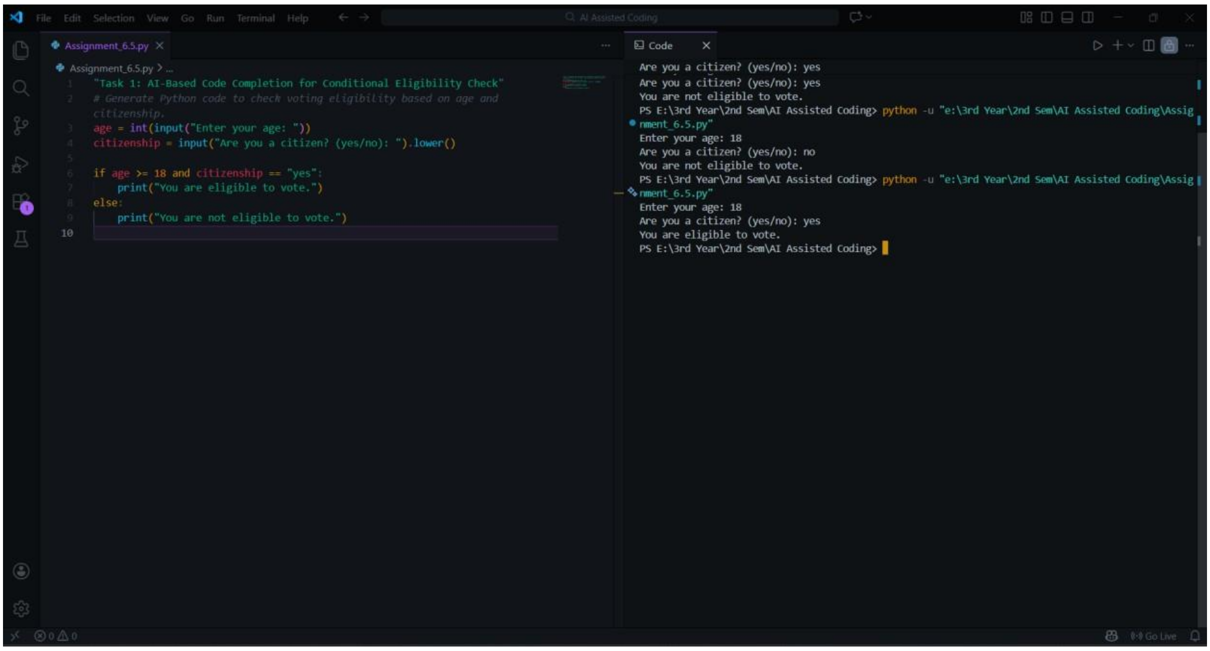
Assignment 6.5

2303A51528

Task 1: AI-Based Code Completion for Conditional Eligibility Check Prompt:

Generate Python code to check voting eligibility based on age and citizenship.

Code & Output:



```python
"Task 1: AI-Based Code Completion for Conditional Eligibility Check"
# Generate Python code to check voting eligibility based on age and citizenship.
age = int(input("Enter your age: "))
citizenship = input("Are you a citizen? (yes/no): ").lower()

if age >= 18 and citizenship == "yes":
    print("You are eligible to vote.")
else:
    print("You are not eligible to vote.")
```

```
Are you a citizen? (yes/no): yes
Are you a citizen? (yes/no): yes
You are not eligible to vote.
PS E:\3rd Year\2nd Sem\AI Assisted Coding> python -u "e:\3rd Year\2nd Sem\AI Assisted Coding\Assignment_6.5.py"
Enter your age: 18
Are you a citizen? (yes/no): no
You are not eligible to vote.
PS E:\3rd Year\2nd Sem\AI Assisted Coding> python -u "e:\3rd Year\2nd Sem\AI Assisted Coding\Assignment_6.5.py"
Enter your age: 18
Are you a citizen? (yes/no): yes
You are eligible to vote.
PS E:\3rd Year\2nd Sem\AI Assisted Coding>
```

Explanation:

The AI-generated code uses conditional statements to check voting eligibility. It verifies whether the age is 18 or above and whether the user is a citizen. Both conditions must be true for eligibility. This demonstrates correct use of conditional logic generated through AIbased code completion.

