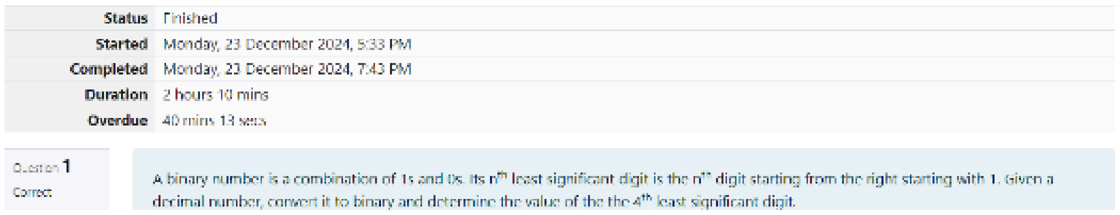
Week 12(1):
ROLL NO.:240801153
Name: Kavin kumar S



Status	Finished
Started	Monday, 23 December 2024, 5:33 PM
Completed	Monday, 23 December 2024, 7:43 PM
Duration	2 hours 10 mins
Overdue	40 mins 13 secs

Question **1**
Correct

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 4^{th} least significant digit.

Q1) A binary number is a combination of 1s and 0s. Its nth least significant digit is the nth 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: 2310 = 24 + 22 + 21 + 20 =
(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 ≤ number < 231
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 Input
STDIN Function
----- --------
32 → number = 32

Sample Output

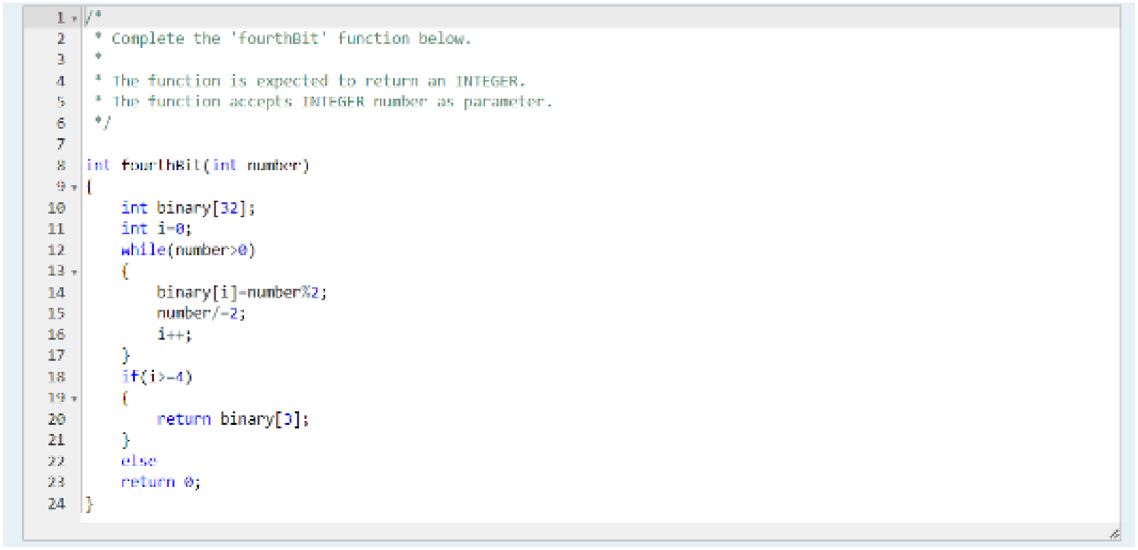
0

Explanation

• Convert the decimal number 32 to binary number: 3210 = (100000)2.

• The value of the 4th index from the right in the binary representation is 0.

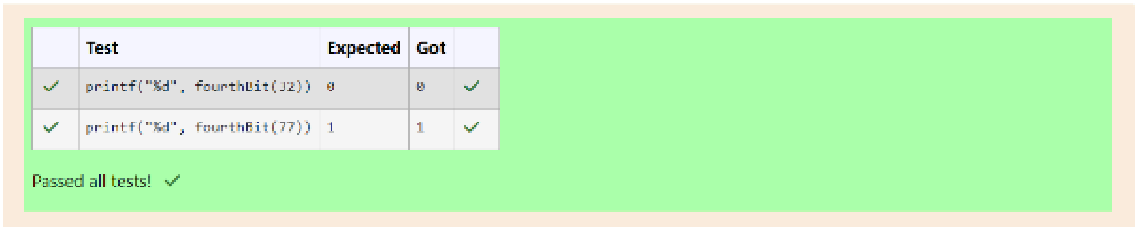
Code:



```c
/*
 * 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[3];
    }
    else
    return 0;
}
```

