

# GE23131-Programming Using C-2024

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Status	Finished
Started	Monday, 13 January 2025, 2:13 PM
Completed	Monday, 13 January 2025, 2:33 PM
Duration	20 mins 4 secs

Question 1

Correct

Marked out of 1.00

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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 starting with 1. Given a decimal number, convert it to binary and determine the value of the 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.

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

**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 Case 1****Sample Input 1**

STDIN    Function

-----

77     $\rightarrow$  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 %)

```
1 1
2  * Complete the 'fourthBit' function below.
3  *
4  * The function is expected to return an INTEGER.
5  * The function accepts INTEGER number as parameter.
6  */
7
8  int fourthBit(int number)
9  {
10     int bin[32];
11     int i=0;
12     while(number>0){
13         bin[i]=number%2;
14         number/=2;
15         i++;
16     }
17
18     if(i>=4){
19         return bin[3];
20     }
21     return 0;
22 }
```

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

Passed all tests! ✓

Question **2**  
Correct

Determine the factors of a number (i.e., all positive integer values that evenly divide into a number) and then return the p<sup>th</sup> element of the list, sorted ascending. If there is

**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.

**Function Description**

Complete the function `pthFactor` in the editor below.

`pthFactor` has the following parameter(s):

`int n`: the integer whose factors are to be found

`int p`: the index of the factor to be returned

Returns:

`int`: the long integer value of the  $p^{\text{th}}$  integer factor of  $n$  or, if there is no factor at that index, then 0 is returned

**Constraints**

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

$1 \leq p \leq 10^9$

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	→ n = 10
3	→ p = 3

**Sample Output 0**

5

**Explanation 0**

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

**Sample Case 1**

**Sample Input 1**

-----  
10    →   n = 10  
5     →   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 as the answer.

**Sample Case 2**

**Sample Input 2**

STDIN    Function  
-----  
1     →   n = 1  
1     →   p = 1

**Sample Output 2**

1

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

**Answer:** (penalty regime: 0 %)

Reset answer

```
1  /*
2  * Complete the 'pthFactor' function below.
3  *
4  * The function is expected to return a LONG_INTEGER.
5  * The function accepts following parameters:
6  * 1. LONG_INTEGER n
7  * 2. LONG_INTEGER p
8  */
9
10 long pthFactor(long n, long p)
11 {
12     long int fac[50];
13     int j=0;
14     for(long int i=1;i<=n;i++){
15         if(n%i==0){
16             fac[j]=i;
17             j++;
18         }
19     }
20     return fac[p-1];
21
22 }
```

	Test	Expected	Got	
✓	printf("%ld", pthFactor(10, 3))	5	5	✓
✓	printf("%ld", pthFactor(10, 5))	0	0	✓



Passed all tests! ✓

Finish review