Task 2: AI-Based Code Completion for Loop-Based String Processing

Prompt:

Generate Python code to count vowels and consonants in a string using a loop.

Code & Output:

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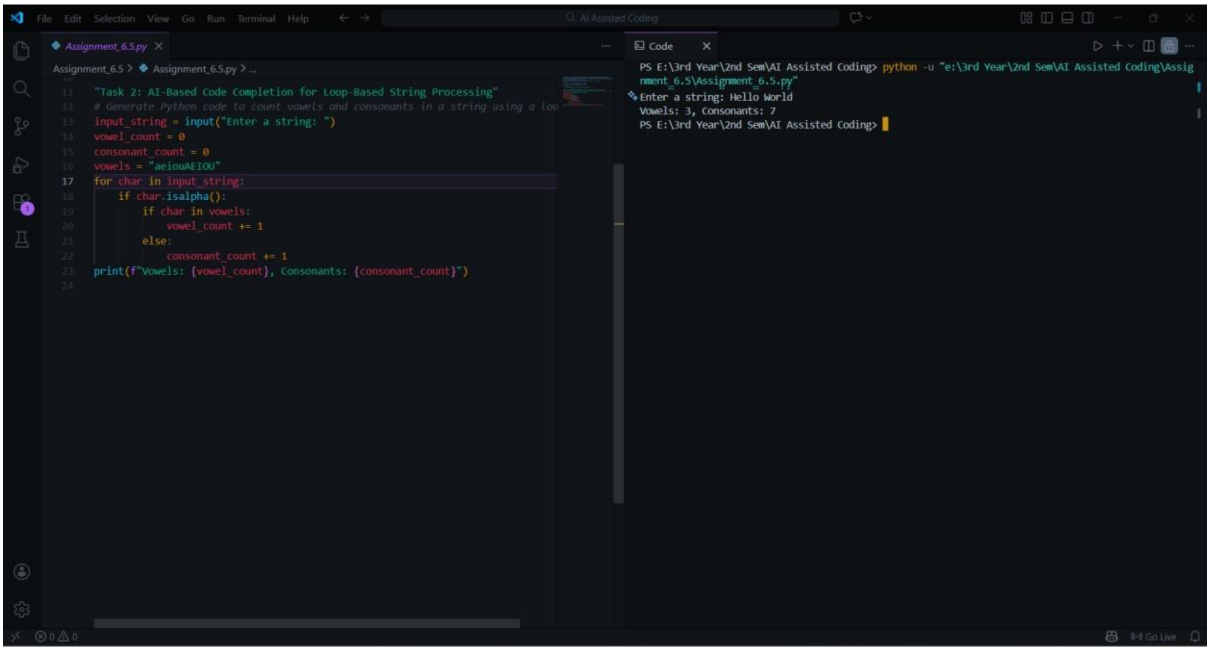

```python
"Task 2: AI-Based Code Completion for Loop-Based String Processing"
# Generate Python code to count vowels and consonants in a string using a loo
input_string = input("Enter a string: ")
vowel_count = 0
consonant_count = 0
vowels = "aeiouAEIOU"
for char in input_string:
    if char.isalpha():
        if char in vowels:
            vowel_count += 1
        else:
            consonant_count += 1
print(f"Vowels: {vowel_count}, Consonants: {consonant_count}")
```

```
PS E:\3rd Year\2nd Sem\AI Assisted Coding> python -u "e:\3rd Year\2nd Sem\AI Assisted Coding\Assig
nment_6.5\Assignment_6.5.py"
Enter a string: Hello World
Vowels: 3, Consonants: 7
PS E:\3rd Year\2nd Sem\AI Assisted Coding>
```

Explanation:

The AI-generated code processes the input string using a loop. Each character is checked to determine whether it is a vowel or a consonant. Alphabetic characters are counted correctly, while non-letter characters are ignored. The output verifies that the logic works as expected.

Task 3: AI-Assisted Code Completion Reflection Task Prompt:

Generate a Python program for a library management system using classes, loops, and conditional statements.

