ASSIGNMENT-2

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BATCH-16

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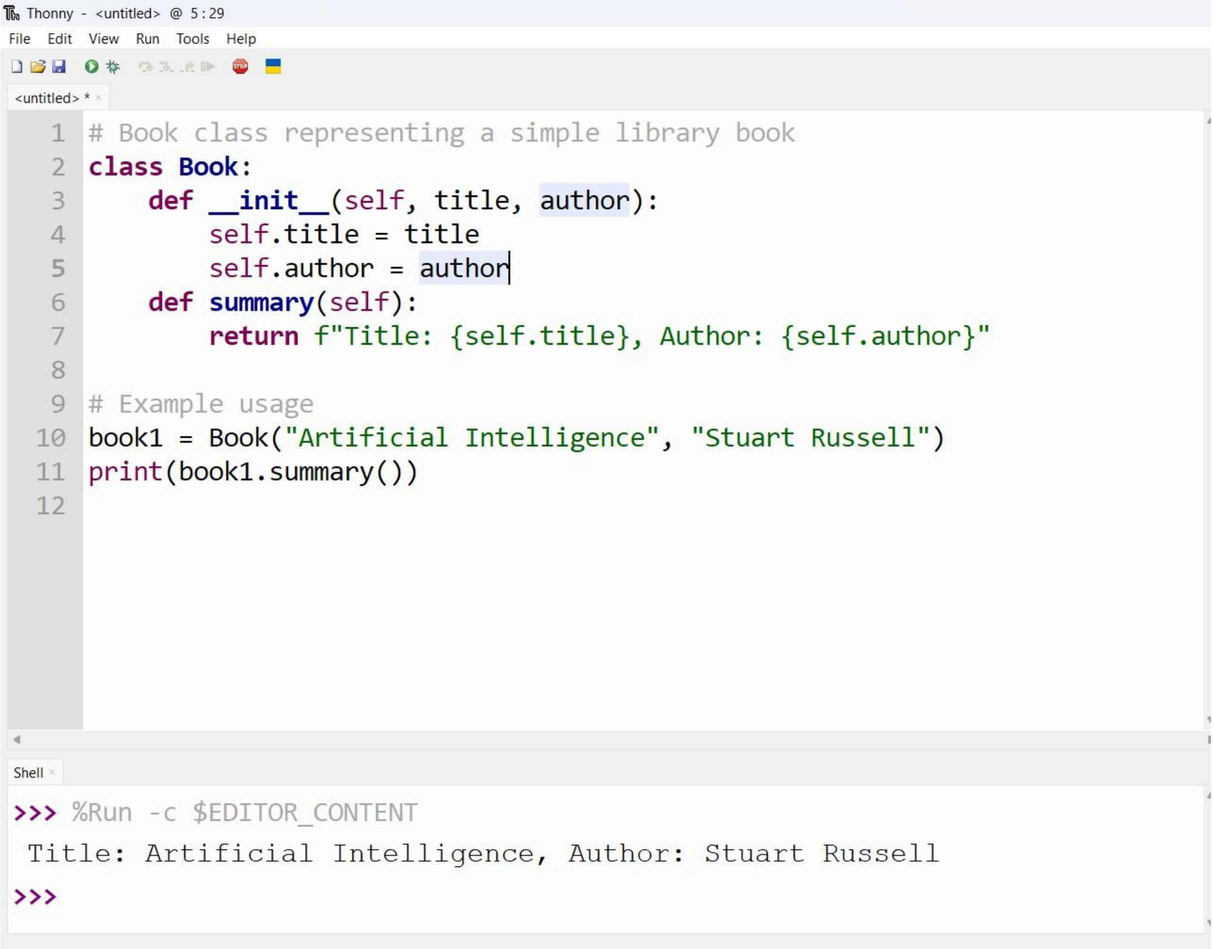
Task 1: Book Class Generation (Using Cursor AI)

