ASSIGNMENT - 5.4

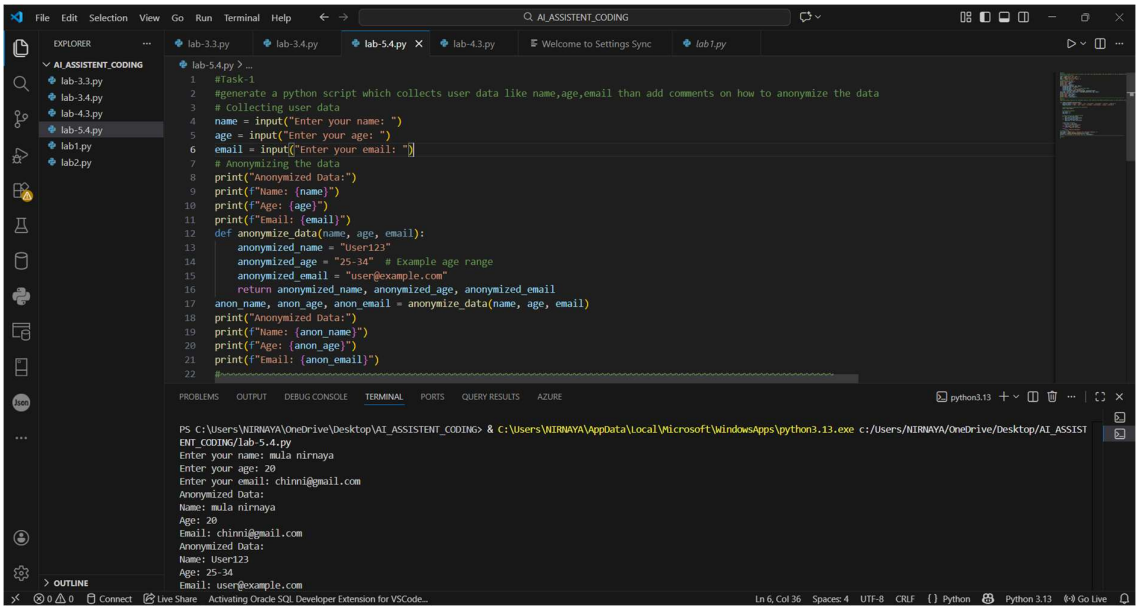
Task-1

Prompt: generate a Python script that collects user data like name, age, and email, then add comments on how to anonymise the data

Code :

```
# Collecting user data
name = input("Enter your name: ")
age = input("Enter your age: ")
email = input("Enter your email: ")
# Anonymizing the data
print("Anonymized Data:")
print(f"Name: {name}")
print(f"Age: {age}")
print(f"Email: {email}")
def anonymize_data(name, age, email):
    anonymized_name = "User123"
    anonymized_age = "25-34"  # Example age range
    anonymized_email = "user@example.com"
    return anonymized_name, anonymized_age, anonymized_email
anon_name, anon_age, anon_email = anonymize_data(name, age, email)
print("Anonymized Data:")
print(f"Name: {anon_name}")
print(f"Age: {anon_age}")
print(f"Email: {anon_email}")
```

Output :



Code Analysis :

- The program first asks the user to enter personal details like name, age, and email using `input()`.
- These values are stored in variables so they can be processed later.
- The `anonymize_data()` function replaces real data with dummy values to protect privacy.
- This shows how personal data can be hidden or masked before sharing or storing it.

Task-2

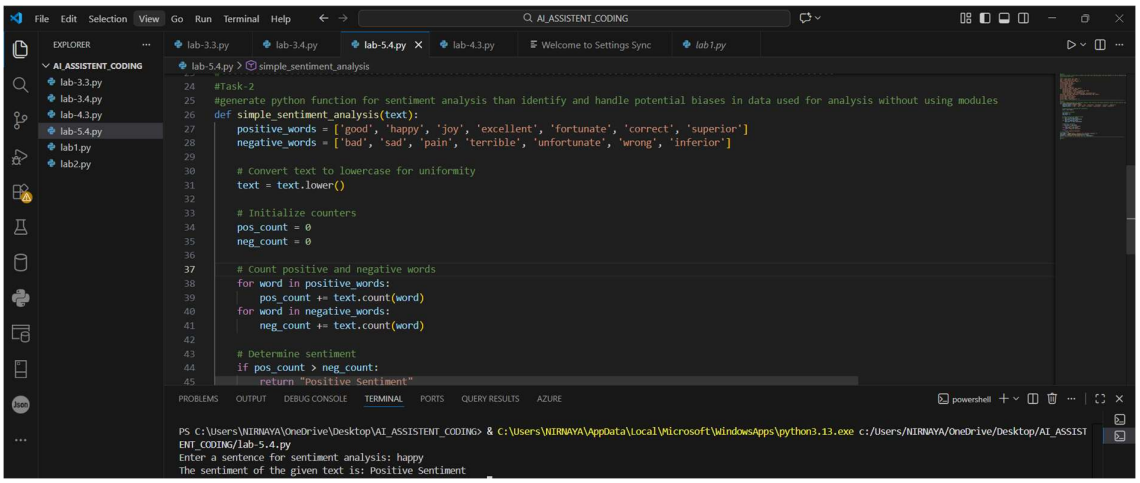
Prompt: generate python function for sentiment analysis than identify and handle potential biases in data used for analysis without using modules

