

Ass-6.3

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Task Description #1: Classes (Student Class)

Scenario

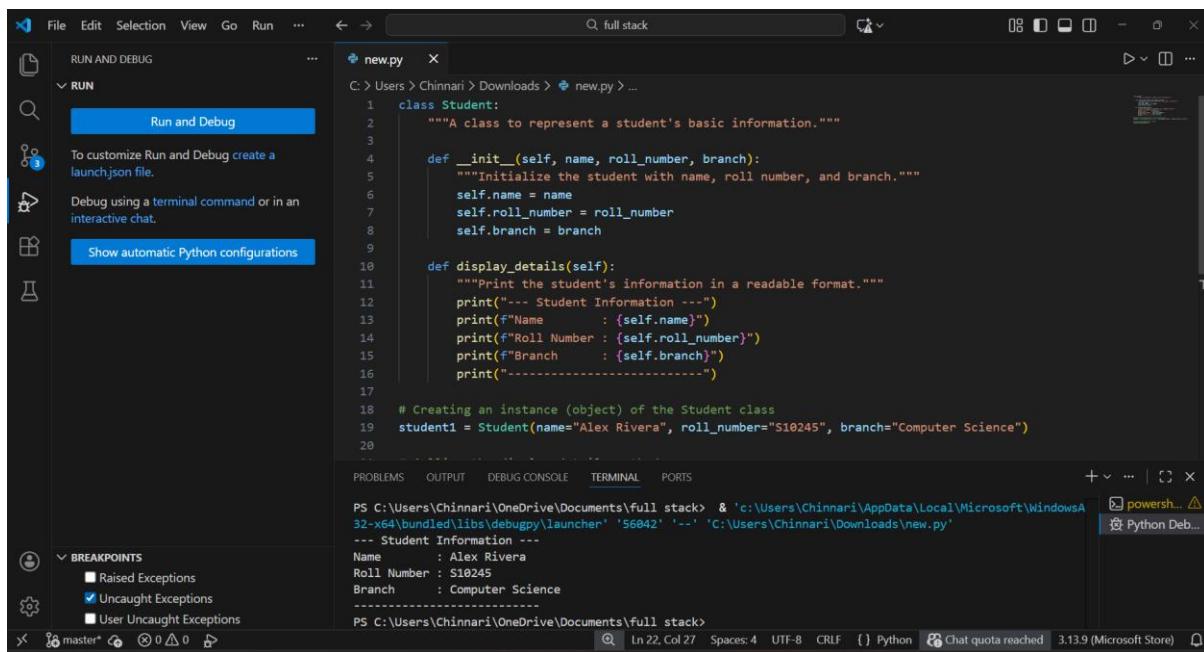
You are developing a simple student information management module.

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

- A Python class with a constructor (`__init__`) and a `display_details()` method.
 - Sample object creation and output displayed on the console.
 - Brief analysis of AI-generated code



```
new.py
```

```
C:\Users\Chinnari>Downloads>new.py>...
1  class Student:
2
3      def display_details(self):
4          """Print the student's information in a readable format."""
5          print("--- Student Information ---")
6          print(f"Name : {self.name}")
7          print(f"Roll Number : {self.roll_number}")
8          print(f"Branch : {self.branch}")
9          print("-----")
10
11     # Creating an instance (object) of the Student class
12     student1 = Student(name="Alex Rivera", roll_number="S10245", branch="Computer Science")
13
14     # Calling the display_details method
15     student1.display_details()
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
```

```
PS C:\Users\Chinnari>OneDrive\Documents\full stack> & "c:\Users\Chinnari\AppData\Local\Microsoft\Windows\32-bit\bundle\libs\debug\python\56042" ---> "C:\Users\Chinnari\Downloads\new.py"
--- Student Information ---
Name : Alex Rivera
Roll Number : S10245
Branch : Computer Science
-----
```

```
PS C:\Users\Chinnari>OneDrive\Documents\full stack>
```

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Breakpoints

- Raised Exceptions
- Uncaught Exceptions
- User Uncaught Exceptions

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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

- Correct loop-based Python implementation.
- Output showing the first 10 multiples of a number.
- Comparison and analysis of different looping approaches.

```

class Student:
    """A class to represent a student's basic information."""
    def __init__(self, name, roll_number, branch):
        self.name = name
        self.roll_number = roll_number
        self.branch = branch

    def display_details(self):
        print("\n--- Student Information ---")
        print(f"Name : {self.name}")
        print(f"Roll Number : {self.roll_number}")
        print(f"Branch : {self.branch}")
        print("-" * 27)

    def print_multiples_for(n):
        """Prints the first 10 multiples using a for loop."""
        print("\n[For Loop] First 10 multiples of " + str(n))
        for i in range(1, n+1):
            print(i * n)

