Midterm Exam 1

Date/Time: 2023.04.11 08:10 – 09:00

(程式檔命名**學號_midterm1.py**，上傳至 Moodle **Midterm1** 上傳區)

Problem: Armstrong Number

[上機寫程式部分]

Write a Python program that takes a positive integer n as input and finds all Armstrong numbers between 1 and n. An Armstrong number is a positive integer that is equal to the sum of its digits raised to the power of the number of digits. For example, 371 is an Armstrong number because $3^3 + 7^3 + 1^3 = 371$.

Input

- The program should prompt the user to enter a positive integer n.
- The value of n should be greater than 0.

Output

- The program should output a list of all Armstrong numbers between 1 and n.
- The output should be in the form of a list.
- If no Armstrong numbers found between 1 and n, the program should output an empty list.

Sample Input/Output (以下是你程式執行後須印出的結果)

```
c:\workspace>python midterm1.py
Enter a positive integer: 100
Armstrong numbers from 1 to 100 are: [1, 2, 3, 4, 5, 6, 7, 8, 9]

c:\workspace>python midterm1.py
Enter a positive integer: 10000
Armstrong numbers from 1 to 10000 are: [1, 2, 3, 4, 5, 6, 7, 8, 9, 153, 370,
 371, 407, 1634, 8208, 9474]

c:\workspace>python midterm1.py
Enter a positive integer: -10
Armstrong numbers from 1 to -10 are: []

c:\workspace>python midterm1.py
Enter a positive integer: 370
Armstrong numbers from 1 to 370 are: [1, 2, 3, 4, 5, 6, 7, 8, 9, 153, 370]

c:\workspace>
```

(繳交是交 midterm1.py 檔，不是交截圖)

Note: You need to write comments (註解) for each part in your code.