Problem Solving

Problem #1

Write a program to find a factorial of a number

```
n = int(input())
fact = 1
i = 1

while i <= n:
    fact *= i
    i += 1
print(fact)
```

```
 0

1
```

Problem #2

Factors of a Number

A factor is a number that divides the given number without any remainder. Who can be the factors?

```
n = int(input())
i = 1

while i <= n:
    if n % i == 0:
```

```
        print(i)
    i += 1
```

```
 7
```

```
1
7
```

Problem #3 (Home work Problem)

Write a program to input T numbers(N) from user and print count of digits of the given numbers.

Problem Constraints

1 <= T <= 100

0 <= N <= 100000000

Input Format

First line is T which means number of test cases.

Each next N lines contain an integer N.

Output Format

T lines each containing count of digits of the input integer.

Example Input

Input 1:

2

0

1

Input 2:

2

100

10101

Example Output

Output 1:

1

1

Output 2:

3

5

```
T = int(input())
i = 0

while i < T:
    n = int(input())
    i += 1
```

```
 3
 12123
 3434
 234
```

```
T = int(input())
i = 0

while i < T:
    n = int(input())
    count = 0

    if n == 0:
        count = 1
```

```
    while n > 0:
        n //= 10 # same as n = n // 10
        count += 1
    print(count)
    i += 1
```

```
 3
 12
```

```
2
```

```
 323
```

```
3
```

```
 1
```

```
1
```

```
n = int(input())
count = 0

if n == 0:
    count = 1
while n > 0:
    n //= 10 # same as n = n // 10
    count += 1
print(count)
```

```
 3
```

```
1
```

```
# Can we start again?
```

Problem 4

Sum the digits Python

Problem Description

Write a program to input T numbers(N) from user and print the sum of the digits of the given numbers.

Problem Constraints

1 <= T <= 1000

0 <= N <= 100000000

Input Format

First line is T which means number of test cases.

Each next T lines contain an integer N.

Output Format

T lines each containing one integer representing sum of the digits of the input integer.

Example Input

Input 1:

2

5

1001

Input 2:

2

123

1589

Example Output

Output 1:

5

2

Output 2:

6

23

Example Explanation

Explanation 1:

5 has only 1 digit hence sum is 5.

Sum(1001) = 1+0+0+1 = 2.

Explanation 2:

Sum(123) = 1+2+3 = 6.

Sum(1589) = 1+5+8+9 = 23.

```
T = int(input())
i = 0

while i < T:
    n = int(input())

    total = 0
    while n > 0:
        last = n % 10
        n = n // 10
        total += last
    print(total)

    i += 1
```

```
 1
 0

0
```

Given a number check number of 1s present in it?

```
n = int(input())

count = 0

while n > 0:
    # Get the last digit
    last = n % 10
    # Check if it's 1
    if last == 1:
        count += 1
    # reduce the value of n
    n = n // 10

# print count
print(count)
```

```
 0101

2
```

Convert a binary number into Decimal

Problem #4 (Homework Problem)

Sum the digits Python

Problem Description

Write a program to input T numbers(N) from user and print the sum of the digits of the given numbers.

Problem Constraints

1 <= T <= 1000

0 <= N <= 100000000

Input Format

First line is T which means number of test cases.

Each next T lines contain an integer N.

Output Format

T lines each containing one integer representing sum of the digits of the input integer.

Example Input

Input 1:

2

5

1001

Input 2:

2

123

1589

Example Output

Output 1:

5

2

Output 2:

6

23

Example Explanation

Explanation 1:

5 has only 1 digit hence sum is 5.

Sum(1001) = 1+0+0+1 = 2.

Explanation 2:

Sum(123) = 1+2+3 = 6.

Sum(1589) = 1+5+8+9 = 23.

Problem #5

Write a program to convert a binary number to decimal number

Problem #6

Count the amount of ones in the binary representation of an integer. For example, since 12 is 1100 in binary, the return value should be 2.