```

```

PS C:\Users\Chinnari\OneDrive\Documents\full stack> c:& cd 'c:\Users\Chinnari\OneDrive\Documents\full stack'& 'c:\Users\Chinnari\AppData\Local\Microsoft\WindowsApps\python3.13.exe' 'c:\Users\Chinnari\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '64803' '--' 'C:\Users\Chinnari\Downloads\new.py'
Enter a number to see its multiples: 22
[For Loop] First 10 multiples of 22:
22 x 1 = 22
22 x 2 = 44
22 x 3 = 66
22 x 4 = 88

```

BREAKPOINTS

- Raised Exceptions
- Uncaught Exceptions
- User Uncaught Exceptions

```

def print_multiples_while(n):
    i = 1
    # --- Execution ---
    if __name__ == "__main__":
        # 1. Class and Object Demo
        student_obj = Student("Alex Rivera", "S10245", "Computer Science")
        student_obj.display_details()

        # 2. Multiples Demo
        try:
            val = int(input("\nEnter a number to see its multiples: "))
            print_multiples_for(val)
            print_multiples_while(val)
        except ValueError:
            print("Invalid input. Please enter an integer.")

```

```

PS C:\Users\Chinnari\OneDrive\Documents\full stack> c:& cd 'c:\Users\Chinnari\OneDrive\Documents\full stack'& 'c:\Users\Chinnari\AppData\Local\Microsoft\WindowsApps\python3.13.exe' 'c:\Users\Chinnari\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '64803' '--' 'C:\Users\Chinnari\Downloads\new.py'
[While Loop] First 10 multiples of 22:
22 x 1 = 22
22 x 2 = 44
22 x 3 = 66
22 x 4 = 88
22 x 5 = 110

```

BREAKPOINTS

- Raised Exceptions
- Uncaught Exceptions
- User Uncaught Exceptions

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).

Expected Output #3

- A Python function that classifies age into appropriate groups.
 - Clear and correct conditional logic.
 - Explanation of how the conditions work.

The screenshot shows the Microsoft Visual Studio Code interface. On the left, the 'RUN AND DEBUG' sidebar is open, displaying the 'Run' section with a 'Run and Debug' button and instructions to customize it via a launch.json file. Below that, there's a note about using a terminal command or an interactive chat, and a 'Show automatic Python configurations' button.

The main editor area contains Python code for a 'Student' class:

```
class Student:  
    """A class to represent a student's basic information."""  
    def __init__(self, name, roll_number, branch):  
        self.name = name  
        self.roll_number = roll_number  
        self.branch = branch  
  
    def display_details(self):  
        print("\n--- Student Information ---")  
        print(f"Name : {self.name}")  
        print(f"Roll Number : {self.roll_number}")  
        print(f"Branch : {self.branch}")  
        print("-" * 27)  
  
    def print_multiples_for(n):  
        """Prints the first 10 multiples using a for loop."""  
        print(f"\n[For Loop] First 10 multiples of {n}:")  
        for i in range(1, 11):
```

The terminal at the bottom shows the following session:

```
PS C:\Users\Chinnari\OneDrive\Documents\Full stack> cd 'C:\Users\Chinnari\OneDrive\Documents\full stack' & cd 'C:\Users\Chinnari\AppData\Local\Microsoft\WindowsApps\python3.10.exe' & 'C:\Users\Chinnari\.vscode\extensions\ms-python.python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '61923' '--' 'C:\Users\Chinnari\Downloads\new.py'  
Enter a number to see its multiples: 30  
Enter an age to classify: 20  
[For Loop] First 10 multiples of 30:  
30 x 1 = 30  
30 x 2 = 60  
30 x 3 = 90
```

The screenshot shows the Microsoft Visual Studio Code interface with the Python extension installed. The left sidebar has sections for RUN and DEBUG, RUN, and BREAKPOINTS. The BREAKPOINTS section shows three types of exceptions: Raised Exceptions (unchecked), Uncought Exceptions (checked), and User Uncaught Exceptions (unchecked). The main editor area contains a Python script named `new.py` with the following code:

```
C:\> Users > Chinnari > Downloads > new.py > Student
88     print(f"\n{n} x {i} = {n * i}")
89
90 def print_multiples_while(n):
91     """Prints the first 10 multiples using a while loop."""
92     print(f"\n[While Loop] First 10 multiples of {n}:")
93     i = 1
94     while i <= 10:
95         print(f"\n{n} x {i} = {n * i}")
96         i += 1
97
98 def classify_age_nested(age):
99     """Classifies age into categories using nested/sequential logic."""
100    if age < 0:
101        return "Invalid age"
102    elif age <= 12:
103        return "Child"
104    elif age <= 19:
105        return "Teenager"
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```

