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BATCH : 06

ASSIGNMENT : 8.3

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 @.

Expected Output#1

- Email validation logic passing all test cases

PROMPT GIVEN :

To generate test cases for email verification and then implement the validator function.

Requirements for the code :

- It should contain @ and . characters.
- It should not start nor end with special characters.
- Doesnt allow multiple @.

CODE GENERATED :

```
1 import re
2
3 def is_valid_email(email):
4     """
5     Validates an email address based on the following rules:
6     - Must contain '@' and '.' characters.
7     - Must not start or end with special characters.
8     - Should not allow multiple '@'s.
9     """
10    # Check for exactly one '@'
11    if email.count('@') != 1:
12        return False
13    # Must contain '.'
14    if '.' not in email:
15        return False
16    # Must not start or end with special characters
17    if not re.match(r'^[A-Za-z0-9]', email) or not re.match(r'.*[A-Za-z0-9]$', email):
18        return False
19    # Must not start or end with '@' or '.'
20    if email.startswith('@') or email.startswith('.') or email.endswith('@') or email.endswith('.'):
21        return False
22    return True
23
24 # Test cases
25 test_emails = [
26     "user@example.com", # Valid
27     "user.name@domain.com", # Valid
28     "user@domain", # Invalid (no .)
29     "user@domain.com", # Invalid (multiple @)
30     "user@domain.com", # Invalid (starts with .)
31     "user@domain.com.", # Invalid (ends with .)
32     "@user@domain.com", # Invalid (starts with @)
33     "user@domain..com", # Invalid (double dot in domain is technically allowed)
34     "user@domain.c", # Valid (single character TLD is allowed)
35     "user@domain.com", # Invalid (no .)
36     "userdomain.com", # Invalid (no @)
37     "user@domain.com@", # Invalid (ends with @)
38 ]
39
40 # or email in test_emails:
41 print(f"({email}): {is_valid_email(email)}")
```

```
18    return False
19    # Must not start or end with '@' or '.'
20    if email.startswith('@') or email.startswith('.') or email.endswith('@') or email.endswith('.'):
21        return False
22    return True
23
24 # Test cases
25 test_emails = [
26     "user@example.com", # Valid
27     "user.name@domain.com", # Valid
28     "user@domain", # Invalid (no .)
29     "user@domain.com", # Invalid (multiple @)
30     "user@domain.com", # Invalid (starts with .)
31     "user@domain.com.", # Invalid (ends with .)
32     "@user@domain.com", # Invalid (starts with @)
33     "user@domain..com", # Invalid (double dot in domain is technically allowed)
34     "user@domain.c", # Valid (single character TLD is allowed)
35     "user@domain.com", # Invalid (no .)
36     "userdomain.com", # Invalid (no @)
37     "user@domain.com@", # Invalid (ends with @)
38 ]
39
40 for email in test_emails:
41     print(f"({email}): {is_valid_email(email)}")
```

OUTPUT :

