

1 Neon Number

Definition

A **Neon Number** is a number where the sum of the digits of its square is equal to the number itself.

Steps to Check

1. Square the given number.
2. Find the sum of the digits of the squared result.
3. If the sum equals the original number, it is a **Neon Number**.

Example

Input: 9

Calculation:

- Square of 9: $9 \times 9 = 81$
- Sum of digits: $8 + 1 = 9$
- Since $9 == 9$, it is a **Neon Number**.

Expected Output:

```
9 is a Neon Number.
```

Input: 12

Calculation:

- Square of 12: $12 \times 12 = 144$
- Sum of digits: $1 + 4 + 4 = 9$
- Since $9 \neq 12$, it is **NOT a Neon Number**.

Expected Output:

```
12 is not a Neon Number.
```

2 Armstrong Number

Definition

A **Number is Armstrong** if the sum of its digits, each raised to the power of the total number of digits, equals the number itself.

Steps to Check

1. Count the number of digits.
2. Compute the sum of each digit raised to the power of the total digits.
3. If the sum equals the original number, it is an **Armstrong Number**.

Example

Input: 153

Calculation:

- 153 has 3 digits.
- Compute: $1^3 + 5^3 + 3^3 = 1 + 125 + 27 = 153$
- Since $153 == 153$, it is an **Armstrong Number**.

Expected Output:

```
153 is an Armstrong Number.
```

Input: 123

Calculation:

- 123 has 3 digits.
- Compute: $1^3 + 2^3 + 3^3 = 1 + 8 + 27 = 36$
- Since $36 \neq 123$, it is NOT an Armstrong Number.

Expected Output:

```
123 is not an Armstrong Number.
```

3 Factorial Number

Definition

The **Factorial of a Number (n!)** is the product of all positive integers from 1 to n.

Steps to Calculate

1. Start from 1 and multiply up to n.
2. Store the result and return the value.

Example

Input: 5

Calculation:

- $5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$

Expected Output:

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Factorial of 5 is 120.
```

Input: 7

Calculation:

- $7! = 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 5040$

Expected Output:

```
Factorial of 7 is 5040.
```