

VIT - Vellore

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BCSE102P_Structured and Object Oriented Programming Lab_VL2024250502354

VIT V_Structured and OOP_Lab 5_COD_Medium_Functions with default Arguments

Attempt : 1

Total Mark : 10

Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Ram is fascinated with perfect numbers and wants to create a program to identify whether a given integer is perfect or not. A perfect number is a positive integer that is equal to the sum of its proper divisors (excluding itself).

For example, 6 is a perfect number because its proper divisors are 1, 2, and 3, and $1 + 2 + 3 = 6$.

15 is not a perfect number because its proper divisors are 1, 3, 5, and $1 + 3 + 5 = 9$.

Function Signature

bool isPerfect(int n, int default_value = 1)

Answer

```
#include <iostream>
using namespace std;
bool isPerfect(int n, int default_value = 1) {
    if (n <= 1) {
        return false;
    }
    int sum = 1;
    for (int i = 2; i * i <= n; ++i) {
        if (n % i == 0) {
            sum += i;
            if (i * i != n) {
                sum += n / i;
            }
        }
    }
    return sum == n;
}

int main() {
    int n;
    cin >> n;
    if (isPerfect(n)) {
        cout << n << " is a perfect number" << endl;
    } else {
        cout << n << " is not a perfect number" << endl;
    }
    return 0;
}
```

Status : Correct

Marks : 10/10