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Lab Assignment 6.3

Task Description #1: Classes (Student Class)

Scenario

You are developing a simple student information management module.

The screenshot shows a code editor interface with the following details:

- File Explorer:** Shows a folder named "AI CODING" containing files like 1.jpeg, add.py, Al lab43.py, Assignment1(CP).pdf, Assignment 2-4.pdf, assignment 3.4, assignment 3.py, Assignment2.pdf, assignment34.docx, factorial.py, jobs.py, jobsccp.py, lab assignment 6.3.py, lab assignment 6.3.txt, lab assignment 44.py, lab assignments3.pdf, lab assignments54.py, lab1 HCP.pdf, matrixHCP.py, Untitled20.ipynb, week2 HCP.pdf, and WhatsApp Image 202...
- Code Editor:** Displays the content of `lab assignment 6.3.py`. The code defines a `Student` class with a `display_details` method. It includes a sample usage section creating a `student1` object and calling its `display_details` method.
- Terminal:** Shows the output of running the script in a terminal window. The output displays the student details for `Alice Johnson` with roll number `2023CS101` and branch `Computer Science`.

```
class Student:
    def display_details(self):
        """
        Method to print the student's details.
        """
        print("Student Details:")
        print(f"Name: {self.name}")
        print(f"Roll Number: {self.roll_number}")
        print(f"Branch: {self.branch}")
        print("-" * 20)

# --- Sample Usage ---
student1 = Student("Alice Johnson", "2023CS101", "Computer Science")

# Displaying the output
student1.display_details()
```

```
PS D:\AI Coding> & C:/Users/ANDALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 6.3.py"
Student Details:
Name: Alice Johnson
Roll Number: 2023CS101
Branch: Computer Science
-----
```

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

Scenario

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

The screenshot shows a code editor interface with the following details:

- File Menu:** File, Edit, Selection, View, Go, Run, Terminal, Help.
- Search Bar:** Q AI Coding.
- Explorer:** Shows files like 1.jpeg, add.py, Al lab43.pdf, Assignment1(CP).pdf, Assignment 2-4.pdf, assignment 3.4, assignment 3.py, Assignment2.pdf, assignment3.4.docx, factorial.py, jobs.py, jobsqp.py, lab assignment 6.3.py, lab assignment 6.3.txt, lab assignment 44.py, lab assignment3.3.pdf, lab assignment5A.py, lab1 HCP.pdf, matrixHCP.py, Untitled20.ipynb, week2 HCP.pdf, WhatsApp Image 202...
- Code Editor:** The active file is "lab assignment 6.3.py". It contains the following code:

```
1 #=====2023 Lab Assignment 6.3=====2 3 def print_multiples(number):3    ""4        Prints the first 10 multiples of the given number.5    """6    print("First 10 multiples of " + str(number))7    # Loop from 1 to 10 (inclusive)8    for i in range(1, 11):9        result = number * i10        print(str(number) + " * " + str(i) + " = " + str(result))1112    # --- Sample Usage ---13    print_multiples(7)14
```
- Terminal:** Shows the output of the code execution:

```
First 10 multiples of 7:7 x 1 = 77 x 2 = 147 x 3 = 217 x 4 = 287 x 5 = 357 x 6 = 427 x 7 = 497 x 8 = 567 x 9 = 637 x 10 = 70
```
- Status Bar:** PS D:\AI Coding>, Ln 1, Col 17, Spaces: 4, UTF-8, CR.

Task Description #3: Conditional Statements (Age Classification)

Scenario

You are building a basic classification system based on age.

The screenshot shows a dark-themed instance of Visual Studio Code (VS Code) with the following details:

- File Explorer:** Shows a folder named "AI CODING" containing files like "1.jpeg", "add.py", "AI lab43.py", "Assignment1(CP).pdf", "Assignment 2-4.pdf", "assignment 3.4", "Assignment2.pdf", "assignment3.4.docx", "factorial.py", "jobs.py", "jobsCP.py", "lab assignment 6.3.py", "lab assignment 6.3.txt", "lab assignment 44.py", "lab assignment5.4.py", "lab1 HCP.pdf", "matrixHCP.py", "Untitled20.pynb", "week2 HCP.pdf", and "WhatsApp Image 202...".
- Code Editor:** Displays a Python script named "lab assignment 6.3.py". The code defines a function "classify_age" that takes an age as input and returns a category ("Child", "Teenager", "Adult", or "Senior"). It includes sample usage and a print statement.
- Terminal:** Shows the command line output of running the script with sample ages (1, 5, 16, 45, 70) and the resulting categories (Invalid age, Child, Teenager, Adult, Senior).
- Output:** Shows a list of running processes: powershell, Python, Python, and Python.
- Status Bar:** Shows the file path "D:\AI Coding>" and other status information.

