

ASSIGNMENT- 6.3

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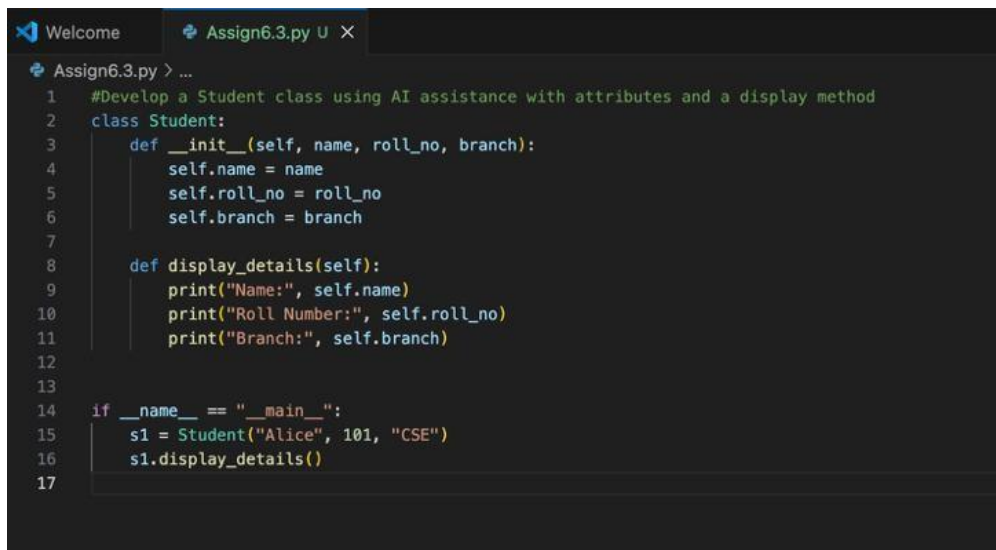
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Task 1: Classes – Student Class

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

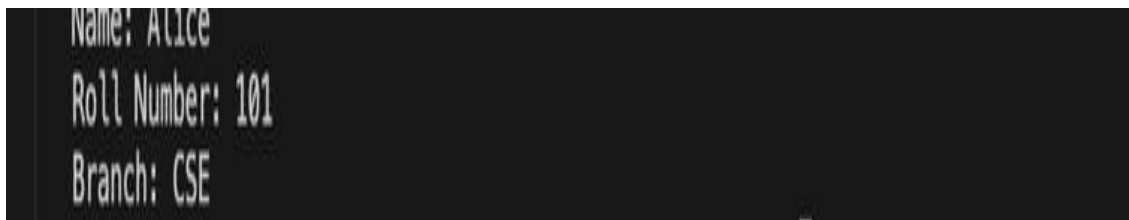
.Prompt: #Generate a Python Student class with name, roll number, and branch. Include a method to display student details..

Code:



```
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()
17
```

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 X
Assign6.3.py > print_multiples
17
18 #Generate code to print the first 10 multiples of a given number using different loop constructs.
19 #Code (Using for loop)
20 def print_multiples(num):
21     for i in range(1, 11):
22         print("using for loop:", num * i)
23
24
25 if __name__ == "__main__":
26     print_multiples(5)
27
28 #Code (Using while loop)
29 def print_multiples_while(num):
30     i = 1
31     while i <= 10:
32         print("using while loop:", num * i)
33         i += 1
34
35
36 if __name__ == "__main__":
37     print_multiples_while(5)
38
39
```

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 X
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 X
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()
113
114
```

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.