

AI ASSISTED CODING

ASSIGNMENT – 2.4

H Ti.No:2303A510B4

Batch:14

Task 1: Use Cursor AI to generate a Python class Book with attributes title, author, and a summary () method.

Prompt : “Generate a Python class named Book with attributes title, author, and a method summary() that returns a formatted string with the title and author.”

Code and output :

The screenshot shows the Microsoft Visual Studio Code interface. In the center, there is a code editor window with the following Python code:

```
# Generate a Python class named Book with attributes title, author, and a method summary()
class Book:
    def __init__(self, title, author):
        self.title = title
        self.author = author

    def summary(self):
        return f'{self.title} is written by {self.author}'
```

Below the code editor, the terminal window displays the following command-line session:

```
PS C:\Users\sathw\Documents\AI-Assisted-coding> & 'c:\Users\sathw\AppData\Local\Microsoft\WindowsApps\python3.11.exe' 'c:\Users\sathw\vscodeextensions\ms-python.python\2025.18.0-win32-x64\bundled\libs\debug\launcher' '62725' '--' 'c:\Users\sathw\Documents\AI-Assisted-coding\2.4.1.py'
'To Kill a Mockingbird' is written by Harper Lee.
PS C:\Users\sathw\Documents\AI-Assisted-coding> ^
PS C:\Users\sathw\Documents\AI-Assisted-coding> PS C:\Users\sathw\Documents\AI-Assisted-coding> c; cd 'c:\Users\sathw\Documents\AI-Assisted-coding'
; & 'c:\Users\sathw\AppData\Local\Microsoft\WindowsApps\python3.11.exe' 'c:\Users\sathw\vscodeextensions\ms-python\2025.18.0-win32-x64\bundled\libs\debug\launcher' '49681' '--' 'c:\Users\sathw\Documents\AI-Assisted-coding\2.4.2.py'
[{'name': 'bobby', 'age': 26}, {'name': 'Ashok', 'age': 25}, {'name': 'mohan', 'age': 30}]
PS C:\Users\sathw\Documents\AI-Assisted-coding>
PS C:\Users\sathw\Documents\AI-Assisted-coding>
```

The status bar at the bottom indicates the file is saved in Python, has 3.13.9 (Microsoft Store) version, and was last modified on 19-01-2026 at 14:46.

Justification:

Object-Oriented Programming helps model real-world entities like books using classes and objects

Encapsulation allows data (title, author) and behavior (summary) to be bundled together logically.

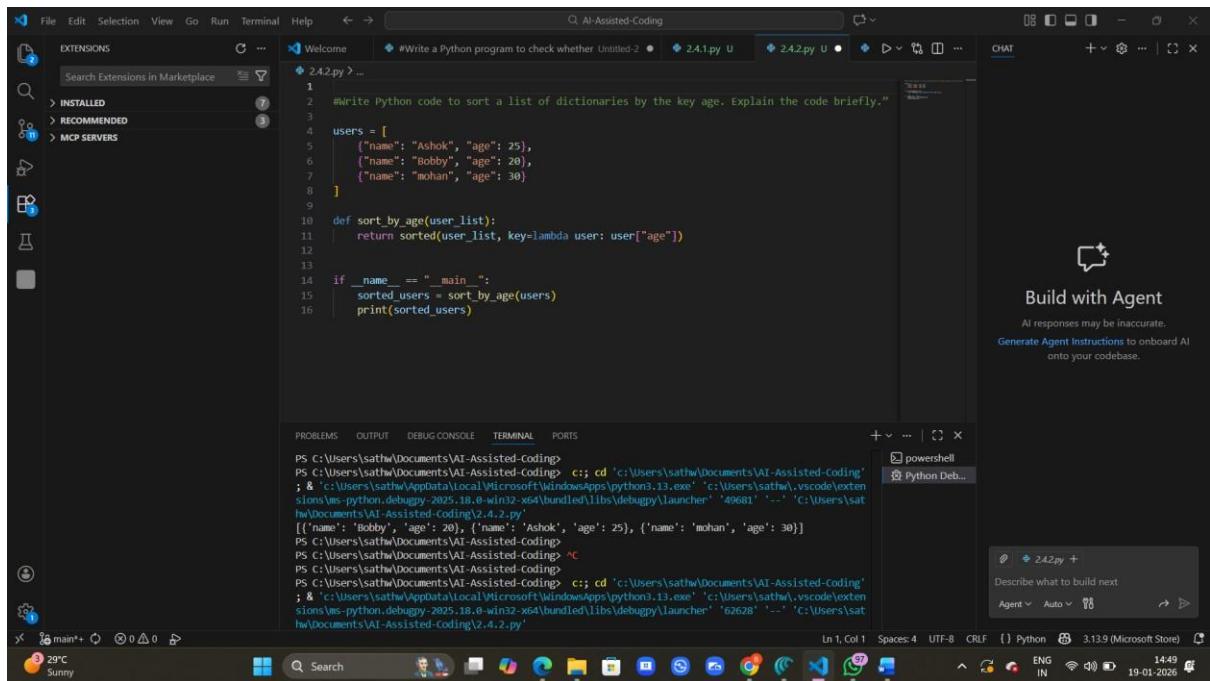
This approach improves code organization, scalability, and ease of maintenance in software systems.

Task 2: Use Gemini and Cursor AI to generate code that sorts a list of dictionaries by a key.

Prompt: Write Python code to sort a list of dictionaries by the key age. Explain the code

briefly.

