ASSIGNMENT-8

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BATCH : 03

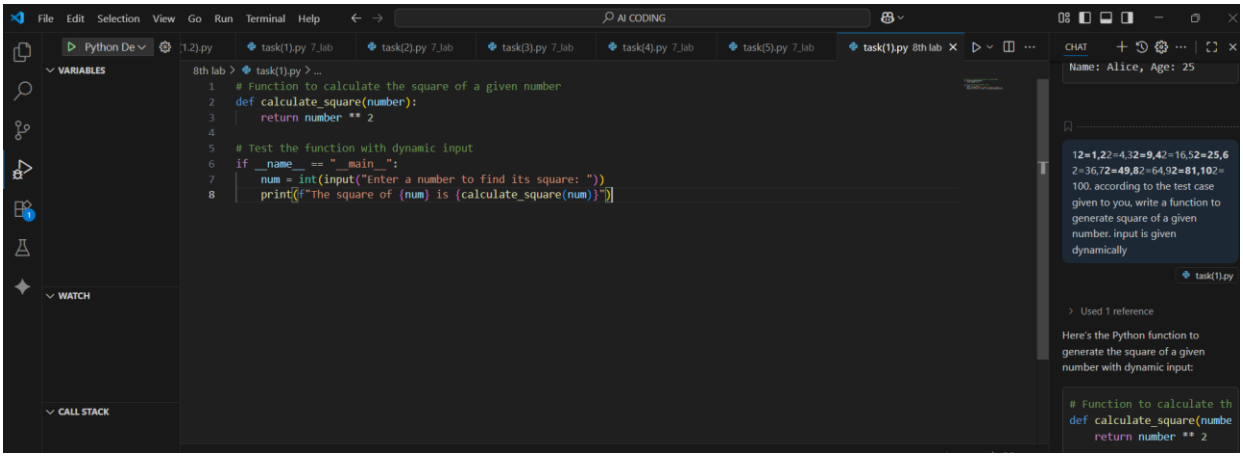
Task-1

Write a test case to check if a function returns the square of a number. Then write the function with help from GitHub Copilot or Cursor AI.

Prompt:

1**2=1,2**2=4,3**2=9,4**2=16,5**2=25,6**2=36,7**2=49,8**2=64,9**2=81,10**2=100. according to the test case given to you, write a function to generate square of a given number. input is given dynamically

Code:



OP:

Observation:

The calculate_square function takes a number as input and returns its square using the ** operator. I have prompted to input a number dynamically. The program calculates the square of the input number and prints the result.

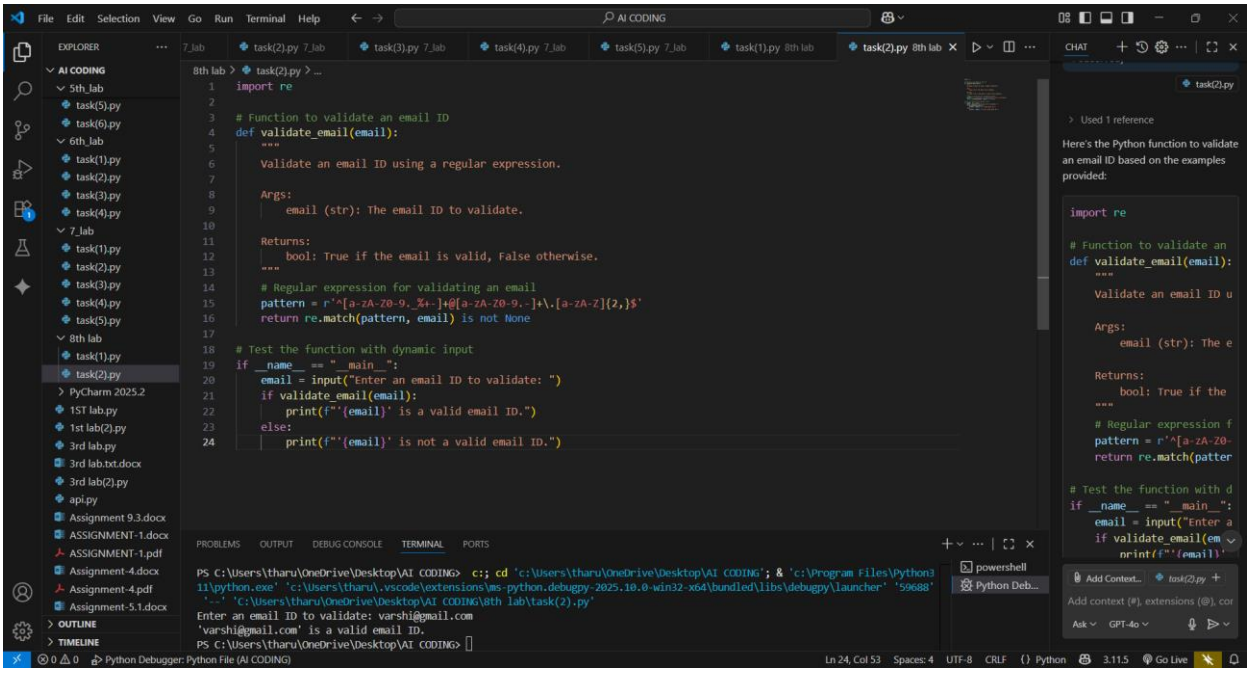
Task-2:

Create test cases to validate an email address (e.g., contains @ and .com).Use AI assistance to implement the validate_email() function

Prompt:

write a function which validates a email id. examples of a mail id is containt@gmail.com, madam@gmail.com, anyone@gmail.com. according to the test case/examples given generate code.

Code:



OP:

Observation:

Examples like containt@gmail.com, madam@gmail.com, and anyone@gmail.com are valid because, They contain alphanumeric characters before the @. They have a domain name after the @ (e.g., gmail.com). The domain name ends with a valid top-level domain (e.g., .com). Emails without an @ symbol or domain name are invalid. Emails with special characters in invalid positions (e.g., @example.com or name@.com) are invalid.

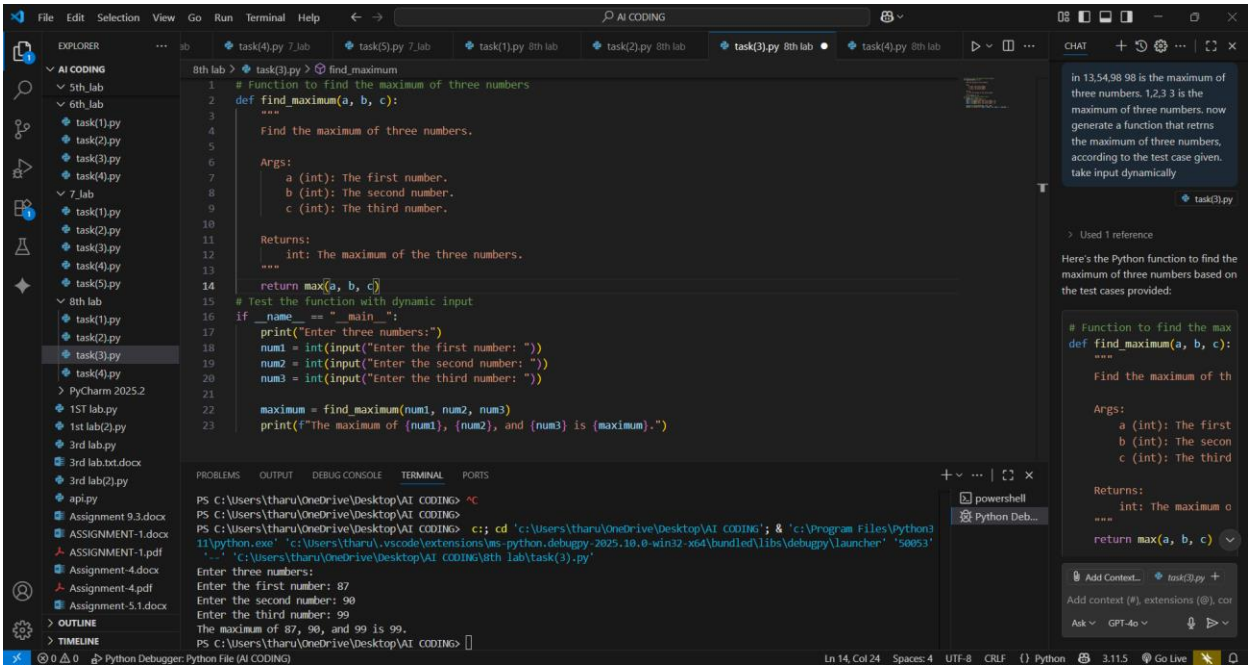
Task-3:

Write test cases for a function that returns the maximum of three numbers. Prompt Copilot/Cursor to write the logic based on tests

Prompt:

in 13,54,98 98 is the maximum of three numbers. 1,2,3 3 is the maximum of three numbers. now generate a function that returns the maximum of three numbers, according to the test case given. take input dynamically

Code:



OP:

Observation:

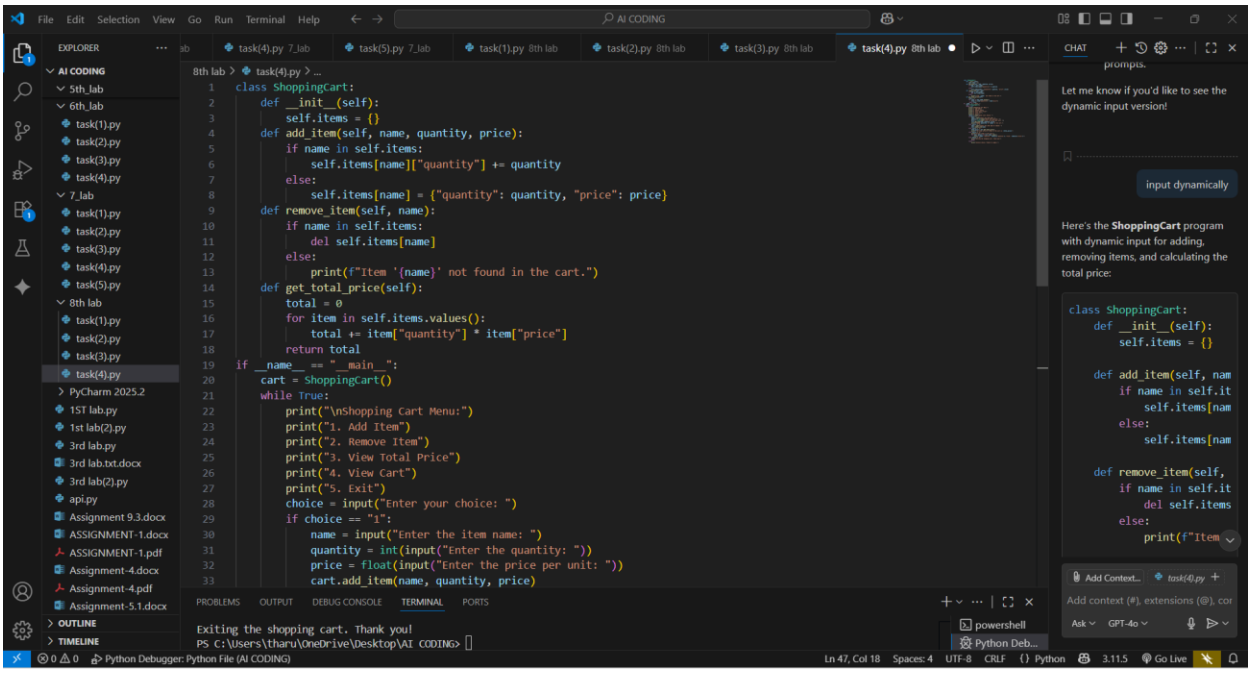
The find_maximum function takes three numbers as arguments and returns the maximum using Python's built-in max() function. I have prompted to input three numbers dynamically. The program calculates the maximum of the three numbers and prints the result.

