines of code in Python?

Ans: You can use triple-quoted strings as a multi-line comment.



```
'''
This is a multiline comment.
You can comment out multiple lines of code
by enclosing them within triple-quotes.
'''
```

Q 3. Explain the difference between a list and a tuple.

Ans: Lists are mutable (can be modified), while tuples are immutable (cannot be modified).

Lists are defined using square brackets [], and tuples use parentheses ().

Q 4. What is the purpose of the if __name__ == "__main__": statement?

Ans: It allows you to execute a block of code only if the script is run directly and not imported as a module into another script.

Q 5. How is memory management handled in Python?

Ans: Python uses an automatic memory management system with a built-in garbage collector that handles memory allocation and deallocation.

Q 6. Explain the concept of a decorator in Python.

Ans: A decorator is a design pattern that allows you to add new functionality to an existing function or method without modifying its structure.

They are commonly used for tasks like logging, authorization, and performance monitoring.

Q 7. What are docstrings in Python?

Ans: Docstrings are strings used as documentation for Python modules, classes, functions, or methods.

They can be accessed using the .__doc__ attribute.

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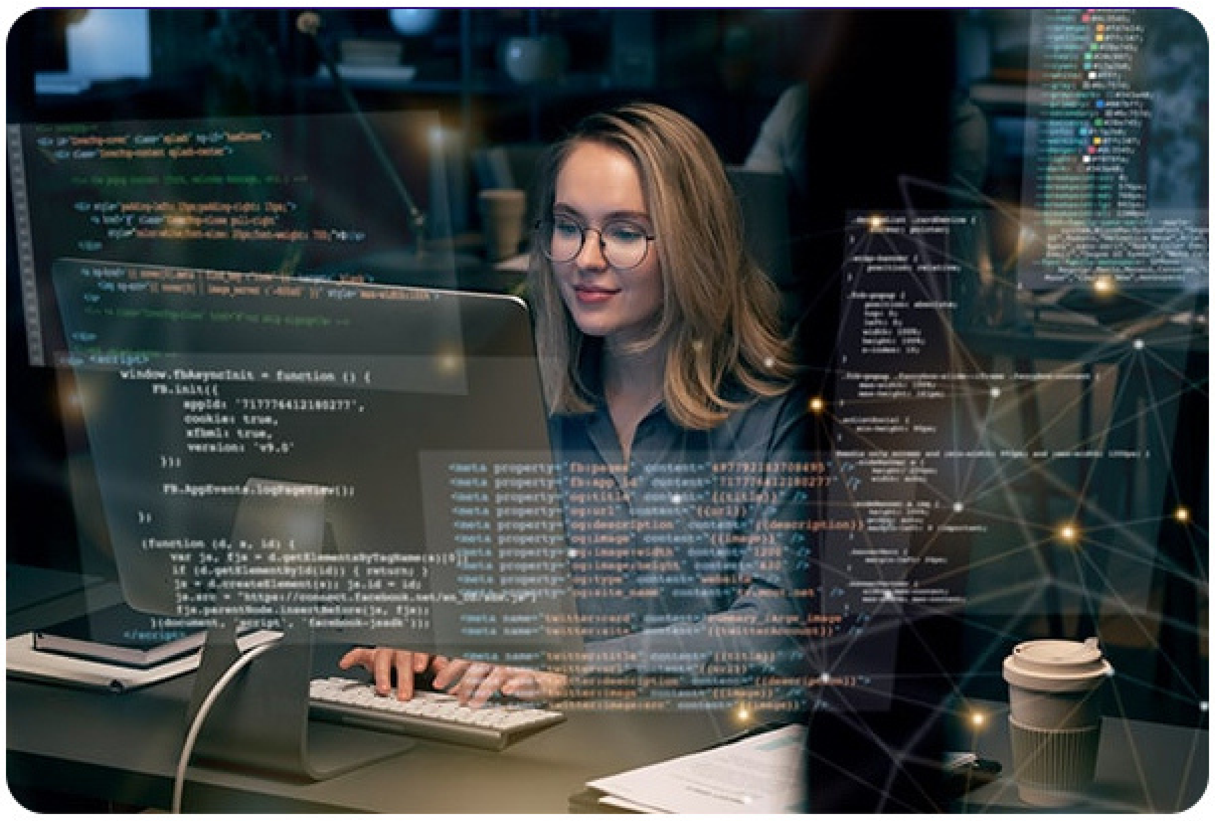

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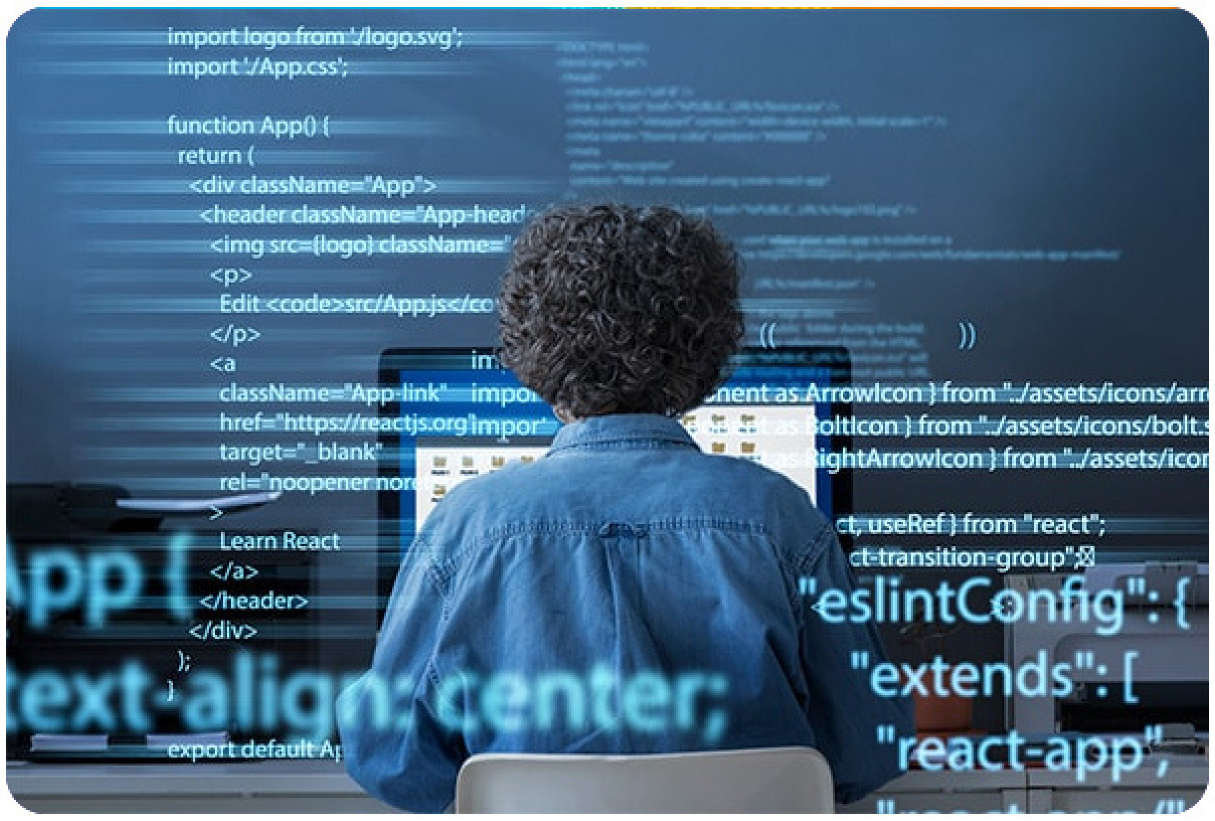