Code & Output:

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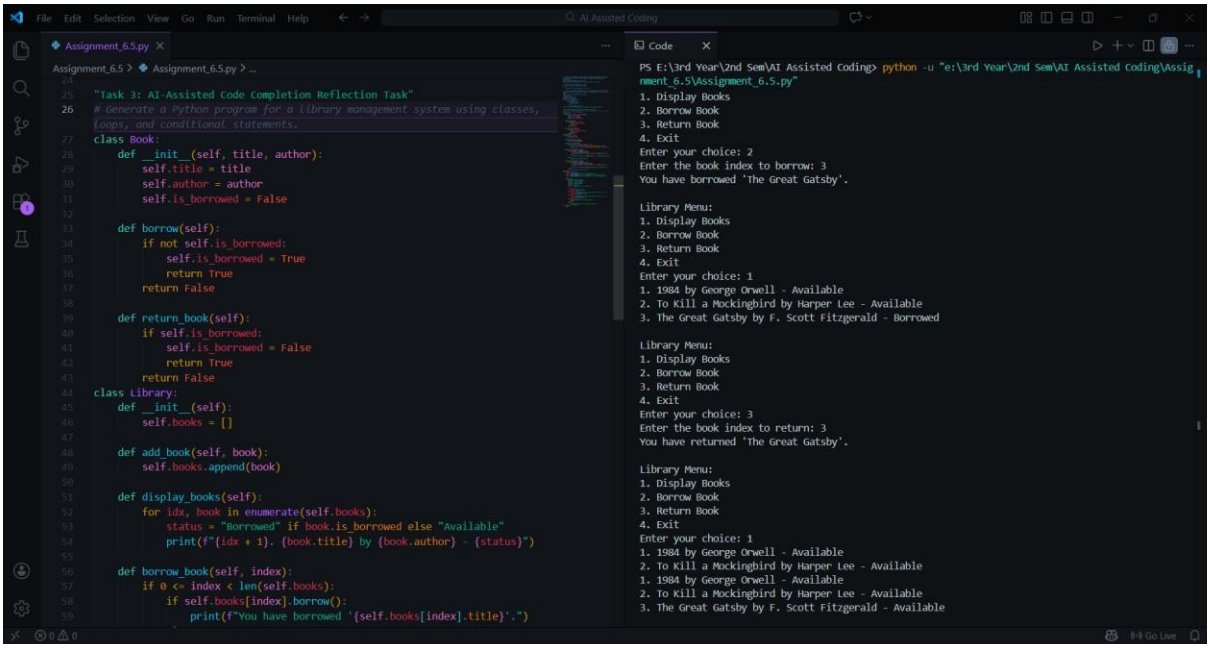
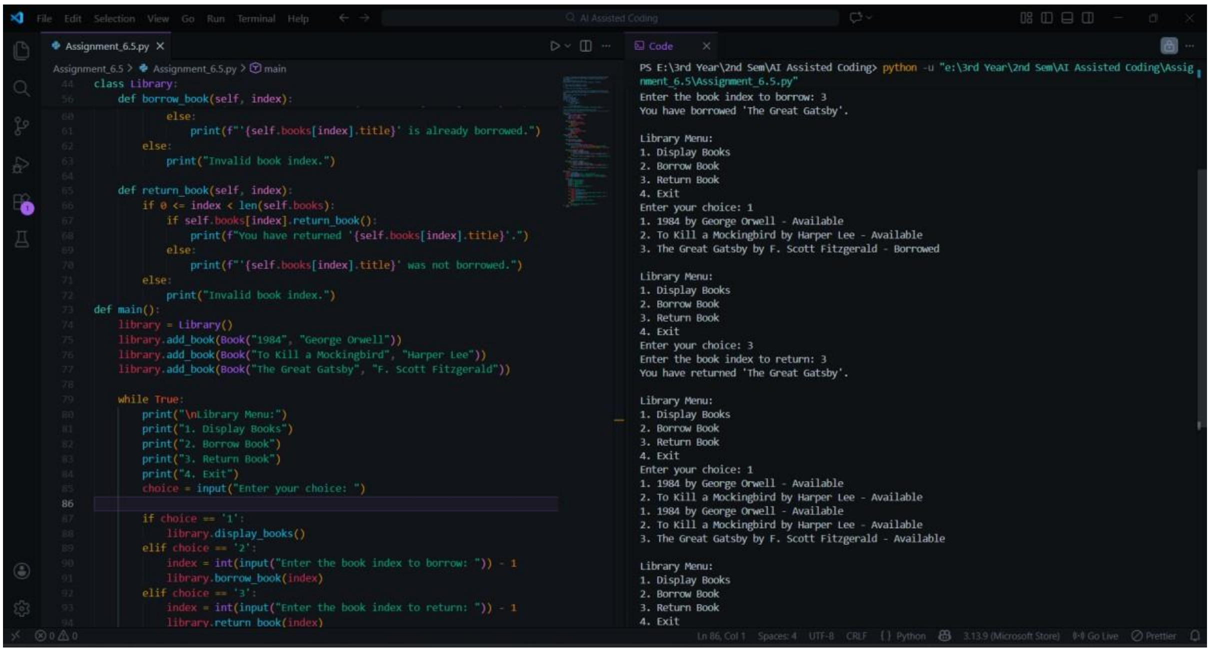


```python
"Task 3: AI-Assisted Code Completion Reflection Task"
# Generate a Python program for a library management system using classes, loops, and conditional statements.
class Book:
    def __init__(self, title, author):
        self.title = title
        self.author = author
        self.is_borrowed = False

    def borrow(self):
        if not self.is_borrowed:
            self.is_borrowed = True
            return True
        return False

    def return_book(self):
        if self.is_borrowed:
            self.is_borrowed = False
            return True
        return False
class Library:
    def __init__(self):
        self.books = []

    def add_book(self, book):
        self.books.append(book)

    def display_books(self):
        for idx, book in enumerate(self.books):
            status = "Borrowed" if book.is_borrowed else "Available"
            print(f"{idx + 1}. {book.title} by {book.author} - {status}")

    def borrow_book(self, index):
        if 0 <= index < len(self.books):
            if self.books[index].borrow():
                print(f"You have borrowed '{self.books[index].title}'.")
```

```
PS E:\3rd Year\2nd Sem\AI Assisted Coding> python -u "e:\3rd Year\2nd Sem\AI Assisted Coding\Assignment_6.5\Assignment_6.5.py"
1. Display Books
2. Borrow Book
3. Return Book
4. Exit
Enter your choice: 2
Enter the book index to borrow: 3
You have borrowed 'The Great Gatsby'.

Library Menu:
1. Display Books
2. Borrow Book
3. Return Book
4. Exit
Enter your choice: 1
1. 1984 by George Orwell - Available
2. To Kill a Mockingbird by Harper Lee - Available
3. The Great Gatsby by F. Scott Fitzgerald - Borrowed

Library Menu:
1. Display Books
2. Borrow Book
3. Return Book
4. Exit
Enter your choice: 3
Enter the book index to return: 3
You have returned 'The Great Gatsby'.

Library Menu:
1. Display Books
2. Borrow Book
3. Return Book
4. Exit
Enter your choice: 1
1. 1984 by George Orwell - Available
2. To Kill a Mockingbird by Harper Lee - Available
1. 1984 by George Orwell - Available
2. To Kill a Mockingbird by Harper Lee - Available
3. The Great Gatsby by F. Scott Fitzgerald - Available
```



```python
class Library:
    def borrow_book(self, index):
            else:
                print(f"'{self.books[index].title}' is already borrowed.")
        else:
            print("Invalid book index.")

    def return_book(self, index):
        if 0 <= index < len(self.books):
            if self.books[index].return_book():
                print(f"You have returned '{self.books[index].title}'.")
            else:
                print(f"'{self.books[index].title}' was not borrowed.")
        else:
            print("Invalid book index.")
def main():
    library = Library()
    library.add_book(Book("1984", "George Orwell"))
    library.add_book(Book("To Kill a Mockingbird", "Harper Lee"))
    library.add_book(Book("The Great Gatsby", "F. Scott Fitzgerald"))

    while True:
        print("\nLibrary Menu:")
        print("1. Display Books")
        print("2. Borrow Book")
        print("3. Return Book")
        print("4. Exit")
        choice = input("Enter your choice: ")

        if choice == '1':
            library.display_books()
        elif choice == '2':
            index = int(input("Enter the book index to borrow: ")) - 1
            library.borrow_book(index)
        elif choice == '3':
            index = int(input("Enter the book index to return: ")) - 1
            library.return_book(index)
```

```
PS E:\3rd Year\2nd Sem\AI Assisted Coding> python -u "e:\3rd Year\2nd Sem\AI Assisted Coding\Assignment_6.5\Assignment_6.5.py"
Enter the book index to borrow: 3
You have borrowed 'The Great Gatsby'.

Library Menu:
1. Display Books
2. Borrow Book
3. Return Book
4. Exit
Enter your choice: 1
1. 1984 by George Orwell - Available
2. To Kill a Mockingbird by Harper Lee - Available
3. The Great Gatsby by F. Scott Fitzgerald - Borrowed

Library Menu:
1. Display Books
2. Borrow Book
3. Return Book
4. Exit
Enter your choice: 3
Enter the book index to return: 3
You have returned 'The Great Gatsby'.

Library Menu:
1. Display Books
2. Borrow Book
3. Return Book
4. Exit
Enter your choice: 1
1. 1984 by George Orwell - Available
2. To Kill a Mockingbird by Harper Lee - Available
1. 1984 by George Orwell - Available
2. To Kill a Mockingbird by Harper Lee - Available
3. The Great Gatsby by F. Scott Fitzgerald - Available

Library Menu:
1. Display Books
2. Borrow Book
3. Return Book
4. Exit
```

