

SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE		DEPARTMENT OF COMPUTER SCIENCE ENGINEERING	
Program Name: B. Tech		Assignment Type: Lab	
Course Coordinator Name		Dr. Rishabh Mittal	
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Course Code	23CS002PC304	Course Title	AI Assisted Coding
Year/Sem	III/II	Regulation	R23
Date and Day of Assignment	Week3 – Wednesday	Time(s)	23CSBTB01 To 23CSBTB52
Duration	2 Hours	Applicable to Batches	All batches
AssignmentNumber: 6.3(Present assignment number)/24(Total number of assignments)			
Q.No.	Question		Expected Time to complete
1	Lab 6: AI-Based Code Completion – Classes, Loops, and Conditionals Lab Objectives <ul style="list-style-type: none"> • To explore AI-powered auto-completion features for core Python constructs such as classes, loops, and conditional statements. • To analyze how AI tools suggest logic for object-oriented programming and control structures. 		Week3 - Wednesday

- To evaluate the correctness, readability, and completeness of AI-generated Python code.

Lab Outcomes (LOs)

After completing this lab, students will be able to:

- Use AI tools to generate and complete Python class definitions and methods.
- Understand and assess AI-suggested loop constructs for iterative tasks.
- Generate and evaluate conditional statements using AI-driven prompts.
- Critically analyze AI-assisted code for correctness, clarity, and efficiency.

Task Description #1: Classes (Student Class)

Scenario

You are developing a simple student information management module.

Task

- Use an AI tool (GitHub Copilot / Cursor AI / Gemini) to complete a Student class.
- The class should include attributes such as name, roll number, and branch.
- Add a method display_details() to print student information.
- Execute the code and verify the output.
- Analyze the code generated by the AI tool for correctness and clarity.

Expected Output #1

```

1  #!/usr/bin/env python3
2  # Student class definition
3
4  class Student:
5      def __init__(self, name, roll_number, branch):
6          self.name = name
7          self.roll_number = roll_number
8          self.branch = branch
9
10     def display_details(self):
11         print(f"Name: {self.name}")
12         print(f"Roll Number: {self.roll_number}")
13         print(f"Branch: {self.branch}")
14
15     # Sample object creation
16     student1 = Student("Karthi", "2303A51801", "Computer Science")
17     student1.display_details()

```

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

Scenario

You are writing a utility function to display multiples of a given number.

Task

- Prompt the AI tool to generate a function that prints the first 10 multiples of a given number using a loop.
- Analyze the generated loop logic.
- Ask the AI to generate the same functionality using another controlled looping structure (e.g., while instead of for).

Expected Output #2

```

Welcome lab5.py x
lab5.py > ...
6     self.branch = branch
7
8     def display_details(self):
9         print(f"Name: {self.name}")
10        print(f"Roll Number: {self.roll_number}")
11        print(f"Branch: {self.branch}")
12    # Example usage
13 student1 = Student("Arun", "1735", "Computer Science")
14 student1.display_details()
15 #Write a Python function print_multiples(n) that prints first 10 multiples of n using for loop
16 def print_multiples(n):
17     for i in range(1, 11):
18         print(n * i)
19 # Example usage
20 print_multiples(5)
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22
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS Python + v ⌂ ⌂ ... | ⌂
PS C:\Users\aruni\ai asst coding> & C:/Python314/python.exe "c:/Users/aruni/ai asst coding/lab5.py"
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Welcome lab5.py x
lab5.py > ...
16     def print_multiples(n):
17         for i in range(1, 11):
18             print(n * i)
19 # Example usage
20 print_multiples(5)"""
21 #Rewrite print_multiples(n) function to print first 10 multiples using while loop instead of f
22 def print_multiples(n):
23     i = 1
24     while i <= 10:
25         print(n * i)
26         i += 1
27 # Example usage
28 print_multiples(5)
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```

simplified conditions or dictionary-based logic).

Expected Output #3

- 1

```
PS C:\Users\aruni\ai asst coding> & c:/Python314/python.exe "c:/Users/aruni/ai asst coding/lab5.py"
● Child
Teenager
Adult
```