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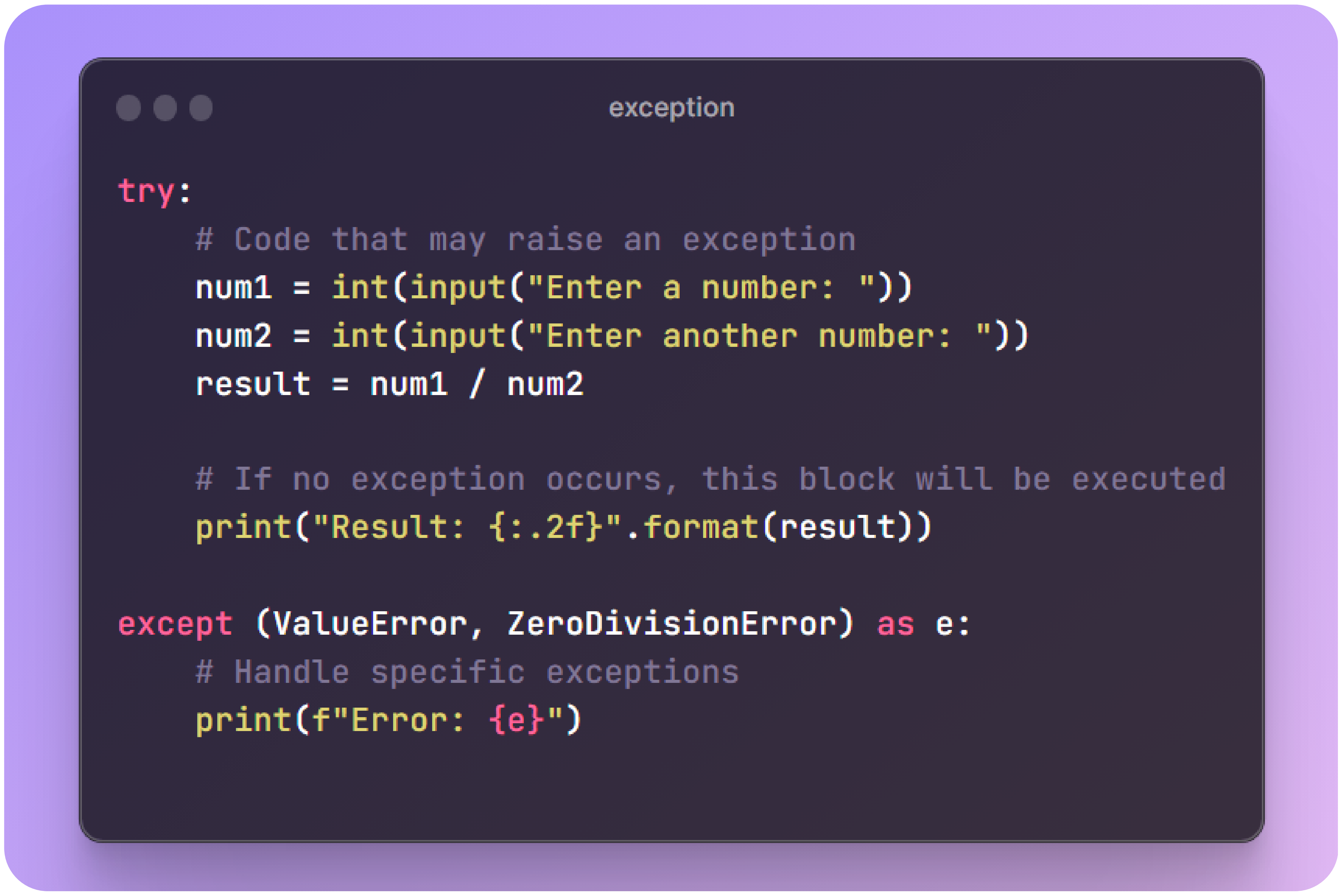
Q 8. How do you handle exceptions in Python?

Ans: You can use try-except blocks to catch and handle exceptions. **For example:**



```python
try:
    # Code that may raise an exception
    num1 = int(input("Enter a number: "))
    num2 = int(input("Enter another number: "))
    result = num1 / num2

    # If no exception occurs, this block will be executed
    print("Result: {:.2f}".format(result))

except (ValueError, ZeroDivisionError) as e:
    # Handle specific exceptions
    print(f"Error: {e}")
```

