

ASSIGNMENT- 6.3

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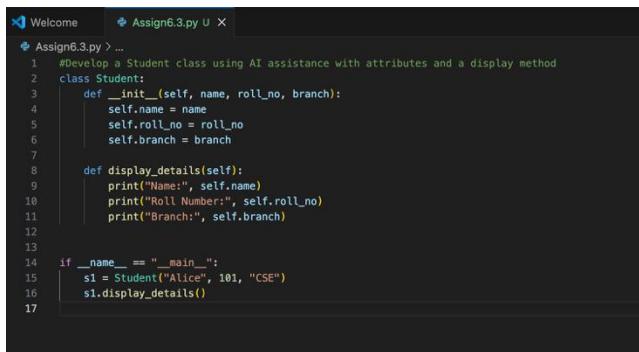
Batch: 20

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:



```
Assign6.3.py > ...
1  #Develop a Student class using AI assistance with attributes and a display method
2  class Student:
3      def __init__(self, name, roll_no, branch):
4          self.name = name
5          self.roll_no = roll_no
6          self.branch = branch
7
8      def display_details(self):
9          print("Name:", self.name)
10         print("Roll Number:", self.roll_no)
11         print("Branch:", self.branch)
12
13
14 if __name__ == "__main__":
15     s1 = Student("Alice", 101, "CSE")
16     s1.display_details()
```

Result:



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

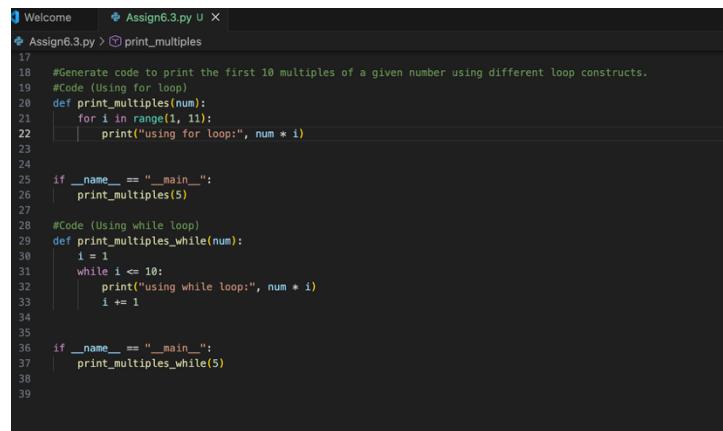
Observation:

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.

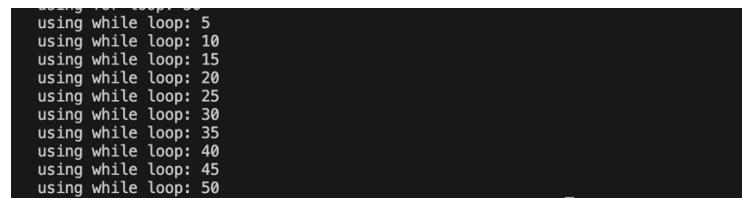
Code:



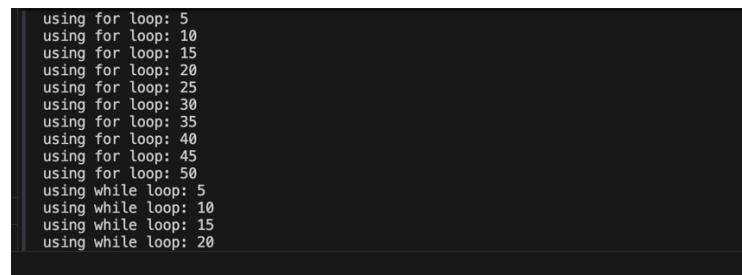
```
1 Welcome  ⌂ Assign6.3.py X
2 Assign6.3.py > ⌂ print_multiples
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```

The code is a Python script named 'Assign6.3.py'. It contains two functions: 'print_multiples' (using a for loop) and 'print_multiples_while' (using a while loop). Both functions take a parameter 'num' and print its multiples from 1 to 10. The script also includes a check at the end to run the while-loop version if the file is executed directly.

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:

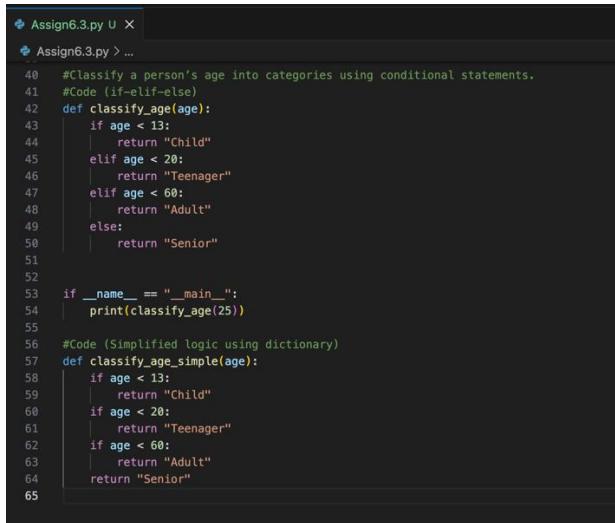
Both loop implementations correctly generate the required output. The for-loop version is more concise and readable, while the while-loop version provides better insight into loop control and

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..

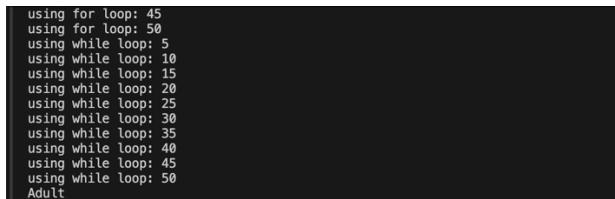
Code:



```
Assign6.3.py U 
Assign6.3.py > ...

40  #Classify a person's age into categories using conditional statements,
41  #Code (if-elif-else)
42  def classify_age(age):
43      if age < 13:
44          return "Child"
45      elif age < 20:
46          return "Teenager"
47      elif age < 60:
48          return "Adult"
49      else:
50          return "Senior"
51
52
53  if __name__ == "__main__":
54      print(classify_age(25))
55
56  #Code (Simplified logic using dictionary)
57  def classify_age_simple(age):
58      if age < 13:
59          return "Child"
60      if age < 20:
61          return "Teenager"
62      if age < 60:
63          return "Adult"
64      return "Senior"
65
```

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:

```
Assign6.3.py U X
Assign6.3.py > ...
  ↵ 65
  66 #Task-4:Calculate the sum of the first n natural numbers using different approaches
  67 #Code (for loop)
  68 def sum_to_n(n):
  69     total = 0
  70     for i in range(1, n + 1):
  71         total += i
  72     return total
  73
  74
  75 if __name__ == "__main__":
  76     print(sum_to_n(10))
  77
  78
  79 #Code (while loop)
  80 def sum_to_n_while(n):
  81     total = 0
  82     i = 1
  83     while i <= n:
  84         total += i
  85         i += 1
  86     return total
  87
```

Result:

```
55
```

Observation

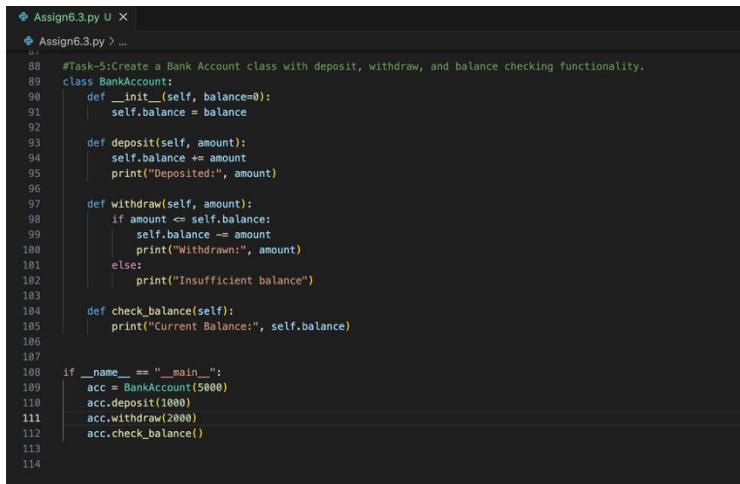
Both loop-based solutions produce the correct result. The for-loop version is more concise, while the while-loop version offers explicit control over iteration. AI-generated logic is correct and easy to understand

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 > ...
88  #Task-5:Create a Bank Account class with deposit, withdraw, and balance checking functionality.
89  class BankAccount:
90      def __init__(self, balance=0):
91          self.balance = balance
92
93      def deposit(self, amount):
94          self.balance += amount
95          print("Deposited:", amount)
96
97      def withdraw(self, amount):
98          if amount <= self.balance:
99              self.balance -= amount
100             print("Withdrawn:", amount)
101         else:
102             print("Insufficient balance")
103
104     def check_balance(self):
105         print("Current Balance:", self.balance)
106
107
108 if __name__ == "__main__":
109     acc = BankAccount(5000)
110     acc.deposit(1000)
111     acc.withdraw(2000)
112     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.

