



Python Modules and Packages



About the Author



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Icons Used



Questions



Tools



Hands-on Exercise



Coding Standards



Questions?



Reference



Try it Out



Informative
Slide



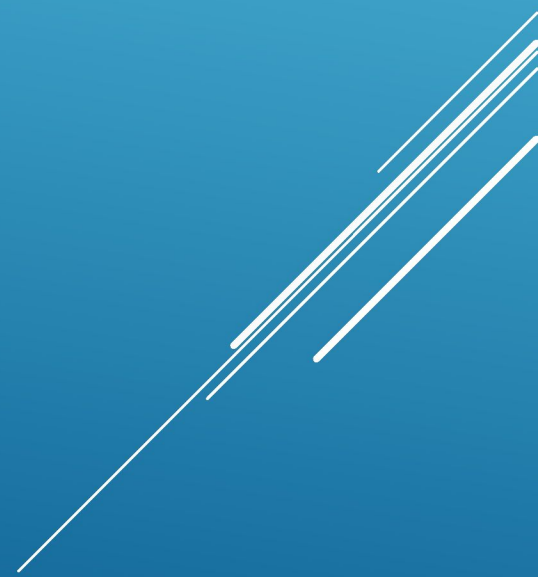
Mandatory
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Welcome Break

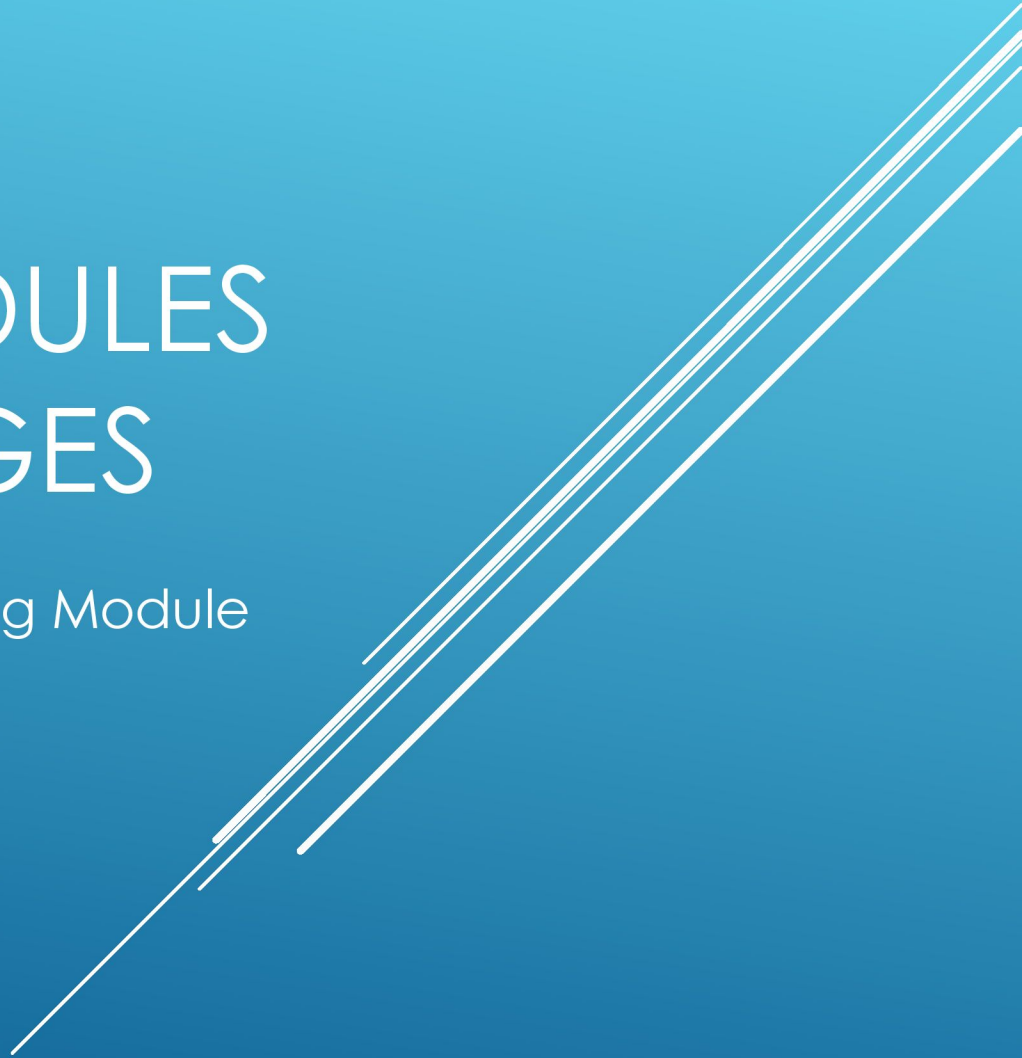
PYTHON MODULES AND PACKAGES

- ▶ Learn Python Modules and Packages
By: Mohd Salman



PYTHON MODULES AND PACKAGES

Beginner to Advanced Training Module



- • Understand modules and packages.
- • Use built-in/custom modules.
- • Write your own modules.
- • Organize code with packages.
- • Apply modular programming.