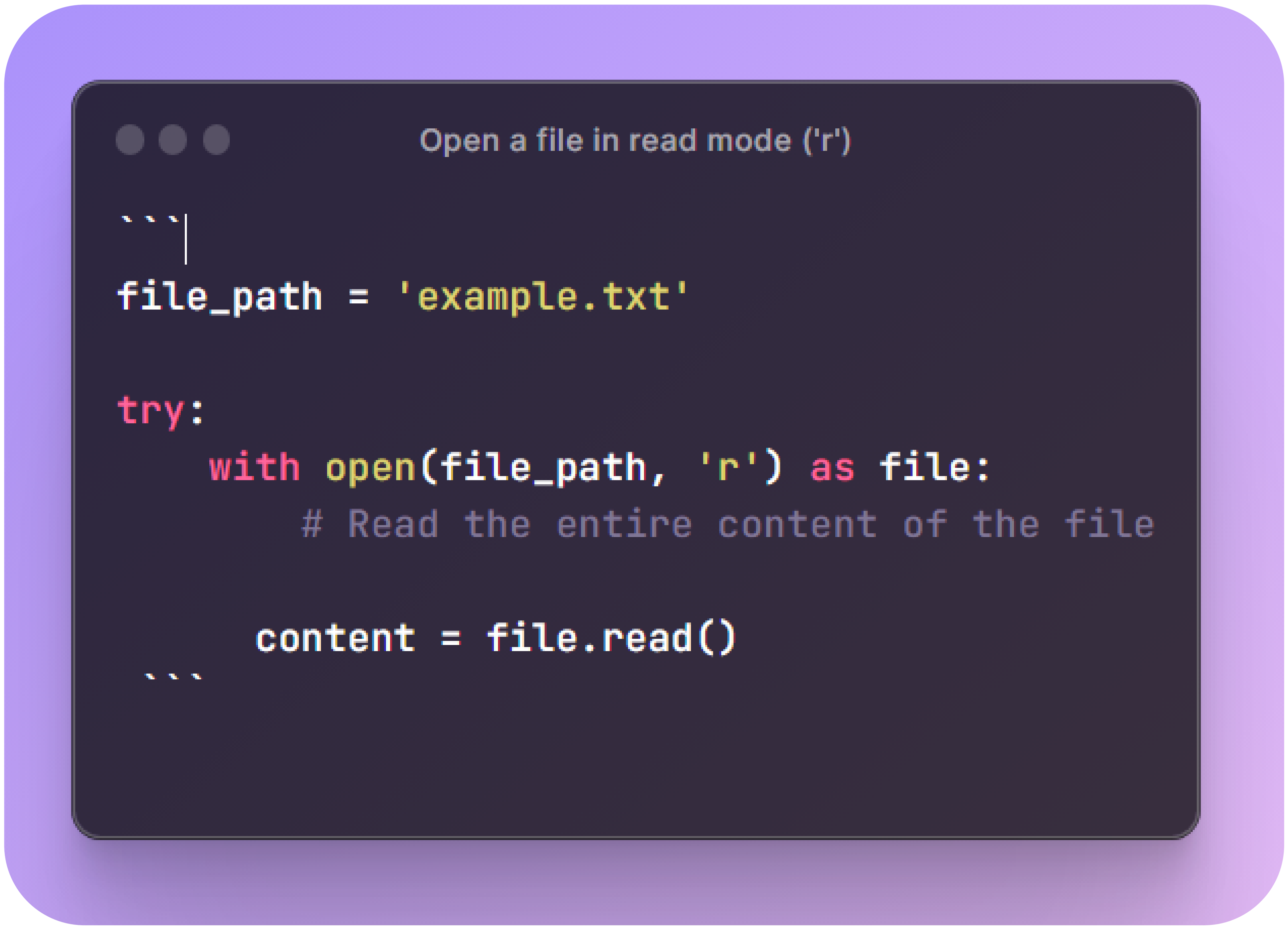
Q 9. What is the Global Interpreter Lock (GIL) in Python?

Ans: The Global Interpreter Lock is a mutex used in CPython (the standard Python interpreter) to synchronize access to Python objects.

It prevents multiple native threads from executing Python bytecodes simultaneously.

Q 10. How can you open and read a file in Python?

Ans: You can use the open() function to open a file and various methods like read(), readline(), or readlines() to read its contents.



Open a file in read mode ('r')

~~~
```
file_path = 'example.txt'

try:
    with open(file_path, 'r') as file:
        # Read the entire content of the file

      content = file.read()
 ```
~~~

Q 11. What is a virtual environment in Python?

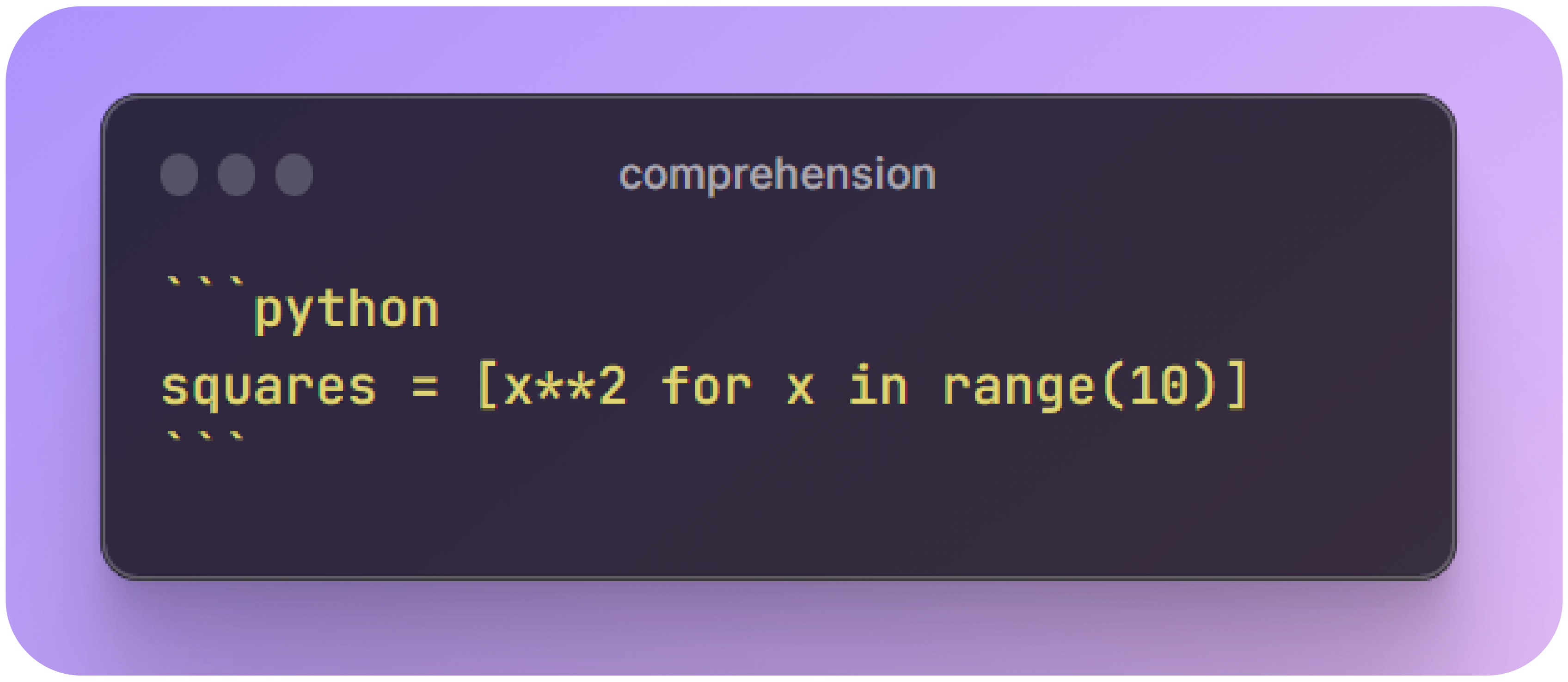
Ans: A virtual environment is an isolated Python environment that allows you to install packages and dependencies separately from the system-wide Python installation.

This helps in managing project-specific dependencies.

Q 12. Explain the concept of list comprehension.

Ans: List comprehension is a concise way to create lists.