```
PS C:\Users\aruni\ai asst coding> & c:/Python314/python.exe "c:/Users/aruni/ai asst coding/lab5.py"
● Child
Teenager
Adult
```

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

Scenario

You need to calculate the sum of the first n natural numbers.

Task

- Use AI assistance to generate a `sum_to_n()` function using a for loop.
 - Analyze the generated code.
 - Ask the AI to suggest an alternative implementation using a while loop or a mathematical formula.

Expected Output #4

- 1

```

Welcome lab5.py ...
56     return group
57 # Example usage
58 print(classify_age(10)) # Output: Child
59 print(classify_age(16)) # Output: Teenager
60 print(classify_age(25)) # Output: Adult
61 print(classify_age(70)) # Output: Senior"""
62 #Write Python function sum_to_n(n) using for loop to calculate sum of first n natural numbers
63 def sum_to_n(n):
64     total = 0
65     for i in range(1, n + 1):
66         total += i
67     return total
68
69 # Example usage
70 print(sum_to_n(5)) # Output: 15
71
72
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS Python + v ⚡ ... | ⚡ x
PS C:\Users\aruni\ai asst coding> & C:/Python314/python.exe "c:/Users/aruni/ai asst coding/lab5.py"
● PS C:\Users\aruni\ai asst coding> & C:/Python314/python.exe "c:/Users/aruni/ai asst coding/lab5.py"
15

Welcome lab5.py ...
68
69 # Example usage
70 print(sum_to_n(5)) # Output: 15"""
71 #Convert sum_to_n(n) to use while loop instead of for loop
72 def sum_to_n(n):
73     total = 0
74     i = 1
75     while i <= n:
76         total += i
77         i += 1
78     return total
79
80 # Example usage
81 print(sum_to_n(5)) # Output: 15
82
83
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS Python + v ⚡ ... | ⚡ x
PS C:\Users\aruni\ai asst coding> & C:/Python314/python.exe "c:/Users/aruni/ai asst coding/lab5.py"
● PS C:\Users\aruni\ai asst coding> & C:/Python314/python.exe "c:/Users/aruni/ai asst coding/lab5.py"
15

Welcome lab5.py ...
73     total = 0
74     i = 1
75     while i <= n:
76         total += i
77         i += 1
78     return total
79
80 # Example usage
81 print(sum_to_n(5)) # Output: 15"""
82 #Add mathematical formula version to sum_to_n(n) function as alternative to loops
83 def sum_to_n(n):
84     # Using the formula n(n + 1) / 2
85     return n * (n + 1) // 2
86
87 # Example usage
88 print(sum_to_n(5)) # Output: 15
89
90
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS Python + v ⚡ ... | ⚡ x
PS C:\Users\aruni\ai asst coding> & C:/Python314/python.exe "c:/Users/aruni/ai asst coding/lab5.py"
● PS C:\Users\aruni\ai asst coding> & C:/Python314/python.exe "c:/Users/aruni/ai asst coding/lab5.py"
15

```

Task Description #5: Classes (Bank Account Class)

Scenario

You are designing a basic banking application.

Task

- Use AI tools to generate a Bank Account class with methods such as deposit(), withdraw(), and check_balance().
- Analyze the AI-generated class structure and logic.
- Add meaningful comments and explain the working of the code.

Expected Output #5

•

```
87 #Create Python BankAccount class with deposit(), withdraw(), check_balance() methods and balan
88 class BankAccount:
89     def __init__(self):
90         self.balance = 0
91
92     def deposit(self, amount):
93         if amount > 0:
94             self.balance += amount
95             print(f"Deposited: {amount}")
96         else:
97             print("Deposit amount must be positive.")
98
99     def withdraw(self, amount):
100        if 0 < amount <= self.balance:
101            self.balance -= amount
102            print(f"Withdrew: {amount}")
103        else:
104            print("Insufficient balance or invalid withdrawal amount.")
105
106    def check_balance(self):
107        print(f"Current Balance: {self.balance}")
108
109 # Example usage
110 account = BankAccount()
111 account.deposit(1000)
112 account.withdraw(500)
113 account.check_balance()
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Current Balance: 500
PS C:\Users\aruni\ai asst coding> & C:/Python314/python.exe "c:/Users/aruni/ai asst coding/lab5.py"
Deposited: 1000
Withdrew: 500
Withdrew: 500
Current Balance: 500

Note: Report should be submitted as a word document for all tasks in a single document with prompts, comments & code explanation, and output and if required, screenshots.