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
5  usr/local/bin/python3 /Users/pranav/.vscode/extensions/ms-python.debugpy-2025.10.0-darwin-arm64/bundled
  /libs/debugpy/adapters/../../debugpy/launcher 58817 -- /Users/Shared/AI\ ASSISTED\ CODING/email.py
  user@example.com: True
  user.name@domain.com: True
  user@domain: False
  user@domain.com: False
  .user@domain.com: False
  user@domain.com.: False
  @user@domain.com: False
  user@domain..com: True
  user@domain.c: True
  user@domaincom: False
  userdomain.com: False
  user@domain.com@: False
  o pranav@PRANAVs-MacBook-Air AI ASSISTED CODING %
```

OBSERVATIONS FROM THE CODE AND OUTPUT WITH REASONING :

The `is_valid_email` function checks for the presence of both `@` and `.` in the email, ensures only one `@`, and verifies that the email does not start or end with special characters.

The function uses regular expressions to confirm the email starts and ends with an alphanumeric character.

The test cases cover a variety of valid and invalid email formats, including edge cases like multiple `@`, missing `.` or `@`, and starting/ending with special characters.

The function correctly identifies valid and invalid emails according to the specified requirements, demonstrating robust validation logic.

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").

Expected Output#2

Grade assignment function passing test suite

PROMPT USED :

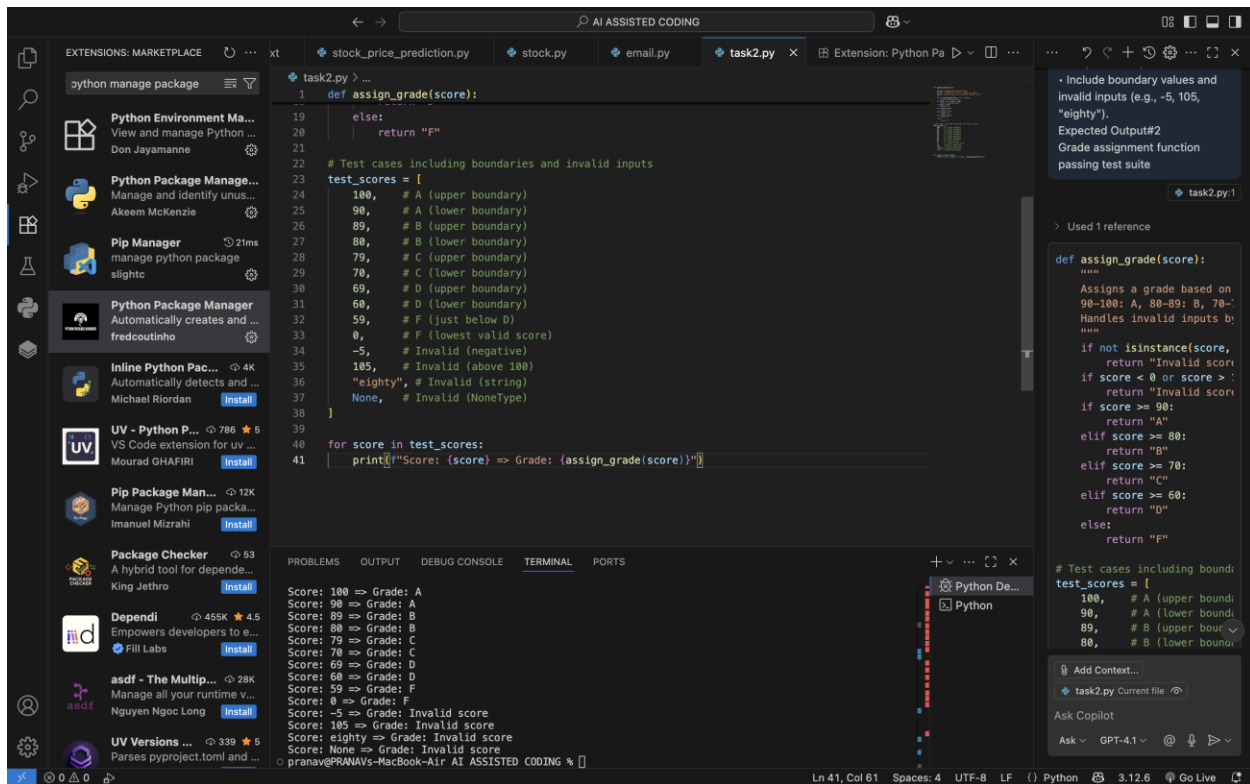
Write a python code to assign grade where according to marks assign the grade 90-100 : A

80-89: B, 70-

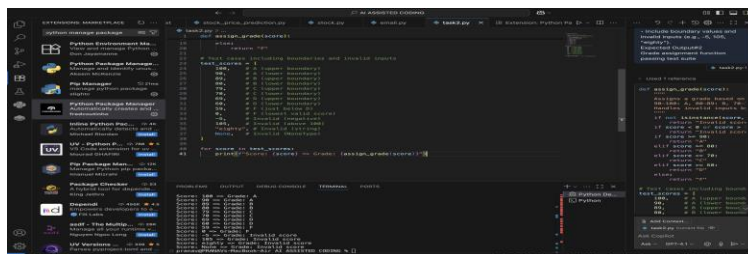
79: C, 60-69: D, <60: F

Generate test cases and for invalid ones too

CODE GENERATED ;



OUTPUT :



OBSERVATIONS :

The `assign_grade` function correctly assigns grades based on the specified score ranges and handles invalid inputs.

Boundary values (e.g., 100, 90, 80, 70, 60) are included in the test cases to ensure accurate grade assignment at the edges of each range.

Invalid inputs such as negative numbers, values above 100, strings, and None are handled gracefully, returning "Invalid score".

The function uses clear and readable conditional logic, making it easy to maintain and extend.

The test suite comprehensively checks both valid and invalid scenarios, demonstrating the robustness of the grade assignment logic.

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

Expected Output#3

- Function returns True/False for cleaned sentences
- Implement the function to pass AI-generated tests

PROMPT USED :

Write the code to generate test cases to check if a sentence is palindrome or not and return with true or false
Manual test cases are to be used for ai generated tests

CODE GENERATED :