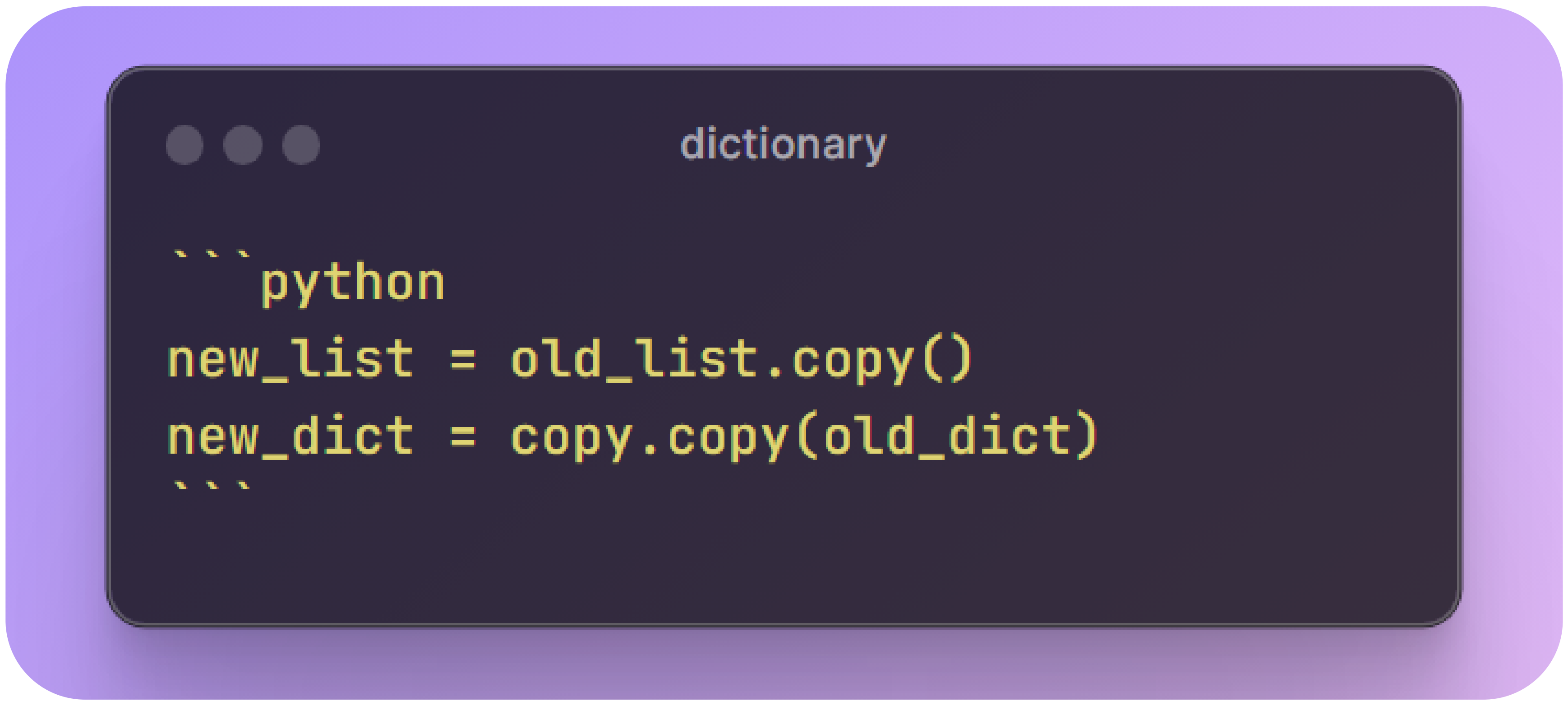
It allows you to create a new list by applying an expression to each item in an existing iterable.



~~~~
```python
squares = [x**2 for x in range(10)]
```
~~~~

Q 13. How can you make a copy of a list or dictionary?

Ans: You can use the copy() method for lists and the copy() method from the copy module for dictionaries.



~~~~
```python
new_list = old_list.copy()
new_dict = copy.copy(old_dict)
```
~~~~

Q 14. Differentiate between deep copy and shallow copy.

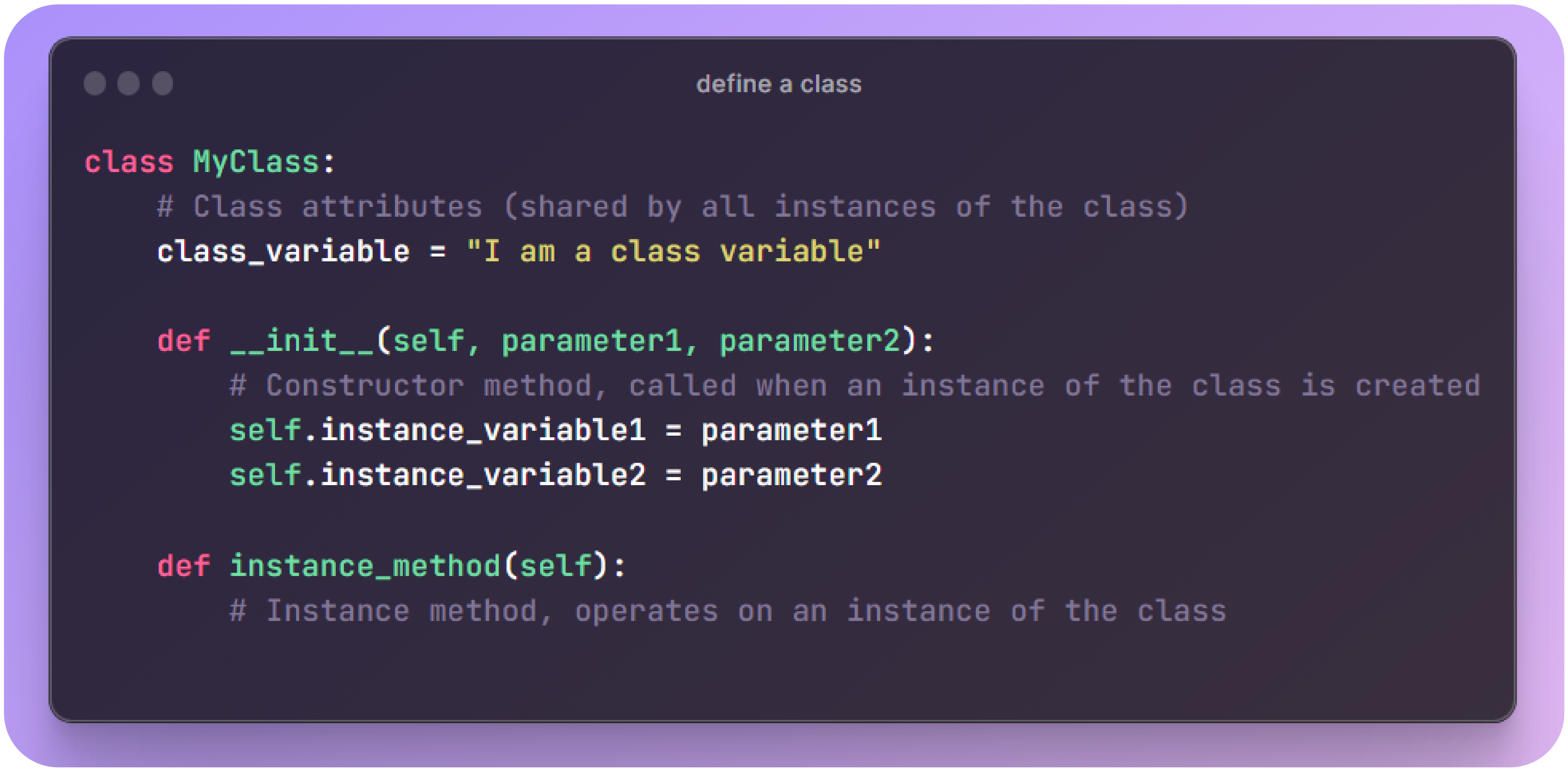
Ans: A shallow copy creates a new object but does not create copies of nested objects.