Python Code: Book Class

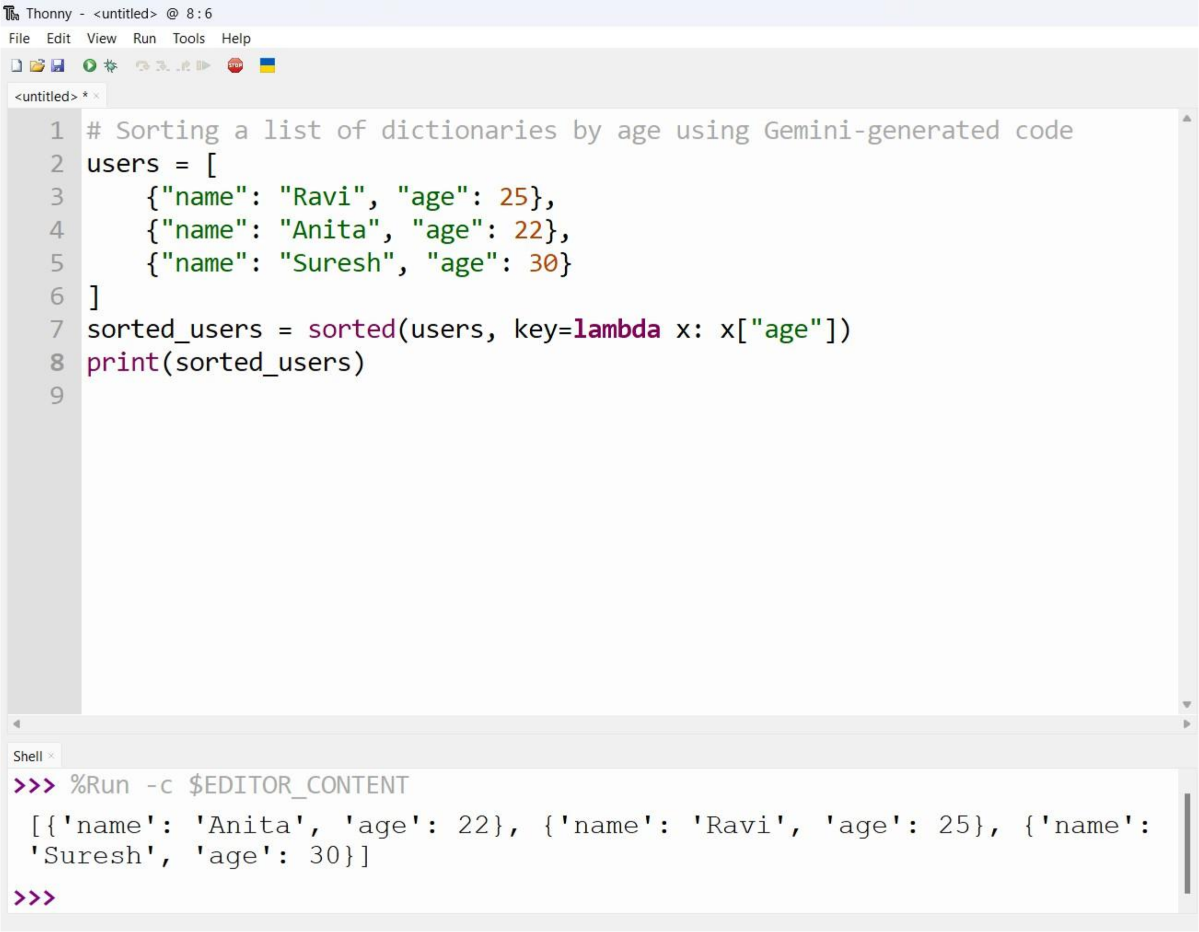


```python
# Book class representing a simple library book
class Book:
    def __init__(self, title, author):
        self.title = title
        self.author = author
    def summary(self):
        return f"Title: {self.title}, Author: {self.author}"

# Example usage
book1 = Book("Artificial Intelligence", "Stuart Russell")
print(book1.summary())
```

```
>>> %Run -c $EDITOR_CONTENT
 Title: Artificial Intelligence, Author: Stuart Russell
>>>
```