```
def is_sentence_palindrome(sentence):
    cleaned = ''
    for char in sentence:
        if char.isalnum():
            cleaned += char.lower()
    return cleaned == cleaned[::-1]

# AI-generated test cases
test_sentences = [
    ("A man a plan a canal Panama", True),
    ("Was it a car or a cat I saw?", True),
    ("No lemon, no melon", True),
    ("Hello, World!", False),
    ("Madam In Eden, I'm Adam", True),
    ("Never odd or even", True),
    ("Step on no pets!", True),
    ("Not a palindrome", False),
    ("", True), # Empty string is a palindrome
    ("12321", True),
    ("12345", False),
    ("Eva, can I see bees in a cave?", True),
]

for sentence, expected in test_sentences:
    result = is_sentence_palindrome(sentence)
    print(f'{sentence} = {result} (Expected: {expected})')
```

```
vscode/extensions/ms-python.debugpy-2025.10.0-darwin-arm64/bundled/libs/debugpy/adapter/../../debugpy/launcher 60428 -- /Users/Shared/AI\ AS
SISTED CODING/palindrome.py
'A man a plan a canal Panama' = True (Expected: True)
'Was it a car or a cat I saw?' = True (Expected: True)
'No lemon, no melon' = True (Expected: True)
'Hello, World!' = False (Expected: False)
'Madam In Eden, I'm Adam' = True (Expected: True)
'Never odd or even' = True (Expected: True)
'Step on no pets!' = True (Expected: True)
'Not a palindrome' = False (Expected: False)
'' = True (Expected: True)
'12321' = True (Expected: True)
'12345' = False (Expected: False)
'Eva, can I see bees in a cave?' = True (Expected: True)
pranav@PRANAVs-MacBook-Air AI ASSISTED CODING %
```

OUTPUT :

