ASSIGNMENT- 06.3

Name: Thatikonda Sasya

HT.No: 2303A51346

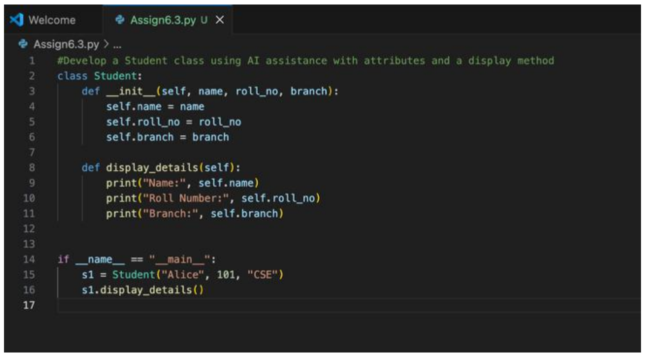
Batch: 20

Task 1: Classes – Student Class

Develop a Student class using AI assistance with attributes and a display method

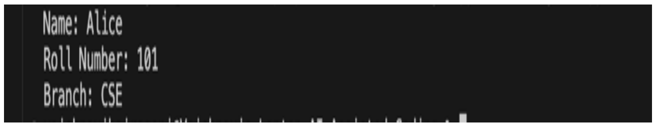
.**Prompt: #Generate a Python Student class with name, roll number, and branch. Include a method to display student details..**

Code:



```python
#Develop a Student class using AI assistance with attributes and a display method
class Student:
    def __init__(self, name, roll_no, branch):
        self.name = name
        self.roll_no = roll_no
        self.branch = branch

    def display_details(self):
        print("Name:", self.name)
        print("Roll Number:", self.roll_no)
        print("Branch:", self.branch)


if __name__ == "__main__":
    s1 = Student("Alice", 101, "CSE")
    s1.display_details()

```

Result:



```
Name: Alice
Roll Number: 101
Branch: CSE
```

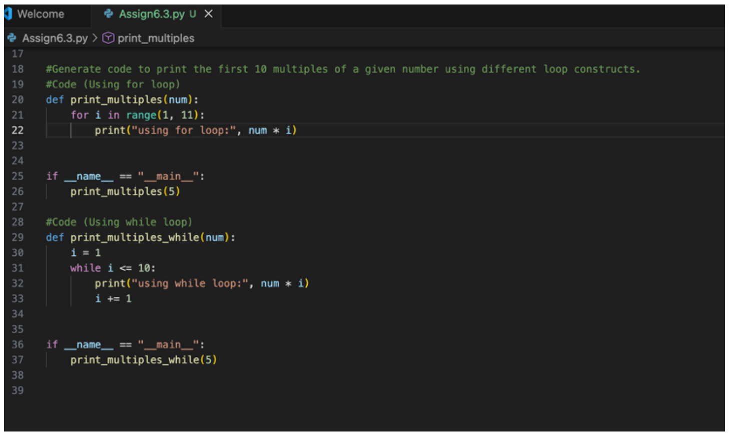
Observation:
The AI-generated class structure is clear and logically organized. The constructor correctly initializes attributes, and the display method outputs student details in a readable format. The code is simple, correct, and suitable for beginner-level object-oriented programming.

Task 2: Loops – Multiples of a Number. Generate code to print the first 10 multiples of a given number using different loop constructs.

Prompt: #Generate Python code to print the first

10 multiples of a number using a loop.

Code:

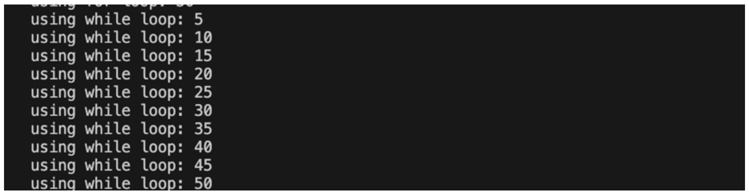


Welcome | Assign6.3.py U ×

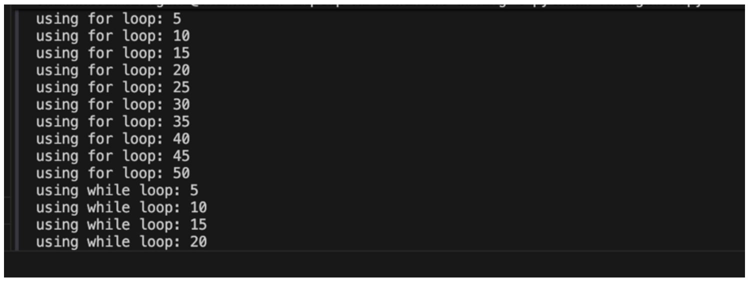
Assign6.3.py > print_multiples

```python

#Generate code to print the first 10 multiples of a given number using different loop constructs.
#Code (Using for loop)
def print_multiples(num):
    for i in range(1, 11):
        print("using for loop:", num * i)


if __name__ == "__main__":
    print_multiples(5)

#Code (Using while loop)
def print_multiples_while(num):
    i = 1
    while i <= 10:
        print("using while loop:", num * i)
        i += 1


if __name__ == "__main__":
    print_multiples_while(5)