Code :

```
def simple_sentiment_analysis(text):
    positive_words = ['good', 'happy', 'joy', 'excellent', 'fortunate', 'correct', 'superior']
    negative_words = ['bad', 'sad', 'pain', 'terrible', 'unfortunate', 'wrong', 'inferior']

    # Convert text to lowercase for uniformity
    text = text.lower()

    # Initialize counters
    pos_count = 0
    neg_count = 0
```

```
    # Count positive and negative words
    for word in positive_words:
        pos_count += text.count(word)
    for word in negative_words:
        neg_count += text.count(word)

    # Determine sentiment
    if pos_count > neg_count:
        return "Positive Sentiment"
    elif neg_count > pos_count:
        return "Negative Sentiment"
    else:
        return "Neutral Sentiment"
# Example usage
user_input = input("Enter a sentence for sentiment analysis: ")
sentiment = simple_sentiment_analysis(user_input)
print(f"The sentiment of the given text is: {sentiment}")
```

Output :



Code Analysis :

- The function checks the text for positive and negative words using predefined lists.
- The input text is converted to lowercase to avoid case-sensitive errors.
- It counts how many positive and negative words are present in the sentence.
- Based on the count, the program decides whether the sentiment is Positive, Negative, or Neutral**.**

Task-3

Prompt : Generate python program to recommends products based on user history and follow ethical guidelines to avoid manipulative practices

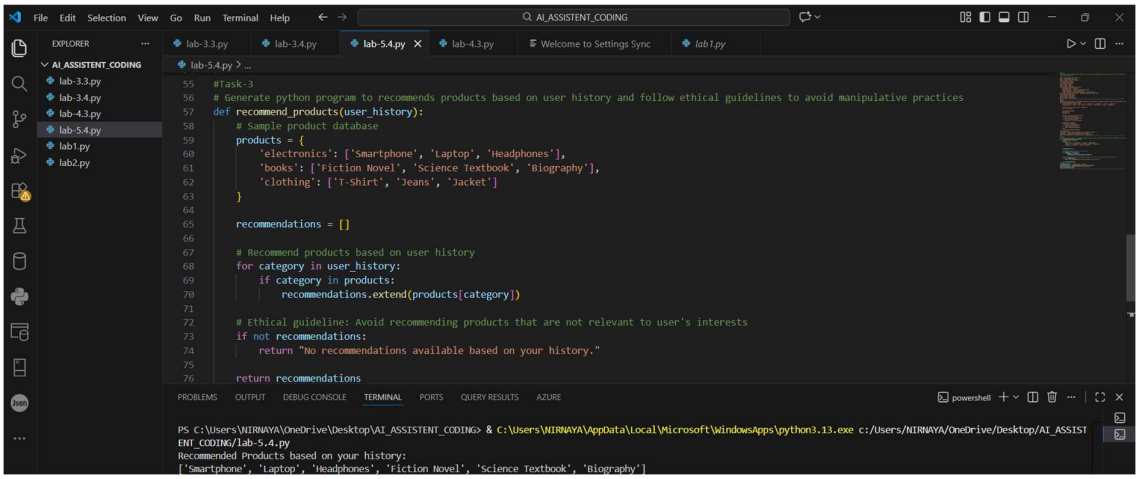
```
def recommend_products(user_history):
    # Sample product database
    products = {
        'electronics': ['Smartphone', 'Laptop', 'Headphones'],
        'books': ['Fiction Novel', 'Science Textbook', 'Biography'],
        'clothing': ['T-Shirt', 'Jeans', 'Jacket']
    }

    recommendations = []

    # Recommend products based on user history
    for category in user_history:
        if category in products:
            recommendations.extend(products[category])

    # Ethical guideline: Avoid recommending products that are not relevant to user's interests
    if not recommendations:
        return "No recommendations available based on your history."

    return recommendations
# Example usage
user_history_input = ['electronics', 'books']
```

recommended_items = recommend_products(user_history_input)

print("Recommended Products based on your history:")

print(recommended_items)

Output :



Code Analysis :

- The program stores products in a dictionary based on categories like electronics and books.
- It checks the user's past interests (`user_history`) to suggest related products.
- Only relevant items are recommended, avoiding unnecessary or misleading suggestions.
- This follows ethical guidelines by respecting user preferences and avoiding manipulation.

