Started on	Monday, 25 August 2025, 10:28 AM
State	Finished
Completed on	Monday, 25 August 2025, 8:53 PM
Time taken	10 hours 24 mins
Marks	10.00/10.00
Grade	**100.00** out of 100.00

Question 1 Correct Mark 1.00 out of 1.00

Given an integer `num`, return *the number of digits in `num` that divide* `num`.

An integer `val` divides `nums` if `nums % val == 0`.

Example 1:

```
Input: num = 7
Output: 1
Explanation: 7 divides itself, hence the answer is 1.
```

Example 2:

```
Input: num = 121
Output: 2
Explanation: 121 is divisible by 1, but not 2. Since 1 occurs twice as a digit, we return 2.
```

Example 3:

```
Input: num = 1248
Output: 4
Explanation: 1248 is divisible by all of its digits, hence the answer is 4.
```

For example:

Input	Result
7	1
121	2
1248	4

Answer: (penalty regime: 0 %)

```
num=int(input())
n=num
c=0
while num!=0:
    r=num%10
    num=num//10
    if n%r==0:
        c=c+1
print(c)
```

	Input	Expected	Got	
✔	7	1	1	✔
✔	121	2	2	✔

	Input	Expected	Got	
✔	1248	4	4	✔
✔	12	2	2	✔
✔	45	1	1	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

Question 2 Correct Mark 1.00 out of 1.00

An **ugly number** is a *positive* integer which does not have a prime factor other than 2, 3, and 5.

Given an integer `n`, Print `True` *if* `n` *is an* ***ugly number,*** *Otherwise Print False.*

For example:

Input	Result
6	True
14	False

Answer: (penalty regime: 0 %)

```
n=int(input())
for p in [2,3,5]:
    while n%p==0:
        n=n//p
if n==1:
    print('True')
else:
    print("False")
```

	Input	Expected	Got	
✔	6	True	True	✔
✔	14	False	False	✔
✔	125	True	True	✔
✔	21	False	False	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

Question 3 Correct Mark 1.00 out of 1.00

Determine the factors of a number (i.e., all positive integer values that evenly divide into a number) and then return the p^{th} element of the list, sorted ascending. If there is no p^{th} element, return 0.

Example

n = 20

p = 3

The factors of 20 in ascending order are {1, 2, 4, 5, 10, 20}. Using 1-based indexing, if p = 3, then 4 is returned. If p > 6, 0 would be returned.

Constraints

$1 \le n \le 10^{15}$

$1 \le p \le 10^9$

The first line contains an integer n, the number to factor.

The second line contains an integer p, the 1-based index of the factor to return.

Sample Case 0

Sample Input 0

10

3

Sample Output 0

5

Explanation 0

Factoring n = 10 results in {1, 2, 5, 10}. Return the p = 3^{rd} factor, 5, as the answer.

Sample Case 1

Sample Input 1

10

5

Sample Output 1

0

Explanation 1

Factoring n = 10 results in {1, 2, 5, 10}. There are only 4 factors and p = 5, therefore 0 is returned as the answer.

Sample Case 2

Sample Input 2

1

1

Sample Output 2

1

Explanation 2

Factoring n = 1 results in {1}. The p = 1st factor of 1 is returned as the answer.

For example:

Input	Result
10 3	5
10 5	0

Input	Result
1 1	1

Answer: (penalty regime: 0 %)

```
n=int(input())
d=int(input())
c=0
r=0
for i in range(1,n+1):
    if n%i==0:
        c=c+1
        if c==d:
            r=i
            break
if r==0:
    print(0)
else:
    print(r)
```

	Input	Expected	Got	
✔	10 3	5	5	✔
✔	10 5	0	0	✔
✔	1 1	1	1	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

Question 4 Correct Mark 1.00 out of 1.00

You are climbing a staircase. It takes `n` steps to reach the top.

Each time you can either climb `1` or `2` steps. In how many distinct ways can you climb to the top?

Example 1:

```
Input: n = 2
Output: 2
Explanation: There are two ways to climb to the top.
1. 1 step + 1 step
2. 2 steps
```

Example 2:

```
Input: n = 3
Output: 3
Explanation: There are three ways to climb to the top.
1. 1 step + 1 step + 1 step
2. 1 step + 2 steps
3. 2 steps + 1 step
```

Constraints:

- `1 <= n <= 45`

For example:

Input	Result
2	2
3	3

Answer: (penalty regime: 0 %)

```
n=int(input())
if n==1:
    print(1)
else:
    a=1
    b=2
    for i in range(3,n+1):
        a,b=b,a+b
    if n>1:
        print(b)
    else:
        print(a)
```

	Input	Expected	Got	
✔	2	2	2	✔
✔	3	3	3	✔
✔	4	5	5	✔
✔	5	8	8	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

Question 5 Correct Mark 1.00 out of 1.00

Given a positive integer n, write a function that returns the number of set bits in its binary representation (also known as the Hamming weight).

Example 1:

Input: n = 11

Output: 3

Explanation:

The input binary string **1011** has a total of three set bits.