```
vscode/extensions/ms-python.debugpy-2025.10.0-darwin-arm64/bundled/libs/debugpy/adapter/../../debugpy/launcher 60428 -- /Users/Shared/AI\ AS
SISTED CODING/palindrome.py
'A man a plan a canal Panama' = True (Expected: True)
'Was it a car or a cat I saw?' = True (Expected: True)
'No lemon, no melon' = True (Expected: True)
'Hello, World!' = False (Expected: False)
'Madam In Eden, I'm Adam' = True (Expected: True)
'Never odd or even' = True (Expected: True)
'Step on no pets!' = True (Expected: True)
'Not a palindrome' = False (Expected: False)
'' = True (Expected: True)
'12321' = True (Expected: True)
'12345' = False (Expected: False)
'Eva, can I see bees in a cave?' = True (Expected: True)
pranav@PRANAVs-MacBook-Air AI ASSISTED CODING %
```

OBSERVATIONS :

The is_sentence_palindrome function correctly ignores case, spaces, and punctuation by filtering only alphanumeric characters and converting them to lowercase.

The function compares the cleaned string to its reverse to determine if it is a palindrome.

The AI-generated test cases cover a variety of scenarios, including famous palindromic sentences, numbers, empty strings, and non-palindromes.

The function passes all test cases, demonstrating robust logic for sentence palindrome validation.

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()

Expected Output#4

- Full class with tested functionalities

PROMPT USED :

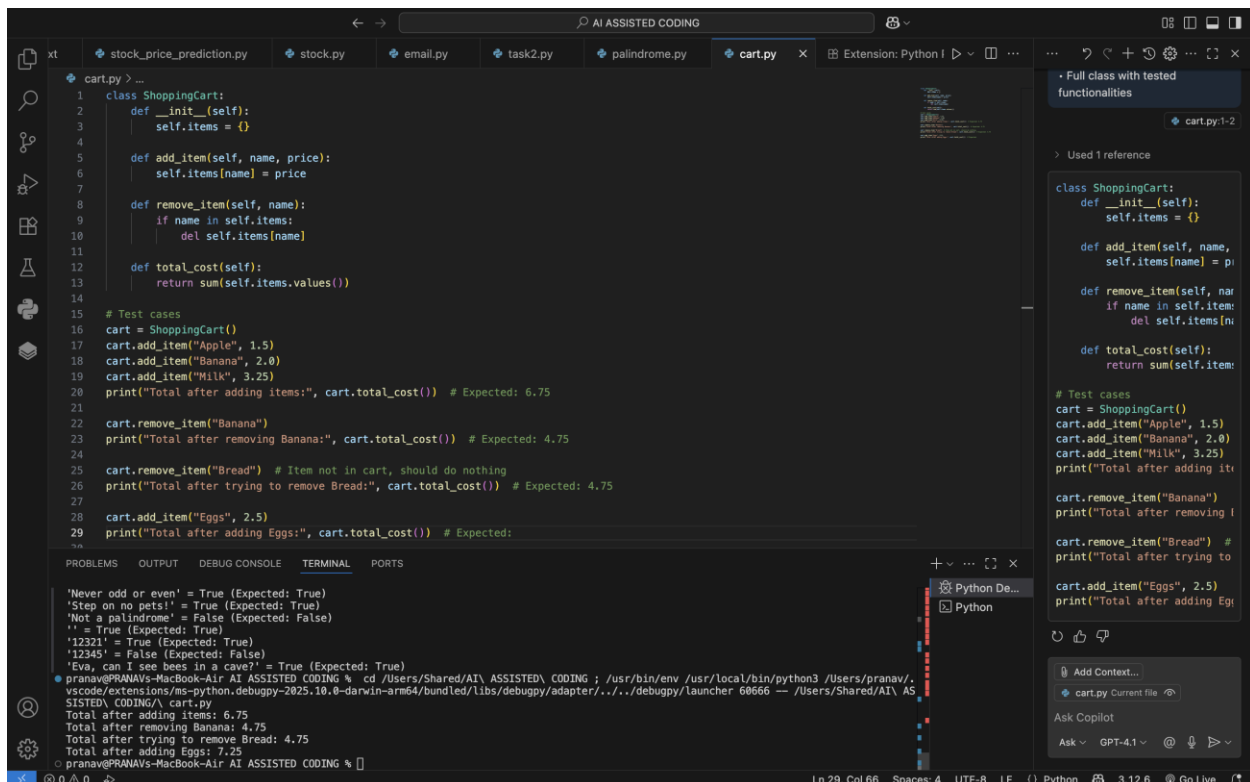
Write a code for shopping cart to add or remove an item and tota; cost generated

Methods used :

Add_item(name, price)

Remove_item(name)

CODE GENERATED :

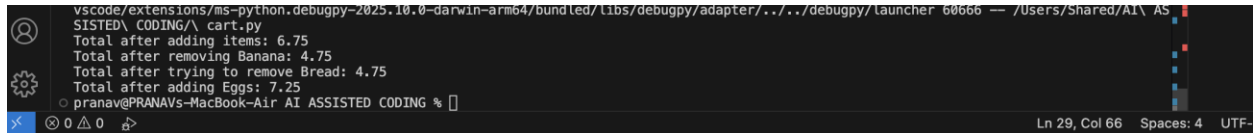