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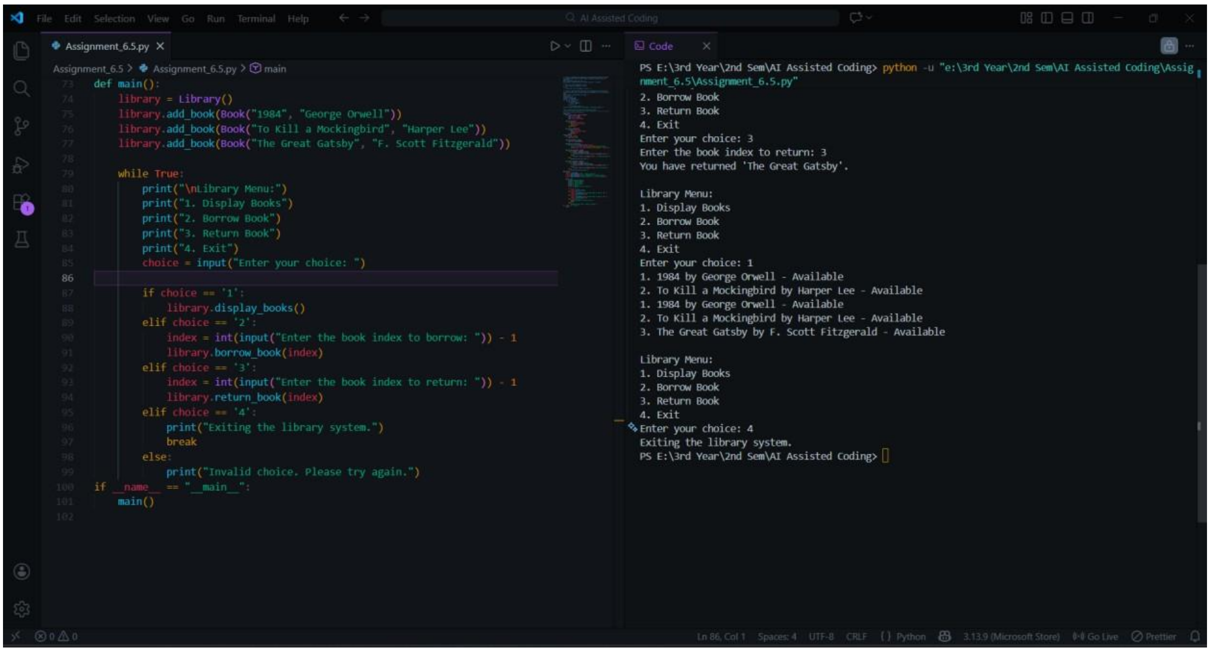

