

# GE23131-Programming Using C-2024

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Question 1

Correct

Marked out of 1.00

☐ Flag question

A binary number is a combination of 1s and 0s. Its  $n^{\text{th}}$  least significant digit is the  $n^{\text{th}}$  digit starting from the right with 1. Given a decimal number, convert it to binary and determine the value of the  $4^{\text{th}}$  least significant digit.

Example

number = 23

- Convert the decimal number 23 to binary number:  $23_{10} = 2^4 + 2^2 + 2^1 + 2^0 = (10111)_2$
- The value of the  $4^{\text{th}}$  index from the right in the binary representation is 0.

Function Description

Complete the function fourthBit in the editor below.

fourthBit has the following parameter(s):

int number: a decimal integer

Returns:

int: an integer 0 or 1 matching the 4th least significant digit in the binary representation of number

Constraints

$$0 \leq \text{number} < 2^{31}$$

Input Format for Custom Testing

Input from stdin will be processed as follows and passed to the function.

The only line contains an integer, number.

Sample Case 0

Sample Input 0

STDIN    Function

-----

32    →    number = 32

Sample Output 0

0

Explanation 0

- Convert the decimal number 32 to binary number:  $32_{10} = (100000)_2$ .
- The value of the 4th index from the right in the binary representation is 0.

Sample Input 1

STDIN    Function  
-----  
77    →    number = 77

Sample Output 1

1

Explanation 1

- Convert the decimal number 77 to binary number:  $77_{10} = (1001101)_2$ .
- The value of the 4th index from the right in the binary representation is 1.

Answer: (penalty regime: 0 %)

Reset answer

	Test	Expected	Got	
	printf("%d", fourthBit(32))	0	0	
	printf("%d", fourthBit(77))	1	1	

Passed all tests!

Question **2**

Correct

Marked out of 1.00

☐ Flag question

Determine the factors of a number (i.e., all positive integer values that evenly divide into a number). Return a list of the factors of the number. If there is no p<sup>th</sup> element of the list, sorted ascending. If there is no p<sup>th</sup> 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, the value 4 would be returned.

Function Description

Complete the function pthFactor in the editor below.

pthFactor has the following parameter(s):

Returns:  
int: the long integer value of the  $p^{\text{th}}$  integer factor of  $n$  or, if there is no factor at that index, the

Constraints

$$1 \leq n \leq 10^{15}$$
$$1 \leq p \leq 10^9$$

Input Format for Custom Testing

Input from stdin will be processed as follows and passed to the function.

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

STDIN	Function
10	$\rightarrow n = 10$
3	$\rightarrow p = 3$

Sample Output 0

5

Explanation 0

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

Sample Case 1

Sample Input 1

STDIN	Function
10	$\rightarrow n = 10$
5	$\rightarrow p = 5$

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.

Sample Case 2

Sample Input 2

STDIN	Function
1	$\rightarrow n = 1$

Sample Output 2

1

Explanation 2

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

Answer: (penalty regime: 0 %)

Reset answer

	Test	Expected	Got	
	<code>printf("%ld", pthFactor(10, 3))</code>	5	5	
	<code>printf("%ld", pthFactor(10, 5))</code>	0	0	
	<code>printf("%ld", pthFactor(1, 1))</code>	1	1	

Passed all tests!

Save the state of the flags