```

Result:



```
using while loop: 5
using while loop: 10
using while loop: 15
using while loop: 20
using while loop: 25
using while loop: 30
using while loop: 35
using while loop: 40
using while loop: 45
using while loop: 50
```



```
using for loop: 5
using for loop: 10
using for loop: 15
using for loop: 20
using for loop: 25
using for loop: 30
using for loop: 35
using for loop: 40
using for loop: 45
using for loop: 50
using while loop: 5
using while loop: 10
using while loop: 15
using while loop: 20
```

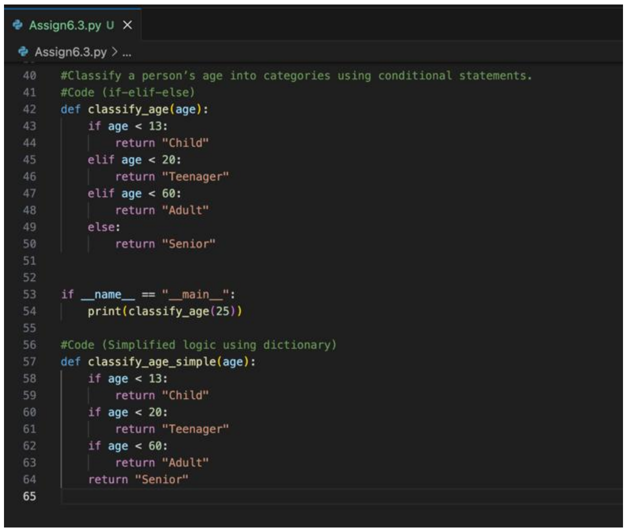
Observation:

Both loop implementations correctly generate the required output. The for-loop version is more concise and readable, while the while-loop version provides better insight into loop control and iteration. AI suggestions for both approaches are correct and efficient.

Task 3: Conditional Statements – Age Classification. Classify a person's age into categories using conditional statements.

Prompt: # Generate Python code to classify age into child, teenager, adult, and senior using if-elif-else..

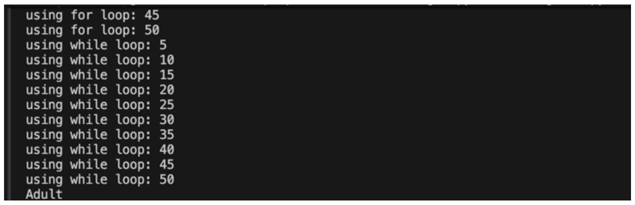
Code:



Assign6.3.py U ×
Assign6.3.py > ...

```python
#Classify a person's age into categories using conditional statements.
#Code (if-elif-else)
def classify_age(age):
    if age < 13:
        return "Child"
    elif age < 20:
        return "Teenager"
    elif age < 60:
        return "Adult"
    else:
        return "Senior"


if __name__ == "__main__":
    print(classify_age(25))

#Code (Simplified logic using dictionary)
def classify_age_simple(age):
    if age < 13:
        return "Child"
    if age < 20:
        return "Teenager"
    if age < 60:
        return "Adult"
    return "Senior"
```

Result:



```
using for loop: 45
using for loop: 50
using while loop: 5
using while loop: 10
using while loop: 15
using while loop: 20
using while loop: 25
using while loop: 30
using while loop: 35
using while loop: 40
using while loop: 45
using while loop: 50
Adult
```

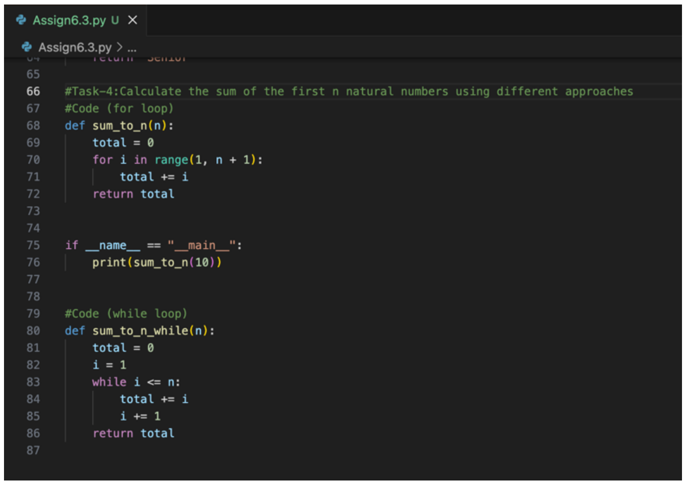
Observation:
The AI-generated conditions correctly classify age groups. The if-elif-else structure is clear and readable, while the simplified version reduces nesting and improves clarity. Both approaches are logically sound.