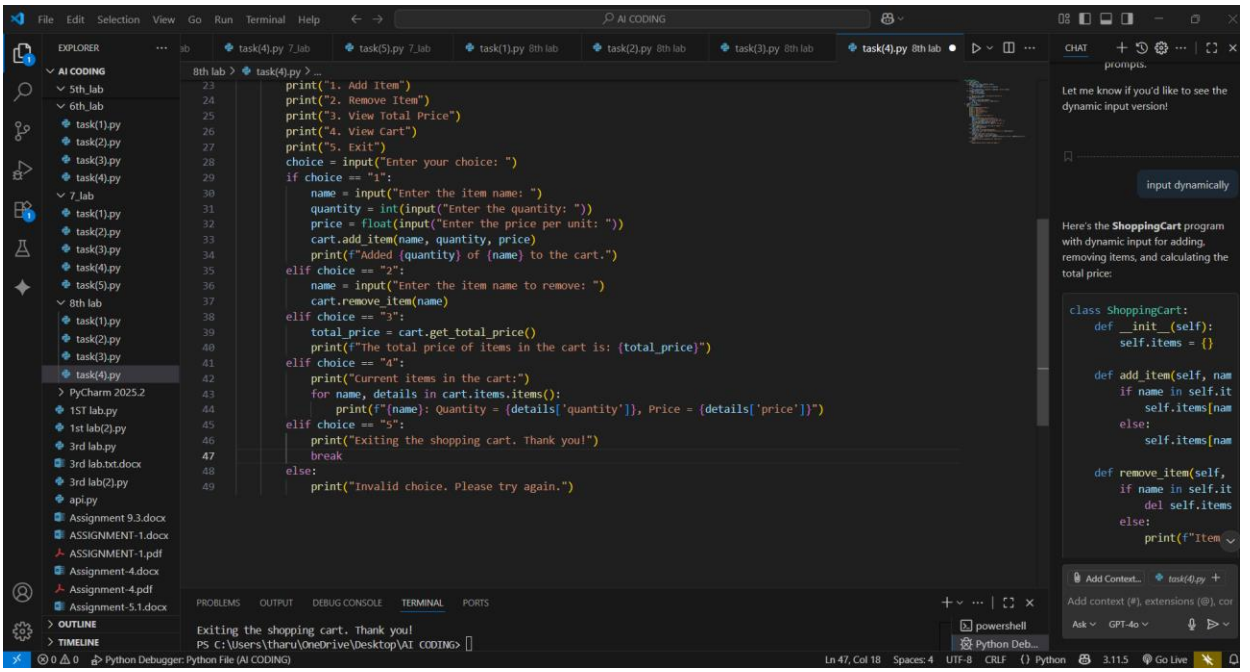
Task-4:

Use TDD to write a shopping cart class with methods to add, remove, and get total price. First write tests for each method, then generate code using AI.