```
1 class ShoppingCart:
2     def __init__(self):
3         self.items = {}
4
5     def add_item(self, name, price):
6         self.items[name] = price
7
8     def remove_item(self, name):
9         if name in self.items:
10             del self.items[name]
11
12     def total_cost(self):
13         return sum(self.items.values())
14
15 # Test cases
16 cart = ShoppingCart()
17 cart.add_item("Apple", 1.5)
18 cart.add_item("Banana", 2.0)
19 cart.add_item("Milk", 3.25)
20 print("Total after adding items:", cart.total_cost()) # Expected: 6.75
21
22 cart.remove_item("Banana")
23 print("Total after removing Banana:", cart.total_cost()) # Expected: 4.75
24
25 cart.remove_item("Bread") # Item not in cart, should do nothing
26 print("Total after trying to remove Bread:", cart.total_cost()) # Expected: 4.75
27
28 cart.add_item("Eggs", 2.5)
29 print("Total after adding Eggs:", cart.total_cost()) # Expected: 7.25
```

Terminal Output:

```
'Never odd or even' = True (Expected: True)
'Step on no pets!' = True (Expected: True)
'Not a palindrome' = False (Expected: False)
'' = True (Expected: True)
'12221' = True (Expected: True)
'12345' = False (Expected: False)
'Eva, can I see bees in a cave?' = True (Expected: True)
pranav@PRANAVs-MacBook-Air AI ASSISTED CODING % cd /Users/Shared/AI/ ASSISTED CODING ; /usr/bin/env /usr/local/bin/python3 /Users/pranav/.vscode/extensions/ms-python.debugpy-2025.10.0-darwin-arm64/bundled/Libs/debugpy/adapter/.../debugpy/launcher 60666 -- /Users/Shared/AI/ ASSISTED CODING/A cart.py
Total after adding items: 6.75
Total after removing Banana: 4.75
Total after trying to remove Bread: 4.75
Total after adding Eggs: 7.25
pranav@PRANAVs-MacBook-Air AI ASSISTED CODING %
```

OUTPUT :



```
vscode/extensions/ms-python.debugpy-2025.10.0-darwin-arm64/bundled/libs/debugpy/adapter/../../debugpy/launcher 60666 -- /Users/Shared/AI\ AS
SISTED\ CODING\ cart.py
Total after adding items: 6.75
Total after removing Banana: 4.75
Total after trying to remove Bread: 4.75
Total after adding Eggs: 7.25
pranav@PRANAVs-MacBook-Air AI ASSISTED CODING %
```

OBSERVATIONS :

The ShoppingCart class provides basic cart functionality: adding items, removing items, and calculating the total cost.

Items are stored in a dictionary, with the item name as the key and price as the value.

Adding an item with the same name updates its price.

Removing an item that does not exist does nothing, preventing errors.

The test cases cover adding, removing, and updating items, as well as checking the total cost after each operation.

The class behaves as expected, and the output matches the expected totals, demonstrating correct implementation of all methods.

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"

Expected Output#5

- Function converts input format correctly for all test cases

PROMPT USED :

TO WRITE CODE TO CHANGE THE DATE FORMAT FROM "YYYY-MM-DD" to "DD-MM-YYYY".

Example: "2023-10-15" → "15-10-2023"

WRITE TEST CASES TO FORMAT CORRECTLY

CODE GENERATED :