Task 4: For and While Loops – Sum of First n Numbers. Calculate the sum of the first n natural numbers using different approaches.

Prompt: #Generate Python code to find the sum of the first n natural numbers using

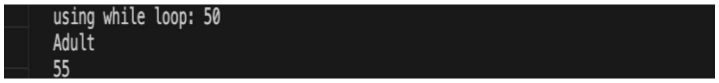
loops.

Code:



```python

#Task-4:Calculate the sum of the first n natural numbers using different approaches
#Code (for loop)
def sum_to_n(n):
    total = 0
    for i in range(1, n + 1):
        total += i
    return total


if __name__ == "__main__":
    print(sum_to_n(10))


#Code (while loop)
def sum_to_n_while(n):
    total = 0
    i = 1
    while i <= n:
        total += i
        i += 1
    return total

```

Result:



```
using while loop: 50
Adult
55
```

Observation

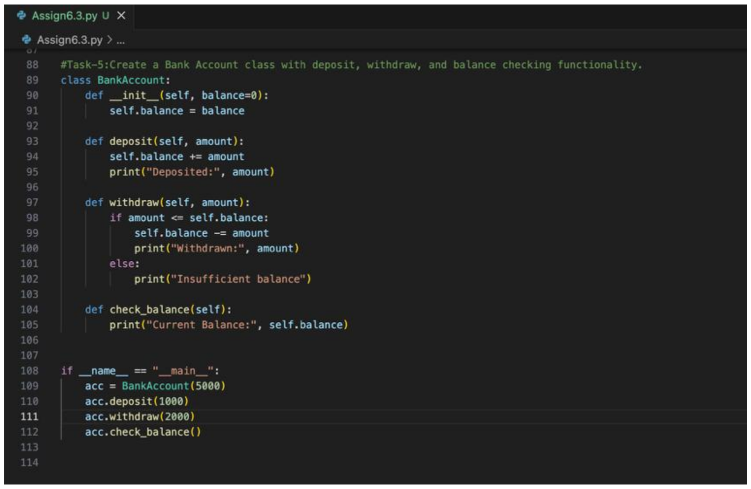
Both loop-based solutions produce the correct result. The for-loop version is more concise, while the while-loop version offers explicit control over iteration. AI-generated logic is correct and easy to understand

Task 5: Classes – Bank Account Class

Create a Bank Account class with deposit, withdraw, and balance checking functionality.

Prompt: #Generate a Python Bank Account class with deposit, withdraw, and check balance methods.

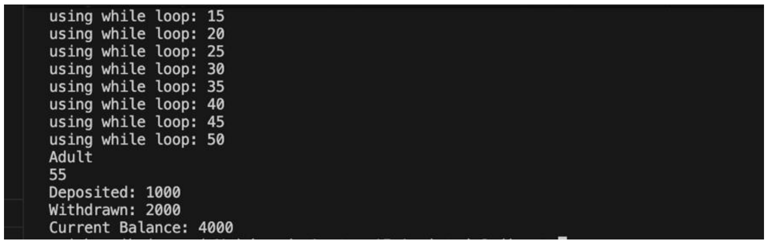
Code:



Assign6.3.py U ×
Assign6.3.py > ...

```python
#Task-5:Create a Bank Account class with deposit, withdraw, and balance checking functionality.
class BankAccount:
    def __init__(self, balance=0):
        self.balance = balance

    def deposit(self, amount):
        self.balance += amount
        print("Deposited:", amount)

    def withdraw(self, amount):
        if amount <= self.balance:
            self.balance -= amount
            print("Withdrawn:", amount)
        else:
            print("Insufficient balance")

    def check_balance(self):
        print("Current Balance:", self.balance)


if __name__ == "__main__":
    acc = BankAccount(5000)
    acc.deposit(1000)
    acc.withdraw(2000)
    acc.check_balance()
```

Result:



```
using while loop: 15
using while loop: 20
using while loop: 25
using while loop: 30
using while loop: 35
using while loop: 40
using while loop: 45
using while loop: 50
Adult
55
Deposited: 1000
Withdrawn: 2000
Current Balance: 4000
```

Observation:
The AI-generated class structure is well organized and logically correct. Methods perform expected operations, and balance updates are accurate. The code is readable, maintainable, and suitable for a basic banking application.