

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

Sample Input 1

STDIN Function

77 → number = 77

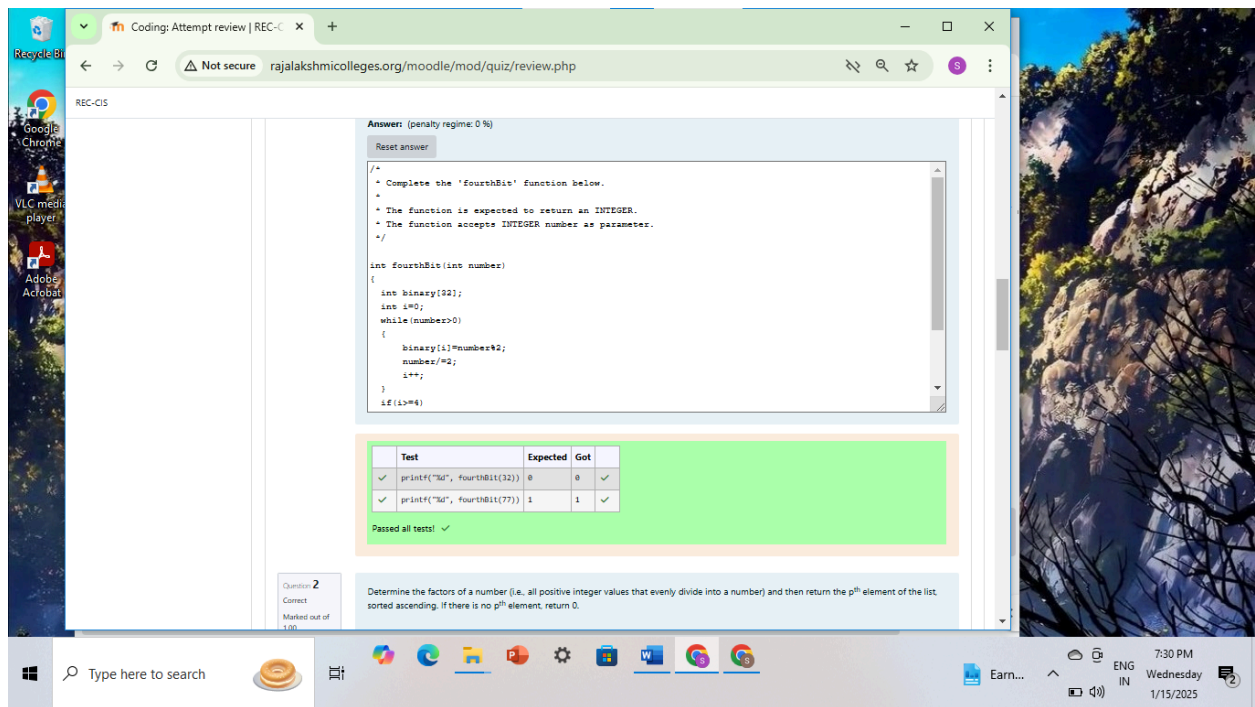
Sample Output 1

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 %)



The screenshot shows a web browser window displaying a Moodle quiz review page. The URL is rajalakshmicolleges.org/moodle/mod/quiz/review.php. The page title is "Coding: Attempt review | REC-C". The quiz question is "Determine the factors of a number (i.e., all positive integer values that evenly divide into a number) and then return the pth element of the list, sorted ascending. If there is no pth element, return 0."

The user's answer is a C++ code snippet for a function `fourthBit`:

```
/*  
 * Complete the 'fourthBit' function below.  
 *  
 * The function is expected to return an INTEGER.  
 * The function accepts INTEGER number as parameter.  
 */  
  
int fourthBit(int number)  
{  
    int binary[32];  
    int i=0;  
    while(number>0)  
    {  
        binary[i]=number%2;  
        number/=2;  
        i++;  
    }  
    if(i>=4)  
    {  
        return binary[i-4];  
    }  
    return 0;  
}
```

The test results table shows two tests passed:

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

Passed all tests! ✓

2.Determine the factors of a number (i.e., all positive integer values that evenly divide into a number) and then return the pth element of the list, sorted ascending. If there is no pth 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.

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 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 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
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10	→ n = 10
3	→ p = 3

Sample Output 0

5

Explanation 0

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

Sample Case 1

Sample Input 1

STDIN	Function
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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
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------	-------

1	→ $n = 1$
---	-----------

1	→ $p = 1$
---	-----------

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 %)