```

new.py

C:\> Users > Chinnari > Downloads > new.py > Student
115     student1.display_details()
116
117
118 # 2. Input and Logic Demonstration
119
120 try:
121     # Get numerical input for Multiples and Age
122     user_num = int(input("\nEnter a number to see its multiples: "))
123     user_age = int(input("Enter an age to classify: "))
124
125     # Run Multiples logic
126     print_multiples_for(user_num)
127     print_multiples_while(user_num)
128
129     # Run Age Classification logic
130     category = classify_age_nested(user_age)
131     print(f"\n[Age Logic] The category for age {user_age} is: {category}")
132
133 except ValueError:
134     print("Error: Please enter valid integers for both number and age.")

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\Chinnari\OneDrive\Documents\full stack> c;; cd 'c:\Users\Chinnari\OneDrive\Documents\full stack'; & 'c:\Users\Chinnari\AppData\Local\Microsoft\WindowsApps\python3.13.exe' 'c:\Users\Chinnari\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\lib\debugpy\launcher' '61923' '--' 'C:\Users\Chinnari\Downloads\new.py'
30 x 7 = 210
30 x 8 = 240
30 x 9 = 270
30 x 10 = 300
[Age Logic] The category for age 20 is: Adult
PS C:\Users\Chinnari\OneDrive\Documents\full stack>

```

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

- Python function to compute the sum of first n numbers.
- Correct output for sample inputs.
- Explanation and comparison of different approaches.

The screenshot shows a Microsoft Visual Studio Code (VS Code) interface with the following details:

- File Explorer:** Shows a file tree with a file named "new.py" under "C:\Users\Chinnari\Downloads".
- Run View:** The "RUN" section is open, showing the "Run and Debug" button is active. It also includes instructions to customize run and debug settings via a launch.json file and to use terminal commands or an interactive chat.
- Code Editor:** Displays Python code for a "Student" class with methods to print student details and multiples. The code editor has syntax highlighting and line numbers.
- Terminal:** Shows a command-line session where the script is run, printing the first 10 multiples of 30.
- Bottom Status Bar:** Shows the current file is "new.py", the line number is 211, column 71, and the encoding is UTF-8. It also indicates "Python" as the active language and "Chat quota reached".

```
File Edit Selection View Go Run ... ← → Q full stack RUN AND DEBUG RUN new.py C:\> Users > Chinnari > Downloads > new.py > ... 194     # 2. Input Collection 195     num_val = int(input("\nEnter a number for multiples: ")) 196     age_val = int(input("Enter an age to classify: ")) 197     sum_val = int(input("Enter 'n' to calculate sum up to n: ")) 198 199     # 3. Running Multiples Logic 200     print_multiples_for(num_val) 201     print_multiples_while(num_val) 202 203     # 4. Running Age Logic 204     print(f"\n[Age Logic] Age {age_val} is classified as: {classify_age(age_val)}") 205 206     # 5. Running Summation Logic 207     print(f"\n[Sum Logic] Iterative Sum: {sum_to_n_iterative(sum_val)}") 208     print(f"[Sum Logic] Formula Sum: {sum_to_n_formula(sum_val)}") 209 210 except ValueError: 211     print("\nError: Please ensure all inputs are valid integers.") PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS PS C:\Users\Chinnari\OneDrive\Documents\full stack> c;; cd 'c:\Users\Chinnari\OneDrive\Documents\full stack'; & 'c:\Users\Chinnari\AppData\Local\Microsoft\WindowsApps\python3.10.exe' 'c:\Users\Chinnari\.vscode\extensions\ms-python.python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '62729' '--' 'c:\Users\Chinnari\Downloads\new.py' 30 x 10 = 300 [Age Logic] Age 20 is classified as: Adult [Sum Logic] Iterative Sum: 15 [Sum Logic] Formula Sum: 15 PS C:\Users\Chinnari\OneDrive\Documents\full stack> 3.13.9 (Microsoft Store)
```

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

- Complete Python Bank Account class.
 - Demonstration of deposit and withdrawal operations with updated balance.
 - Well-commented code with a clear explanation

The screenshot shows the Microsoft Visual Studio Code interface. On the left, there's a sidebar with icons for file operations like RUN and DEBUG. The main area displays a Python file named `new.py`. The code defines a `BankAccount` class with methods for depositing and checking balance. A terminal window at the bottom shows the account being deposited \$150.50, resulting in a balance of \$650.50.