```
def convert_date_format(date_str):  
    """  
    Converts date from 'YYYY-MM-DD' to 'DD-MM-YYYY' format.  
    Returns 'Invalid format' for incorrect input.  
    """  
    try:  
        parts = date_str.split('-')  
        if len(parts) == 3 and all(part.isdigit() for part in parts):  
            yyyy, mm, dd = parts  
            if len(yyyy) == 4 and len(mm) == 2 and len(dd) == 2:  
                return f"{dd}-{mm}-{yyyy}"  
            return "Invalid format"  
        except Exception:  
            return "Invalid format"  
  
# Test cases  
test_dates = [  
    "2023-10-15", # Expected: "15-10-2023"  
    "1999-01-01", # Expected: "01-01-1999"  
    "2020-12-31", # Expected: "31-12-2020"  
    "2022-07-04", # Expected: "04-07-2022"  
    "2023-5-15", # Invalid (month not 2 digits)  
    "23-10-15", # Invalid (year not 4 digits)  
    "2023/10/15", # Invalid (wrong separator)  
    "2023-10-155", # Invalid (day not 2 digits)  
    "abcd-ef-gh", # Invalid (not digits)  
    "", # Invalid (empty string)  
]  
  
for date in test_dates:  
    print(f"{date} -> {convert_date_format(date)}")
```

```
Total after adding Eggs: 7.25  
pranav@PRANAVs-MacBook-Air AI ASSISTED CODING % cd /Users/Shared/AI/ ASSISTED\ CODING ; /usr/bin/env /usr/local/bin/python3 /Users/pranav/.  
vscode/extensions/ms-python.debugpy-2025.10.0-darwin-arm64/bundled/Libs/debugpy/adapter/.../debugpy/launcher 60978 -- /Users/Shared/AI/ AS  
SISTED CODING/date.py  
2023-10-15 -> 15-10-2023  
1999-01-01 -> 01-01-1999  
2020-12-31 -> 31-12-2020  
2022-07-04 -> 04-07-2022  
2023-5-15 -> Invalid format  
23-10-15 -> Invalid format  
2023/10/15 -> Invalid format  
2023-10-155 -> Invalid format  
abcd-ef-gh -> Invalid format  
 -> Invalid format  
pranav@PRANAVs-MacBook-Air AI ASSISTED CODING %
```

OUTPUT :

```
# Test cases  
test_dates = [  
    "2023-10-15", # Expected: "15-10-2023"  
    "1999-01-01", # Expected: "01-01-1999"  
    "2020-12-31", # Expected: "31-12-2020"  
    "2022-07-04", # Expected: "04-07-2022"  
    "2023-5-15", # Invalid (month not 2 digits)  
    "23-10-15", # Invalid (year not 4 digits)  
    "2023/10/15", # Invalid (wrong separator)  
    "2023-10-155", # Invalid (day not 2 digits)  
    "abcd-ef-gh", # Invalid (not digits)  
    "", # Invalid (empty string)  
]  
  
for date in test_dates:  
    print(f"{date} -> {convert_date_format(date)}")
```

OBSERVATIONS :

- The convert_date_format function accurately converts dates from "YYYY-MM-DD" to "DD-MM-YYYY" format for valid inputs.
- The function checks for correct separator, digit-only parts, and proper length for year, month, and day.
- Invalid formats (wrong separator, incorrect part lengths, non-digit values, empty strings) are handled gracefully, returning "Invalid format".

The test cases cover valid conversions, boundary cases, and a variety of invalid inputs, demonstrating the robustness of the function.

The implementation is concise and effective for the required date format transformation