File Edit Selection View Go Run Terminal Help
AI Assisted Coding
Assignment_6.5.py
Assignment_6.5 > Assignment_6.5.py > main
Code
Ln 86, Col 1 Spaces: 4 UTF-8 CRLF {} Python 3.13.9 (Microsoft Store) Go Live Prettier

```python
def main():
    library = Library()
    library.add_book(Book("1984", "George Orwell"))
    library.add_book(Book("To Kill a Mockingbird", "Harper Lee"))
    library.add_book(Book("The Great Gatsby", "F. Scott Fitzgerald"))

    while True:
        print("\nLibrary Menu:")
        print("1. Display Books")
        print("2. Borrow Book")
        print("3. Return Book")
        print("4. Exit")
        choice = input("Enter your choice: ")

        if choice == '1':
            library.display_books()
        elif choice == '2':
            index = int(input("Enter the book index to borrow: ")) - 1
            library.borrow_book(index)
        elif choice == '3':
            index = int(input("Enter the book index to return: ")) - 1
            library.return_book(index)
        elif choice == '4':
            print("Exiting the library system.")
            break
        else:
            print("Invalid choice. Please try again.")
if __name__ == "__main__":
    main()
```

```
PS E:\3rd Year\2nd Sem\AI Assisted Coding> python -u "e:\3rd Year\2nd Sem\AI Assisted Coding\Assignment_6.5\Assignment_6.5.py"
2. Borrow Book
3. Return Book
4. Exit
Enter your choice: 3
Enter the book index to return: 3
You have returned 'The Great Gatsby'.

Library Menu:
1. Display Books
2. Borrow Book
3. Return Book
4. Exit
Enter your choice: 1
1. 1984 by George Orwell - Available
2. To Kill a Mockingbird by Harper Lee - Available
1. 1984 by George Orwell - Available
2. To Kill a Mockingbird by Harper Lee - Available
3. The Great Gatsby by F. Scott Fitzgerald - Available

Library Menu:
1. Display Books
2. Borrow Book
3. Return Book
4. Exit
Enter your choice: 4
Exiting the library system.
PS E:\3rd Year\2nd Sem\AI Assisted Coding>
```

Explanation:

The AI-generated program uses a class to represent a library and includes loops and conditional statements for menu-driven interaction. The loop allows continuous user input, and conditionals control program flow. The program correctly demonstrates AI-assisted use of object-oriented programming concepts.

Reflection on AI-Assisted Coding:

The AI tool generated a complete and functional program quickly. While the logic is correct, the code can be further improved with input validation and advanced features. This task shows that AI is useful for speeding up development but still requires human review and optimization.

Task 4: AI-Assisted Code Completion for Class-Based Attendance System

Prompt:

Generate a Python class to mark and display student attendance using loops.

Code & Output:

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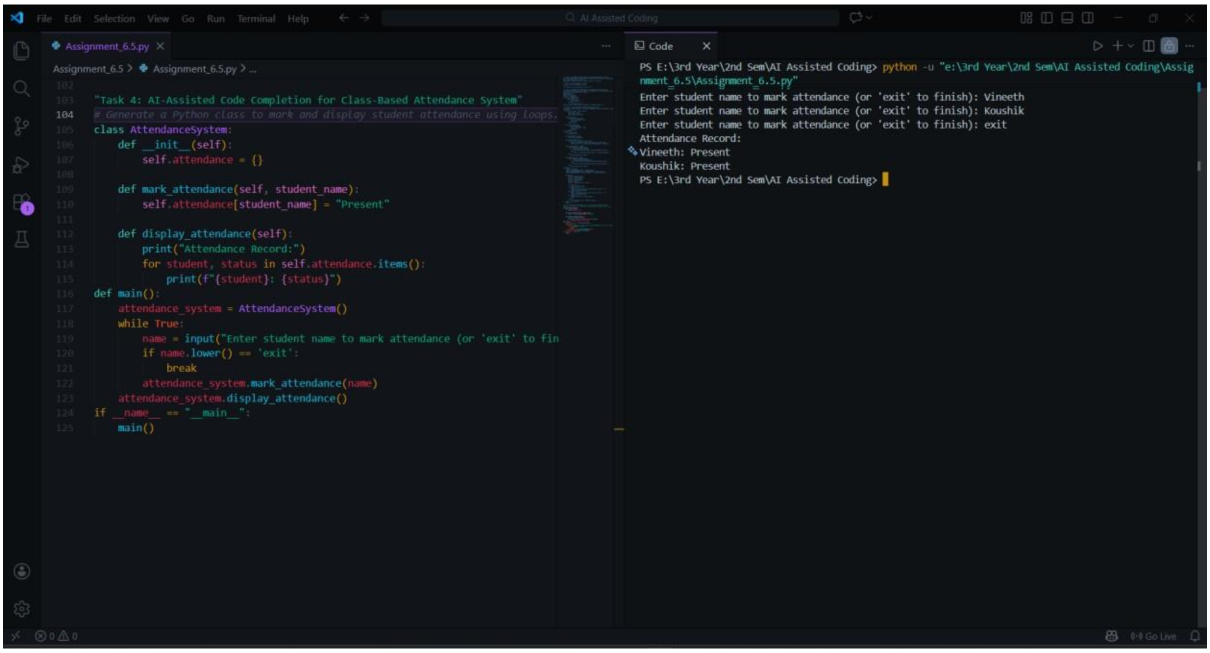