A deep copy creates new objects for both the main object and all the nested objects.

Q 15. How do you define a class in Python?

Ans: You define a class using the class keyword.

It contains attributes (variables) and methods (functions).



define a class

```python
class MyClass:
    # Class attributes (shared by all instances of the class)
    class_variable = "I am a class variable"

    def __init__(self, parameter1, parameter2):
        # Constructor method, called when an instance of the class is created
        self.instance_variable1 = parameter1
        self.instance_variable2 = parameter2

    def instance_method(self):
        # Instance method, operates on an instance of the class
```

Q 16. What is inheritance in Python?

Ans: Inheritance is a way to create a new class that inherits properties and behaviors from an existing class.

The new class is called the derived class or subclass, and the existing class is called the base class or superclass.

Q 17. How does Python manage memory for objects?

Ans: Python uses a private heap space to manage memory for objects.

The memory allocation and deallocation are automatic through built-in functions like id() and the garbage collector.

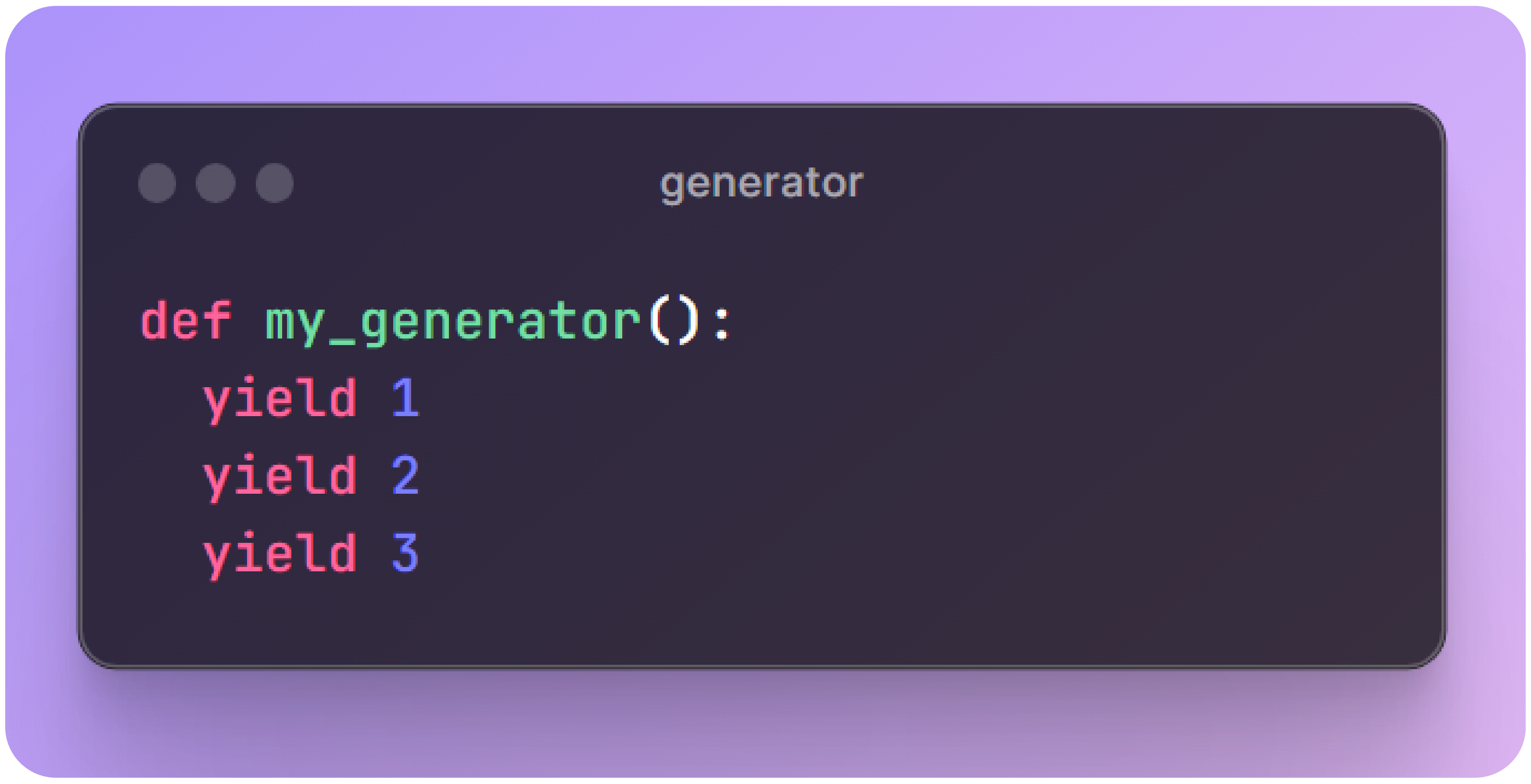
Q 18. What is the purpose of the __init__ method in a class?

Ans: The __init__ method is a constructor that is automatically called when a new instance of a class is created.

It initializes the attributes of the object.

Q 19. How can you create a generator in Python?

