

Progress Evaluation Test - 2
Topic - Data Types, Conditional Logic, Loop
*Total Marks - 100 (20 * 5)*
Time - 60 minutes

N.B. Each question carries 20 points. Answer any 5 of the following questions.

1. C program to print mirrored half diamond star pattern

Input

Input N: 5

Output

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    ***
   ****
  *****
 *****
  *****
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    ***
     **
      *
```

2. Given an integer n, return true if it is a power of four. Otherwise, return false. An integer n is a power of four, if there exists an integer x such that $n == 4^x$.

Example 1:

Input: n = 16
Output: true

Example 2:

Input: n = 5
Output: false

3. C program to find prime factors of a number

Input

Input any number: 10

Output

Prime factors of 10: 2, 5

N.B. Factors of a number that are prime numbers are called as Prime factors of that number. For example: 2 and 5 are the prime factors of 10.

4. C program to find perfect numbers between 1 to n

Input

Input upper limit: 100

Output

Perfect numbers between 1 to 100: 6, 28

N.B. Perfect number is a positive integer which is equal to the sum of its proper positive divisors. For example: 6 is the first perfect number. Proper divisors of 6 are 1, 2, 3.

Sum of its proper divisors = $1 + 2 + 3 = 6$.

Hence 6 is a perfect number.

5. Given an integer x, return true if x is a palindrome integer. An integer is a palindrome when it reads the same backward as forward. For example, 121 is a palindrome while 123 is not.

Example 1:

Input: x = 121

Output: true

Explanation: 121 reads as 121 from left to right and from right to left.

Example 2:

Input: x = -121

Output: false

Explanation: From left to right, it reads -121. From right to left, it becomes 121-. Therefore it is not a palindrome.

Best of luck.