

ASSIGNMENT-6.3

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Lab 6: AI-Based Code Completion – Classes, Loops, and Conditionals

Task Description #1: Classes (Student Class)

Scenario

You are developing a simple student information management module.

```
1  #Task1
2  #generate a student class with name rollno branch
3  class Student:
4      def __init__(self, name, roll_no, branch):
5          self.name = name
6          self.roll_no = roll_no
7          self.branch = branch
8
9      def display_details(self):
10         print("Student Name:", self.name)
11         print("Roll Number:", self.roll_no)
12         print("Branch:", self.branch)
13
14
15  # Object creation
16  student1 = Student("Vyshnavi", 1895, "Cse")
17  student1.display_details()
```

```
Student Name: Vyshnavi
Roll Number: 1895
Branch: Cse
```

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).

```

1 #Task2
2 #generate the same functionality using another controlled looping structure
3 def print_multiples(num):
4     for i in range(1, 11):
5         print(num * i)
6 print_multiples(5)
7 def print_multiples_while(num):
8     i = 1
9     while i <= 10:
10        print(num * i)
11        i += 1
12
13 print_multiples_while(5)

```

```

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```

Task Description #3: Conditional Statements (Age Classification)

Scenario

You are building a basic classification system based on age.

Task

- Ask the AI tool to generate nested if-elif-else conditional statements to classify age groups (e.g., child, teenager, adult, senior).
- Analyze the generated conditions and logic.
- Ask the AI to generate the same classification using alternative conditional structures (e.g., simplified conditions or dictionary-based logic).

```

1 #Task3
2 #to generate nested if-elif-else conditional statements to classify age groups
  (e.g., child, teenager, adult, senior).
3
4 def classify_age(age):
5     if age < 13:
6         return "child"
7     elif age < 20:
8         return "Teenager"
9     elif age < 60:
10        return "Adult"
11    else:
12        return "Senior"
13
14 print(classify_age(25))

```

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.

```

1 #Task4
2 #For and While Loops (Sum of First n Numbers)
3 def sum_to_n(n):
4     total = 0
5     for i in range(1, n + 1):
6         total += i
7     return total
8
9 print(sum_to_n(10))
10 def sum_to_n_while(n):
11     total = 0
12     i = 1
13     while i <= n:
14         total += i
15         i += 1
16     return total
17
18 print(sum_to_n_while(10))

```

55

55

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.

```
1  #Task5
2  #generate a Bank Account class with methods such as deposit(), withdraw(), and
   check_balance().
3
4  class BankAccount:
5      def __init__(self, account_holder, balance=0):
6          self.account_holder = account_holder
7          self.balance = balance
8
9      def deposit(self, amount):
10         self.balance += amount
11         print("Deposited:", amount)
12
13         def withdraw(self, amount):
14             if amount <= self.balance:
15                 self.balance -= amount
16                 print("Withdrawn:", amount)
17             else:
18                 print("Insufficient balance")
19
20         def check_balance(self):
21             print("Current Balance:", self.balance)
22
23
24  # Object creation
25  account = BankAccount("Vyshnavi", 5000)
26  account.deposit(2000)
27  account.withdraw(1500)
28  account.check_balance()
```

Deposited: 2000
Withdrawn: 1500
Current Balance: 5500