

# Bit Pair Sum

Problem Code: **CWHIZZ02**



[Tweet](#)

(<https://twitter.com/share>)

All submissions for this problem are available.

**All Submissions**  
(/CODW2018/status/CWHIZZ02)

## Problem description.

Pappu is a very curious boy. Once when he was learning about converting binary to decimal numbers, he became interested in how bits of a binary number can be rearranged and what properties they have. Now he is stuck at this problem: Let **B** be a number whose binary representation is **b<sub>1</sub>b<sub>2</sub>b<sub>3</sub>...b<sub>n</sub>**. Then compute, where **b<sub>i</sub>b<sub>j</sub>** is a 2-bit binary number and decimal() converts the input binary number to a decimal number.

## Input

The first line contains a single number **T**, number of test cases. From the second line there will be **T** lines, each line containing an integer **N**.

## Output

For each integer **N**, compute **PF(N)** and print it in a new line.

## Constraints

- $1 \leq T \leq 50$
- $2 \leq N \leq 10^9$

## Example

**Input :**  
2  
5  
11  
  
**Output :**  
6  
13

## Explanation

N=5 Binary representation = 101 (b<sub>1</sub>=1 b<sub>2</sub>=0 b<sub>3</sub>=1)  
PF(5) = decimal(b<sub>1</sub>b<sub>2</sub>) + decimal(b<sub>1</sub>b<sub>3</sub>) + decimal(b<sub>2</sub>b<sub>3</sub>)  
= 10 + 11 + 01 = 2 + 3 + 1 = 6

N=11 Binary representation = 1011 (b<sub>1</sub>=1 b<sub>2</sub>=0 b<sub>3</sub>=1 b<sub>4</sub>=1)  
PF(11) = decimal(b<sub>1</sub>b<sub>2</sub>) + decimal(b<sub>1</sub>b<sub>3</sub>) + decimal(b<sub>1</sub>b<sub>4</sub>) + decimal(b<sub>2</sub>b<sub>3</sub>) + decimal(b<sub>2</sub>b<sub>4</sub>) + decimal(b<sub>3</sub>b<sub>4</sub>)  
= 10 + 11 + 11 + 01 + 01 + 11 = 2 + 3 + 3 + 1 + 1 + 3 = 13

Author: 1★ [kjsreddy123 \(/users/kjsreddy123\)](#)

Tags: [kjsreddy123 \(/tags/problems/kjsreddy123\)](#)

Date Added: 11-01-2018

**Successful Submissions**

+

Time Limit: 1 secs

Source Limit: 50000 Bytes

Languages: ADA, ASM, BASH, BF, C, CAML, CLOJ, CLPS, COB, CPP 4.3.2, CPP 6.3, CPP14, CS2, D, ERL, FORT, FS, GO, HASK, ICK, ICON, JAVA, JS, kotlin, LISP clisp, LISP sbcl, LUA, NEM, NICE, NODEJS, PAS fpc, PAS gpc, PERL, PERL6, PHP, PIKE, PRLG, PYPY, PYTH, PYTH 3.5, RUBY, rust, SCALA, SCM chicken, SCM guile, SCM qobi, ST, swift, TCL, TEXT, WSPC

---

## Comments ▶

---

[CodeChef is a non-commercial competitive programming community](#)

[About CodeChef \(http://www.codechef.com/aboutus/\)](#) [About Directi \(http://www.directi.com/\)](#) [CEO's Corner \(http://www.codechef.com/ceoscorner/\)](#)  
[C-Programming \(http://www.codechef.com/c-programming\)](#) [Programming Languages \(http://www.codechef.com/Programming-Languages\)](#) [Contact Us \(http://www.codechef.com/contactus\)](#)

© 2009 Directi Group (<http://directi.com>). All Rights Reserved. CodeChef uses SPOJ © by [Sphere Research Labs \(http://www.sphere-research.com\)](http://www.sphere-research.com)

In order to report copyright violations of any kind, send in an email to [copyright@codechef.com \(mailto:copyright@codechef.com\)](mailto:copyright@codechef.com)

**Directi** (<http://directi.com>)  
Intelligent People. Uncommon Ideas.  
The time now is: 11:51:20 PM  
Your IP: 78.42.19.73

### <http://www.codechef.com> - A Platform for Aspiring Programmers

CodeChef was created as a platform to help programmers make it big in the world of algorithms, **computer programming** and **programming contests**. At CodeChef we work hard to revive the geek in you by hosting a **programming contest** at the start of the month and another smaller programming challenge in the middle of the month. We also aim to have training sessions and discussions related to **algorithms**, **binary search**, technicalities like **array size** and the likes. Apart from providing a platform for **programming competitions**, CodeChef also has various algorithm tutorials and forum discussions to help those who are new to the world of **computer programming**.

### <https://www.codechef.com/problems/easy> - A Place to hone your 'Computer Programming Skills'

Try your hand at one of our many practice problems and submit your solution in a language of your choice. Our **programming contest** judge accepts solutions in over 35+ programming languages. Preparing for coding contests were never this much fun! Receive points, and move up through the CodeChef ranks. Use our practice section to better prepare yourself for the multiple **programming challenges** that take place through-out the month on CodeChef.

### <https://www.codechef.com/problems/easy> - Monthly Programming Contests and Cook-offs

Here is where you can show off your **computer programming skills**. Take part in our 10 day long monthly coding contest and the shorter format Cook-off **coding contest**. Put yourself up for recognition and win great prizes. Our **programming contests** have prizes worth up to INR 20,000 (for Indian Community), \$700 (for Global Community) and lots more CodeChef goodies up for grabs.

### Programming Tools

[Online IDE \(https://www.codechef.com/ide\)](https://www.codechef.com/ide)

[Upcoming Coding Contests \(http://www.codechef.com/contests#FutureContests\)](http://www.codechef.com/contests#FutureContests)

[Contest Hosting \(http://www.codechef.com/hostyourcontest\)](http://www.codechef.com/hostyourcontest)

[Problem Setting \(http://www.codechef.com/problemsetting\)](http://www.codechef.com/problemsetting)

[CodeChef Tutorials \(http://www.codechef.com/wiki/tutorials\)](http://www.codechef.com/wiki/tutorials)

[CodeChef Wiki \(https://www.codechef.com/wiki\)](https://www.codechef.com/wiki)

### Practice Problems

[Easy \(https://www.codechef.com/problems/easy\)](https://www.codechef.com/problems/easy)

[Medium \(https://www.codechef.com/problems/medium\)](https://www.codechef.com/problems/medium)

[Hard \(https://www.codechef.com/problems/Hard\)](https://www.codechef.com/problems/Hard)

[Challenge \(https://www.codechef.com/problems/challenge\)](https://www.codechef.com/problems/challenge)

[Peer \(https://www.codechef.com/problems/extcontest\)](https://www.codechef.com/problems/extcontest)

[School \(https://www.codechef.com/problems/school\)](https://www.codechef.com/problems/school)

[FAQ's \(https://www.codechef.com/wiki/faq\)](https://www.codechef.com/wiki/faq)

### Initiatives

[Go for Gold \(http://www.codechef.com/qoforgold\)](http://www.codechef.com/qoforgold)

[CodeChef for Schools \(http://www.codechef.com/school\)](http://www.codechef.com/school)

[Campus Chapters \(http://www.codechef.com/campus\\_chapter/about\)](http://www.codechef.com/campus_chapter/about)