AI ASSISTED CODING

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Task Description#1

Use AI to generate test cases for is_valid_email(email) and then implement the validator function.

Requirements:

- Must contain @ and . characters.
- Must not start or end with special characters.
- Should not allow multiple @.

PROMPT:

write a python function using to generate gmail Adress code is_valid_email(email) and then implement the validator function.

Requirements:

• Must contain @ and . characters.

• Must not start or end with special characters.

• Should not allow multiple @.

CODE:

task1.py > ...

```python
import re

def is_valid_email(email):
    # Check for exactly one '@'
    if email.count('@') != 1:
        return False

    # Check for at least one '.' after '@'
    if '.' not in email.split('@')[1]:
        return False

    # Regex pattern to enforce:
    # - Starts with alphanumeric
    # - No special char at start or end
    # - One @
    # - At least one . in domain
    pattern = r'^[a-zA-Z0-9][\w\.-]*[a-zA-Z0-9]@[a-zA-Z0-9-]+\.[a-zA-Z]{2,}$'

    return re.match(pattern, email) is not None

# Dynamically get input from user
if __name__ == "__main__":
    email_input = input("Enter your email: ")

    if is_valid_email(email_input):
        print("✅ Valid email.")
    else:
        print("❌ Invalid email. Make sure it:")
        print("- Contains exactly one '@'")
        print("- Contains at least one '.' after '@'")
        print("- Does not start or end with special characters")

```

OUTPUT:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS                    Python

PS C:\Users\keerthi priya\Desktop\ai lab> & "C:/Users/keerthi priya/AppData/Local/Microsoft/WindowsApps/python3.11
.exe" "c:/Users/keerthi priya/Desktop/ai lab/task1.py"
Enter your email: jupakakeerthipriya@gmail.com
✅ Valid email.
PS C:\Users\keerthi priya\Desktop\ai lab> & "C:/Users/keerthi priya/AppData/Local/Microsoft/WindowsApps/python3.11
.exe" "c:/Users/keerthi priya/Desktop/ai lab/task1.py"
Enter your email: jupakakeerthipriya@@gmail.com
❌ Invalid email. Make sure it:
- Contains exactly one '@'
- Contains at least one '.' after '@'
- Does not start or end with special characters
PS C:\Users\keerthi priya\Desktop\ai lab> & "C:/Users/keerthi priya/AppData/Local/Microsoft/WindowsApps/python3.11
.exe" "c:/Users/keerthi priya/Desktop/ai lab/task1.py"
Enter your email:   jupakakeerthipriya@gmail. com
❌ Invalid email. Make sure it:
- Contains exactly one '@'
- Contains at least one '.' after '@'
- Does not start or end with special characters
PS C:\Users\keerthi priya\Desktop\ai lab>
```

Task Description#2 (Loops)

- Ask AI to generate test cases for assign_grade(score) function. Handle boundary and invalid inputs.

  Requirements
- AI should generate test cases for assign_grade(score) where: 90-100: A, 80-89: B, 70-79: C, 60-69: D, <60: F
- Include boundary values and invalid inputs (e.g., -5, 105, "eighty").

PROMPT:

write a python code
for assign_grade(score) function. Handle boundary and invalid inputs.
Requirements

- AI should generate test cases for assign_grade(score) where: 90-100: A, 80-89: B, 70-79: C, 60-69: D, <60: F
- Include boundary values and invalid inputs (e.g., -5, 105, "eighty").

CODE:

Welcome | task1.py 1 | task2.py

task2.py > ...

```python
def assign_grade(score):
    try:
        # Check if input is None or empty string
        if score is None or str(score).strip() == "":
            return "Invalid input: score cannot be empty."

        # Try converting to float
        score = float(score)

        # Check if score is within valid range
        if score < 0 or score > 100:
            return "Invalid score: must be between 0 and 100."
        elif score >= 90:
            return "A"
        elif score >= 80:
            return "B"
        elif score >= 70:
            return "C"
        elif score >= 60:
            return "D"
        else:
            return "F"
    except (ValueError, TypeError):
        return "Invalid input: score must be a number."