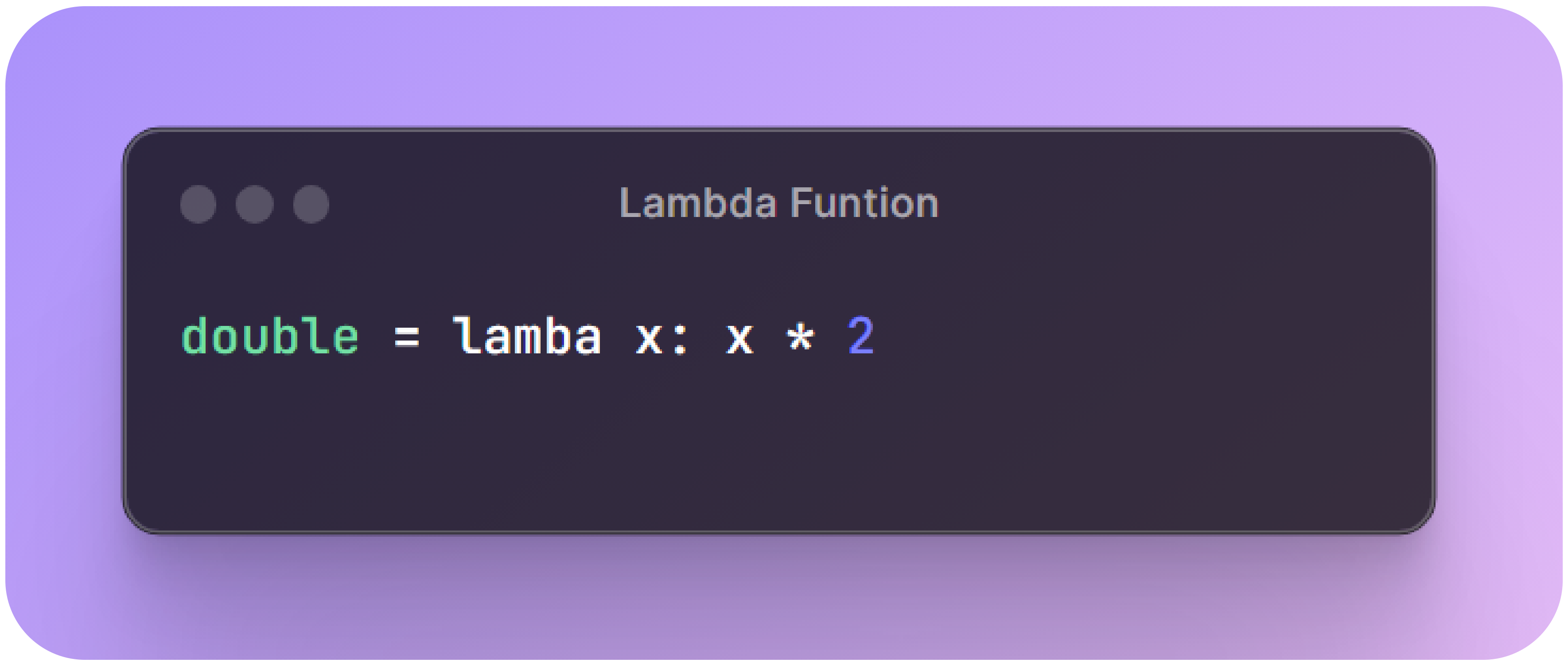
Ans: You can create a generator using a function with the yield keyword. Generators allow you to iterate over a sequence of items without storing the entire sequence in memory.



```
def my_generator():
  yield 1
  yield 2
  yield 3
```

Q 20. Explain the concept of a lambda function.

Ans: A lambda function is an anonymous function defined using the lambda keyword. It's often used for short, simple operations.



```
double = lamba x: x * 2
```

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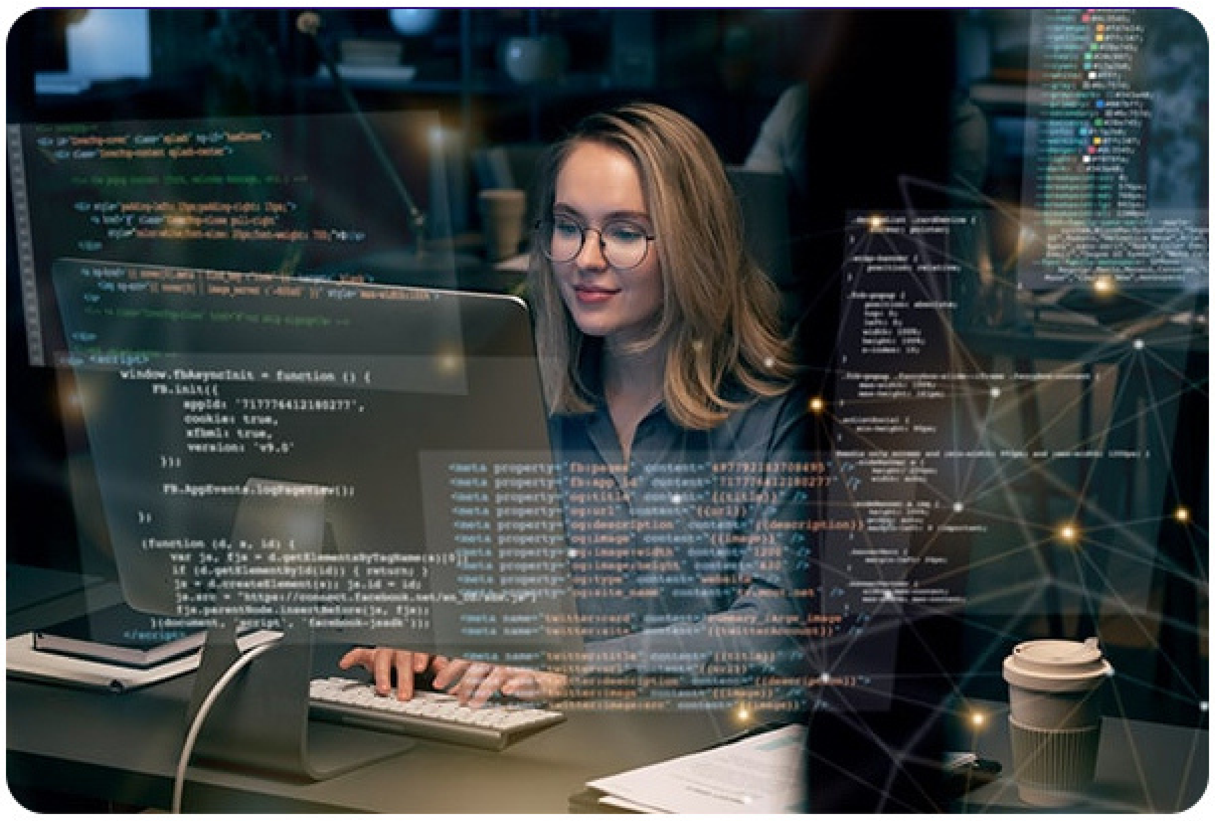