Task 2: Sorting Dictionaries with AI

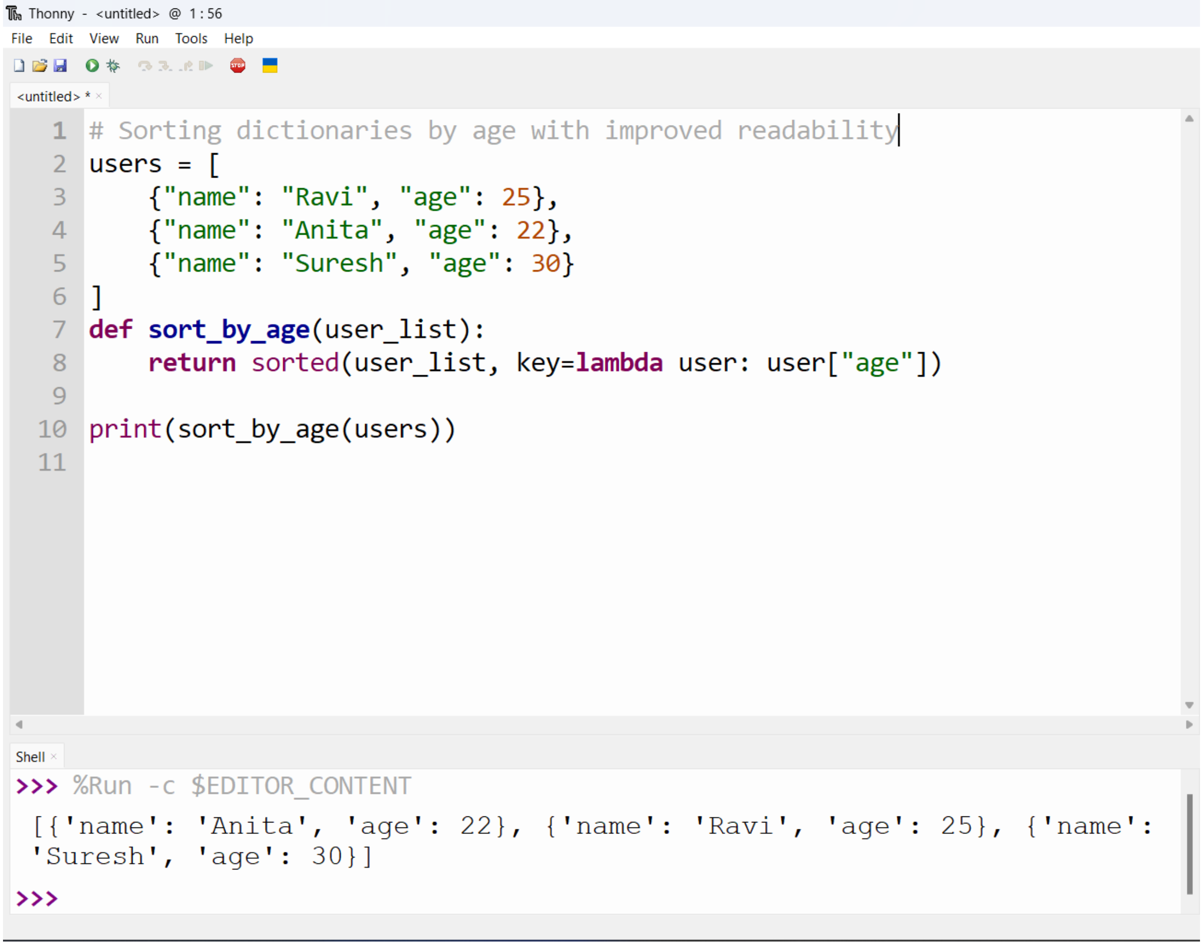
🔶 **Using Google Gemini**



```python
# Sorting a list of dictionaries by age using Gemini-generated code
users = [
    {"name": "Ravi", "age": 25},
    {"name": "Anita", "age": 22},
    {"name": "Suresh", "age": 30}
]
sorted_users = sorted(users, key=lambda x: x["age"])
print(sorted_users)
```

```
>>> %Run -c $EDITOR_CONTENT
 [{'name': 'Anita', 'age': 22}, {'name': 'Ravi', 'age': 25}, {'name':
 'Suresh', 'age': 30}]
>>>
```

Using Cursor AI



```python
# Sorting dictionaries by age with improved readability
users = [
    {"name": "Ravi", "age": 25},
    {"name": "Anita", "age": 22},
    {"name": "Suresh", "age": 30}
]
def sort_by_age(user_list):
    return sorted(user_list, key=lambda user: user["age"])

print(sort_by_age(users))
```

