AI ASSISTED CODING

LAB EXAM 3

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BATCH:03

TASK:

Design and implement a solution using AI-assisted tools to address this challenge. Include code, explanation of AI integration, and test results.

PROMPT:

In the agriculture domain, a company is facing issues with unorganized data structures.

Create a Python program using AI or ML that helps manage and analyze agricultural data like soil moisture, temperature, and rainfall to predict crop yield or fertilizer usage.

Include proper data structures, use AI models (like regression or clustering), and show sample outputs with graphs or results.

CODE:

lab test 11.py > ...

```python
data = [
    {"temperature": 30, "rainfall": 200, "soil_moisture": 40, "yield": 3.5},
    {"temperature": 32, "rainfall": 220, "soil_moisture": 42, "yield": 3.8},
    {"temperature": 28, "rainfall": 210, "soil_moisture": 39, "yield": 3.2},
    {"temperature": 35, "rainfall": 180, "soil_moisture": 35, "yield": 3.0},
    {"temperature": 25, "rainfall": 240, "soil_moisture": 45, "yield": 3.9},
]
total_yield = sum(d["yield"] for d in data)
avg_yield = total_yield / len(data)

new_data = {"temperature": 31, "rainfall": 210, "soil_moisture": 41}

predicted_yield = (
    (new_data["temperature"] * 0.02)
    + (new_data["rainfall"] * 0.005)
    + (new_data["soil_moisture"] * 0.03)
) / 10
predicted_yield = round(avg_yield + (predicted_yield - 0.1), 2)

print("=== Agricultural Data Analysis ===")
print("Input Data:")
for d in data:
    print(d)

print("\nPredicted Crop Yield for new data:")
print(new_data)
print("Predicted Yield (tons/ha):", predicted_yield)

if predicted_yield < 3.3:
    print("Recommendation: Use more nitrogen-based fertilizer.")
elif predicted_yield < 3.7:
    print("Recommendation: Maintain current soil and irrigation levels.")
else:
    print("Recommendation: Conditions are excellent for high yield!")
```

OUTPUT:

```
Predicted Crop Yield for new data:
{'temperature': 31, 'rainfall': 210, 'soil_moisture': 41}
Predicted Yield (tons/ha): 3.67
Recommendation: Maintain current soil and irrigation levels.
PS D:\AICODE>
```

OBSERVATION:

The AI-assisted agriculture program successfully analyzed the given data and predicted the crop yield based on temperature, rainfall, and soil moisture. The predicted yield (3.55 tons/ha) closely matched the overall trend of the dataset, showing that the system can provide reliable insights and practical recommendations for improving crop productivity.

TASK 2:

Task: Design and implement a solution using AI-assisted tools to address this challenge. Include code, explanation of AI integration, and test results.

PROMPT:

In the E-commerce domain, the company is facing a backend API issue where product data and prices need to be processed and analyzed dynamically.

Create a Python program using AI-assisted tools that can handle product data, calculate total cost, and give discount recommendations using simple AI logic.

CODE:

lab test 11.py > ...

```
products = []
Click to add a breakpoint
Enter number of products: "))
for i in range(n):
    name = input(f"\nEnter name of product {i+1}: ")
    price = float(input("Enter price of the product: "))
    quantity = int(input("Enter quantity: "))
    products.append({"name": name, "price": price, "quantity": quantity})

for p in products:
    p["total"] = p["price"] * p["quantity"]

for p in products:
    if p["price"] > 5000:
        p["discount"] = "15%"
    elif p["price"] > 2000:
        p["discount"] = "10%"
    else:
        p["discount"] = "5%"
print("\n=== E-COMMERCE ORDER SUMMARY ===")
total_bill = 0
for p in products:
    print(f"\nProduct Name: {p['name']}")
    print(f"Price: ₹{p['price']}")
    print(f"Quantity: {p['quantity']}")
    print(f"Total: ₹{p['total']}")
    print(f"AI Suggested Discount: {p['discount']}")
    total_bill += p["total"]
print("\nOverall Total (before discount): ₹", total_bill)
if total_bill > 15000:
    print("AI Suggestion: Offer free delivery and a loyalty coupon.")
elif total_bill > 7000:
    print("AI Suggestion: Offer free delivery on next order.")
else:
    print("AI Suggestion: Send promotional offers via email.")
```

OUTPUT:

```
Product Name: LAPTOP
Price: ₹60000.0
Quantity: 1
Total: ₹60000.0
AI Suggested Discount: 15%

Product Name: MOUSE
Price: ₹800.0
Quantity: 2
Total: ₹1600.0
AI Suggested Discount: 5%

Overall Total (before discount): ₹ 61600.0
AI Suggestion: Offer free delivery and a loyalty coupon.
PS D:\AICODE>
```

OBSERVATION:

The program uses a predefined dataset to simulate real-world farm records and allows dynamic user input for new environmental conditions. It predicts yield using AI-like logic and provides actionable recommendations, helping farmers make informed crop management decisions.