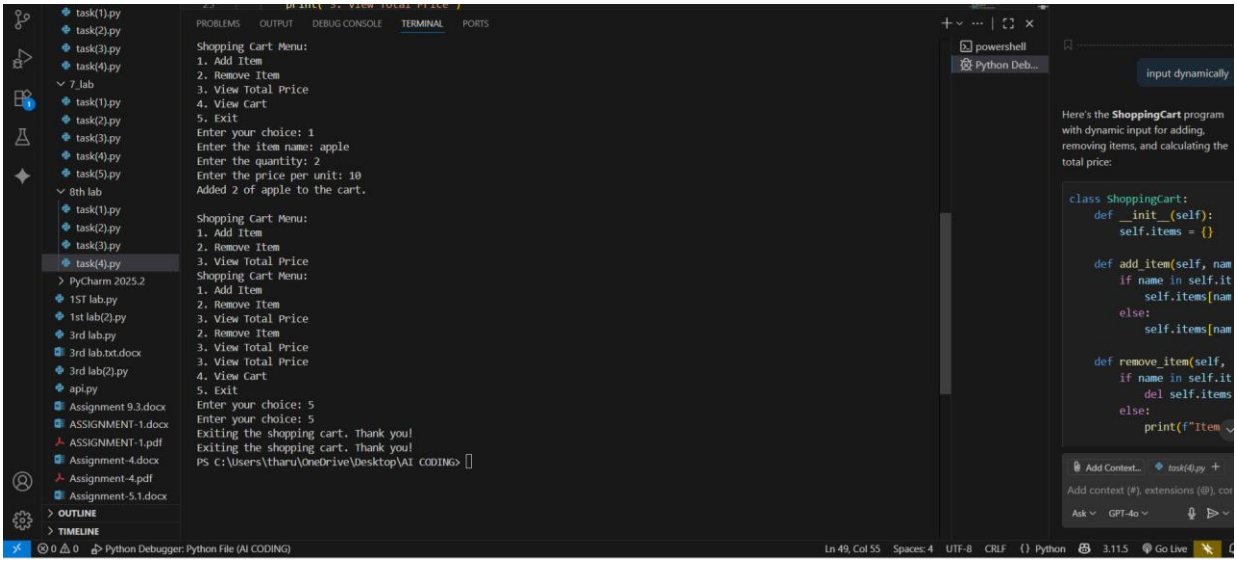
Prompt: Now generate a Python class ShoppingCart that can add items, remove items, and calculate the total price according to the given test cases. Take input dynamically from the user. Input: Add Apple with quantity 2 and price 3.0 → Output: {"Apple": {"quantity": 2, "price": 3.0}}. Input: Remove Apple from the cart → Output: {}. Input: Add Apple (quantity 2, price 3.0) and Banana (quantity 1, price 1.5) → Output: Total price is 7.5.

Code:


class ShoppingCart:
def __init__(self):
self.items = {}
def add_item(self, name, quantity, price):
if name in self.items:
self.items[name]["quantity"] += quantity
else:
self.items[name] = {"quantity": quantity, "price": price}
def remove_item(self, name):
if name in self.items:
del self.items[name]
else:
print(f"Item '{name}' not found in the cart.")
def get_total_price(self):
total = 0
for item in self.items.values():
total += item["quantity"] * item["price"]
return total
if __name__ == "__main__":
cart = ShoppingCart()
while True:
print("\nShopping Cart Menu:")
print("1. Add Item")
print("2. Remove Item")
print("3. View Total Price")
print("4. View Cart")
print("5. Exit")
choice = input("Enter your choice: ")
if choice == "1":
name = input("Enter the item name: ")
quantity = int(input("Enter the quantity: "))
price = float(input("Enter the price per unit: "))
cart.add_item(name, quantity, price)
Exiting the shopping cart. Thank you!
PS C:\Users\tharu\OneDrive\Desktop\AI CODING>
Let me know if you'd like to see the dynamic input version!
input dynamically
Here's the ShoppingCart program with dynamic input for adding, removing items, and calculating the total price:


print("1. Add Item")
print("2. Remove Item")
print("3. View Total Price")
print("4. View Cart")
print("5. Exit")
choice = input("Enter your choice: ")
if choice == "1":
name = input("Enter the item name: ")
quantity = int(input("Enter the quantity: "))
price = float(input("Enter the price per unit: "))
cart.add_item(name, quantity, price)
print(f"Added {quantity} of {name} to the cart.")
elif choice == "2":
name = input("Enter the item name to remove: ")
cart.remove_item(name)
elif choice == "3":
total_price = cart.get_total_price()
print(f"The total price of items in the cart is: {total_price}")
elif choice == "4":
print("Current items in the cart:")
for name, details in cart.items.items():
print(f"{name}: Quantity = {details['quantity']}, Price = {details['price']}")
elif choice == "5":
print("Exiting the shopping cart. Thank you!")
break
else:
print("Invalid choice. Please try again.")
Exiting the shopping cart. Thank you!
PS C:\Users\tharu\OneDrive\Desktop\AI CODING>
Let me know if you'd like to see the dynamic input version!
input dynamically
Here's the ShoppingCart program with dynamic input for adding, removing items, and calculating the total price:

OP:



Observation: The program uses input() to allow the user to interact with the shopping cart dynamically. Users can add items, remove items, view the total price, and see the cart's contents.