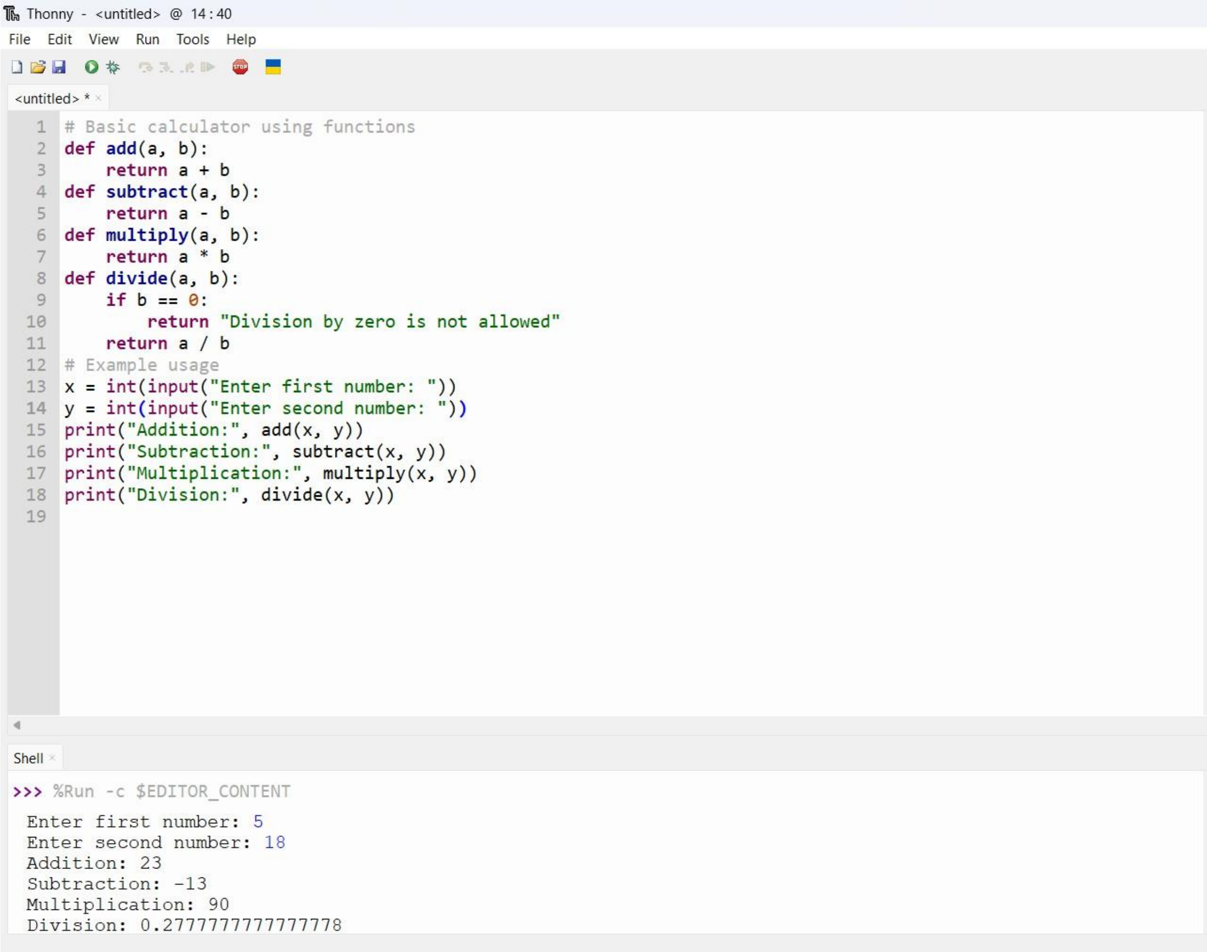
```
>>> %Run -c $EDITOR_CONTENT
 [{'name': 'Anita', 'age': 22}, {'name': 'Ravi', 'age': 25}, {'name':
 'Suresh', 'age': 30}]
>>>
```

Comparison (Short Note):

The solution generated by Gemini is short and direct, making it quick to understand for simple tasks. Cursor AI, on the other hand, focused more on clean structure by using a function, which improves readability and makes the code reusable. While both approaches have similar performance, the Cursor AI version is more suitable for larger projects where maintainability and clarity are important.

Task 3: Calculator Using Functions (Gemini)