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.

The screenshot shows a Visual Studio Code (VS Code) interface. The top menu bar includes File, Edit, Selection, View, Go, Run, Terminal, Help, and a search bar. The left sidebar has an Explorer view showing files like '1.jpeg', 'add.py', 'AI lab43.py', 'Assignment 2-4.pdf', 'assignment 3.4', 'assignment 3.py', 'Assignment2.pdf', 'assignment2.4.docx', 'factorial.py', 'jobs.py', 'jobsCPy.py', 'lab assignment 6.3.py', 'lab assignment 6.3.txt', 'lab assignment 44.py', 'lab assignment3.3.pdf', 'lab assignments5.4.py', 'lab1 HCP.pdf', 'matrixHCP.py', 'Untitled20.pynb', 'week2 HCP.pdf', and 'WhatsApp Image 202...'. The main editor area contains Python code for calculating the sum of natural numbers:

```
1 #=====
2 def sum_natural_numbers(n):
3     """
4         Calculates the sum of the first n natural numbers using a for loop.
5         Returns 0 if n is not positive.
6     """
7     if n < 1:
8         return 0
9
10    total_sum = 0
11
12    # Loop from 1 up to n (inclusive)
13    for i in range(1, n + 1):
14        total_sum += i
15
16    return total_sum
17
18 # --- Sample Usage ---
19 n = 10
20 result = sum_natural_numbers(n)
21
22 print(f"The sum of the first {n} natural numbers is: {result}")
```

The bottom right corner shows a terminal window with the output of the code execution:

```
7 x 10 = 70
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 6.3.py"
Age | Category
-----
-1 | Invalid age
5  | Child
16 | Teenager
45 | Adult
70 | Senior
PS D:\AI Coding> & C:/Users/ANJALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 6.3.py"
The sum of the first 10 natural numbers is: 55
PS D:\AI Coding>
```

Task Description #5: Classes (Bank Account Class)

Scenario

You are designing a basic banking application.

The screenshot shows a Microsoft Visual Studio Code (VS Code) interface. The left sidebar has a tree view under 'EXPLORER' labeled 'AI CODING' containing files like '1.jpeg', 'add.py', 'AI lab43.py', 'Assignment1(CP).pdf', 'Assignment2.C.pdf', 'assignment 3.4', 'Assignment2.pdf', 'assignment3.4.py', 'factorial.py', 'jobs.py', 'jobs.py', 'lab assignment 6.3.py', 'lab assignment 6.3.txt', 'lab assignment 44.py', 'lab assignment3.3.pdf', 'lab assignment5.4.py', 'lab1 HCP.pdf', 'matrixHCP.py', 'Untitled20.ipynb', 'week2 HCP.pdf', and 'WhatsApp Image 202...'. The main editor tab is 'lab assignment 6.3.py' which contains the following Python code:

```
1 class BankAccount:
2     """
3         Prints and returns the current balance.
4     """
5     def check_balance(self):
6         """
7             Prints and returns the current balance.
8         """
9         print(f"Current Balance: ${self.balance:.2f}")
10        return self.balance
11
12    # --- Sample Usage ---
13
14    # 1. Create an account
15    my_account = BankAccount("John Doe", 100.00)
16
17    print("." * 30)
18
19    # 2. Perform transactions
20    my_account.check_balance()
21    my_account.deposit(50.00)
22    my_account.withdraw(30.00)
23    my_account.withdraw(200.00) # Testing insufficient funds
24
25    print("." * 30)
26
27    # 3. Final check
28    my_account.check_balance()
```

The 'TERMINAL' tab shows command-line output from running the script:

```
PS D:\AI Coding> & C:/Users/ANALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 6.3.py"
The sum of the first 10 natural numbers is: 55
PS D:\AI Coding> & C:/Users/ANALI/AppData/Local/Programs/Python/Python313/python.exe "d:/AI Coding/lab assignment 6.3.py"
Account created for John Doe with balance: $100.00
-----
Current Balance: $100.00
Deposited: $50.00
Withdraw: $30.00
Failed to withdraw $200.00 (Insufficient funds).
-----
Current Balance: $120.00
PS D:\AI Coding>
```

The right sidebar includes a 'CHAT' section with AI-generated responses and a 'Used' section listing terms like 'GEN', 'attribute', 'Include', 'display', 'inform', 'Create', and 'output'. The bottom right corner shows a 'Python' icon in the status bar.