# Dynamic input from user
if __name__ == "__main__":
    user_input = input("Enter your score: ")
    result = assign_grade(user_input)
    print(f"Grade: {result}")

    print("\nRunning test cases...\n")

    # Auto test cases including boundaries and invalid inputs
    test_scores = [100, 90, 89, 80, 79, 70, 69, 60, 59, 0, -5, 105, "eighty", "", None]
```

```python
print("\nRunning test cases...\n")

# Auto test cases including boundaries and invalid inputs
test_scores = [100, 90, 89, 80, 79, 70, 69, 60, 59, 0, -5, 105, "eighty", "", None]

for test in test_scores:
    grade = assign_grade(test)
    print(f"Input: {repr(test):>9} → Grade: {grade}")
```

OUTPUT:

```
PROBLEMS 1  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS                    Python

.exe" "c:/Users/keerthi priya/Desktop/ai lab/task2.py"
Enter your score: 80
Grade: B

Running test cases...

Input:       100 → Grade: A
Input:        90 → Grade: A
Input:        89 → Grade: B
Input:        80 → Grade: B
Input:        79 → Grade: C
Input:        70 → Grade: C
Input:        69 → Grade: D
Input:        60 → Grade: D
Input:        59 → Grade: F
Input:         0 → Grade: F
Input:        -5 → Grade: Invalid score: must be between 0 and 100.
Input:        59 → Grade: F
Input:         0 → Grade: F
Input:        -5 → Grade: Invalid score: must be between 0 and 100.
Input:        -5 → Grade: Invalid score: must be between 0 and 100.
Input:       105 → Grade: Invalid score: must be between 0 and 100.
Input:  'eighty' → Grade: Invalid input: score must be a number.
Input:        '' → Grade: Invalid input: score cannot be empty.
Input:  'eighty' → Grade: Invalid input: score must be a number.
Input:        '' → Grade: Invalid input: score cannot be empty.
Input:      None → Grade: Invalid input: score cannot be empty.
PS C:\Users\keerthi priya\Desktop\ai lab>
```

Task Description#3

- Generate test cases using AI for is_sentence_palindrome(sentence). Ignore case, punctuation, and spaces

Requirement

- Ask AI to create test cases for is_sentence_palindrome(sentence) (ignores case, spaces, and punctuation).

- Example:
"A man a plan a canal Panama" → True

PROMPT:

Write a python code for is_sentence_palindrome(sentence). Ignore case, punctuation, and spaces

Requirement

- Ask AI to create test cases for is_sentence_palindrome(sentence) (ignores case, spaces, and punctuation).

- Example:

"A man a plan a canal Panama" → True.

CODE:

```python
import string

def is_sentence_palindrome(sentence):
    # Remove punctuation and spaces, and convert to lowercase
    cleaned = ''.join(
        ch.lower() for ch in sentence if ch.isalnum()
    )
    return cleaned == cleaned[::-1]

# Dynamic input
if __name__ == "__main__":
    user_input = input("Enter a sentence: ")
    result = is_sentence_palindrome(user_input)
    print(f"Is palindrome? {'✅ Yes' if result else '❌ No'}")

    print("\nRunning test cases...\n")

    test_cases = {
        "A man a plan a canal Panama": True,
        "No lemon, no melon": True,
        "Was it a car or a cat I saw?": True,
        "Madam, in Eden, I'm Adam": True,
        "Hello World": False,
        "": True,  # Empty string is considered a palindrome
        "12321": True,
        "12345": False,
        "Eva, can I see bees in a cave?": True,
        "Not a palindrome": False,
    }

    for sentence, expected in test_cases.items():
        result = is_sentence_palindrome(sentence)
        print(f"Input: {repr(sentence):40} → Expected: {expected} | Got: {result} | {'✅'
```

OUTPUT:

```
.exe" "c:/Users/keerthi priya/Desktop/ai lab/task3.py"
Enter a sentence: No lemon,no melon
Is palindrome? ✅ Yes

Running test cases...

