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Week-12

User defined functions

Question 1:

Question **1**
Correct
Marked out of 1.00
Flag question

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.

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^{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.

Source code and Result:

```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;
}
```

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

Passed all tests! ✓

Question 2:

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^{th} element of the list, sorted ascending. If there is no p^{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.

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

Source code and Result:

```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 c=0;
    for(long i=1;i<=n;i++)
    {
        if(n%i==0)
        {
            c++;
            if(c==p)
            {
                return i;
            }
        }
    }
    return 0;
}
```

	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! ✓