Example 2:

Input: n = 128

Output: 1

Explanation:

The input binary string **10000000** has a total of one set bit.

Example 3:

Input: n = 2147483645

Output: 30

Explanation:

The input binary string **1111111111111111111111111111101** has a total of thirty set bits.

For example:

Input	Result
11	3
128	1

Answer: (penalty regime: 0 %)

```
n=int(input())
c=0
while n>0:
    if n%2==1:
        c=c+1
    n=n//2
print(c)
```

	Input	Expected	Got	
✔	11	3	3	✔
✔	128	1	1	✔
✔	32	1	1	✔
✔	2147483645	30	30	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

Question 6 Correct Mark 1.00 out of 1.00

A **happy number** is a number defined by the following process:

- Starting with any positive integer, replace the number by the sum of the squares of its digits.
- Repeat the process until the number equals 1 (where it will stay), or it **loops endlessly in a cycle** which does not include 1.
- Those numbers for which this process **ends in 1** are happy.

Print `true` *if* `n` *is a happy number, and* `false` *if not.*

For example:

Input	Result
19	True
2	False

Answer: (penalty regime: 0 %)

```
n=int(input())
while n!=1 and n!=4:
    s=0
    while n>0:
        d=n%10
        s=s+(d*d)
        n=n//10
    n=s
if n==1:
    print("True")
else:
    print('False')
```

	Input	Expected	Got	
✔	19	True	True	✔
✔	2	False	False	✔
✔	82	True	True	✔
✔	16	False	False	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

Question 7 Correct Mark 1.00 out of 1.00

Given an integer `n`, return *the number of trailing zeroes in* `n!`.

Note that `n! = n * (n - 1) * (n - 2) * ... * 3 * 2 * 1`.

Example 1:

```
Input: n = 3
Output: 0
Explanation: 3! = 6, no trailing zero.
```

Example 2:

```
Input: n = 5
Output: 1
Explanation: 5! = 120, one trailing zero.
```

Example 3:

```
Input: n = 0
Output: 0
```

Constraints:

- $0 <= n <= 10^4$

For example:

Input	Result
3	0
5	1

Answer: (penalty regime: 0 %)

```
n=int(input())
c=0
while n>=5:
    n=n//5
    c=c+n
print(c)
```

	Input	Expected	Got	
✔	3	0	0	✔

	Input	Expected	Got	
✔	5	1	1	✔
✔	0	0	0	✔
✔	10	2	2	✔
✔	25	6	6	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

Question 8 Correct Mark 1.00 out of 1.00

A perfect number is a **positive integer** that is equal to the sum of its **positive divisors**, excluding the number itself. A **divisor** of an integer `x` is an integer that can divide `x` evenly.

Given an integer `n`, return `True` *if* `n` *is a perfect number, otherwise return* `False`.

Example 1:

```
Input: num = 28
Output: True
Explanation: 28 = 1 + 2 + 4 + 7 + 14
1, 2, 4, 7, and 14 are all divisors of 28.
```

Example 2:

```
Input: num = 7
Output: False
```

Constraints:

- `1 <= num <=` 10^8

Answer: (penalty regime: 0 %)

```
num=int(input())
s=0
for i in range(1,num//2+1):
    if num%i==0:
        s=s+i
if s==num and num!=1:
    print("True")
else:
    print('False')
```

	Input	Expected	Got	
✔	28	True	True	✔
✔	7	False	False	✔
✔	8128	True	True	✔
✔	496	True	True	✔
✔	500	False	False	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

Question 9 Correct Mark 1.00 out of 1.00

Given an integer `num`, repeatedly add all its digits until the result has only one digit, and return it.

Example 1:

```
Input: num = 38
Output: 2
Explanation: The process is
38 --> 3 + 8 --> 11
11 --> 1 + 1 --> 2
Since 2 has only one digit, return it.
```

Example 2:

```
Input: num = 0
Output: 0
```

For example:

Input	Result
38	2
0	0

Answer: (penalty regime: 0 %)

```
n=int(input())
while n>=10:
    s=0
    while n>0:
        s=s+n%10
        n=n//10
    n=s
print(n)
```

	Input	Expected	Got	
✔	38	2	2	✔
✔	0	0	0	✔
✔	11	2	2	✔
✔	50	5	5	✔
✔	81	9	9	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.

Question 10 Correct Mark 1.00 out of 1.00

Write a program in Python to display a pyramid with "*" as follows,

For example:

Input	Result
4	* *** ***** *******

Answer: (penalty regime: 0 %)

```
n=int(input())
for i in range(1,n+1):
    for j in range(n-i):
        print(" ",end="")
    for k in range(2*i-1):
        print("*",end='')
    print()
```

	Input	Expected	Got	
✔	4	* *** ***** *******	* *** ***** *******	✔
✔	2	* ***	* ***	✔
✔	5	* *** ***** ******* *********	* *** ***** ******* *********	✔

Passed all tests! ✔

Correct

Marks for this submission: 1.00/1.00.