OUTPUT:



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

Passed all tests! ✓

Q2) 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 pth integer factor of n or, if there is no factor at that
index, then 0 is returned

Constraints

$1 \leq n \leq 1015$

$1 \leq p \leq 109$

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 Input

```
STDIN Function
----- --------
10 → n = 10
3 → p = 3
```

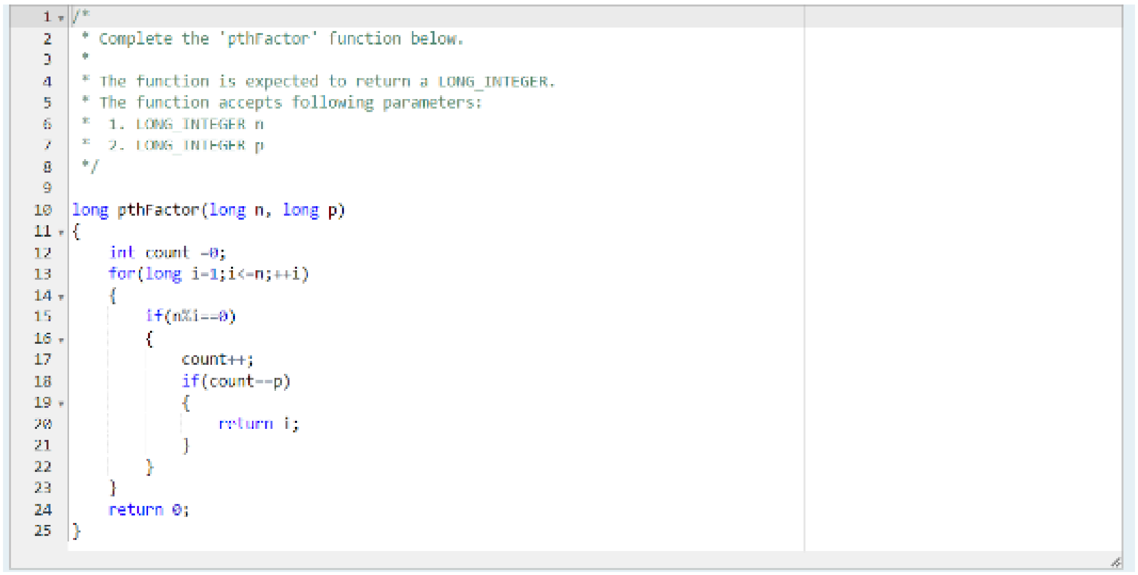
Sample Output

```
5
```

Explanation

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

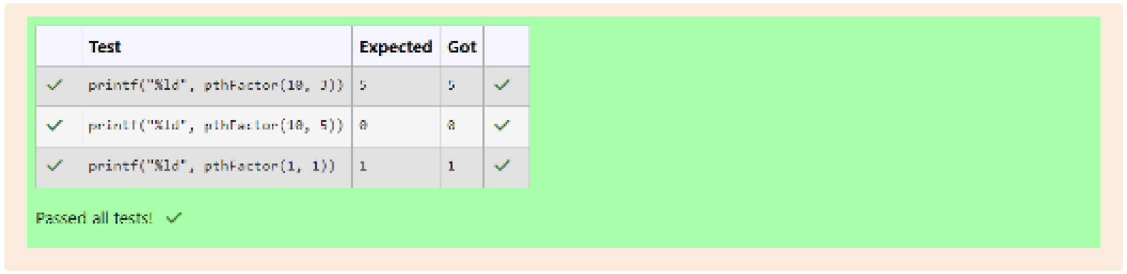
Code:



```c
/*
 * Complete the 'pthFactor' function below.
 *
 * The function is expected to return a LONG_INTEGER.
 * The function accepts following parameters:
 *  1. LONG_INTEGER n
 *  2. LONG_INTEGER p
 */

long pthFactor(long n, long p)
{
    int count =0;
    for(long i=1;i<=n;++i)
    {
        if(n%i==0)
        {
            count++;
            if(count==p)
            {
                return i;
            }
        }
    }
    return 0;
}
```

OUTPUT:



	Test	Expected	Got	
✓	printf("%ld", pthFactor(10, 3))	5	5	✓
✓	printf("%ld", pthFactor(10, 5))	0	0	✓
✓	printf("%ld", pthFactor(1, 1))	1	1	✓

Passed all tests! ✓