

# AI Assisted Coding

## Assignment 6.3

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Batch no: 19

### Task 1:

#### Prompt:

Generate a Python Student class with attributes name, roll number, and branch, and a method to display student details.

The screenshot shows a code editor window with a dark theme. The file tab shows 'Assignment\_6.3.py'. The code defines a 'Student' class with an \_\_init\_\_ method to initialize name, roll\_number, and branch, and a display\_details method to print them. A student object is created and its details are displayed. Below the code editor is a terminal window showing the execution of the script and its output.

```
Assignment_6.3.py X
Assignment_6.3.py > ...
1 #TASK 1
2 class Student:
3     def __init__(self, name, roll_number, branch):
4         self.name = name
5         self.roll_number = roll_number
6         self.branch = branch
7     def display_details(self):
8         print(f"Name: {self.name}")
9         print(f"Roll Number: {self.roll_number}")
10        print(f"Branch: {self.branch}")
11 # Create a student object
12 student1 = Student("Hari Vamsh", 1266, "Computer Science Engineering")
13 # Display student details
14 student1.display_details()
15
```

TERMINAL

```
PS C:\Users\hariv\OneDrive\Documents\SRU\3 year II sem\AI_Assistant_coding> & C:/Users/hariv/AppData/Local/Microsoft/WindowsApps/python3.12.exe "c:/Users/hariv/OneDrive/Documents/SRU/3 year II sem/AI_Assistant_coding/Assignment_6.3.py"
Name: Hari Vamsh
Roll Number: 1266
Branch: Computer Science Engineering
PS C:\Users\hariv\OneDrive\Documents\SRU\3 year II sem\AI_Assistant_coding>
```

#### Explanation:

The AI-generated code properly implements a Student class by following object-oriented programming concepts. The constructor is used to initialize the student's details, and the

`display_details()` method neatly outputs this information. Overall, the class design is clean, easy to understand, and works as expected when a student object is created and run.

## Task 2: Loops (Multiples of a Number)

### Prompt:

Generate a Python function to print the first 10 multiples of a given number using a for loop.

### Code & Output:

The screenshot shows a code editor interface with a dark theme. At the top, there's a tab bar with 'Assignment\_6.3.py' and other icons. Below the editor area, there's a terminal window titled 'TERMINAL'. The terminal shows the command 'python Assignment\_6.3.py' being run, followed by the output of the program which prints the first 10 multiples of 5.

```
Assignment_6.3.py
Assignment_6.3.py > ...
1 # Task 2: Loops (Multiples of a Number)
2 # Generate a Python function to print the first 10 multiples of a given number
3 def print_multiples(number):
4     for i in range(1, 11):
5         multiple = number * i
6         print(f"{number} x {i} = {multiple}")
7 # Example usage
8 print_multiples(5)

PROBLEMS    OUTPUT    TERMINAL    PORTS    ... | ⌂ X
> ▾ TERMINAL
PS C:\Users\hariv\OneDrive\Documents\SRU\3 year II sem\AI_Assistant_coding> & C:/Users/hariv/AppData/Local/Microsoft/WindowsApps/python3.12.exe "c:/Users/hariv/OneDrive/Documents/SRU/3 year II sem/AI_Assistant_coding/Assignment_6.3.py"
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
PS C:\Users\hariv\OneDrive\Documents\SRU\3 year II sem\AI Assistant coding>
```

### Explanation:

The AI-generated function uses a for loop to loop through values from 1 to 10 and display the multiples of the given number. During each loop cycle, the current value is multiplied by the input number to generate the result. The loop limits are clearly set, and the logic works

correctly to produce accurate output. Overall, the code is simple, efficient, and easy to read, making it well-suited for situations that require a fixed number of repetitions.

### Prompt (Alternative Loop):

Generate the same program using a while loop

### Code & Output:

```
Assignment_6.3.py X
Assignment_6.3.py > print_multiples_while
1 def print_multiples(number):
2     for i in range(1, 11):
3         multiple = number * i
4         print(f"{number} x {i} = {multiple}")
5
6     # Example usage
7     print_multiples(5)
8
9
10    # (Alternative Loop)
11    # Generate the same program using a while loop
12    def print_multiples_while(number):
13        i = 1
14        while i <= 10:
15            multiple = number * i
16            print(f"{number} x {i} = {multiple}")
17            i += 1
18
19    # Example usage
20    print_multiples_while(5)
```

TERMINAL

```
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
PS C:\Users\hariv\OneDrive\Documents\SRU\3 year II sem\AI_Assistant_coding>
```

### Explanation:

The while-loop version produces the same output as the for-loop version. While loops require manual control of the counter variable, making the for loop slightly cleaner and more readable for fixed iterations.