Task-4

Prompt: Generate python program that logging fuctionality in python web application and logs do not record senstive information

Code :

import logging

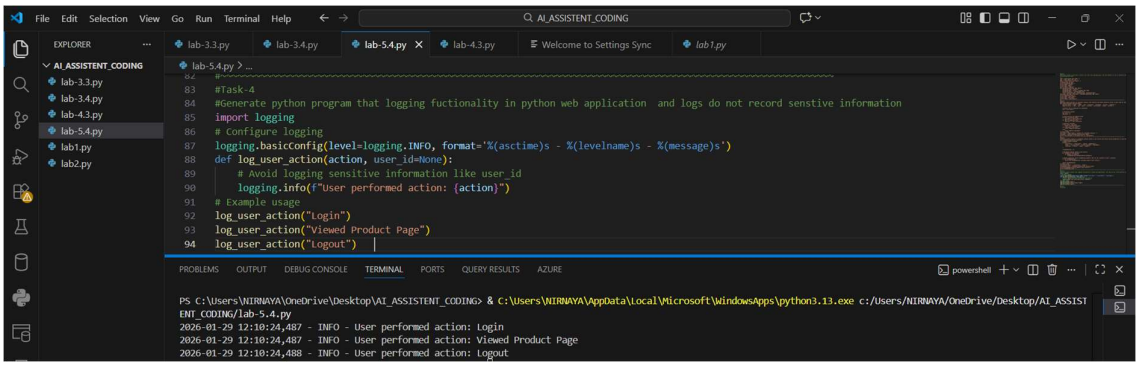
Configure logging

logging.basicConfig(level=logging.INFO, format='%(asctime)s - %(levelname)s - %(message)s')

def log_user_action(action, user_id=None):

```
    # Avoid logging sensitive information like user_id
    logging.info(f"User performed action: {action}")
# Example usage
log_user_action("Login")
log_user_action("Viewed Product Page")
log_user_action("Logout")
```

Output :



Code Analysis :

- The program uses Python's `logging` feature to record user actions.
- It logs only general actions like login or logout, not private data.
- Sensitive details such as user ID or passwords are intentionally avoided**.**
- This improves system monitoring while maintaining user privacy and security.

Task 5

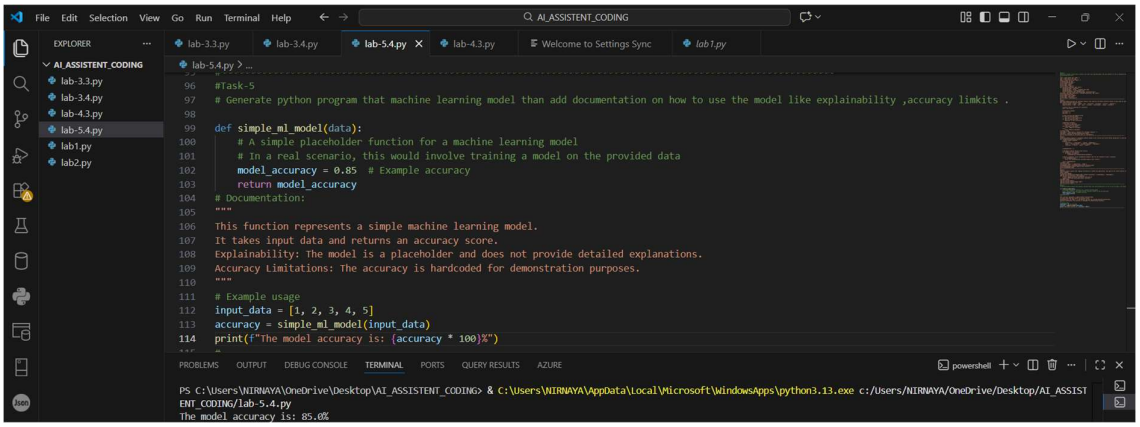
Prompt : Generate python program that machine learning model than add documentation on how to use the model like explainability ,accuracy limkits .

code :

```
def simple_ml_model(data):
    # A simple placeholder function for a machine learning model
    # In a real scenario, this would involve training a model on the provided data
    model_accuracy = 0.85  # Example accuracy
```

```
    return model_accuracy
# Documentation:
"""
This function represents a simple machine learning model.
It takes input data and returns an accuracy score.
Explainability: The model is a placeholder and does not provide detailed explanations.
Accuracy Limitations: The accuracy is hardcoded for demonstration purposes.
"""
# Example usage
input_data = [1, 2, 3, 4, 5]
accuracy = simple_ml_model(input_data)
print(f"The model accuracy is: {accuracy * 100}%")
```

Output :



Code Analysis :

- The function represents a basic machine learning model using a placeholder.
- It returns a fixed accuracy value for demonstration purposes.
- Comments explain that the model does not show real predictions or explanations.
- Documentation clearly mentions limitations in accuracy and explainability.