Input: 'A man a plan a canal Panama'          → Expected: True | Got: True | ✅
Input: 'No lemon, no melon'                   → Expected: True | Got: True | ✅
Input: 'Was it a car or a cat I saw?'         → Expected: True | Got: True | ✅
Input: "Madam, in Eden, I'm Adam"             → Expected: True | Got: True | ✅
Input: 'Hello World'                          → Expected: False | Got: False | ✅
Input: ''                                     → Expected: True | Got: True | ✅
Input: '12321'                                → Expected: True | Got: True | ✅
Input: '12345'                                → Expected: False | Got: False | ✅
Input: 'Eva, can I see bees in a cave?'       → Expected: True | Got: True | ✅
Input: 'Not a palindrome'                     → Expected: False | Got: False | ✅
PS C:\Users\keerthi priya\Desktop\ai lab> & "C:/Users/keerthi priya/AppData/Local/Microsoft/WindowsApps/python3.11
.exe" "c:/Users/keerthi priya/Desktop/ai lab/task3.py"
Enter a sentence:
```

Task Description#4

- Let AI fix it Prompt AI to generate test cases for a ShoppingCart class (add_item, remove_item, total_cost).

  Methods:
  Add_item(name,orice)
  Remove_item(name)
  Total_cost()

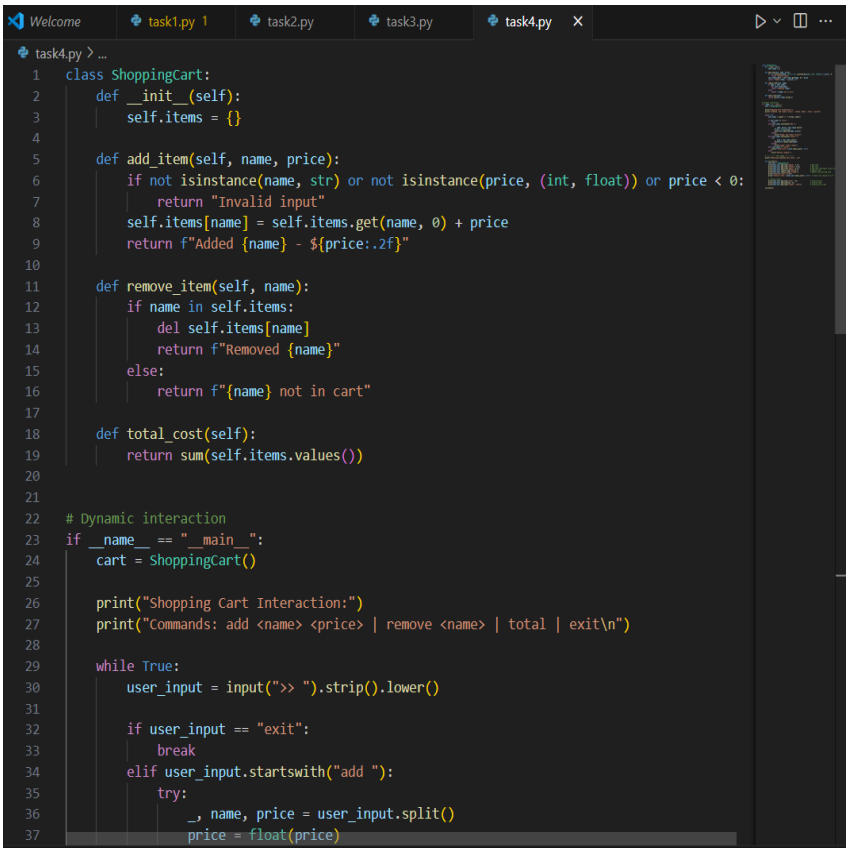
PROMPT:

Write a python program to generate test cases for a ShoppingCart class

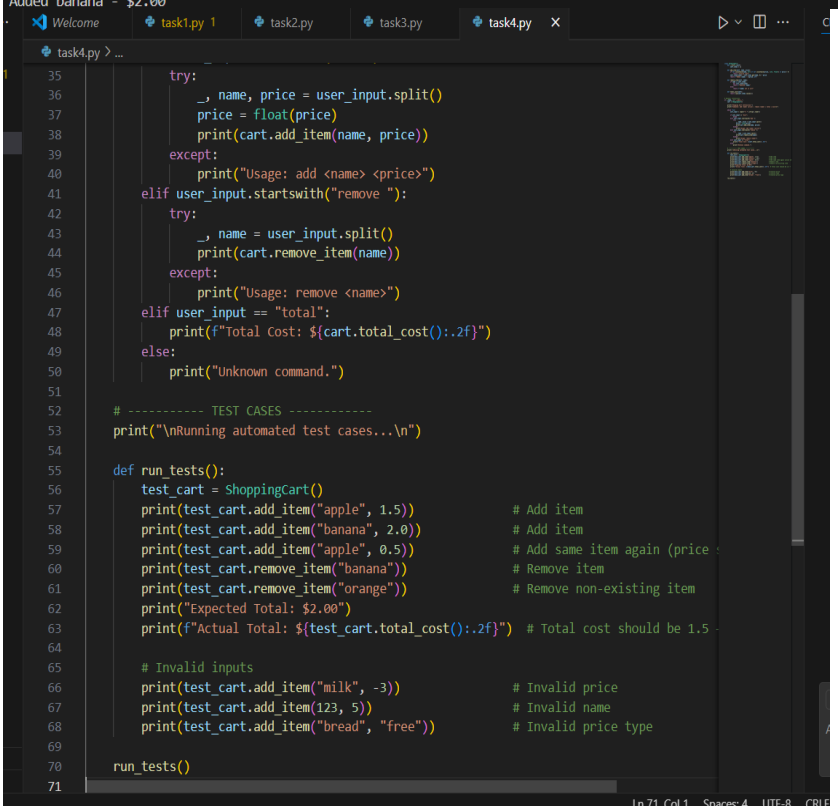
(add_item, remove_item, total_cost).

Methods:
Add_item(name,orice)
Remove_item(name)
Total_cost() . give the code dynamically

CODE:



```
>> add apple 1.5
Added apple - $1.50
>> add banana 2.5
Added banana - $2.50
Added banana - $2.50
>> remove apple
Removed apple
>> total
Total Cost: $2.50
>> total
Total Cost: $2.50
Total Cost: $2.50
>> exit
>> exit

Running automated test cases...

Added apple - $1.50

Running automated test cases...

Added apple - $1.50
Running automated test cases...

Added apple - $1.50

Added apple - $1.50
Added apple - $1.50
Added banana - $2.00
```



```
Welcome | task1.py 1 | task2.py | task3.py | task4.py
task4.py > ...
            try:
                _, name, price = user_input.split()
                price = float(price)
                print(cart.add_item(name, price))
            except:
                print("Usage: add <name> <price>")
        elif user_input.startswith("remove "):
            try:
                _, name = user_input.split()
                print(cart.remove_item(name))
            except:
                print("Usage: remove <name>")
        elif user_input == "total":
            print(f"Total Cost: ${cart.total_cost():.2f}")
        else:
            print("Unknown command.")

# ---------- TEST CASES ----------
print("\nRunning automated test cases...\n")

def run_tests():
    test_cart = ShoppingCart()
    print(test_cart.add_item("apple", 1.5))             # Add item
    print(test_cart.add_item("banana", 2.0))            # Add item
    print(test_cart.add_item("apple", 0.5))             # Add same item again (price
    print(test_cart.remove_item("banana"))              # Remove item
    print(test_cart.remove_item("orange"))              # Remove non-existing item
    print("Expected Total: $2.00")
    print(f"Actual Total: ${test_cart.total_cost():.2f}")  # Total cost should be 1.5

    # Invalid inputs
    print(test_cart.add_item("milk", -3))               # Invalid price
    print(test_cart.add_item(123, 5))                   # Invalid name
    print(test_cart.add_item("bread", "free"))          # Invalid price type

