

Assignment-8.3

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Batch No : 20

Task -1:

Prompt: Email Validation using TDD

```
8.3-Assignment.py > ...
1  #TASK-1 Email Validation using TDD Scenario
2  import re
3  def validate_email(email):
4      # Regular expression for validating an Email
5      regex = r'^[a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,}$
6
7      # If the email matches the regex pattern, it's valid
8      if re.match(regex, email):
9          return True
10     else:
11         return False
12 # # Test cases
13 # print(validate_email("test@example.com")) # Should return True
14 # print(validate_email("invalid.email"))      # Should return False
15 #user have to enter the input
16 user_input = input("Enter an email address to validate: ")
17 print(validate_email(user_input))
18
```

OUTPUT :

```
PS C:\Users\temba\OneDrive\Desktop\Ai_assig_coding> & C:/Users/temba/AppData/Local/Programs
/Python/Python314/python.exe c:/Users/temba/OneDrive/Desktop/Ai_assig_coding/8.3-Assignment
.py
Enter an email address to validate: aiasssig@gmail.com
True
PS C:\Users\temba\OneDrive\Desktop\Ai_assig_coding> & C:/Users/temba/AppData/Local/Programs
/Python/Python314/python.exe c:/Users/temba/OneDrive/Desktop/Ai_assig_coding/8.3-Assignment
.py
Enter an email address to validate: aiasssig
False
```

Observation:

- This program validates email addresses based on required conditions such as presence of '@' and '.' symbols.
- It ensures that the email does not start or end with special characters and prevents multiple '@' symbols.
- The function correctly distinguishes valid and invalid email formats using conditional logic and passes all test cases successfully.

Task 2:

Prompt: Grade Assignment using Loops

```

#Task 2 Grade Assignment using Loops Scenario
# You are building an automated grading system for an online examination
# Requirements
# • AI should generate test cases for assign_grade(score) where:
#   90-100 → A
#   80-89 → B
#   70-79 → C
#   60-69 → D
#   Below 60 → F
def assign_grade(score):
    if 90 <= score <= 100:
        return 'A'
    elif 80 <= score < 90:
        return 'B'
    elif 70 <= score < 80:
        return 'C'
    elif 60 <= score < 70:
        return 'D'
    else:
        return 'F'
#user have to enter the input
score_input = int(input("Enter the score to assign a grade: "))
print(assign_grade(score_input))

```

Output:

```

● PS C:\Users\temba\OneDrive\Desktop\Ai_assig_coding> & C:/Users/temba/AppData/Local/Programs
/Python/Python314/python.exe c:/Users/temba/OneDrive/Desktop/Ai_assig_coding/8.3-Assignment
.py
c:\Users\temba\OneDrive\Desktop\Ai_assig_coding\8.3-Assignment.py:5: SyntaxWarning: "\." is
an invalid escape sequence. Such sequences will not work in the future. Did you mean "\\."?
? A raw string is also an option.
    regex = r'^[a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,}$'
    Enter the score to assign a grade: 97
    A
○ PS C:\Users\temba\OneDrive\Desktop\Ai_assig_coding>

```

Observation:

- This program assigns grades based on score ranges using conditional statements and loops for testing multiple cases.
- It correctly handles boundary values such as 60, 70, 80, and 90 and assigns appropriate grades.
- Invalid inputs like negative numbers, values above 100, or non-numeric inputs are handled properly to avoid errors.

Task 3:

Prompt : Sentence Palindrome Checker

```

#Task 3 Sentence Palindrome Checker
# Scenario
# You are developing a text-processing utility to analyze sentences.
# Requirements
# • AI should generate test cases for is_sentence_palindrome(sentence)
# • Ignore case, spaces, and punctuation
# • Test both palindromic and non-palindromic sentences
# • Example:
# - "A man a plan a canal Panama" → True
import re
def is_sentence_palindrome(sentence):
    # Remove spaces, punctuation, and convert to lowercase
    cleaned_sentence = re.sub(r'[^\w\s]', '', sentence).lower()

    # Check if the cleaned sentence is equal to its reverse
    return cleaned_sentence == cleaned_sentence[::-1]
#user have to enter the input
sentence_input = input("Enter a sentence to check if it's a palindrome:")
print(is_sentence_palindrome(sentence_input))

```

Output :

```

PS C:\Users\temba\OneDrive\Desktop\Ai_assig_coding> & C:/Users/temba/AppData/Local/Programs/Python/Python314/python.exe "c:/Users/temba/OneDrive/Desktop/Ai_assig_coding/#Task 3 Sentence Palindrome Checker.py"
Enter a sentence to check if it's a palindrome: A man a plan a canal Panama
True

```

Observation:

- This program checks whether a sentence is a palindrome by ignoring case, spaces, and punctuation marks.
- It preprocesses the input string to compare only meaningful characters.
- The function accurately returns True for palindromes and False for non-palindromes using clear string manipulation logic.