LEARNING OBJECTIVES

- ▶ **A module is a Python file (.py) containing reusable code.**

Benefits:

- • Code reuse
- • Debugging ease
- • Maintainability

Example:

```
import math  
print(math.sqrt(16))  
print(math.pi)
```

WHAT IS A MODULE?

What Are Python Modules?

A file containing Python code — variables, functions, classes, or runnable code you can use without creating everything from scratch

- **Ways to import and use modules**
- **Types of Python modules (Built-in and user-defined)**
- **How to create modules**
- **Best practices**

Modules in Python



WHAT IS A MODULE?

Common modules:

- • math
- • random
- • datetime

▶ Example:

```
import random
```

```
print(random.randint(1,10))
```

USING BUILT-IN MODULES

Several white lines of varying lengths and angles are positioned in the bottom right corner of the slide, creating a modern, abstract graphic element.

Methods:

```
import math
```

```
from math import sqrt, pi
```

```
import math as m
```

IMPORTING MODULES

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Steps:

1. Create a .py file.
2. Import it.

Example:

calculator.py:

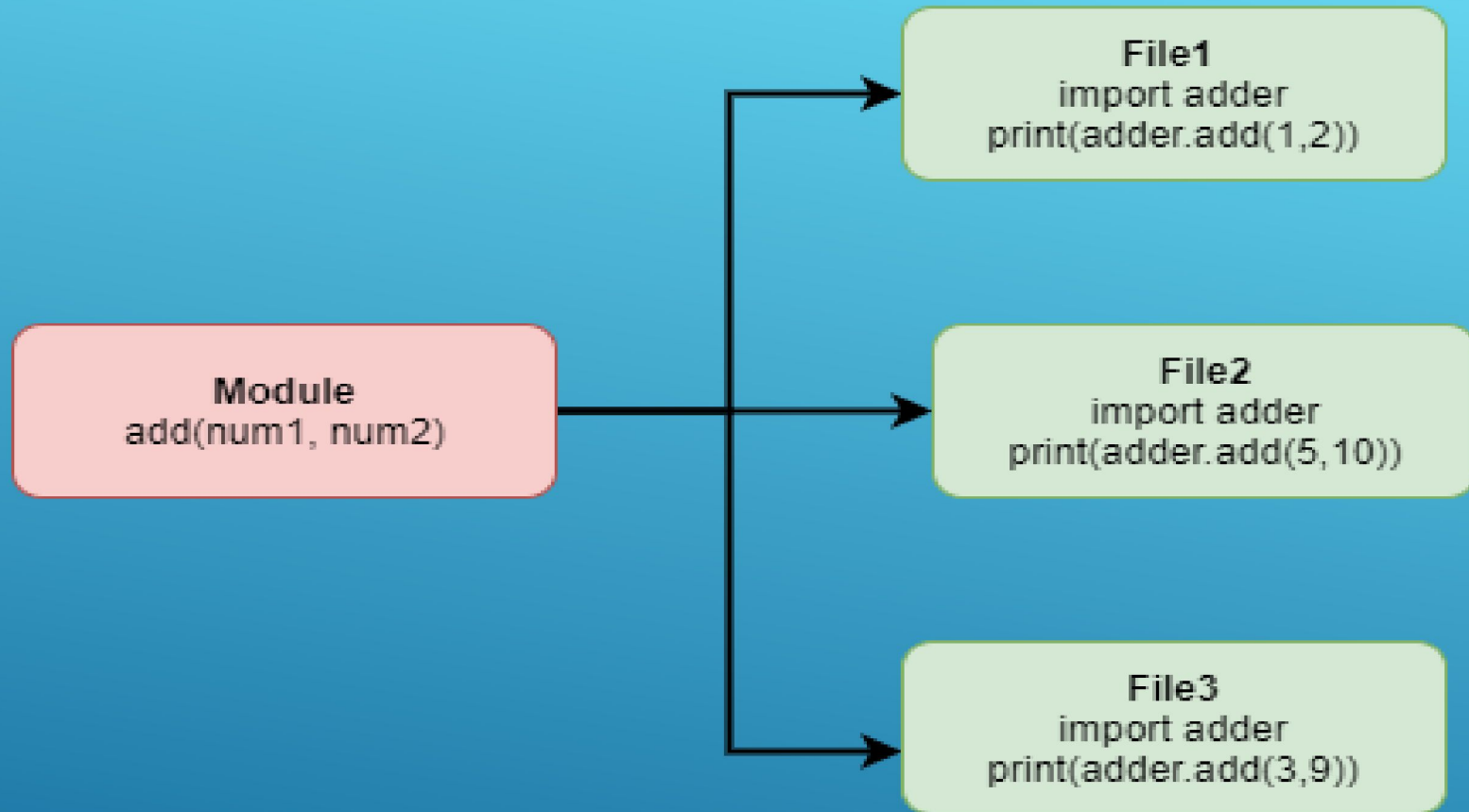
```
def add(a,b): return a+b
```

main.py:

```
import calculator  
print(calculator.add(3,5))
```

WRITING YOUR OWN MODULE

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WHAT IS A MODULE?

A package is a directory with modules + `__init__.py`.

Structure:

```
ecommerce/
```

```
    __init__.py
```

```
    cart.py
```

Usage:

```
from ecommerce import cart
```

```
cart.add_item()
```

PACKAGES IN PYTHON

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Marks a directory as a package.

Can initialize/expose functions.

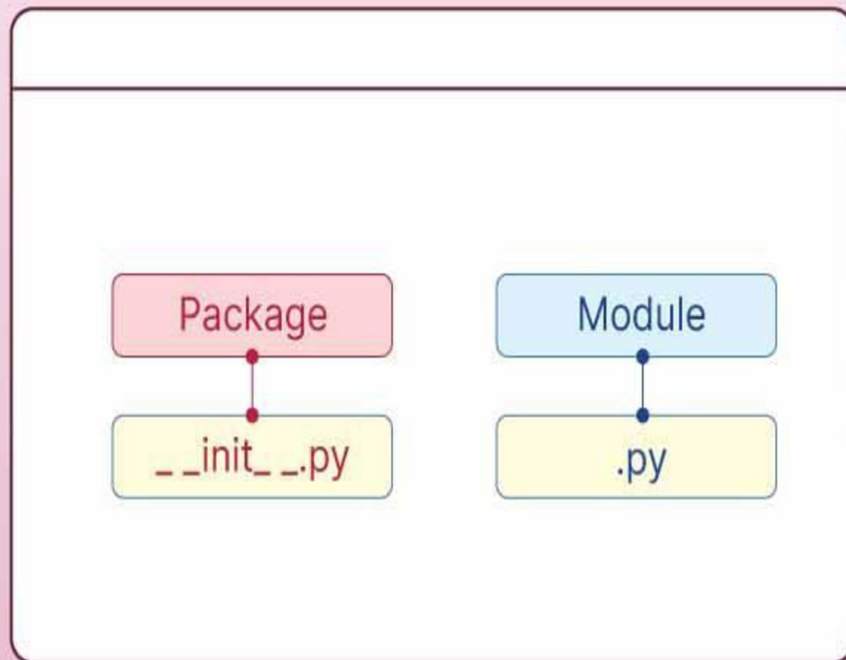
Example:

```
from .cart import add_item
```

__INIT__.PY EXPLAINED

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Difference Between Package and Module

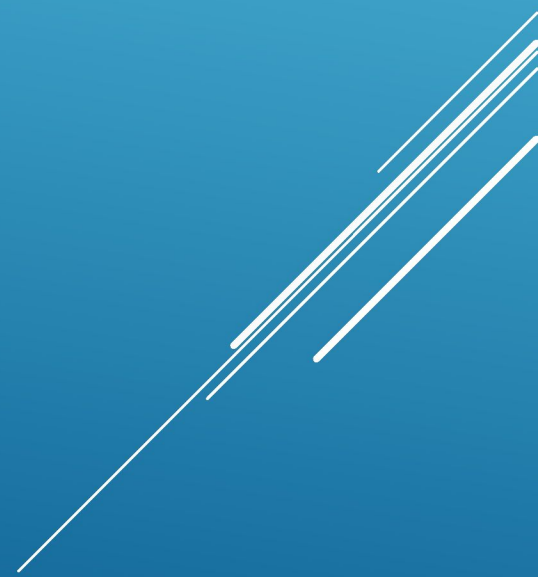


- ▶ • Descriptive names.
- ▶ • Avoid circular imports.
- ▶ • Keep modules focused.
- ▶ • Add docstrings.

BEST PRACTICES

- ▶ What marks folder as package?
- ▶ Valid import?
- ▶ Circular imports cause?

KNOWLEDGE CHECK



- ▶ Module = single .py file.
- ▶ `__init__.py` marks package.
- ▶ Avoid wildcard imports.
- ▶ Circular imports = errors.

KNOWLEDGE CHECK

- ▶ Modules = reusable files.
- ▶ Packages = directories of modules.
- ▶ Importing = modular programs.

RECAP