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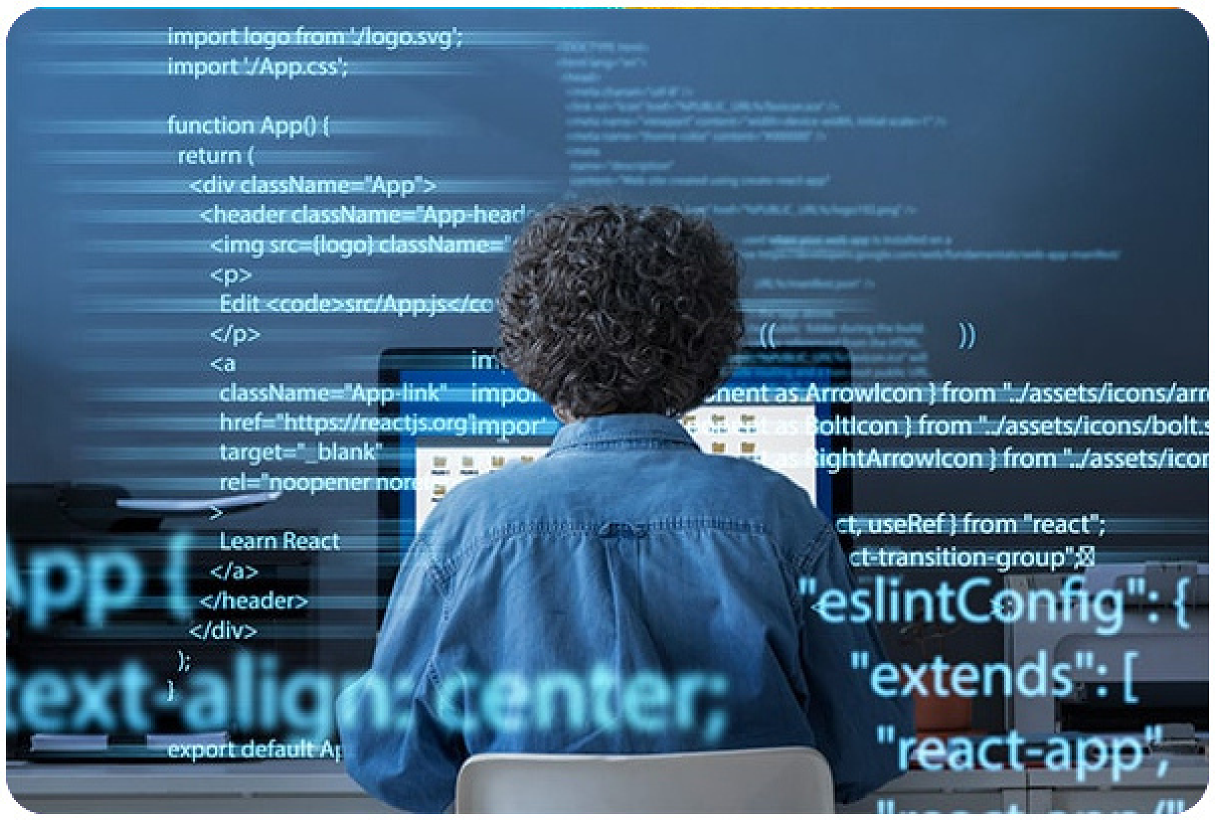

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Q 21. How can you handle and raise exceptions in Python?

Ans: You can handle exceptions using try, except, else, and finally blocks.

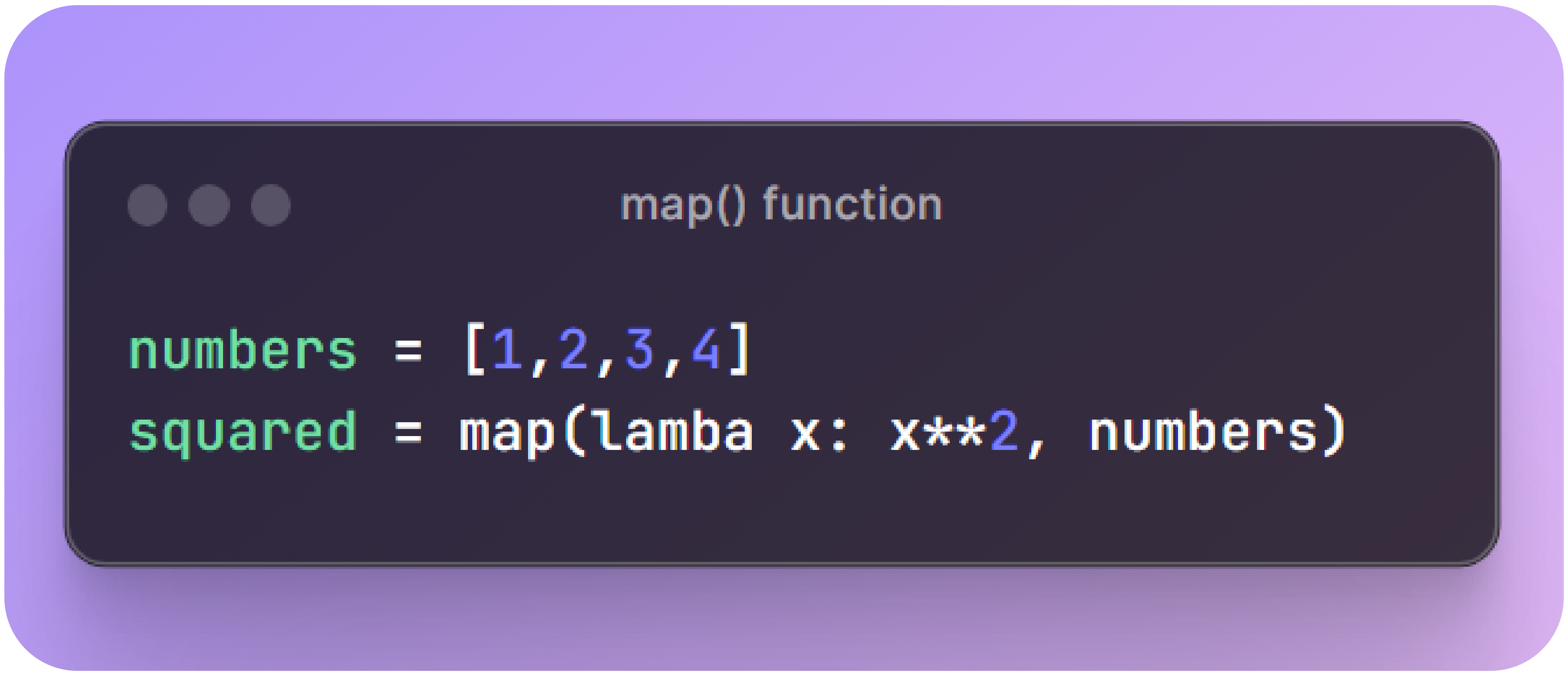
To raise an exception, you can use the raise statement.

Q 22. What is a set in Python?

Ans: A set is an unordered collection of unique elements. Sets are defined using curly braces {}.

Q 23. Explain the use of the map() function.