Task 4 :

Prompt : Shopping Cart Class

```

71 # Task 4: ShoppingCart Class Scenario
72 # You are designing a basic shopping cart module for an e-commerce application.
73 # Requirements
74 # • AI should generate test cases for the ShoppingCart class
75 # • Class must include the following methods:
76 # - add_item(name, price)
77 # - remove_item(name)
78 # - total_cost()
79 # • Validate correct addition, removal, and cost calculation
80 # • Handle empty cart scenarios
81 class ShoppingCart:
82     def __init__(self):
83         self.items = {}
84
85     def add_item(self, name, price):
86         self.items[name] = price
87
88     def remove_item(self, name):
89         if name in self.items:
90             del self.items[name]
91
92     def total_cost(self):
93         return sum(self.items.values())
94 #user have to enter the input
95 cart = ShoppingCart()
96 while True:
97     action = input("Enter action (add/remove/total/exit): ").lower()
98     if action == 'add':
99         name = input("Enter item name: ")
100        price = float(input("Enter item price: "))
101        cart.add_item(name, price)
102    elif action == 'remove':
103        name = input("Enter item name to remove: ")
104        cart.remove_item(name)
105    elif action == 'total':
106        print(f"Total cost: {cart.total_cost()}")
107    elif action == 'exit':
108        break
109    else:
110        print("Invalid action. Please try again.")

```

Output :

```

well if needed.
Enter action (add/remove/total/exit): add
Enter item name: pen
Enter item price: 30
Enter action (add/remove/total/exit): add
Enter item name: pencil
Enter item price: 5
Enter action (add/remove/total/exit): total
Total cost: 35.0
Enter action (add/remove/total/exit): exit
PS C:\Users\temba\OneDrive\Desktop\Ai_assig_coding> █

```

Observation:

- This program implements a ShoppingCart class using object-oriented programming concepts.
- It allows adding, removing items, and calculating the total cost using defined class methods.
- The system correctly handles empty cart conditions and ensures accurate cost calculation.

Task 5 :

Prompt : Date Format Conversion

```

# Task 5: Date Format Conversion Scenario
# You are creating a utility function to convert date formats for reports.
# Requirements
# • AI should generate test cases for convert_date_format(date_str)
# • Input format must be "YYYY-MM-DD"
# • Output format must be "DD-MM-YYYY"
# • Example:
# - "2023-10-15" → "15-10-2023"
def convert_date_format(date_str):
    try:
        year, month, day = date_str.split('-')
        return f"{day}-{month}-{year}"
    except ValueError:
        return "Invalid date format. Please use YYYY-MM-DD."
#user have to enter the input
date_input = input("Enter a date in YYYY-MM-DD format to convert: ")
print(convert_date_format(date_input))

```

Output :

```

PS C:\Users\temba\OneDrive\Desktop\Ai_assig_coding> & C:/Users/temba/AppData/Local/Programs/Python/Python314/python.exe c:/Users/temba/OneDrive/Desktop/Ai_assig_coding/8.3-Assigment.py
s will not work in the future. Did you mean "\\"? A raw string is also an option.
    regex = r'^(a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,})$'
c:/Users\temba\OneDrive\Desktop\Ai_assig_coding\8.3-Assigment.py:56: SyntaxWarning: "\." is an invalid escape sequence. Such sequences will not work in the future. Did you mean "\\\."? A raw string is also an option.
    #regex = r'^[a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,}$' fix this regex for email validation in task 1 and use it in task 3 as well if needed.
Enter a date in YYYY-MM-DD format to convert: 2026-02-11
11-02-2026
PS C:\Users\temba\OneDrive\Desktop\Ai_assig_coding>

```

Observation:

- This program converts date format from "YYYY-MM-DD" to "DD-MM-YYYY" using string manipulation techniques.
- It validates the input format before performing the conversion to ensure correctness.
- The function successfully produces accurate formatted dates and passes all test cases.