

## Week-12-User-Defined Functions

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## Coding

✓ Done

Re-attempt quiz

Attempts allowed: 4

Time limit: 1 hour 30 mins

Grading method: Highest grade

### Your attempts

Attempt 1	
Status	Finished
Started	Thursday, 26 December 2024, 9:33 AM
Completed	Thursday, 26 December 2024, 9:38 AM
Duration	5 mins 5 secs

Review

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REC-CIS

GE23131-Programming Using C-2024

Quiz navigation

12

Show one page at a time

Finish review

StatusFinished

StartedThursday, 26 December 2024, 9:33 AM

CompletedThursday, 26 December 2024, 9:38 AM

Duration5 mins 5 secs

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 starting with 1. Given a decimal number, convert it to binary and determine the value of the the 4<sup>th</sup> 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<sup>th</sup> 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):

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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

-----

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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

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**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

```
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 binary[32];
11     int i=0;
12     while(number>0)
13     {
14         binary[i]=number%2;
15         number/=2;
16         i++;
17     }
18     if(i>=4)
19     {
20         return binary[3];
21     }
22     else
23         return 0;
24 }
```

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	Test	Expected	Got
✓	<code>printf("%d", fourthBit(32))</code>	0	0 ✓
✓	<code>printf("%d", fourthBit(77))</code>	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) and then return the  $p^{\text{th}}$  element of the list, sorted ascending. If there is no  $p^{\text{th}}$  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.

**Function Description**

Complete the function `pthFactor` in the editor below.

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`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 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**

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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  $p = 3^{\text{rd}}$  factor, 5, as the answer.

**Sample Case 1**

**Sample Input 1**

STDIN	Function
10	→ n = 10
5	→ p = 5

**Sample Output 1**

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REC-CIS

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

**Explanation 2**

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

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REC-CIS

Answer - question requires a key

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     int count=0;
13     for(long i=1;i<=n;i++)
14     {
15         if(n%i==0)
16         {
17             count++;
18             if(count==p)
19             {
20                 return i;
21             }
22         }
23     }
24     return 0;
25 }
```

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

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```
10 long pthFactor(long n, long p)
11 {
12     int count=0;
13     for(long i=1;i<=n;i++)
14     {
15         if(n%i==0)
16         {
17             count++;
18             if(count==p)
19             {
20                 return i;
21             }
22         }
23     }
24     return 0;
25 }
```

	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! ✓

Finish review