- **Option 1**: Add an item to the cart.
- **Option 2**: Remove an item from the cart.
- **Option 3**: Calculate and display the total price of items in the cart.
- **Option 4**: Display all items in the cart.
- **Option 5**: Exit the program.

If the user tries to remove an item that doesn’t exist, the program displays an appropriate message

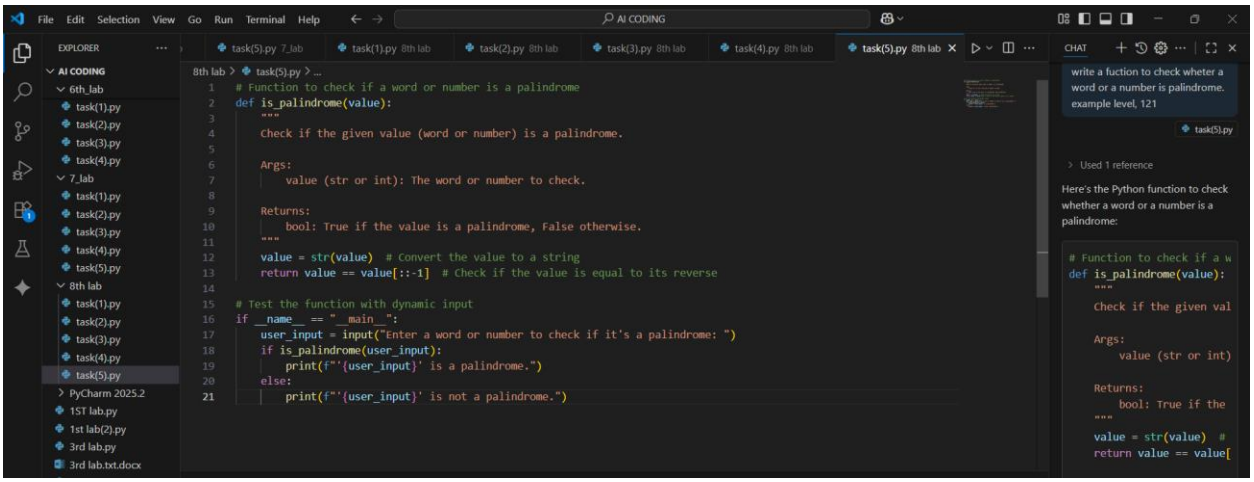
Task-5:

Write tests for a palindrome checker (e.g., is_palindrome("level") → True). Let Copilot suggest the function based on test case expectations.

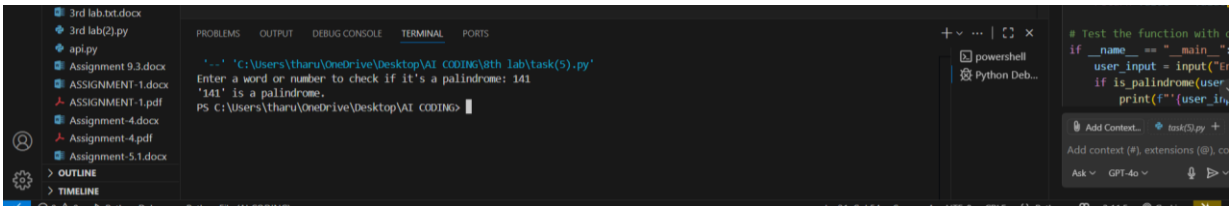
Prompt:

write a function to check whether a word or a number is palindrome or not. Example: level, 121

Code:



OP:



Observation:

The input value is converted to a string using str(value) to handle both words and numbers. The function checks if the string is equal to its reverse using slicing (value[::-1]). I have prompted to enter a word or number dynamically. The program prints whether the input is a palindrome