### Task 3: Conditional Statements (Age Classification)

#### Prompt:

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

#### Code & Output:

The screenshot shows a code editor window with the file 'Assignment\_6.3.py' open. The code defines a function 'classify\_age' that takes an age as input and returns a classification ('Child', 'Teenager', 'Adult', or 'Senior') based on nested if-elif-else statements. An example usage is shown where age 45 is classified as 'Adult'. Below the code editor is a terminal window showing the command to run the script and the resulting output: 'Age: 45, Classification: Adult'.

```
Assignment_6.3.py X
Assignment_6.3.py > ...
1 # Task 3: Conditional Statements (Age Classification)
2 # Generate Python code using if-elif-else to classify age into child,
3 # teenager, adult, and senior.
4 def classify_age(age):
5     if age < 13:
6         return "Child"
7     elif 13 <= age < 20:
8         return "Teenager"
9     elif 20 <= age < 60:
10        return "Adult"
11    else:
12        return "Senior"
13 # Example usage
14 age = 45
15 classification = classify_age(age)
16 print(f"Age: {age}, Classification: {classification}")
17
```

TERMINAL

```
PS C:\Users\hariv\OneDrive\Documents\SRU\3 year II sem\AI_Assistant_coding> & C:/Users/hariv/AppData/Local/Microsoft/WindowsApps/python3.12.exe "c:/Users/hariv/OneDrive/Documents/SRU/3 year II sem/AI_Assistant_coding/Assignment_6.3.py"
● Age: 45, Classification: Adult
○ PS C:\Users\hariv\OneDrive\Documents\SRU\3 year II sem\AI_Assistant_coding>
```

#### Explanation:

The AI-generated function applies nested if-elif-else statements to categorize different age groups. Each condition evaluates a particular age range in a logical sequence, ensuring that only one group is assigned for any given age. The approach is straightforward and accurate, making the logic easy to follow and verify. This clear structure makes the code beginner-friendly and practical for real-world age classification scenarios.

#### Task 4: For and While Loops (Sum of First n Numbers)

##### Prompt:

Generate a Python function to calculate the sum of first n natural numbers using a for loop.

##### Code & Output:

The screenshot shows a code editor window with a dark theme. At the top, there's a tab labeled "Assignment\_6.3.py". Below the tabs, there's a code editor area containing the following Python code:

```
1 # Task 4: For and While Loops (Sum of First n Numbers)
2 # Generate a Python function to calculate the sum of
3 # first n natural numbers using a for loop.
4
5 def sum_of_n_numbers(n):
6     total = 0
7     for i in range(1, n + 1):
8         total += i
9     return total
10
11 # Example usage
12 print(sum_of_n_numbers(5))
13
```

Below the code editor, there's a navigation bar with tabs: PROBLEMS, OUTPUT, TERMINAL, and PORTS. The TERMINAL tab is currently selected. In the terminal pane, there's a single line of output:

```
PS C:\Users\hariv\OneDrive\Documents\SRU\3 year II sem\AI_Assistant_coding> & C:/Users/hariv/AppData/Local/Microsoft/WindowsApps/python3.12.exe "c:/Users/hariv/OneDrive/Documents/SRU/3 year II sem/AI_Assistant_coding/Assignment_6.3.py"
```

##### Explanation:

The AI-generated function finds the sum by looping through the numbers from 1 to n and adding each value to a running total. The loop is implemented correctly and gives the right result. This method is simple, easy to follow, and works well for small to medium values of n.

#### Task 5: Classes (Bank Account Class)

##### Prompt:

Generate a Python Bank Account class with methods to deposit, withdraw, and check balance.

##### Code & Output:

```
Assignment_6.3.py X
Assignment_6.3.py > ...
1  # Task 5: Classes (Bank Account Class)
2  # Generate a Python Bank Account class with methods to deposit, withdraw,
3  # and check balance.
4
5  class BankAccount:
6      def __init__(self, account_holder, initial_balance=0):
7          self.account_holder = account_holder
8          self.balance = initial_balance
9
10     def deposit(self, amount):
11         if amount > 0:
12             self.balance += amount
13             print(f"Deposited: {amount}. New Balance: {self.balance}")
14         else:
15             print("Deposit amount must be positive.")
16
17     def withdraw(self, amount):
18         if 0 < amount <= self.balance:
19             self.balance -= amount
20             print(f"Withdrew: {amount}. New Balance: {self.balance}")
21         else:
22             print("Insufficient balance or invalid withdrawal amount.")
23
24     def check_balance(self):
25         print(f"Account Holder: {self.account_holder}, Balance: {self.balance}")
26
27 # Example usage
28 account = BankAccount("John Doe", 1000)
29 account.check_balance()
30 account.deposit(500)
31 account.withdraw(200)
32 account.check_balance()
33
```

```
● PS C:\Users\hariv\OneDrive\Documents\SRU\3 year II sem\AI_Assistant_coding> & C:/Users/hariv/AppData/Local/Microsoft/WindowsApps/python3.12.exe "c:/Users/hariv/OneDrive/Documents/SRU/3 year II sem/AI_Assistant_coding/Assignment_6.3.py"
Account Holder: John Doe, Balance: 1000
Deposited: 500. New Balance: 1500
Withdrew: 200. New Balance: 1300
Account Holder: John Doe, Balance: 1300
○ PS C:\Users\hariv\OneDrive\Documents\SRU\3 year II sem\AI_Assistant_coding>
```

### Explanation:

The AI-generated Bank Account class effectively showcases object-oriented programming concepts. The constructor sets the initial balance, while the class methods handle deposits, withdrawals, and balance inquiries. Built-in conditional checks ensure that withdrawals are blocked when there are insufficient funds. Overall, the code is well-structured, logically correct, and easy to expand, making it a good fit for a simple banking system.