Calculator Code

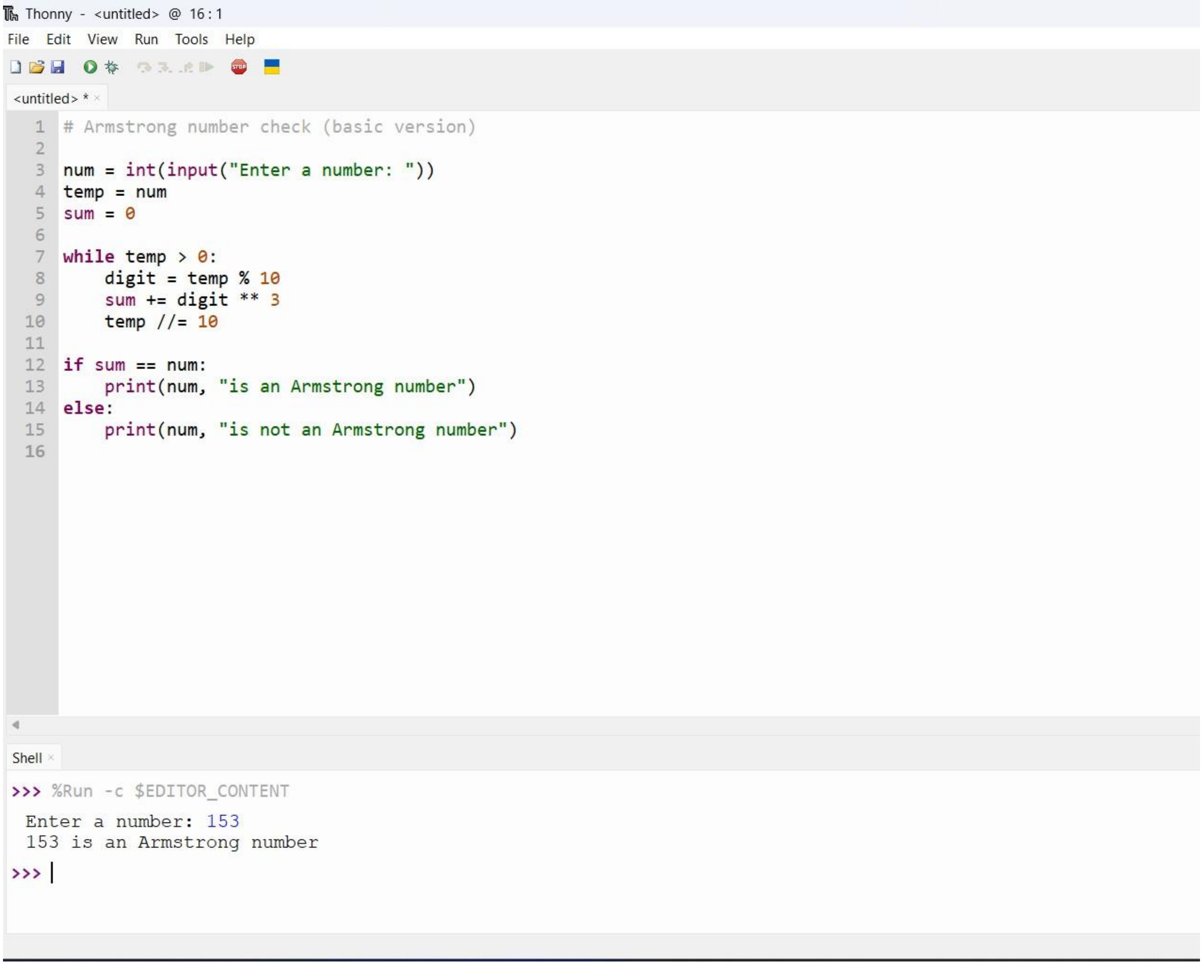


```python
# Basic calculator using functions
def add(a, b):
    return a + b
def subtract(a, b):
    return a - b
def multiply(a, b):
    return a * b
def divide(a, b):
    if b == 0:
        return "Division by zero is not allowed"
    return a / b
# Example usage
x = int(input("Enter first number: "))
y = int(input("Enter second number: "))
print("Addition:", add(x, y))
print("Subtraction:", subtract(x, y))
print("Multiplication:", multiply(x, y))
print("Division:", divide(x, y))
```

```
>>> %Run -c $EDITOR_CONTENT

 Enter first number: 5
 Enter second number: 18
 Addition: 23
 Subtraction: -13
 Multiplication: 90
 Division: 0.2777777777777778
```

