Problem Solving

Problem 1

Write a program to find a factorial of a number

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

# if n == 0:
#     fact = 1

while start <= n:
    fact *= start
    # increment the start
    start += 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?

```
# Using a while loop

n = int(input())
start = 1

while start <= n:
    # check for remainder
    if n % start == 0:
        print(start)
    # increment the start
    start += 1
```

```
 10

1
2
5
10
```

```
# For loop

n = int(input())

for i in range(1, n+1):
    # check for remainder
    if n % i == 0:
        print(i)
```

```
 10

1
2
5
10
```

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

```
# taking multiple inputs

T = int(input())

while T > 0:
    n = int(input())
    T -= 1
```

```
 3
 12
 10101
 123
```

```
# quiz

print(123 // 10)
```

12

```
12 // 10
```

1

```
1 // 10
```

```
0
```

```
# Finding total digits in a number

n = int(input())
count = 0

while n > 0:
    n = n // 10
    count += 1
print(count)
```

```
 123
```

```
3
```

```
# Final code

T = int(input())

while T > 0:
    n = int(input())
    # This T is for external loop i,e test cases
    T -= 1

    count = 0
    # Code for number of digits
    while n > 0:
        n = n // 10
        count += 1
    print(count)
```

```
 1
 0
```

```
0
```

```
# Adjusting for 0

T = int(input())

while T > 0:
```

```
    n = int(input())
    # This T is for external loop i,e test cases
    T -= 1


    count = 0
    # for 0
    if n == 0:
        count = 1

    # Code for number of digits
    while n > 0:
        n = n // 10
        count += 1
    print(count)
```

```
 1
 0

1
```

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.

```
# Taking T inputs
T = int(input())

while T > 0:
    n = int(input())
    T -= 1
```

```
 2
 234
 5
```

```
# code for sum of a digit

n = int(input())
add = 0

while n > 0:
    # find the last digit
    last = n % 10

    # Chop off the last digit
    n = n // 10   # n //= 10

    # add the last digit
    add += last

print(add)
```

```
 101012

5
```

```
# Final code for this problem

T = int(input())

while T > 0:
    # Taking T number of inputs
    n = int(input())
    T -= 1


    # Adding adding digits of the inputs
    add = 0
    while n > 0:
        # find the last digit
        last = n % 10

        # Chop off the last digit
        n = n // 10   # n //= 10

        # add the last digit
        add += last
```

```
    print(add)
```

```
 3
 1234
```

```
10
```

```
 101012
```

```
5
```

```
 105
```

```
6
```

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

```
# Logic

n = int(input())
count = 0

while n > 0:
    last = n % 10

    if last == 1:
        count += 1

    # Chop off last digit
    n //= 10

print(count)
```

```
 008970
```

```
0
```

Reverse a number

- n = 123
- output: 321

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

```
while n > 0:
    # get the last digit
    last = n % 10

    # update the reverse
    rev = rev * 10 + last

    # chop off the last digit
    n = n // 10

print(rev)
```

```
 123

321
```