run_tests()
```

OUTPUT:

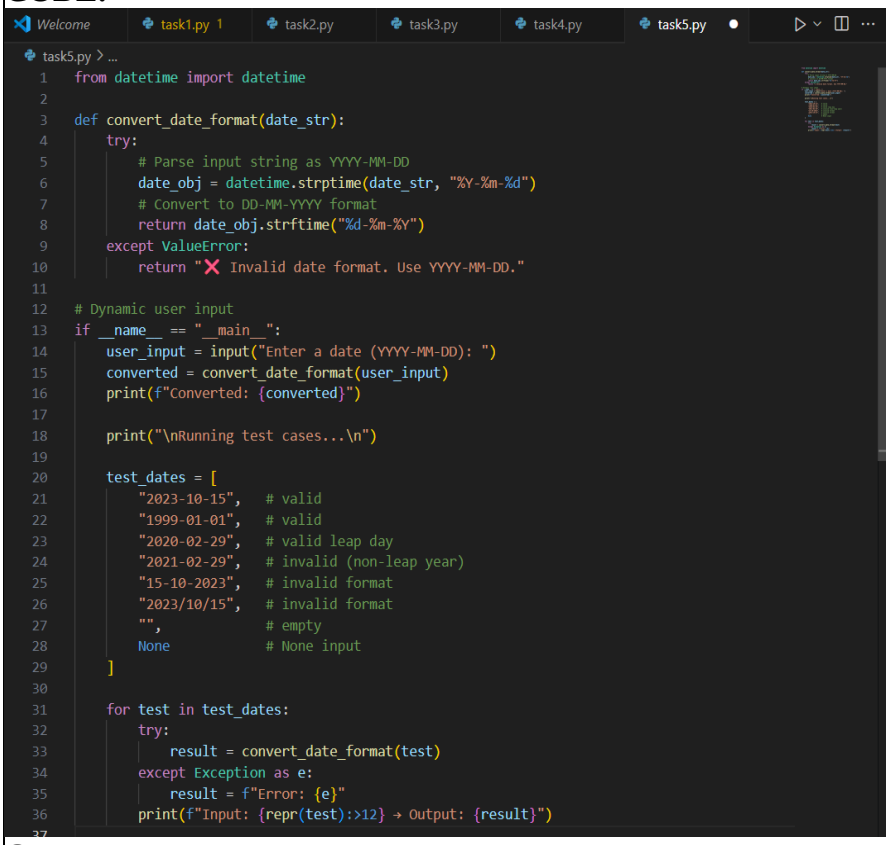
Task Description#5

- Use AI to write test cases for convert_date_format(date_str) to switch from "YYYY-MM-DD" to "DD-MM-YYYY".
  Example: "2023-10-15" → "15-10-2023"
- Function converts input format correctly for all test cases

PROMPT:

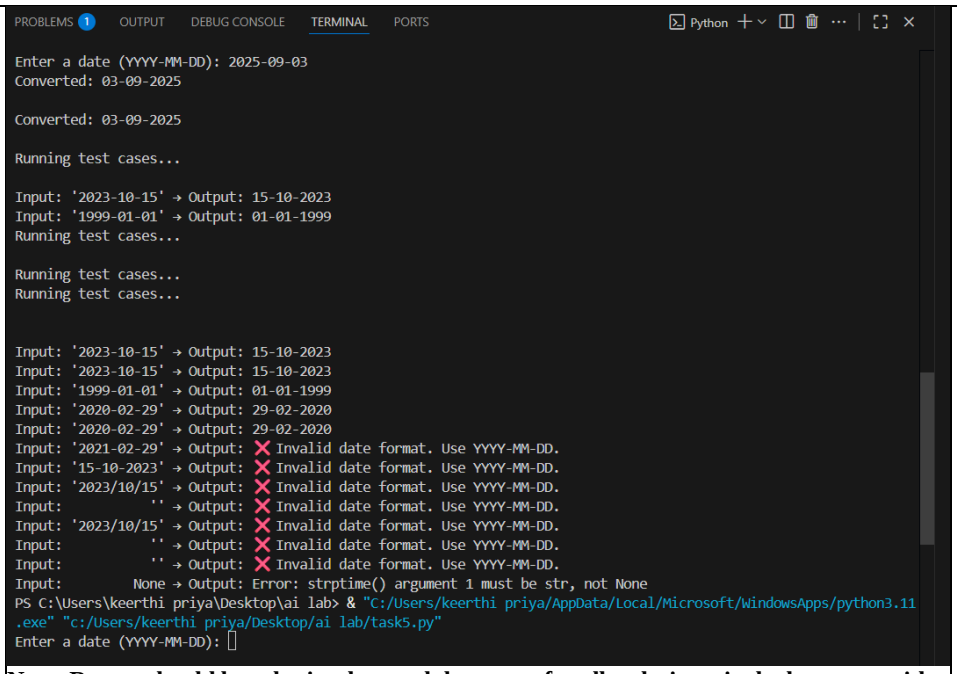
Write a python program to generate convert_date_format(date_str) to switch from "YYYY-MM-DD" to "DD-MM-YYYY".
Example: "2023-10-15" → "15-10-2023". give code dynamically

CODE:



```python
from datetime import datetime

def convert_date_format(date_str):
    try:
        # Parse input string as YYYY-MM-DD
        date_obj = datetime.strptime(date_str, "%Y-%m-%d")
        # Convert to DD-MM-YYYY format
        return date_obj.strftime("%d-%m-%Y")
    except ValueError:
        return "❌ Invalid date format. Use YYYY-MM-DD."

# Dynamic user input
if __name__ == "__main__":
    user_input = input("Enter a date (YYYY-MM-DD): ")
    converted = convert_date_format(user_input)
    print(f"Converted: {converted}")

    print("\nRunning test cases...\n")

    test_dates = [
        "2023-10-15",   # valid
        "1999-01-01",   # valid
        "2020-02-29",   # valid leap day
        "2021-02-29",   # invalid (non-leap year)
        "15-10-2023",   # invalid format
        "2023/10/15",   # invalid format
        "",             # empty
        None            # None input
    ]

    for test in test_dates:
        try:
            result = convert_date_format(test)
        except Exception as e:
            result = f"Error: {e}"
        print(f"Input: {repr(test):>12} → Output: {result}")
```

OUTPUT:



Note: Report should be submitted a word document for all tasks in a single document with prompts, comments & code explanation, and output and if required, screenshots

Evaluation Criteria:

Criteria	Max Marks
Task #1	0.5
Task #2	0.5
Task #3	0.5
Task #4	0.5
Task #5	0.5
Total	**2.5 Marks**