Task 4: Armstrong Number Optimization

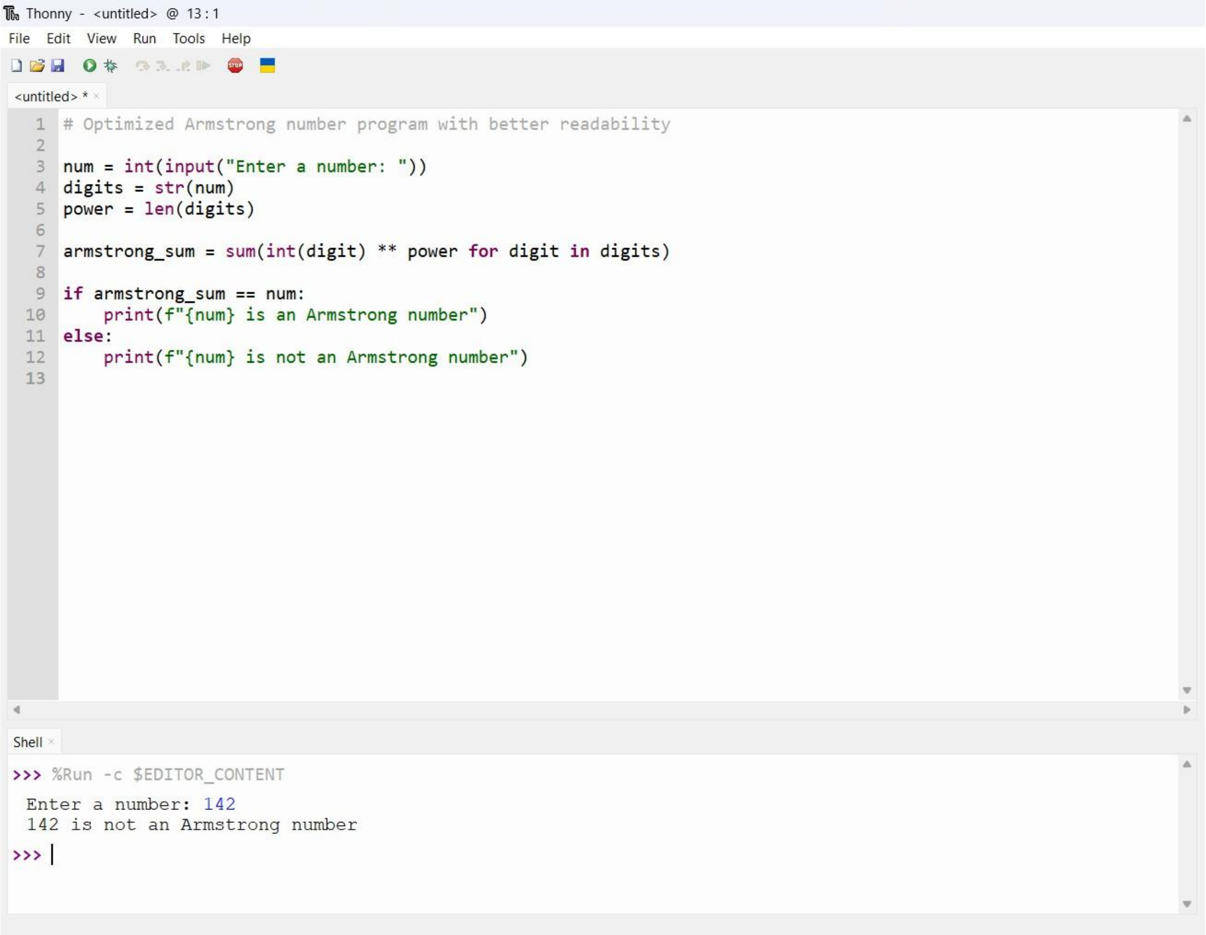
◆ Version 1: Gemini-Generated Armstrong Program



```python
# Armstrong number check (basic version)

num = int(input("Enter a number: "))
temp = num
sum = 0

while temp > 0:
    digit = temp % 10
    sum += digit ** 3
    temp //= 10

if sum == num:
    print(num, "is an Armstrong number")
else:
    print(num, "is not an Armstrong number")

```

```
>>> %Run -c $EDITOR_CONTENT

 Enter a number: 153
 153 is an Armstrong number

>>> 
```

Version 2: Optimized Using Cursor AI



```python
# Optimized Armstrong number program with better readability

num = int(input("Enter a number: "))
digits = str(num)
power = len(digits)

armstrong_sum = sum(int(digit) ** power for digit in digits)

if armstrong_sum == num:
    print(f"{num} is an Armstrong number")
else:
    print(f"{num} is not an Armstrong number")
```

```
>>> %Run -c $EDITOR_CONTENT

 Enter a number: 142
 142 is not an Armstrong number

>>> 
```

Summary of Improvements:

- **Reduced lines of code**
- **Removed unnecessary variables**
- **Improved readability using Python built-in functions**
- **Works for Armstrong numbers of any length**