```
213     class BankAccount:  
214         """A class representing a simple bank account with basic transactions."""  
215  
216         def __init__(self, account_number, account_holder, initial_balance=0.0):  
217             # Initializing instance attributes  
218             self.account_number = account_number  
219             self.account_holder = account_holder  
220             self.balance = initial_balance  
221  
222         def deposit(self, amount):  
223             """Adds a positive amount to the balance."""  
224             if amount > 0:  
225                 self.balance += amount  
226                 print(f"Successfully deposited ${amount:.2f}")  
227             else:  
228                 print("Deposit Error: Amount must be positive.")  
229             self.check_balance()  
230  
231  
232     # Test the BankAccount class  
233     account = BankAccount("BA-9988", "Casey Jordan", 500.0)  
234     account.deposit(150.5)  
235  
236     print(f"Account: {account.account_number} | Holder: {account.account_holder} | Balance: ${account.balance:.2f}")  
237  
238     # Output:  
239     # Account: BA-9988 | Holder: Casey Jordan | Balance: $650.50
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\Chinnari\OneDrive\Documents\full stack> c; cd 'c:\Users\Chinnari\OneDrive\Documents\full stack'; & 'c:\Users\Chinnari\AppData\Local\Microsoft\WindowsApps\python3.13.exe' 'c:\Users\Chinnari\vscode\extensions\ms-python.python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '--' 'C:\Users\Chinnari\Downloads\new.py'

Account: BA-9988 | Holder: Casey Jordan | Balance: \$500.00

Successfully deposited \$150.50

Account: BA-9988 | Holder: Casey Jordan | Balance: \$650.50

Successfully withdrew \$100.00

Account: BA-9988 | Holder: Casey Jordan | Balance: \$550.50

The screenshot shows the Microsoft Visual Studio Code interface. The left sidebar has sections for RUN and DEBUG, with 'Run and Debug' highlighted. Below it, there's a note about customizing run and debug settings via a launch.json file, and another note about using terminal commands or an interactive chat. A button to 'Show automatic Python configurations' is also present. The main area displays the code for 'new.py', which creates a bank account, makes a deposit, withdraws money, and attempts a withdrawal that fails due to insufficient funds. The bottom status bar shows the command line path and the current file being run ('full stack'). The bottom right corner shows a preview of the Python extension's features.

```
C:\> Users > Chinnari > Downloads > new.py > ...
245     print("-" * 30)
246
247     # --- Sample Operations ---
248
249     # 1. Create a new account
250     my_account = BankAccount("BA-9988", "Casey Jordan", 500.0)
251     my_account.check_balance()
252
253     # 2. Demonstrate a deposit
254     my_account.deposit(150.50)
255
256     # 3. Demonstrate a withdrawal
257     my_account.withdraw(100.0)
258
259     # 4. Demonstrate validation (Insufficient Funds)
260     my_account.withdraw(1000.0)

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\Chinnari\OneDrive\Documents\full stack> c:; cd 'c:\Users\Chinnari\OneDrive\Documents\full sta
ck'; & 'c:\Users\Chinnari\AppData\Local\Microsoft\WindowsApps\python3.13.exe' 'c:\Users\Chinnari\.vscode\ext
ensions\ms-python.python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '63520' '--' 'C:\Users\Chin
nari\Downloads\new.py'
powershell... Python Deb...
Successfully withdrew $100.00
Account: BA-9988 | Holder: Casey Jordan | Balance: $550.50

Withdrawal Error: Insufficient funds. Current balance: $550.50
Account: BA-9988 | Holder: Casey Jordan | Balance: $550.50

PS C:\Users\Chinnari\OneDrive\Documents\full stack> []
```

File Edit Selection View Go Run ... ← → Q full stack 08 □ □ □ - □ □ □ ...

RUN AND DEBUG

RUN

Run and Debug

To customize Run and Debug create a launch.json file.

Debug using a terminal command or in an interactive chat.

Show automatic Python configurations

BREAKPOINTS

- Raised Exceptions
- Uncaught Exceptions
- User Uncaught Exceptions

full stack

1 260 Col 28 Spaces: 4 UTE-R CRIE { Python Chat quota reached 3 13.9 (Microsoft Store)