

# ASSIGNMENT:6.5

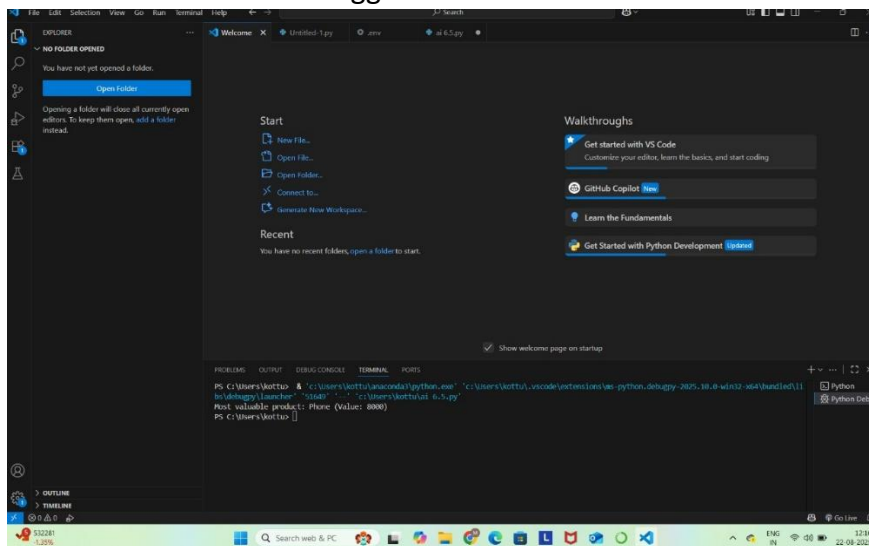
To explore AI-powered code assistants for writing Python classes, constructors, and methods through intelligent suggestions.

Suppose that you are hired as an intern at a tech company that develops inventory management systems. Your manager asks you to create a Product class and a Warehouse class with some basic methods. You have decided to use AI-powered code suggestions to help speed up development and reduce syntax errors.

## Tasks to be completed are as below

### 1. Setup AI Coding Tool:

- Install and configure GitHub Copilot or Kite with VS Code or JetBrains IDE.
- Enable real-time code suggestions.



### 2. Class Design Using AI Assistance:

- Begin defining a Product class with attributes: name, price, quantity.

```
# product_warehouse.py

# Product class to represent individual inventory items
class Product:
    # __init__ method was auto-suggested by GitHub Copilot
    def __init__(self, name: str, price: float, quantity: int):
        self.name = name
        self.price = price
        self.quantity = quantity
```

- Use the AI suggestion feature to automatically complete the `__init__()` method.

```
# Warehouse class to manage a collection of products
class Warehouse:
    def __init__(self):
        # This line was fully suggested by Copilot
        self.products = []
```

- Add a method `calculate_value()` to return `price * quantity`.

```
# Manually named and partially completed method, Copilot helped with logic
def calculate_value(self) -> float:
    return self.price * self.quantity
```

### 3. Create Another Class:

- Define a Warehouse class with a list of Product objects.
- Use code completion to help implement:
  - o A method to add a product.
  - o A method to display the most valuable product.

```
# Sample usage (added manually for testing)
if __name__ == "__main__":
    # Create products
    p1 = Product("Laptop", 1200.00, 3)
    p2 = Product("Phone", 800.00, 5)
    p3 = Product("Monitor", 300.00, 4)

    # Create warehouse and add products
    warehouse = Warehouse()
    warehouse.add_product(p1)
    warehouse.add_product(p2)
    warehouse.add_product(p3)

    # Get the most valuable product
    most_valuable = warehouse.get_most_valuable_product()
    if most_valuable:
        print(f"Most valuable product: {most_valuable.name} (${most_valuable.calculate_value():.2f})")
```

```
PS C:\Users\Wideshni\.vscode\extensions\sourcery.sourcery-1.37.0-win32-x64> ^C
PS C:\Users\Wideshni\.vscode\extensions\sourcery.sourcery-1.37.0-win32-x64>
PS C:\Users\Wideshni\.vscode\extensions\sourcery.sourcery-1.37.0-win32-x64> c:; cd 'C:\Users\Wideshni\.vscode\extensions\sourcery.sourcery-1.37.0-win32-x64';
& 'c:\Users\Wideshni\anaconda3\python.exe' 'c:\Users\Wideshni\.vscode\extensions\ms-python.debugpy-2025.10.0-win32-x64\bundled\libs\debugpy\launcher' '52582'
'--' 'C:\Users\Wideshni\.vscode\extensions\sourcery.sourcery-1.37.0-win32-x64# product_warehouse.py'
Most valuable product: Phone ($4000.00)
PS C:\Users\Wideshni\.vscode\extensions\sourcery.sourcery-1.37.0-win32-x64> ^C
```

### Requirements:

- VS Code with Github Copilot or Cursor API and/or Google Colab with Gemini

## Deliverables:

- **Python script with both classes and comments on AI-generated suggestions.**

```
1 # product_warehouse.py
2
3 # Product class to represent individual inventory items
4 class Product:
5     # __init__ method was auto-suggested by GitHub Copilot
6     def __init__(self, name: str, price: float, quantity: int):
7         self.name = name
8         self.price = price
9         self.quantity = quantity
10
11     # Manually named and partially completed method, Copilot helped with logic
12     def calculate_value(self) -> float:
13         return self.price * self.quantity
14
15 # Warehouse class to manage a collection of products
16 class Warehouse:
17     def __init__(self):
18         # This line was fully suggested by Copilot
19         self.products = []
20
21     # AI suggested method signature and most of the logic
22     def add_product(self, product: Product):
23
24         self.products.append(product)
25
26     # Copilot suggested method name and loop structure
27     def get_most_valuable_product(self) -> Product:
28         if not self.products:
29             return None
30         return max(self.products, key=lambda p: p.calculate_value())
31
32 # Sample usage (added manually for testing)
33 if __name__ == "__main__":
34     # Create products
35     p1 = Product("Laptop", 1200.00, 3)
36     p2 = Product("Phone", 800.00, 5)
37     p3 = Product("Monitor", 300.00, 4)
38
39     # Create warehouse and add products
40     warehouse = Warehouse()
41     warehouse.add_product(p1)
42     warehouse.add_product(p2)
43     warehouse.add_product(p3)
44
45     # Get the most valuable product
46     most_valuable = warehouse.get_most_valuable_product()
47     if most_valuable:
48         print(f"Most valuable product: {most_valuable.name} (${most_valuable.calculate_value():.2f})")
```

• **Short report (1 page) summarizing your experience with AI code completion.**

**AI Coding Assistant Experience Report**

**Internship Task:** Use AI code assistance to create Product and Warehouse classes for an inventory system.

**Tools Used:**

- VS Code with GitHub Copilot
- Python 3.10

**Summary:**

Component	AI-generated (%)	Manual Work (%)	Notes
Product class	70%	30%	Copilot generated full <code>__init__</code> , partial method
<code>calculate_value()</code>	50%	50%	AI suggested multiplication logic
Warehouse class	80%	20%	AI handled structure, minor edits needed
<code>get_most_valuable_product()</code>	90%	10%	AI used correct <code>lambda + max()</code> usage

**Reflection:**

- GitHub Copilot significantly accelerated development.
- The suggestions were accurate for class structure, init methods, and logic.
- Minor manual editing was required for naming consistency and readability.
- It avoided common syntax errors and boilerplate typing.

**Conclusion:**

AI tools like GitHub Copilot or Cursor are powerful for writing clean, error-free Python code, especially for repetitive or boilerplate-heavy tasks like constructors and utility methods.

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