File Edit Selection View Go Run Terminal Help
AI Assisted Coding
Assignment_6.5.py
Assignment_6.5 > Assignment_6.5.py > ...
Code

```python
"Task 4: AI-Assisted Code Completion for Class-Based Attendance System"
# Generate a Python class to mark and display student attendance using loops.
class AttendanceSystem:
    def __init__(self):
        self.attendance = {}

    def mark_attendance(self, student_name):
        self.attendance[student_name] = "Present"

    def display_attendance(self):
        print("Attendance Record:")
        for student, status in self.attendance.items():
            print(f"{student}: {status}")
def main():
    attendance_system = AttendanceSystem()
    while True:
        name = input("Enter student name to mark attendance (or 'exit' to fin
        if name.lower() == 'exit':
            break
        attendance_system.mark_attendance(name)
    attendance_system.display_attendance()
if __name__ == "__main__":
    main()
```

```
PS E:\3rd Year\2nd Sem\AI Assisted Coding> python -u "e:\3rd Year\2nd Sem\AI Assisted Coding\Assig
nment_6.5\Assignment_6.5.py"
Enter student name to mark attendance (or 'exit' to finish): Vineeth
Enter student name to mark attendance (or 'exit' to finish): Koushik
Enter student name to mark attendance (or 'exit' to finish): exit
Attendance Record:
Vineeth: Present
Koushik: Present
PS E:\3rd Year\2nd Sem\AI Assisted Coding>
```

Explanation:

The AI-generated attendance system uses a class to store attendance data. A loop is used to take multiple student entries, and another loop displays the attendance records. The code works correctly and demonstrates class-based AI code completion.

Task 5: AI-Based Code Completion for Conditional Menu Navigation

Prompt:

Generate a Python program using loops and conditionals to simulate an ATM menu.

Code & Output:

Assignment 6.5

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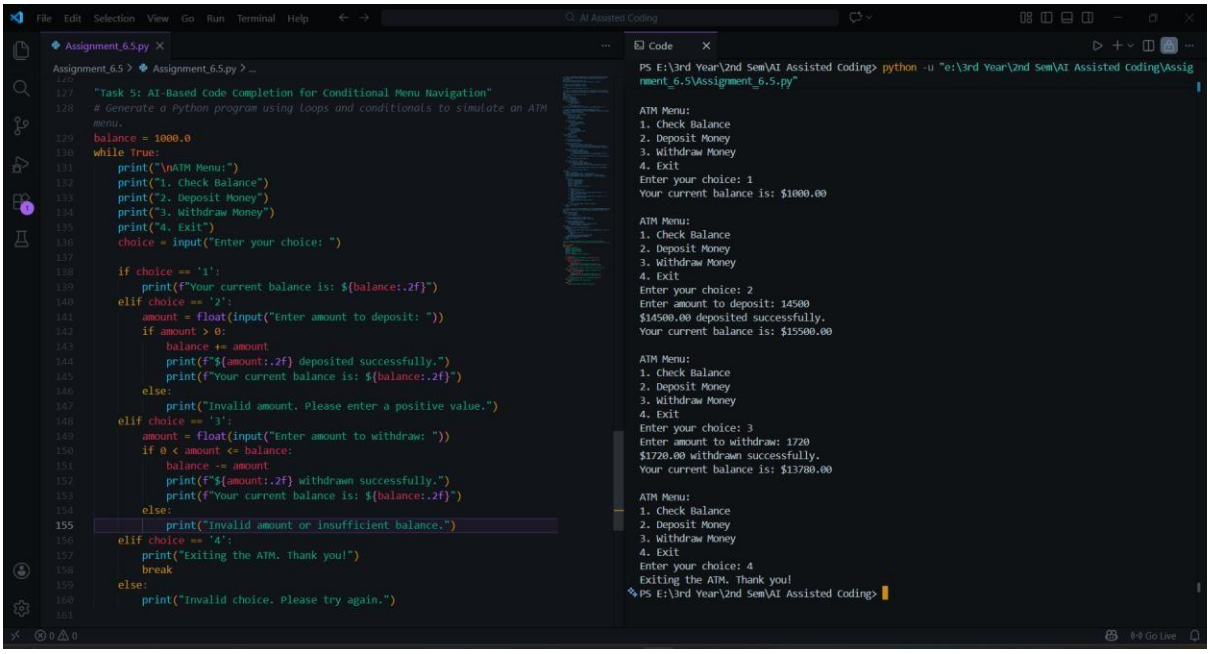