Code and output :



The screenshot shows the Microsoft Visual Studio Code interface. The main editor window contains the following Python code:

```
#Write Python code to sort a list of dictionaries by the key age. Explain the code briefly.
users = [
    {"name": "Ashok", "age": 25},
    {"name": "Bobby", "age": 20},
    {"name": "mohan", "age": 30}
]

def sort_by_age(user_list):
    return sorted(user_list, key=lambda user: user["age"])

if __name__ == "__main__":
    sorted_users = sort_by_age(users)
    print(sorted_users)
```

The terminal below shows the command-line output of running the script:

```
PS C:\Users\sathw\Documents\AI-Assisted-Coding> cd 'c:\Users\sathw\Documents\AI-Assisted-Coding'
; & 'c:\Users\sathw\AppData\Local\Microsoft\WindowsApps\python3.11.exe' 'c:\Users\sathw\.vscode\extensions\les-pythond-debugger-2025.10.0-win32-x64\bundled\libs\debuggy\launcher' '49681' '-l' 'C:\Users\sat
hw\Documents\AI-Assisted-Coding\2.4.2.py'
[{"name": "Bobby", "age": 20}, {"name": "Ashok", "age": 25}, {"name": "mohan", "age": 30}]
PS C:\Users\sathw\Documents\AI-Assisted-Coding>
PS C:\Users\sathw\Documents\AI-Assisted-Coding> <C:\Users\sathw\Documents\AI-Assisted-Coding>
```

The status bar at the bottom indicates the file is saved and shows the path: C:\Users\sathw\Documents\AI-Assisted-Coding\2.4.2.py. The date and time shown are 19-01-2026.

Justification:

Gemini's code is more concise and easy to understand for quick tasks.

Cursor's approach is slightly more structured and reusable due to function encapsulation.

Task 3: Ask Gemini to generate a calculator using functions and explain how it works.

Prompt: Write a Python calculator program using separate functions for add, subtract, multiply, and divide. Then explain how the program works step by step.

Code and Output:

The screenshot shows the Visual Studio Code interface. The code editor displays a Python script named 2.43.py. The script defines four functions: add, subtract, multiply, and divide. It then prompts the user for two numbers and prints the results of addition and subtraction. The terminal below shows the execution of the script and its output. A sidebar on the right shows AI-assisted coding options, including "Build with Agent".

```
#Write a Python program to check whether
1 |   write a Python calculator program using separate functions for add, subtract, multiply, and d
2 |   2.43.py > ...
3 |   1 |   2.41.py U 2.42.py U 2.43.py U 2.44.py U ...
4 |   2 |   return a + b
5 |   3 |   def add(a, b):
6 |   4 |       return a - b
7 |   5 |   def subtract(a, b):
8 |   6 |       return a * b
9 |   7 |   def multiply(a, b):
10 |   8 |       if b == 0:
11 |   9 |           return "Error: Division by zero"
12 |   10 |       return a / b
13 |   11 |
14 |   12 |   if __name__ == "__main__":
15 |   13 |       a = float(input("Enter first number: "))
16 |   14 |       b = float(input("Enter second number: "))
17 |   15 |
18 |   16 |       print("Addition:", add(a, b))
19 |   17 |       print("Subtraction:", subtract(a, b))
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```

Task 4: Generate an Armstrong number program using Gemini, then improve it using Cursor AI.

Prompt: Write a Python program to check whether a given number is an Armstrong number. Use basic Python constructs and explain briefly.

Code and Input:

The screenshot shows the Microsoft Visual Studio Code interface with the following details:

- File Bar:** File, Edit, Selection, View, Go, Run, Terminal, Help.
- Search Bar:** Q AI-Assisted-Coding
- Extensions Sidebar:** Search Extensions in Marketplace, INSTALLED, RECOMMENDED, MCP SERVERS.
- Code Editor:** A Python script named 2.4.4.py with the following code:

```
1 #Write a Python program to check whether a given number is an Armstrong number. Use basic Python constructs and explain briefly.
2 def is_armstrong(num):
3     digits = str(num)
4     power = len(digits)
5     total = sum(int(digit) ** power for digit in digits)
6     return total == num
7
8
9 if __name__ == "__main__":
10     number = int(input("Enter a number: "))
11
12     if is_armstrong(number):
13         print("Armstrong Number")
14     else:
15         print("Not an Armstrong Number")
16
```
- Terminal:** Shows command-line output for running the script.

```
Enter a number: 157
Not an Armstrong Number
PS C:\Users\sathw\Documents\AI-Assisted-Coding> ^C
PS C:\Users\sathw\Documents\AI-Assisted-Coding>
PS C:\Users\sathw\Documents\AI-Assisted-Coding> c: cd 'c:\Users\sathw\Documents\AI-Assisted-Coding' & 'c:\Users\sathw\AppData\Local\Microsoft\WindowsApps\python3.11.exe' 'c:\Users\sathw\vscode\extensions\ms-python.python.debugger-2023.18.0-win32-x64\handled\libs\debgui\launcher' '50999' '--' 'c:\Users\sathw\Documents\AI-Assisted-Coding\2.4.4.py'
Enter a number: 153
Armstrong Number
PS C:\Users\sathw\Documents\AI-Assisted-Coding> ^C
PS C:\Users\sathw\Documents\AI-Assisted-Coding>
PS C:\Users\sathw\Documents\AI-Assisted-Coding> c: cd 'c:\Users\sathw\Documents\AI-Assisted-Coding'
```
- Bottom Status Bar:** Shows file paths, line numbers, and other system information.

Justification:

The optimized version avoids string conversion, reducing unnecessary overhead.

It uses arithmetic operations, which are more efficient and closer to low-level computation.

The logic is clearer for understanding numeric processing and improves overall performance.