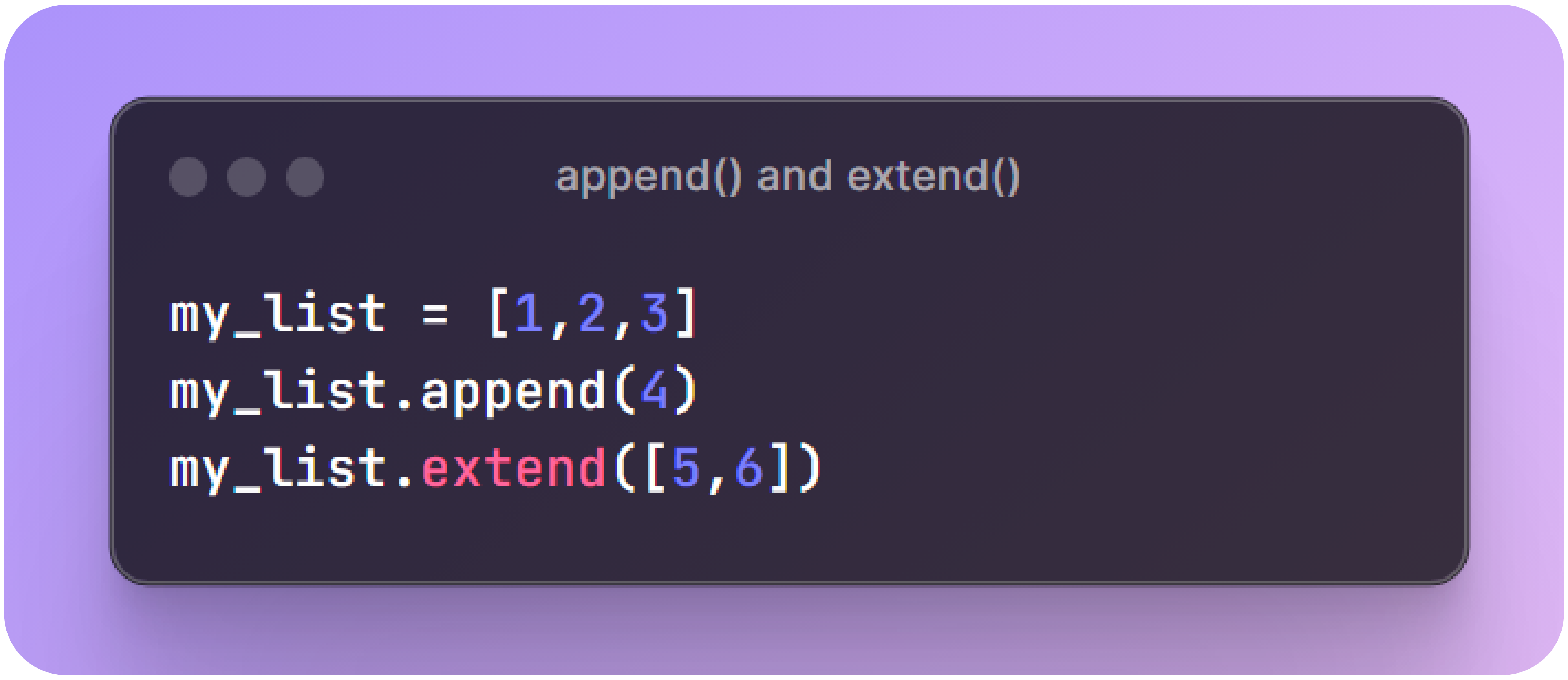
Ans: The map() function applies a given function to each item of an iterable and returns an iterator that yields the results.



```
numbers = [1,2,3,4]
squared = map(lamba x: x**2, numbers)
```

Q 24. What is the difference between append() and extend() in a list?

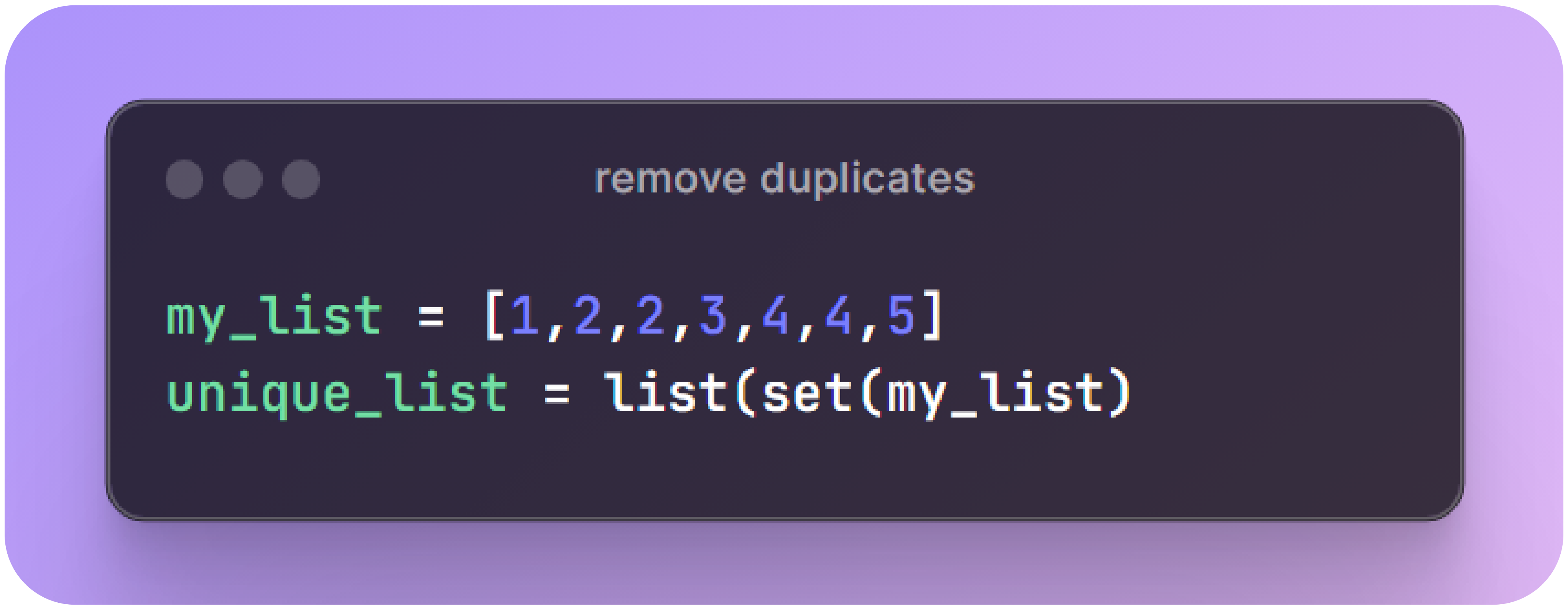
Ans: The append() method adds an item to the end of a list. The extend() method takes an iterable and adds its elements to the end of the list.



```
my_list = [1,2,3]
my_list.append(4)
my_list.extend([5,6])
```

Q 25. How can you remove duplicates from a list?

Ans: You can convert the list to a set to remove duplicates and then convert it back to a list.



```
my_list = [1,2,2,3,4,4,5]
unique_list = list(set(my_list))
```

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