File Edit Selection View Go Run Terminal Help
AI Assisted Coding
Assignment_6.5.py
Assignment_6.5 > Assignment_6.5.py > ...
Code
Go Live

```python
"Task 5: AI-Based Code Completion for Conditional Menu Navigation"
# Generate a Python program using loops and conditionals to simulate an ATM menu.
balance = 1000.0
while True:
    print("\nATM Menu:")
    print("1. Check Balance")
    print("2. Deposit Money")
    print("3. Withdraw Money")
    print("4. Exit")
    choice = input("Enter your choice: ")

    if choice == '1':
        print(f"Your current balance is: ${balance:.2f}")
    elif choice == '2':
        amount = float(input("Enter amount to deposit: "))
        if amount > 0:
            balance += amount
            print(f"${amount:.2f} deposited successfully.")
            print(f"Your current balance is: ${balance:.2f}")
        else:
            print("Invalid amount. Please enter a positive value.")
    elif choice == '3':
        amount = float(input("Enter amount to withdraw: "))
        if 0 < amount <= balance:
            balance -= amount
            print(f"${amount:.2f} withdrawn successfully.")
            print(f"Your current balance is: ${balance:.2f}")
        else:
            print("Invalid amount or insufficient balance.")
    elif choice == '4':
        print("Exiting the ATM. Thank you!")
        break
    else:
        print("Invalid choice. Please try again.")
```

```
PS E:\3rd Year\2nd Sem\AI Assisted Coding> python -u "e:\3rd Year\2nd Sem\AI Assisted Coding\Assignment_6.5\Assignment_6.5.py"

ATM Menu:
1. Check Balance
2. Deposit Money
3. Withdraw Money
4. Exit
Enter your choice: 1
Your current balance is: $1000.00

ATM Menu:
1. Check Balance
2. Deposit Money
3. Withdraw Money
4. Exit
Enter your choice: 2
Enter amount to deposit: 14500
$14500.00 deposited successfully.
Your current balance is: $15500.00

ATM Menu:
1. Check Balance
2. Deposit Money
3. Withdraw Money
4. Exit
Enter your choice: 3
Enter amount to withdraw: 1720
$1720.00 withdrawn successfully.
Your current balance is: $13780.00

ATM Menu:
1. Check Balance
2. Deposit Money
3. Withdraw Money
4. Exit
Enter your choice: 4
Exiting the ATM. Thank you!
PS E:\3rd Year\2nd Sem\AI Assisted Coding>
```

Explanation:

The AI-generated ATM program uses a loop to display the menu repeatedly and conditional statements to handle user choices. The logic correctly updates the balance and prevents invalid withdrawals. This task demonstrates effective AI-based code completion for menudriven programs.

Final Conclusion:

This experiment shows how AI-based code completion tools can generate useful Python code involving classes, loops, and conditionals. While AI speeds up development, developers must still review logic, handle edge cases, and ensure ethical and responsible use of AIgenerated code.